

# Hazard Mitigation Plan 2009

(Updated from the 2004 adopted plan)



**CITY OF NAPA**



November 4, 2009

To: Officials, Employees, and Citizens of Napa City

RE: Commitment to creating a disaster-resistant City

The preservation of life, property and the environment is an important public safety objective for local, state, and federal government. The City of Napa has prepared this update to the Hazard Mitigation Plan to ensure the most effective and economical allocation of resources for protection of people and property prior to the onset of a natural or technological disaster.

While no plan can completely prevent the possibility of injury, loss of life or property damage, good plans carried out by knowledgeable and well-trained personnel can and will minimize losses. This plan establishes the priorities for future mitigation actions to begin the process of making the City of Napa a disaster resistant community.

The objective of this plan is to incorporate and coordinate the best possible approaches to mitigation from our four major threats, flooding, wildfire, earthquakes and technological hazards, so these approaches can be rapidly and effectively applied as resources become available to conduct these mitigation programs and measures. By implementing, over time the process and programs outlined in this plan, the City will greatly enhance the survivability of key facilities and the ability of response personnel of the city in responding effectively to any emergency.

This mitigation plan is an extension of the *State Hazard Mitigation Plan*, and implements guidelines and requirements set forth in the federal Disaster Mitigation Act of 2000. It will be reviewed and exercised periodically and revised as necessary to meet changing conditions.

The Napa City Council gives its full support to this plan and urges all officials, employees, and the citizens, individually and collectively, to do their share in the total disaster mitigation effort of the City of Napa.

This letter promulgates the *City of Napa Hazard Mitigation Plan*, constitutes the adoption of the plan as a standing annex to the City of Napa Emergency Plan that repetitive and avoidable disaster loss must be prevented to make all communities disaster-resistant. This mitigation plan becomes effective on approval by the Napa City Council.

Sincerely,

Jill Techel  
Mayor



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**RESOLUTION R2009 \_\_\_\_\_**

**RESOLUTION OF THE CITY COUNCIL OF THE CITY  
OF NAPA, STATE OF CALIFORNIA ADOPTING THE  
CITY OF NAPA HAZARD MITIGATION PLAN**

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## SECTION 2: THE PLANNING PROCESS

**Preparing the plan:** Hazard mitigation planning in the City and County of Napa has been an ongoing process. Such plans are authorized under the state's Planning laws, and the federal Disaster Mitigation Act of 2000 requires the preparation of a Local Hazard Mitigation Plan in order for the City to be eligible for various types of federal disaster grants and assistance. The City of Napa adopted and FEMA approved its first written Hazard Mitigation Plan in 2004. This plan was reviewed and updated each year and progress was evaluated on each *action item*. In addition, each *action item* was reviewed to determine if these items needed to be re-prioritized. In July of 2009, City staff undertook a complete rewrite. Dan Hall, Battalion Chief with the Napa Fire Dept., was the lead staff in writing this plan. He worked closely with a team of City, County and Community members to complete this plan. Each section was reviewed with some sections requiring more changes than others. For example, the flood and fire hazard assessment received more updates due to progress in completing mitigation strategies and action items as compared to the earthquake and terrorism hazards. The HAZUS data changed little whereas the Cities threat to fires in the wild-land urban interface changed significantly due to progress made by the Fire-safe Councils. Each draft and revision was reviewed by the team and eventually presented to the public through a series of Public Workshops, and posted on the City website for community review and comments. The City of Napa has, and will continue to have, public, private and governmental input into the City's threat assessment and mitigation strategies. This section describes this input and planning process.

**Incorporating existing plans:** The City of Napa has a Safety Element within the General Plan and this section already identified our most likely hazards and listed mitigation strategies that were incorporated into this plan. In addition, the City had completed other reports such as the Seismic Vulnerability Study on URM buildings, the Storm Drain Improvement Plan, a Water Department Vulnerability Study and a Terrorism Vulnerability Report. These and other studies or plans have been incorporated into this document. The City of Napa has a FEMA-approved Flood Mitigation Plan at a cost estimated in 2009 to total approximately \$400,000,000. While the specifics are not included in here since that plan is a stand alone mitigation document, it is a companion to this document and is available for public review. The City has an Emergency Plan that addresses a response to emergencies and disasters. The information in this document compliments the emergency plan but concentrates on mitigation strategies as compared to response or recovery. It is the intent that the LHMP and the Emergency Plan will be companion documents.

**The Process - Flood:** The planning process for this document began in the 90's after Napa suffered a significant flood in 1986. The community and civic leaders began the process of developing the Flood Mitigation Plan which was approved by FEMA in 1996. The process is described at length in the section below, titled *Major Threat: Flood*. It includes who was involved, how the public participated, the involvement of other agencies and the specific strategies used to obtain a FEMA-approved plan. The Flood Mitigation Plan was itself updated in November 2009 and was adopted by the City Council. As of November 2009, the flood mitigation project is at the halfway point at a cost of approximately \$200 million. The projected cost for completion is estimated at \$400 million.

**The Process – Earthquake:** After Napa experienced a 5.1 earthquake on September 3, 2000, the community began the process of mitigating potential damage from future quakes. The Mayor convened a public workshop to address Napa’s risk to future earthquakes and also invited experts to explore mitigation and planning activities designed to reduce these estimated future earthquake losses. The information from this workshop and the data offered by HAZAS continues to provide the City with the information needed to determine mitigation strategies in 2009. This process is described at length in the section below titled *Major Threat: Earthquake*.

**The Process – Terrorism:** The Napa Terrorism Working Group (TWG) was formed in 2001 in response to the events of 9/11 and the subsequent anthrax mailings. All emergency response agencies collaborated on a countywide protocol for response to terrorist incidents and began the process of exploring strategies to mitigate future terror attacks locally. This process is described in the section below titled *Major Threat: Terrorism*.

**The Process – Fire:** The Napa County Firewise Conference that was held on June 4-6, 2003 generated ideas how to complete our hazard assessment and develop mitigation strategies. There were 81 participants in the process from a mix of disciplines. In breakout session, groups were tasked with developing strategies to become Firewise Communities. While this conference was six years ago, it was a catalyst for the development of our City and County *Fire-wise* programs and Fire-safe Councils. The process that began years before continues today and has been enhanced because of the participation of our Fire Safe Councils comprised of local residents and professionals. The results of the breakout groups brainstorming can be found on page 11 – 12 under the title *Major Threat: Fire*.

**Putting it all together** - The Fire Department became the responsible City division for implementation of the plan; however a City Mitigation Team was formed to work on this project. The team met in August, developed goals and objectives, delegated tasks and responsibilities and agreed on a timetable. They regularly met to review progress and submit the information and documents they were responsible for. The members of this Team are listed on page 1. Each team member contributed in areas of their expertise. For example Cassandra Walker is the City’s Redevelopment Director and she assisted in collecting and interpreting data regarding the City’s seismically vulnerable buildings and together with Steve Jensen, the City’s Chief Building Inspector, recommended mitigation actions.

It was determined early on that the City and County would collaborate, wherever we could, however, we would each produce our own stand-alone plans. The contact from the County was Kerry Whitney the OES Coordinator. In addition, various Community Groups participated in the process including the Montecito Fire Safe Council and the Napa Creek neighborhood group *In Harms Way*.

Each City Department Head reviewed the plan as it progressed, utilized the talents within their department and recommended changes. In addition, after the hazard assessment was completed, they recommended mitigation action items. Each of these action items were evaluated, prioritized and collectively the Department Heads decided

which ones were appropriate to recommend the Team review for final acceptance. After the Team made final changes, the City Manager approved the document and it was sent to City Council for Adoption. The Plan was formally adopted in December of 2009.

**Public involvement in the planning process:** The following section describes the foundation of public support for preparedness in the City of Napa. The public provided input by participating in several forums. There were multiple public workshops during the period of building the FEMA-approved Flood Mitigation Plan as described in a previous section titled; *Major Threat: Flooding*. As noted on page 7, a multitude of different agencies, businesses groups, nonprofits, community leaders and government agencies attended the Flood Mitigation Workshops. Our citizens have made great strides in contributing in the direction and success of our *Fire Wise Program*. Napa Communities Firewise Foundation General Meetings and Board Meeting occur every third Thursday of each month. Their input is a significant reason the City has been so successful in meeting its goal of becoming fire safe. Beginning in August and ending in November 2009, the City conducted a series of public meetings to meet the guidance requirements and receive additional public input. On August 12<sup>th</sup>, the City held a public workshop relating to the revision of the FEMA flood maps and on Oct 7<sup>th</sup> and 8<sup>th</sup> a two day workshop was held relating to the Flood Mitigation Plan. On November 2<sup>nd</sup>, 2009 the City co-hosted a public workshop with Napa County at which information and input was solicited on all of the hazards confronting the City. Each meeting was announced several weeks before on the local radio, noticed in the local newspaper and the information placed on the City's web page. As a result the meetings were well attended; the participants demonstrated a high degree of awareness of the potential major threats and were very supportive of the plan. In addition, the City web site presented a link to the draft mitigation action items as well as providing a method for the public to comment via the web page.

## Major Threat: Flooding

Flood events in Napa have been recorded since 1892. Historically, the most significant flood events occurred in 1940, 1942, 1955, 1960, 1963, 1965, 1973, 1979, 1982, 1983, 1986, 1995, 1997, 1998, 2002 and most recently 2005/2006. Major floods have resulted in damage to commercial, industrial, residential, and agricultural areas. Utilities, roads, bridges, and streets also are subject to damage and require repair and clean up after a flood event. Flooding causes business slow down or stoppage, wage loss, and interruptions to traffic and the flow of goods. Flooding also has significant effects on human life and health (both physical and mental). The 1986 flood, which was the result of a 50-year storm, inundated most of the land adjacent to the Napa River and caused \$100 million in property damage, killed 3 people, injured 27 people, destroyed 250 homes, and damaged 2,500 residences county-wide.

Since the 1930's, Napa City and County residents have made several concerted efforts to address flooding. The most recent effort began in 1965, when Congress authorized the development of a detailed project proposal for flood protection. In 1975, the U.S. Army Corps of Engineers submitted the first project proposal under the 1965 Authorization. Napa County voters rejected the proposal in referendum elections in both 1976 and 1977, and it was subsequently shelved. When the floods of 1986 hit the Napa

valley, the City of Napa requested that the project be reactivated. The Corps responded with a revised proposal in 1995. Again, it was deemed unacceptable.

As frustrating as the rejections were, not just for the Corps, but for all those who desperately wanted a solution, a new approach emerged which looked at flood control from a broader, more comprehensive perspective. Citizens for Napa River Flood Management was formed, bringing together a diverse group of local engineers, architects, aquatic ecologists, business and agricultural leaders, environmentalists, government officials, homeowners and renters, and numerous community organizations.

Through a series of public meetings and intensive debates over every aspect of Napa's flooding problems, the Citizens for Napa River Flood Management crafted a flood management plan offering a range of benefits for the entire Napa region. The U.S. Army Corps of Engineers served as a resource for the group, helping to evaluate their approach to flood management. The final plan produced by the Citizens for Napa River Flood Management was successfully evaluated through the research, experience, and state-of-the-art simulation tools developed by both the Army Corps of Engineers and numerous international experts in the field of hydrology and other related disciplines. The success of this collaboration serves as a model, not just for Napa, but also for the nation.

### **Establishing Goals: Blending Engineering and Ecology**

Citizens for Napa River Flood Management established the following agreed-upon set of goals, initially for the City of Napa, but quickly expanded to include all of Napa County:

- 100-year flood protection;
- An environmentally-restored, "living" Napa River;
- Enhanced opportunities for economic development;
- A local financing plan that the community could support; and
- A plan that addresses the entire watershed countywide.

### **Examining Potential Strategies**

Building on members' expertise, Citizens for Napa River Flood Management members examined the range of potential strategies that could achieve these goals. Some of the broad categories considered were:

- Existing Reservoir Strategies
  - Increasing the use of existing reservoirs for flood control purposes as well as water supply.
- Up-Valley Strategies
  - Holding more water upriver during potential flood events, reducing the flow through the City of Napa, then releasing the stored water as conditions permit.
- Down-River Strategies

- Improving “drainage” at the mouth of the Napa River, thereby increasing the rate of flow through the City of Napa and preventing the accumulation of floodwaters.
- Watershed Protection Strategies
  - Improving the capacity of the entire watershed to control and direct flood flows by altering land-use practices.
- Risk Reduction Strategies
  - Elevating and/or relocating homes and businesses in the floodplain.

### **Evaluating Alternative Strategies**

As each of these strategies were examined, both individually and in combinations, some conclusions emerged:

- Configuration of new or expanded-capacity dams and reservoirs upriver by itself could not adequately reduce flood flows into Napa;
- Increasing the rate of flow through the City of Napa by improving “drainage” at the mouth of the Napa River would create erosion and would not significantly reduce flood levels;
- Improving the capacity of the entire watershed to control and direct flood flows is a desirable goal, but by itself cannot prevent major flood events, which occur naturally; and
- Elevating and/or relocating homes and businesses in the floodplain would be extremely costly and, in many cases, infeasible.

The current design evolved from a series of analyses and informed discussions about which strategies, or combination of strategies, best met the Project’s objectives.

The U.S. Army Corps of Engineers, lead federal agency for the Project, was required to submit a detailed proposal describing the project and the rationale behind the proposed design. In addition, the Corps prepared a Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/EIR) detailing the environmental analyses and mitigation measures contained in the Project. These environmental documents are available in their entirety for public review at various locations throughout the County (see back cover for additional information).

The approach of Citizens for Napa River Flood Management is based on the natural processes and characteristics of the Napa River itself, incorporating the following principles of geomorphology:

- Maintaining the natural slope of the river—the slope should not be altered significantly by dredging or straightening;
- Maintaining the natural width of the river;
- Maintaining the natural width/depth ratio of the river;
- Maintaining or restoring the connection of the river to the floodplain;
- Allowing the river to meander as much as possible;

- Maintaining channel features such as mud flats, shallows, sandbars, and a naturally uneven bottom; and
- Maintaining a continuous fish and riparian corridor along the river.

The goal is to once again make the Napa River a living river by:

- Conveying variable flows and restoring habitat in the floodplain;
- Balancing sediment input with sediment transport;
- Providing natural fish and wildlife habitat;
- Maintaining high water quality and supply;
- Offering improved recreation opportunities;
- Maintaining its aesthetic qualities; and
- Generally enhancing the human environment.

### **Community Partners “Citizens for Napa River Flood Management”**

- Friends of the Napa River
- Napa Valley Economic Development Corporation
- Napa County Resource Conservation District
- California Dept. of Fish & Game
- Napa Chamber of Commerce
- United Napa Valley Associates
- American Center for Wine, Food & Arts
- National Resource Conservation Service (NRCS)
- Homeowners: GSMOL & 1st St. Neighbors
- Napa County Landmarks
- Napa Valley Vintners Association
- Sierra Club
- Flood Plain Business Coalition
- Up Valley Chambers of Commerce
- Napa County Land Trust
- Napa-Solano Building Trades Council
- Napa Valley Fisherman’s Associations
- Napa Valley Conference & Visitors Bureau
- Napa Downtown Merchants
- Napa Valley Expo
- Napa County Farm Bureau
- Napa Valley Grape Growers Association
- Soscol Council
- Agricultural Commission
- U.S. Army Corps of Engineers
- Napa County Flood Control & Water Conservation District
- Napa County
- City of American Canyon
- City of Calistoga
- City of Napa
- City of St. Helena
- Town of Yountville

## Major Threat: Earthquake

Napa County faces a potential \$1 billion earthquake risk. This is an estimate for modeled losses due to building damages and business losses from a local earthquake caused by the West Napa Fault, running through Napa Valley. Earthquakes of two other nearby earthquake faults – the Rodgers Creek Fault and the Concord-Green Valley Fault – would cause estimated damages to Napa County in the one-half billion-dollar range.

On February 5, 2001, in a first-of-its-kind meeting, scientists and emergency managers from the United States Geological Survey, California Division of Mines and Geology, Federal Emergency Management Agency, and California Governor's Office of Emergency Services gathered to present modeled building stock and business interruption loss-estimation figures for three potential earthquake threats to the 127,000 residents of Napa County.

This public meeting, requested by Mayor Ed Henderson, City of Napa, used FEMA's National Risk Assessment System, called HAZUS. HAZUS is a sophisticated earthquake-loss estimation software tool based on a user-friendly geographic information system platform

The three-earthquake scenario simulations affecting northern San Francisco Bay Area counties were presented to an audience over 75 Napa County public officials. Not only did the meeting address Napa County's risk to future earthquakes, but the invited experts also emphasized mitigation and planning activities designed to reduce these estimated future earthquake losses.

To further its proactive mitigation posture, Napa County has joined FEMA's Disaster Resistant Communities initiative, which is based on establishing public-private partnerships in order to leverage resources necessary to create a disaster-resistant community. The U. S. Geological Survey, California Division of Mines and Geology, California Governor's Office of Emergency Services, and the Napa County Office of Emergency Services are all Disaster Resistant Communities program partners with FEMA.

Napa County residents and businesses experienced very strong shaking during the Napa Earthquake near Mt. Veeder, magnitude Richter 5.1, on September 3, 2000, with an epicenter near the Town of Yountville, causing moderate damage throughout the southern Napa Valley. Total losses from this moderate earthquake ranged from \$50 to \$65 million.

The process for the development of Earthquake related projects has used input from public meetings, the Local Assistance Center, individual exit surveys and our public-private partnership started by the Disaster Education Task Force.

## **Major Threat: Wildland Interface Fires**

A narrow valley floor surrounded and intermingled with steep, hilly, wooded terrain that contains areas that are very susceptible to wildland fires characterizes areas of the City and the County. Such fires expose residential and other development within the County to an increased risk of conflagration. The hilly/mountainous terrain on the east and west side of Napa Valley strongly influences both wildland fire behavior and the suppression capability of firefighters and their equipment.

Wind is a predominant factor in the spread of fire in that burning embers are carried with the wind to adjacent exposed areas. The Napa Valley has a characteristic southerly wind that originates from the San Francisco Bay and becomes a factor in fire suppression. Also, during the dry season the Valley experiences an occasional north wind of significant velocity that is recognized by fire fighters to be a significant factor in the spread of wildland fires.

### **Firewise Conference**

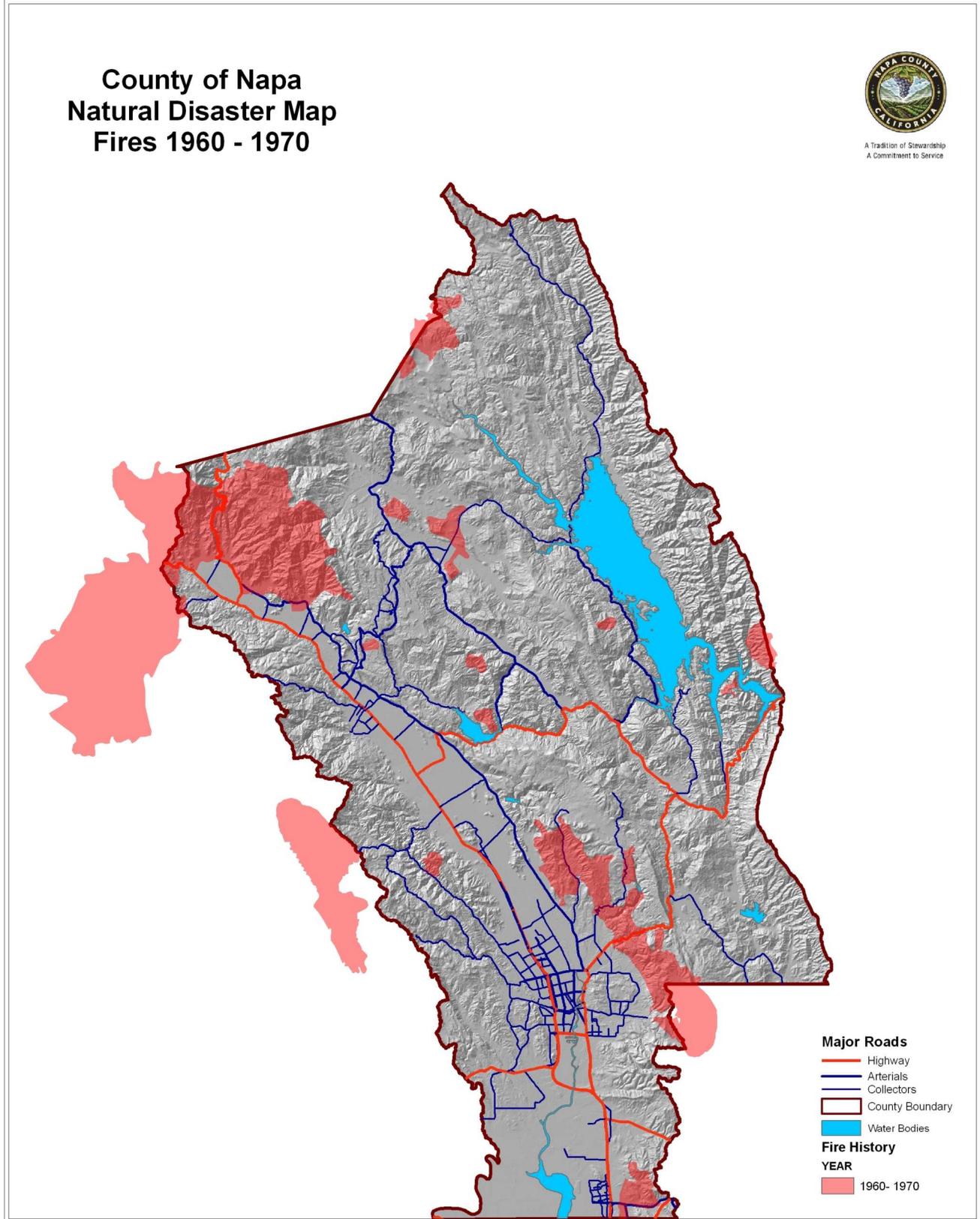
The public participation for the wildland fire interface portions of this Plan was developed from the input of participants at the Napa County Firewise Conference that was held on June 4-6, 2003. There were 81 participants in the process from a mix of disciplines. In breakout session, groups were tasked with developing strategies to become Firewise Communities. From these Firewise group strategies, the mitigation action items were developed for this Plan. This public process was facilitated by California Division of Forestry and the United States Forest Service and gave us a firm foundation for our fire hazard mitigation planning efforts.

Under the leadership of the City of Napa and the County Fire Marshal's Office two competitive mitigation grants were awarded to the county. Working in conjunction with the Firewise group, County OES, and the Napa City Fire Marshal's Office, an aggressive program of fire mitigation, education and organization was launched county wide.

### **Public Education Campaign**

Staff has worked with our contractor Balzac communications to maintain an aggressive public information campaign, building on the success of the first grant project. A Firewise web site is fully functional; fire education mapping and simulation programs are on line. Numerous public appearances before community groups centered in the WUI area of the county have been conducted. We have maintained a presence at major community events including the Napa Home and Garden show, farmers and chefs markets and other community events. We have used public mailings to spread the word to over 25,000 households. We have cooperated with local media and ran weekly Firewise columns in the major newspaper in the county. We anticipate over a thousand residents to take advantage of the fire safe fair and events county-wide. We have partnered with the community council and local fire department and the initial response has been remarkable.

# County of Napa Natural Disaster Map Fires 1960 - 1970



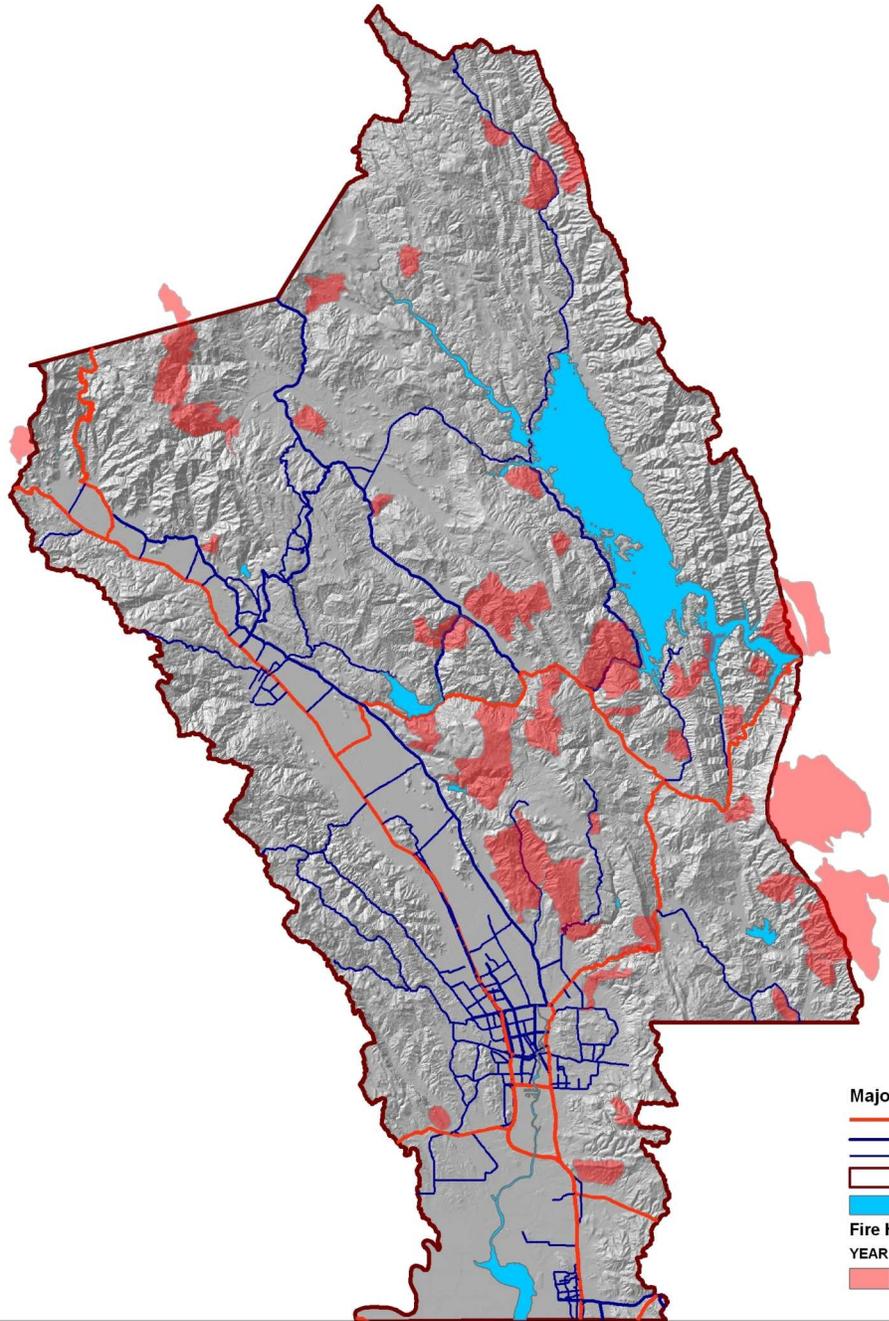
County of Napa GIS  
August 2009



# County of Napa Natural Disaster Map Fires 1950 - 1960



A Tradition of Stewardship  
A Commitment to Service



- Major Roads**
  - Highway
  - Arterials
  - Collectors
  - County Boundary
  - Water Bodies
- Fire History**
  - YEAR
  - 1950 - 1960

County of Napa GIS  
August 2009



## **Major Threat: Terrorism and Technological Hazards**

### **Napa Terrorism Working Group**

The Napa Terrorism Working Group (TWG) was formed in 2001 in response to the events of 9/11 and the subsequent anthrax mailings. All emergency response agencies collaborated on a countywide protocol for response to terrorist incidents

When Homeland Defense grants became available, the same agencies decided that the TWG was best positioned to do needs assessments related to terrorism and determine allocations of any monies received for homeland defense issues. It was agreed by the members that such monies would be pooled and used based on needs assessments conducted by the group. The group was instrumental in completing two countywide threat and vulnerability assessments that maintained our eligibility for these grant programs. The TWG group agreed that the money is to be shared as equitably as possible. The main concept of the TWG was to form a cooperative, interagency group to deal with a host of issues related to terrorism and funding. Pooling the monies received and dispensing them according to the agreed upon needs of the group was one of the goals.

At the beginning of F/Y 03-04, in order to meet the state requirements for the Homeland Defense grants, an executive committee was formed within the group. This executive committee consisted of the County Sheriff, the County Fire Chief (or their representatives), a representative from the city's Fire Chiefs, from the city's Police Chiefs, and the County Public Health Officer.

### **Plan Intent and Vision**

This Plan is intended to be a roadmap towards a more disaster-resistant community. It is not intended as a regulatory document like the City's General Plan or zoning Ordinance, but a living document that provides a background on the threats that are faced in Napa, identifies the critical paths to mitigate these threats and provides a list of action items that, when funding becomes available, will move the City of Napa closer to becoming a disaster-resistant community.

The list of action items is categorized by major threat, by time horizon from funding of the requirement to completion, and by the complexity of coordination (especially in regards to environmental coordination under the California Environmental Quality Act {CEQA} and the need for a detailed environmental impact report under federal statutes).

By building this modular approach to hazard mitigation, public policy officials can focus future limited mitigation dollars on where they can have the most impact in light of the threats that are faced. As mitigation funding increases there will be a list of action items from which to rapidly develop public policy.

The action item lists will be revised annually, and as technology and approaches to mitigation change or improve, so will the lists. This Plan is intended to be an evolving mitigation document. As hazards are largely mitigated (i.e. the 2011 completion of the living river project that will substantially reduce the flood threat), secondary hazards will increase in importance and require revision in the Plan and action item lists to address them.

The Plan's vision therefore is process and project oriented. Practical result-oriented action items with clear cost/risk benefit analysis are the building blocks of this Plan, laying the foundation for rapid action in the event that mitigation resource funding becomes available from whatever source. This Plan therefore is a mitigation toolkit that identifies hazards and risks, finds and defines prescriptive mitigation actions, and develops a framework for their implementation as public policy. This Plan is a call to action for hazard mitigation and moves the City of Napa towards being a more disaster resistant community.

## **COMMUNITY PROFILE**

### **Napa's History**

The word *Napa* was probably derived from the name given to a southern Wappo Indian Village whose people shared the area with elk, deer, grizzlies and panthers for many centuries. At the time of the first recorded exploration into Napa Valley in 1823, the population consisted of hundreds of Indians. Padre Jose Altimira, founder of the mission at Sonoma, led the expedition. Spanish and Mexican control remained until the Bear Flag Revolution, and the valley became one of the first in California to be settled by American farmers, who started arriving in the 1830s.

When California was granted statehood, Napa Valley was in the Territory of California, District of Sonoma. In 1850 when counties were first organized, Napa became one of the original counties of California, and in 1851 the first courthouse was erected. By 1870 most of the Indians who had inhabited the valley were wiped out by smallpox and other diseases brought by the white man. The few that remained finally were taken into Alexander Valley, where a few descendants now reside on government reservations.

The City of Napa was laid out in 1848 by Nathan Coombs on property he had received from Nicolas Higuerra, holder of the original Spanish Grant. The first business establishment was opened in the new city in 1849.

It was the gold rush of the late 1850s that really built Napa City. After the first severe winter in the gold fields, miners sought refuge in the young city from snow, cold, floods and disease. A tent city was erected along Main Street. There was plenty of work in the valley for disillusioned miners. Many cattle ranches were maintained, and the lumber industry had mushroomed. Sawmills in the valley were in operation cutting up timber that was hauled by team to Napa City, then shipped out on the river to Benicia and San Francisco.

In the mid 1850s, Napa Main Street rivaled that of many larger cities, with as many as 100 saddle horses tied to the fences on an average afternoon. Hotels were crowded, cash slugs and California coinage were plentiful. Saloons and gambling emporiums were numerous, but culture had also made its debut. There was a lyceum and reading room, an opera house, an agricultural society and other evidences of a maturing community.

In 1858 the great silver rush began in Napa Valley, and miners eagerly flocked to the eastern hills. In the sixties, mining was carried on, on a large scale, with quicksilver mines operating in many areas of Napa County. The most noted mine was the Silverado Mine, located on the slope of Mt. St. Helena, which was immortalized by Robert Louis Stevenson in his classic *The Silverado Squatters*.

In the Twentieth Century, the City of Napa became the primary business and economic center for the Napa Valley. As agricultural and wine interests developed north of the City boundary, much of the light industry, banking, commercial and retail activity in the county evolved within the City of Napa and in earlier times along the Napa River through the Historic Downtown. Even today the bulk of the county population lives in the City of Napa. The active economic development program has continued to support the wine and agricultural activities of the Valley to this day.

## Napa Community Profile

### Population and Location

The City of Napa, incorporated in 1872, is located at the base of the world-famous Napa Valley wine-producing region, approximately 50 miles northeast of San Francisco. It has a land area of 18.34 square miles and a population of 74,666. A 1975 Citizens Initiative established a Rural Urban Line around the City that limits the City's outward growth.

### Economic Trends

	1990	1995	2000	2005	2010
Population	59,523	62,776	74,666	76,824	81,525
Average Income/Household*	\$16,247	\$23,200	\$25,655	\$27,711	\$31,973
* In constant 1995 dollars					

### Climate

Strongly influenced by the built-in air conditioning of San Francisco Bay, Napa enjoys a moderate climate. Representative temperatures for the City of Napa in January are 37.4° minimum and 57.7° maximum. For July, they are 52.2° and 82.1°, respectively. Average rainfall is 23.88" per year, with the majority occurring from November to March.

### Transportation

#### Highways

Highway 29 runs north-south through the City.

Highway 12 (east-west) intersects at the southern part of Napa County and Interstate 80 is six miles east of this point.  
Highway 121 runs through the southern and eastern sides of the City of Napa.

**Rail**

California Northern and Union Pacific Railroads provide freight service.

**Air**

The Napa Airport is located south of the city limits. On-call charter service is available 24 hours a day. Major airports (Sacramento, Oakland, San Francisco) are within one hour's drive. Evans Transportation provides shuttle service to and from San Francisco and Oakland airports.

**Bus**

Napa Valley Transit & the VINE provide service north to Calistoga and south to Vallejo; there is connecting ferry service from Vallejo to San Francisco.

**Truck**

Several companies serve Napa with overnight service throughout California; a UPS depot is in the Napa Valley Corporate Park.

**Water Supply**

The City of Napa is committed to providing a safe and reliable supply of quality drinking water. Water is provided by three city-owned and operated, state-of-the-art, treatment plants: Hennessey, Jamieson Canyon terminal of the State Water Project and Milliken. The Jamieson Canyon water treatment plant is undergoing improvements in 2009.

**Sewer Service**

The Napa Sanitation District serves the City of Napa and adjacent unincorporated areas. Existing users pay an annual sewer service charge that is based on flow and strength. New connectors pay a connection fee, also based on flow and strength.

**Solid Waste Disposal**

**The Napa-Vallejo Waste Management Authority:** provides support services for a joint powers agency between Napa City, Napa County, American Canyon, and Vallejo City for economical waste disposal facilities and activities. It is the owner of the Devlin Road Recycling and Transfer Station, including the Hazardous Waste Collection Facility for households and small quantity business generators.

**Storm Drainage**

The City adopted a Storm Drainage Master Plan in 2006 that identifies and prioritizes a community wide list of storm drainage improvements. March 2005 costs were 22.6 million. The City continues to collect a citywide storm water system service fee to help pay for needed capital improvements; these fees need to be increased substantially to fully fund all improvements.

**Electricity and Natural Gas**

Pacific Gas and Electric (PG&E) supplies electricity and natural gas to the City of Napa.

## **Telephone**

SBC provides a variety of services to the City of Napa.

## **Recent Major Projects since 2005**

Recently completed Downtown projects include the Riverfront, a retail, office and residential mixed use project, Napa Square, a retail and office mixed use development, the Avia Hotel, a 5 story 142 room hotel; the 160 room Westin Hotel; the Oxbow Public Market; Main Street West, a retail and office development; and the Zeller Building, a new retail and office building.

Outside of the Downtown core, other private projects completed in 2005 or later include a new CVS pharmacy on South Coombs; the Bel Aire Plaza façade improvements; the Blue Oak School; the Tom Foolery office remodel; a new Toyota dealership; the 200+ room Meritage Hotel and time shares; several new facilities at Queen of the Valley Hospital, Jasna Commons, a smaller residential/commercial mixed use project on California; Merryvale Winery; Mi Favorita Market; a bank on Trancas; two light industrial buildings; and numerous subdivisions and apartments including at Sheveland Ranch; Oak Leaf; Hidden Glen; Terrace Drive Estates, Silverado Villa; Walden Glen, Coffield, Appella, Napa Terrace, Valley Oak Villas, Christensen and Mayfield; Hawthorne Village Phase 2; and the Brown Subdivision.

In addition, the City is being transformed by a \$200+ million Napa River Flood Protection Project. To date, about half of the project is completed, including replacement of 4 bridges at Imola, First Street (2) and Third Street; the expansion of flood plain terraces south of the city and up to Downtown; and levees and new floodwalls east of the River south of Third Street and Downtown. The next major segments include railroad bridges; improvements along Napa Creek and design of the Oxbow Bypass in the Downtown area. The City has worked to design in a riverfront promenade; redesigned parks and the new Oxbow Preserve open space. Another significant public project completed in the past several years ins the Highway 29/Trancas interchange.

## **City Government**

Napa operates under the council-manager form of government. Policy-making and legislative authority are vested in the governing council, which consists of a mayor and four council members. Council members are elected to four-year staggered terms with two council members elected every two years, and they also hire the City Manager, City Attorney and City Clerk. The City Manager is responsible for carrying out the policies of the City Council, overseeing the day-to-day operations of the City and for appointing the directors of the City departments.

## **Police**

The Police Department provides policing services to the residents and visitors of Napa by providing contemporary law enforcement services and by addressing quality of life issues. The departments also provides a variety of youth programs; provides dispatch services for City and County law enforcement and City Fire and emergency ambulance

calls; handles various city governed permits; and works with a wide spectrum of agencies to address social and criminal issues.

**Major Accomplishments in Fiscal Years 2007-2009:** The Police Department has initiated a restructure and reorganization of the department to provide better service to the community and to provide for internal succession planning, addressed homelessness issues, thereby reducing homeless victimization and calls for service involving the homeless, enhances customer service by providing citizen generated on-line crime reporting, implemented the first stage of the Department Strategic Plan, and has implemented to the Intergraph Public Safety Computer Aided Dispatch and Records Management System. (CAD/RMS).

## **Fire**

The Fire Department is a multi-hazard emergency response agency that provides service to the citizens and visitors of the community. Its primary responsibility is to provide an effective means of protecting life, property and the environment while being a productive member of the municipal team and contributing to the realization of the City's overall goals. The department is divided into three functional divisions: Administration, Operations, and Prevention.

**Major Accomplishments in Fiscal Years 2007-2009:** Property has been purchased for the future site of Fire Station No. 5, the department succeeded in getting a Fire and Paramedic Development Fee for Fire Station No. 5 adopted by City Council, received a FEMA grant for a type 3 Wildland Engine, adopted new California Fire and Building Code, Developed specifications and bids, and purchased one technical Rescue Unit and one Engine, and responded to more than 70,000 calls for service, which is an all-time high.

## **Public Works**

The Public Works Department's core objectives are to design, construct, operate and maintain the City's public infrastructure and services generally consisting of streets, storm drains, sidewalks, bridges, electrical water, materials diversion and fleet. The department is divided into two functional areas, operations and engineering, with eight divisions providing a diverse array of services, including traffic engineering, developments engineering, real property management, water operations, street maintenances, trash collection and recycling, and capital project design, among others. The department interfaces daily with the Economic Development, Community Development and Parks and Recreation Services Departments regarding physical changes in Napa.

**Major Accomplishments in Fiscal Years 2007-2009:** The department was on schedule to complete the First Street Bridge over the Napa River, on Schedule to complete construction of the Edward I. Barwick Jamieson Canyon Water Treatment Plant Improvement Project, Enhanced regular interaction and improved coordination with the Napa County Flood Control District, and reorganized and restructured the department to provide better management oversight and greater efficiencies and production.

## **Community Development**

The Community Development Department provides both regulatory and strategic visioning relating to the planning and developments of the physical environments, neighborhood quality of life, and management of Federal grants promoting affordable housing and support for key non-profit agencies. The department is divided into five divisions: Administration, Planning, Building, Code Enforcement, and Housing. Key responsibilities of the divisions include preparing studies and documentation to address future planning needs, administering and maintaining the General Plan and Municipal Ordinances, permitting development, providing building inspection services, responding to violations of the City Municipal Code, processing entitlements, and financing affordable housing.

**Major Accomplishments in Fiscal Years 2007-2009:** The departments have completed the Draft Housing Element, implemented the first phase of the Green Building Ordinance, facilitated major developments now underway such as the Avia Hotel, Ritz Carlton, and Oliveri Plaza, and have adopted a Vacation Rental Ordinance, initiated Special Multi –agency Resource Team (SMART) for neighborhood improvement, and improved working relations with HUD through increased performance on Federal programs.

## **Community Resources**

The Parks and Recreation Services Department provides recreational opportunities for the community; provides for maintenance and management of public parks, trails, civic plazas and open spaces; manages a municipal golf course at Kennedy Park; maintains and manages the approval process for private events on public streets, public squares or in recreations facilities; supports the Tree Advisory, the senior Advisory, and the Park and Recreation Advisory commissions; supports the efforts of the foundation for Napa Recreation to augment public recreation.

**Major Accomplishments in Fiscal Years 2007-2009:** the Department began a development of a 15-year park and Recreational Facility Master Plan, collaborated with City Attorney staff in revising the Park Use and Special Event Ordinance, successfully transitioned the City's Facility Maintenance into a new Division of the Parks and Recreation Services Department, completed a number of previously deferred facility maintenance projects, and implemented a Facility Attendant program that provides additional staffing in facilities during off-hours and weekend events.

## **City Departments**

The Economic Development Department provides a full range of business services, with a focus on business retention and marketing, new business development and expansion, and targeted business recruitment. The Department provides significant coordination between property owners, developers and businesses, and other City departments and outside agencies to ensure successful projects. The Department manages the Redevelopment Agency and implements numerous capital improvement projects and programs that benefit the two project areas, utilizing tax increment and bond funds. The Department collaborates with community business organizations to achieve our collective goals.

## **Community Facilities**

### **Health**

The City of Napa has excellent medical facilities: Queen of the Valley Hospital, Kaiser Permanente Clinic and Napa State Hospital. Nearby are also the St. Helena Hospital and Health Care Center and the Veterans Home of California. Paramedic service and the REACH emergency rescue program are in place as well.

### **Education**

Napa Valley Unified School District has 21 elementary schools, three middle schools, and three high schools including the New Technology High School in the city of Napa. Napa is also served by private and parochial schools including Justin Siena High School and the new Blue Oak School, an independent elementary school. Eighty percent of public and ninety percent of private high school students go on to college. Local higher education facilities include: Napa Valley College, 180-acre campus serving 11,000 students and Pacific Union College, 2,000 acre campus serving 1,600 students. University of California Berkeley, University of California Davis and Sonoma State University are all within 40 minutes.

### **Culture and Recreation**

Napa's mild climate encourages year-round outdoor activity. The City of Napa offers numerous neighborhood, community, and regional parks, wetlands and natural open areas, and hiking and river trails. Recreation and leisure facilities include three community swimming pools, a public golf course and public tennis courts. There are weekly Farmers' and Chefs' Markets from April through October. The preservation of historic neighborhoods and buildings is balanced with a dynamic mix of retail, fine dining and professional offices. The new COPIA, American Center for Wine, and the Arts recently opened. The arts further enrich downtown with studios, theaters and galleries.

### **Housing Availability, Pricing and Rentals**

Napa is a city known for its quality lifestyle. There are many neighborhoods, each with its own distinct character. In 2008, rentals for apartments and duplexes ranged from \$850 to \$2,100 per month; rentals for two and three bedroom houses ranged from \$1,000 to \$2,800 per month. The median sales price of homes was \$471,000, a reduction from 2007 levels; this median has continued to drop in 2009. There are 13 mobile home parks with approximately 1,500 spaces located in the community area.

### **Industrial Sites**

Within the City of Napa and south to American Canyon, there are several business/industrial parks that offer sites for purchase, space in existing buildings for lease, and build-to-suit arrangements. The types of uses allowed cover the spectrum from office to R&D, from light to general manufacturing, and from warehouse to distribution. Examples include the Napa Valley Corporate Park, which comprises 246 acres and is located in the southern part of the City, the Napa Valley Gateway Business Park, a 386-acre master planned development, and the Napa Airport Center, both within close proximity to the City of Napa.

## **Economic Outlook**

The City of Napa has a strong balanced economy, diversified labor force, and competitive land values, all good reasons to do business in the City of Napa. With access to transportation routes and its convenient location at the base of the Napa Valley, the City of Napa is the economic hub for the region. Private investment is on the rise. The business climate is expanding from its agriculture and tourism base to include a growing high-tech market. Retail and service industries are also experiencing growth.

## **Napa's Economical Demographics**

Napa County is centrally located in the North Bay Area of California. The county remains primarily agricultural, confining most commercial and residential development to the existing cities. Its most prominent graphic feature is the Napa Valley, which is one of the most famous and productive wine regions in the world and a very convenient place to do business. State highways include 29, 121, 12 and 128 allow the residents to travel to other cities. The Interstate 80 connection is six miles east of Napa. Highway 101 is 18 miles west of Napa. Napa also has rail, truck and barge service from the Port of San Francisco and the Port of Oakland.

Service is the largest industry in the county, accounting for 27.8% of total employment. Another significant industry, retail trade, accounts for 17% of employment, with numerous jobs available in the eating and drinking sectors. Manufacturing makes up 16.3% of the total followed by government at 15.6%.

Demographic trends, shifts in demands for products or services, technological innovations and the way business is conducted are some of the variables that drive employment in an occupation up or down. Also, occupations which have large employment and have high turnover rates generally provide the most job openings. Napa County is projected to have many employment opportunities in the high turnover occupations.

The projected growth for Manufacturing during the years of 1995 thru 2002 was 36.6%. The projected growth for Retail Trade during the years of 1995 thru 2002 was 36.3%. The projected growth for Services during the years of 1995 thru 2002 was 23.7%.

The June 2001 Sacramento report was that California has replaced France to become the fifth largest economy in the world, this was caused by the European weak currency and this state's financial clout. California's economy grew 13.6% to \$1.33 Trillion in 2000 while France suffered from the deteriorating Euro, according to the Los Angeles Economic Development Corporation. If the Euro recovers this year, the Number five ranking may change back to the Number six for California. The only economies larger than California at the end of 2000 were the United States (\$9.96 trillion), Japan (\$4.61 trillion), Germany (\$1.89 trillion) and the United Kingdom (\$1.42 trillion).

Napa General Information 2009	
County Seat	Napa County
Napa County Incorporated	February 18,1850
Napa Town Site Founded	1847
Incorporated as City of Napa	1872
Napa City Size	18.34Sq.Mi.
Napa County Size	35 Mi. Long
City of Napa Population	77,831
County Population	137,571
Number of Households	76,372
Median Household Income	\$61,595
Average Income per Household	\$72,688
Per Capita Income per Household	\$30,521
Owner Occupied	61
Renter Occupied	39
Average Persons per Household	2.6
Mobile Home Parks	13
Median Home Cost	\$270,000
Home Cost Range	\$190,000-\$1,000,000
Avg. Travel Time to Work	22.4 min.
City Departments	12
City Employees	428
Government	Manager/Council
Official Sister Cities (2001)	(1) Casablanca Valley, Chile (2) Iwanuma, Japan (3)Launceston, Australia
Official Friendship Cities (2001)	(1) Jerez, Mexico (2) Nakaizu City, Japan
Residential Land	67%
Commercial Land	8%
Industrial Land	4%
Public Parks and Quasi	12%
Undeveloped/Agricultural	9%
2003 Taxable Sales Transactions	504,077,00
Sales Tax for State and Local	7.75%

<b>2008 Average Rental Prices in Napa</b>	
<b>TYPE</b>	<b>PER MONTH COST</b>
Rental Units Rent Ranges	\$819/month
Apartments	\$850 - \$1,700/month
One Bedroom & One Bathroom	\$1,145/month
Two bedroom & One Bathroom	\$1,216/month
Three Bedroom	\$1,692 - \$2,800/month

<b>2000 City of Napa Marital Status</b>		
<b>STATUS</b>	<b>AMOUNT</b>	<b>PERCENT</b>
Single never married	13,865	23.9%
Married, excluding separated	29,746	51.3%
Widowed	4,539	8%
Divorced	6,440	11%

Source: 2000 Census

<b>2000 City of Napa Population by Age</b>	
<b>AGE CATEGORY</b>	<b>AGE IN YEARS</b>
Median Age	36.1 years
Average Age	37.47

Source: 2000 Census

<b>2009 Napa County Population by Cities/Towns vs. Unincorporated (estimate)</b>		
<b>AREA TYPE</b>	<b>POPULATION</b>	<b>PERCENT</b>
(City of Napa) Cities/Towns	31,057	56%
Unincorporated	28,683	21%

Source: 2000 Census

<b>2000 City of Napa Population by Household</b>		
<b>HOUSEHOLD TYPE</b>	<b>POPULATION</b>	<b>PERCENT</b>
Family Households	47,192	65%
Non-Family Households	22,953	33%
Group Quarters	1,459	2%

*Source: 2000 Census*

<b>What the City of Napa Provides</b>	
Neighborhood Recreational Parks	35
Community Parks	4
City Wide Open Space Parks	4
Total Acres of Park Land	748 acres
Softball and Baseball Fields	13
18-Hole Municipal Golf Courses	1
Tennis Courts	48
Swimming Pools	4
State Parks	1
Community Centers	1
Senior Centers	1

<b>The Infrastructure of Napa City</b>	
Miles of Streets	220
City Street Lights	4,405
Signaled Intersections	66
Miles of Water Mains	352
Water Treatment Plants	3
Miles of Storm Drainage	90
Average Water Consumption	14 Million Gallons/Day
Water Tanks	14
Parking Garages	3

<b>Available Education and Day Care</b>	
Elementary Schools	21
Middle Schools	2
High Schools	3
Charter Schools	3
Student/Teacher Ratio	14/1
Expenditures Per Pupil	\$4,743
Accredited Day Care Facilities	5
Licensed Day Care Facilities	39
Percentage of Public School Students Continuing to College	80%
Percentage of Private School Students Continuing to College	90%
Colleges in Napa	3
Colleges Within 45 minutes of Napa	3

<b>2008 Area Crime Rate (Annualized Per 100,000)</b>	
<b>CRIME</b>	<b>ANNUALIZED</b>
Robberies	46
Rapes	26
Homicides	1
Aggravated Assaults	187
Motor Vehicle Thefts	179

*Source: Napa Chamber of Commerce*

<b>2009 Unemployment</b>	
Unemployment	7.3%

*Source: Sites USA*

<b>Health Care</b>	
Number of Hospitals	2
Number of Physicians	317
County's Citizens/Physician Ratio	399.3/1

<b>Elder Care</b>	
Skilled Nursing Facilities	8
Total Number of Beds	562

<b>Napa Media</b>	
<b>NAME</b>	<b>TYPE OF MEDIA</b>
Napa Valley Register	Newspaper
The Sentinel	Newspaper
St. Helena Star	Newspaper
KVON/KVYN	Local AM/FM Radio Stations

## Tourism Information

The tourism and the hospitality sectors area is a key component of the local economy which attracts an estimated 4.7 millions visitors a year. Over the last 10 years the City of Napa has experience a steady increase in tourism and new hospitability development. In 2001-02, tourism declined by 3% measured by Transient Occupancy Tax (TOT) to reflect the downturn in travel after the tragic September 11<sup>th</sup> events. In 2008-09, the City again experienced a decrease of 6% in TOT to reflect the downtown in the overall economy. Over the last 10 years the City has mainly experience a steady increase in TOT and occupancy levels except for the years of a significant economic change reflecting changes throughout the Country. Since 2000 high season (summer/fall) average occupancy rates have been in the 75- 80% range with 100% occupancy totals on key weekends. Low season (winter) average occupancy rates have been in the 40 – 56% range. In 2007, the Meritage Resort opened with 157 rooms and 100 timeshare units which are used as rooms when the timeshare units are not booked by owners.

In late 2008, the Westin hotel came on the market with 160 rooms, followed by the Avia Hotel in July 2009 with 141 rooms. Tourism rates in terms of occupancy and TOT are expected to again decline in 2010, but rebound after that. These declines also reflect the absorption of the new rooms into the market over the last few years. The City anticipates the tourism economy to recover and steadily increase over the next five year cycle.

## SURVEY OF TOURISTS VISITING NAPA COUNTY

HOUSEHOLDS	PERCENT
Couples	80%
No Children at Home	60%

AGE	PERCENT
25-44	54%
45-54	17%
55-64	14%
Over 65	8%

PLACE	AMOUNT IN DOLLARS
National Average	\$24,000
Mean Household	\$53,000

WHAT AMOUNT	PERCENT
Some College	Over 8%
College Graduates	43%
Masters Degree	21%

REGION	PERCENT
Northern California	31%
Southern California	5%
East Coast	17.5%
Midwest	17.5%
Southern States	17.5%
Canada, Germany, United Kingdom, Japan, Australia	11.5%

## NAPA LAND USE

### Regional Setting

The City of Napa is located along the Napa River in the southern portion of the Napa Valley, 52 miles northeast of San Francisco and 61 miles west of Sacramento. Most of the City is on relatively level ground, except the eastern and western edges which extend into brush and oak-covered foothills. The City's northern edge abuts agricultural lands, primarily vineyards. To the south lies agricultural and marsh lands and the Napa County Airport. Regional access to Napa is primarily via State Highways 12, 29, 121, 128, and 221.

The City of Napa straddles the Napa River and occupies the level valley floor between the Howell Mountains to the east and the Mayacamas to the west. Napa is the largest city in Napa County, with approximately 75,000 residents in 2009. The city is primarily residential in character with general commercial and tourist commercial areas located downtown and along major roadways. There is a corporate business park at the southeastern end of the City and two other light industrial areas. Community and neighborhood parks are located throughout the city, and larger city-wide recreational areas are found at city boundaries to the west and south.

## **Geographic Areas**

### **City Limits**

As of 2009, Napa's city limits encompass about 18.1 square miles of incorporated territory. Within the boundaries of the city limits, there are several unincorporated islands which remain under County jurisdiction particularly in the Terrace Shurtleff and Pueblo planning area.

### **Rural Urban Limit**

The planning boundary for the General Plan is the Rural Urban Limit (RUL), encompassing approximately 18.2 square miles. The RUL represents the city's planned ultimate boundary for urban development, based on a 1975 advisory measure since included in the City's General Plan. A 1999 Charter Amendment requires a vote of the people to change the RUL.

### **Planning Areas**

The RUL is divided into 12 planning areas of generally related neighborhoods and commercial and industrial areas, for purposes of more localized planning. They include:

- |                  |                      |
|------------------|----------------------|
| 1. Linda Vista   | 7. Westwood          |
| 2. Vintage       | 8. Central Napa      |
| 3. Browns Valley | 9. Soscol            |
| 4. Pueblo        | 10. Terrace/Shurleff |
| 5. Beard         | 11. River East       |
| 6. Alta Heights  | 12. Stanly Ranch     |

## **City of Napa History**

The original town site was laid out at the headwaters of the Napa River in 1848. River trade soon helped Napa City become a center of valley commerce. The city's population swelled from 159 in 1850 to nearly 3,500 in its first 30 years. Consumer goods from San Francisco were unloaded from river barges at the wharf located at the foot of Third Street. Agricultural products, timber from the valley's hills, and fine tanned leather were loaded for transport downriver.

By the turn of the century, Napa boasted several fine hotels and a beautiful opera house in its bustling downtown. Vineyards and orchards had been planted during the mid-nineteenth century and the area was well known for its fine wines and brandies.

Some of the original wineries are still in operation and have been joined by over 200 more. Today, Napa Valley's agricultural industry is more than simply a source of local employment. The wine industry has virtually become a local *raison d'etre*; wine production and its most important spin-off industry, tourism, extend south to the City.

Following a long period of slow growth, the city grew rapidly between 1940 and 1950. Much of the growth was a result of war-industry-related operations in nearby Solano County and created the first signs that Napa was becoming a bedroom community within the San Francisco Bay Area.

Early plans envisioned a future in which the city of Napa would become a full-scale urban center. The City's 1969 General Plan forecast a population of 150,000 by 1990 with an extensive urbanized area and major transportation improvements. However, the 1969 General Plan was never realized. Portions of the plan, and the rapid growth it seemed to be promoting, alarmed many residents. Citizens mobilized and began calling for a new plan that would slow the city's growth rate. In 1973, the City Council placed questions on population growth on the ballot. The option with the least population increase (75,000) was selected by voters. The City Council adopted a new general plan in 1975. Consistent with the ballot measure, the plan projected a Year 2000 population of up to 75,000 and contained urban development within an urban growth boundary dubbed the Residential Urban Limit Line (RUL).

The 1975 General Plan expanded the RUL concept into a growth control mechanism. Urban uses were planned within the RUL. Napa County cooperated by requiring annexation of lands within the RUL before urbanization. During the 1970s, Napa County was also engaged in growth policy discussions. As a result of passage of voter-initiated Measure A, which went into effect in 1980, county lands outside the RUL were planned for resource use, agriculture, or very low density residential development.

In 1980 the city was developed at a typical suburban density of about four units per acre. The 1982 General Plan reasserted the importance of the downtown as the county's primary retail and government center. The Napa Town Center project was designed and three downtown parking garages were constructed on cleared land. The building demolitions associated with redevelopment galvanized a local historic preservation movement, which has led to preservation of most "Old Town" buildings.

The Napa River became a focus for planning efforts after a disastrous flood in 1986. Public interest in flood control provided the impetus for the Army Corps of Engineers' Napa River Flood Control Project. Extensive community participation in the development of the Flood Project led to approval of an innovative "Living River" concept. A local sales tax measure to support this Project was approved in 1999, and construction of the Project is currently ongoing.

## Existing Land Use

In 2003, the city was characterized as a low rise (one to two story building heights) community dominated by low density, detached single family housing in relatively distinct neighborhoods, with low intensity commercial uses along major arterials and generally one story industrial buildings. The following table provides generalized breakdowns of the land use categories by acreage in the early 1990's.

<b>Existing Land Area in RUL –1992</b>		
General Land Use Categories	Acres	% of RUL
Residential	7,856	67%
Commercial	963	8%
Industrial	454	4%
Parks and Public Quasi-Public	1,343	12%
Undeveloped/Agricultural	1,037	9%
<b>Total</b>	<b>11,653</b>	<b>100%</b>

*Source: City of Napa Planning Department based on 1986 General Plan land use categories*

## Residential Development

Napa includes a diverse housing stock. Of the City's 30,232 homes in 2009, 60 percent were single family detached homes, 27 percent were multiple family rentals, 8 percent attached single family homes and another 5 percent mobile homes (California Department of Finance, January 1, 2009). The city's housing stock ranges from the merchant mansions built in the late 1800's in the "Old Town" area near downtown, to the working class cottages of the early 1900's, to the traditional ranch style subdivisions of the 1950's and 60's to the large custom homes and subdivisions of the 1990's. Subdivisions are typically developed at between 3-6 units per acre. Multi-family housing (occurring at about 9-40 units per acre) is found throughout the City, ranging from duplexes and triplexes, older homes which have been converted to multi family use, small apartment complexes often in the City's historic neighborhoods, and larger apartments and condominiums which tend to be concentrated along major streets. Mobile home parks and a variety of residential care facilities are also located throughout the City.

## Commercial Development

While downtown functions as the City's commercial center, other general commercial and tourist commercial areas are located along major arterials, including Trancas Street, Soscol Avenue, Lincoln Avenue, Imola Avenue West and parts of Jefferson Street. These areas include several community shopping centers as well as older "strip

commercial” buildings, and an auto row on Soscol Avenue. Most development is one story, but parts of Downtown have 2-5 story buildings.

### **Industrial Development**

Most industrial development in Napa is in the southern part of the city, in or near the Napa Valley Corporate Park. Other concentrations of light industrial uses are found along California Blvd. and Industrial Way; in the vicinity of Jackson, Iriquois and Tannen Streets; in the Tannery Bend Area east of Coombs Street. An undeveloped area designated “Corporate Park” is located in the southwestern entrance to the city.

### **Park Lands**

City parks and recreation facilities are located throughout the city, with the larger citywide recreational areas found at the city boundaries to the west and south. Existing regional parks in the city include Alston, Kennedy, and Westwood Hills and Timber Hill, totaling approximately 630 total acres. Four community parks include Century Oaks, Fuller, Garfield, and Las Flores, totaling approximately 46 acres. Neighborhood parks comprise the balance of parkland within the city. The park system is augmented by the developing Napa River Trail which will provide an expanding major north-south bicycle pedestrian “spine” along the River, a new open oxbow open space preserve, and Trancas Crossing Park.

### **Vacant and Underused Lands**

Vacant land comprised nine percent of the city’s RUL, according to a 1994 survey of vacant parcels, about half of which was considered generally developable. Usable acreage did not include environmentally sensitive areas or bodies of water since those areas were generally not considered suitable for development. This reduced the amount of vacant, usable land to less than five percent of the total RUL. The City has designated many of the environmentally constrained sites as “Resource Area”, including steep hillsides in Browns Valley, Westwood and Alta Heights, and wetland areas on Stanly Ranch.

Overall, the City is largely urbanized, although land used for agricultural production is found to the south in the Stanly Ranch and in the Westwood Planning Area. Pockets of intensive agricultural use also remain in the Vintage, Beard, and Terrace Shurtleff Planning Areas.

In 2009, vacant usable low density residential acreage is concentrated in the Vintage Planning Area in north Napa, Westwood, and Terrace Shurtleff. Planning Area. Development in other Planning Areas will primarily be the result of infill and re-use over time. Increasing opportunities for development and redevelopment are along the Napa River, particularly in the Soscol Corridor, Downtown and Tannery Bend as the Napa River Flood Protection Project continues to be completed and added areas are re-mapped out of the floodplain.

## City Land Use and Development Trends and Hazard Areas

### Overview

Over the past 15 years, the City has averaged fewer than 300 residential units per year, and there is political and policy support for continuing this “even rate of growth” through 2020. In terms of types of residential development, the City anticipates more mixed use and infill housing as remaining vacant land tracts are used.

Development interest in the Downtown and in the Soscol Corridor have increased in recent years with the ongoing construction of the Flood Protection Project, and catalysts such as Copia and the renovation and re-opening of the historic Opera House. New restaurants and art galleries are opening. Over the next 10 years, the City expects to see substantial reinvestment in these two areas, with residential mixed use projects and more 2-4 story developments. The City has embarked on a 2009-10 Downtown Specific Plan to refine land use, circulation, design, infrastructure, and finance mechanisms for this area. As the City is largely built out, with limited remaining vacant lands within the RUL, and a City Charter provision that requires a vote of the people to change the RUL, new development in the future is likely to include greater reuse of existing sites in certain parts of the City

The City and County have generally cooperated since the early 1980’s to ensure that urban development occurs within the City’s Rural Urban Limit. From 2003-07, the City of Napa and Napa County agreed to shift portions of the County’s regional housing need much lower housing need assignments for the 2007-14 housing planning period and decided to entertain a proposal to redevelop a 150 acre vacant pipe plant facility on the City’s borders to intensive housing and other uses. That proposal is currently undergoing environmental review; the City has communicated numerous concerns with this proposed project.

Following is a general description of land use and development trends as they relate to various hazards.

### Flooding

The ongoing Napa Flood Protection Project’s major improvements have been complete; to date they include the South Wetland s Opportunity Area; a railroad realignment from Kennedy Park to Eight Street; completion of the Maxwell Bridge, the Third and First Street Bridges over the Napa River; floodplain terracing from south of the City through to Third Street and the Soscol Avenue/ Oxbow Bypass Bridge and sections of the Napa River Trail. These improvements have generally reduced flood levels in the lower reaches of the river and have filled several properties so that they are out of the floodplain. In 2007-08, FEMA requested that the Napa County Flood District document these changes as a result of improvements completed to date.

In mid 2008, the District submitted a Letter of Map Revision, or LOMR documenting the 100 year flood plain and floodway under these interim conditions. The interim conditions also incorporate new information from more recent flood events and local flood information. The updated map substantially takes other land out of the flood plain.

In September, 2008, FEMA agreed the submitted Letter of Map Revision is technically adequate. It has incorporated the revisions in its preliminary FIS report and DFIRM panels provided in June, 2009 beginning a community review time, followed by publication in the Federal Register and local newspapers for a 90 day appeal period. After this, FEMA issues a Letter of Final Determination which may occur by September and become effective after 6 months or by early 2010.

In remapped areas where land has been removed from the floodway and/or floodplain, which include parts of Downtown and the Soscol corridor, new development of currently vacant or underutilized lands is anticipated within the next 4-5 years depending on economic conditions. Within the next 4-10 years, potential development includes:

**Downtown, including Oxbow:** Multi story mixed residential office and commercial uses on 7 or more sites, some of which until recently have been in the floodplain. Permitted densities in the Downtown currently range from 20-45 units per acre while non residential intensities are 1.25 Floor Area Ratio (FAR) by right; up to 4.0 FAR with a Use Permit. The downtown Specific Plan in 2009-10 is relooking at land uses and intensities.

**Tannery Bend South of Downtown and Imola, west side of the Napa River:** Multi story mixed residential/office/commercial/light industrial uses in Tannery Bend on about 3 sites which are currently in the floodplain toward the south end of the area. Planned residential densities are 20-40 units per acre while nonresidential intensities are 0.4 FAR. In addition, the River Place Shopping Center is expected to be renovated, in part with retail and residential mixed use.

**Soscol Corridor on the East side of the River:** the Gasser Master Plan area, about 48 acres of developable vacant land is proposed to include 380-500 homes at about 25 units/acre; offices; and several commercial buildings and a theatre. In addition to this area, 3-4 sites are expected to redevelop with commercial buildings and at least another 2 sites with multi story residential/ commercial/ office mixed uses. Planned residential densities are 20-40 units per acre while nonresidential intensities are 0,4 FAR.

**River Corridor north of Downtown:** several smaller sites south of Lincoln Avenue may redevelop with commercial/office uses. North of Lincoln, 4 or 5 vacant or highly underutilized multi family sites are planned to be developed at densities of 22-30 units/acre once flooding constraints are removed in the latter part of the planning period.

**Other:** A small amount of infill residential development (fewer than 30 units) at low densities (1-8 units/acre) may occur on other floodplain-designated lands throughout the city.

### **Seismic Hazards**

The City of Napa lies in a seismically active region; consequently, any development in the City is subject to a certain level of seismic risk and development regulations and practices reflect this fact. The City enforces strict building codes, requirements for geotechnical studies, and other requirements that must be complied within for any development in the City.

Portions of the City with the greatest earthquake shaking intensity (from the West Napa Fault) are found in a north-south band running along the western edge of the City and through Browns Valley where there is very limited residential development potential (an estimated 200 units) in the next 15 years on infill sites at low densities (up to 6 units/acre). Any sites with hillside slopes have even lower densities: generally 0-2 units/acre. A planned corporate park south of the existing city limits on Golden Gate Drive (with an FAR of 0.4) is also in the highest earthquake shaking intensity area. An area of the City with highest shaking risk, the 900 acre Stanly Ranch in the very southernmost part of the city, was redesignated in 2003 from "Study Area" to a "Resource Area" agricultural land use classification that allows wineries and extremely limited residential uses (up to 18 homes). In 2009 a General Plan Amendment has been submitted to permit a resort hotel on a portion of the Stanly Ranch property.

### **Wildland Interface Fire Hazards**

The wildland urban interface fire hazard areas shown on p. 111 of this Plan are found primarily on the City's hilly edges (Areas 1,2,3,4,5,6,7,8) where added residential development at very low densities (0-2 units/acre) is extremely limited (estimated fewer than 100 units). These areas have an increased threat of a wildfire or are have an increased impact to wildfire due to the vegetation, the terrain or topography, limited access or limited water supply.

### **Hazardous Materials**

Sources of hazardous materials in the City include 21 businesses ranging from major medical facilities and paint companies to PG&E. Hazardous materials are also found in agricultural facilities around the City. Major new sources of hazardous materials are not anticipated.

### **Dam Failure**

The dam failure map on p. 95 shows potential inundation areas from various dams. Anticipated land use changes in areas affected by potential dam failure would be similar to that described in the flooding section.

### **Terrorism**

No planned land use changes are expected to increase vulnerability to terrorism hazards.

## SECTION 3: RISK ASSESSMENT

### Hazard Identification

#### **Explaining the Threat Analysis. Where does the rating come from?**

The planning process used the FEMA Hazus and other tools such as historical, predicted, and probable occurrences, statistical compilations, expert opinion and past documentation to evaluate all the possible threats faced. In some cases historical data were difficult to find. While the City has kept records for disasters that have occurred since the 1960's, detailed information prior to that has been sketchy. Information was researched from the local newspaper, searching the Internet and interviewing employees and citizens with knowledge of the City. An attempt was made to collect data for the past 100 years. This information was compiled and a graph created that depicts possible hazards the community faces and how often (frequency) and the impact of each of those hazards (severity). Through the threat analysis process the most probable threats, the most devastating threats and the most significant threats to the City of Napa were identified. The four most significant hazards faced are: floods, earthquakes, wildland interface fires, and terrorism and technological hazards. The values in the graph shown with the subsequent rating were obtained using the following variables.

#### Determining Frequency of Occurrence

##### Historic Ratings

- 0 = No occurrence in the last 100 years
- 1 = 1 occurrence in the last 100 years
- 2 = 2 occurrences in the last 100 years
- 3 = 3-10 occurrences in the last 100 years
- 4 = 11-25 occurrences in the last 100 years

##### Probability Ratings (in chances per year)

- 0 = less than 1 in 10,000
- 1 = 1 in 10,000
- 2 = 1 in 1,000
- 3 = 1 in 100
- 4 = 1 in 10
- 5 = greater than 1 in 10

Determining Severity Potential – a vulnerability rating in % of affected people and property including a worst-case scenario.

##### Vulnerability List Ratings

- 0 = 0%
- 1 = 1%
- 2 = 1 – 5%
- 3 = 6 – 10%
- 4 = 10 – 20%
- 5 = greater than 20%

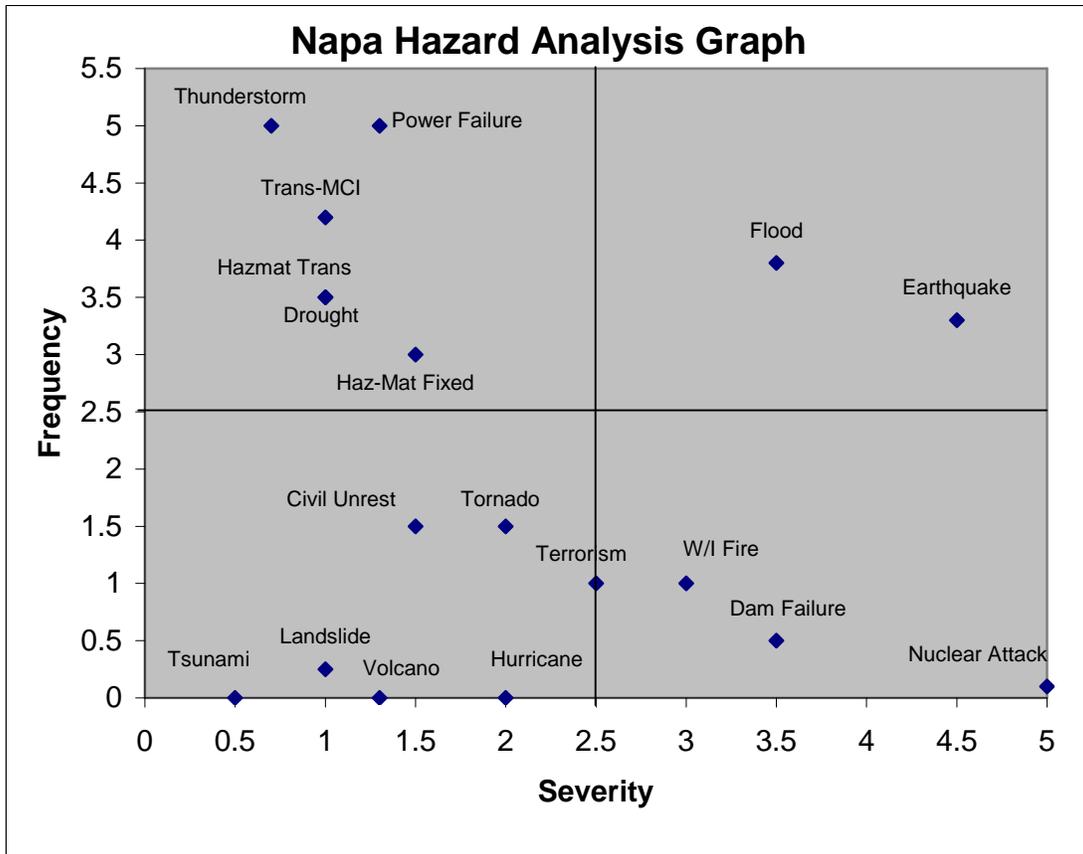
Worst-Case Scenario Ratings

- 0 = 0%
- 1 = 1 - 5%
- 2 = 6 – 10%
- 3 = 11 – 20%
- 4 = 21 – 40%
- = greater than 40%

The graph depicts the end result of a process that identified and analyzed specific anticipated hazards and the chances of future occurrences. In addition it shows the potential vulnerability to people and property. The hazards depicted in the lower right hand quadrant rarely if at all will occur, however if they did, they could affect many with high severity. An example is a hurricane or nuclear war. The bottom hazards should not be given much consideration. In contrast, the hazards listed in the right upper box reflect those that occur with the highest frequency and most severe causing the most damage to people and property. It is these hazards that the City must address.

<b>NAPA HAZARD ANALYSIS DATA</b>						
<b>Hazard</b>	<b>Frequency</b>			<b>Severity</b>		
	<b>History</b>	<b>Probability</b>	<b>Rating</b>	<b>Vulnerability</b>	<b>Worst Case</b>	<b>Rating</b>
<b>Civil Unrest</b>	1	2	1.5	1	2	1.5
<b>Dam Failure</b>	0	1	0.5	3	4	3.5
<b>Drought</b>	3	4	3.5	1	1	1
<b>Earthquake</b>	3	3.5	3.3	4	5	4.5
<b>Fire-W/I Interface</b>	0	2	1	2.5	3.5	3
<b>Flood</b>	4	3.5	3.8	4	3	3.5
<b>Hazmat-Fixed Facility</b>	3	3	3	1	2	1.5
<b>Hazmat-Transportation</b>	4	3	3.5	1	1	1
<b>Hurricane</b>	0	0	0	2	2	2
<b>Landslide</b>	0	0.5	0.25	1	1	1
<b>Nuclear Attack</b>	0	0.1	0.1	5	5	5
<b>Power Failure</b>	5	5	5	0.5	2	1.3
<b>Terrorism</b>	0	2	1	2	3	2.5
<b>Tornado</b>	2	1	1.5	2	2	2
<b>Transportation-MCI</b>	4	4.3	4.2	1	1	1
<b>Tsunami</b>	0	0	0	0	1	0.5
<b>Thunderstorm</b>	5	5	5	1	0.5	0.7
<b>Volcano</b>	0	0	0	0.5	2	1.3

Plotting the threats on a Cartesian plane gives a graphical view of the true magnitude, potential, probability and significance of the threats. The following graph demonstrates this analysis.



Mitigation of these significant hazards has the side benefit of appreciably enhancing the overall disaster resistance in the community from related threats. For example, the clearing of roads of intrusive vegetation eliminating a wildfire hazard will also speed the restoration of the road after an earthquake. The effect of mitigation actions carried out is recognized as a synergistic effect.

In the raw data as displayed, nuclear attack is, as it has been historically, the greatest potential threat. However planning for this threat is a matter of national security. It involves every level of government, and any planning that is being conducted will not appear in public documents due to its sensitive nature.

The following Section will explore the major hazards that the City of Napa currently faces.

## **Repetitive Losses for Each of Our Hazards**

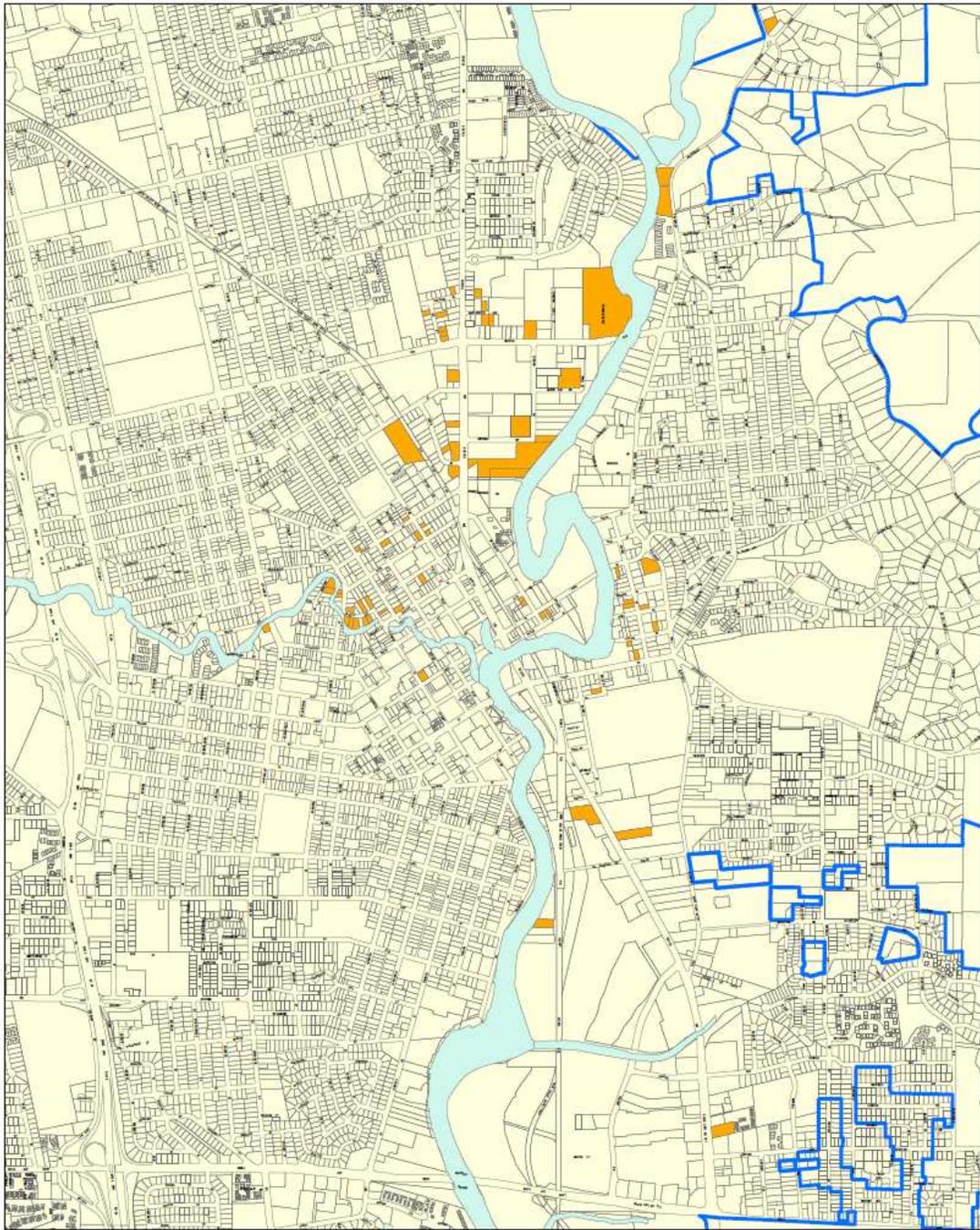
**Flood:** The City of Napa is the fifth most prone community in California in terms of flood damage payments from the Federal Emergency Management Agency. There are 3,146 properties in the flood plain and over 60 have made more than one flood damage claim to FEMA. The following map and chart catalogue these properties.

**Fire:** The city has been fortunate to have not suffered a significant loss to date from wildfires in the urban setting; consequently there is not a case for repetitive losses. It should be noted however, that there is a significant potential as described in the fire hazard section for a devastating loss. It is the City's hope that through mitigation efforts outlined in this plan that the City can prevent these losses.

**Earthquake:** The last significant earthquake in Napa was in September of 2000. The total damage for the City was approximately 65 million with 40 injuries and the City issued a total of 2,300 building permits to repair damage. The only other earthquake that caused significant damage was the 1906 earthquake that affected the entire greater Bay Area. There is limited official information that documents the damage.

**Terror/Technology:** The City's greatest potential in this hazard is in regards to a release of hazardous materials. The City has been fortunate to have not suffered any significant losses due to hazardous materials releases. In addition the City has not experienced significant losses due to terrorism

### Map Depicting Repetitive Losses due to Flooding



**Legend**

	2009 Reploss		City Boundary
	River		Parcels

**City of Napa  
FEMA Repetitive Loss Properties  
2009**



### Table of Properties That Are Repetitive Losses

COOWNER	SITENUMBER	SITESTREET	SITECITY	SITEZIP
	301	1ST ST	NAPA	94559
	419	1ST ST	NAPA	94559
	645	1ST ST	NAPA	94559
	1130	1ST ST	NAPA	94559
	420	3RD ST	NAPA	94559
	600	4TH ST	NAPA	94559
	1300	ARROYO DR	NAPA	94559
	1315	ARROYO DR	NAPA	94559
	1316	ARROYO DR	NAPA	94559
	1325	ARROYO DR	NAPA	94559
	1345	ARROYO DR	NAPA	94559
	1355	ARROYO DR	NAPA	94559
	1365	ARROYO DR	NAPA	94559
Montanez Juan Carlos	1540	BEHRENS ST	NAPA	94559
	1552	BEHRENS ST	NAPA	94559
	1323	BROWN ST	NAPA	94559
	706	CAROLINA ST	NAPA	94558
	927	CAYMUS ST	NAPA	94559
	1040	CLINTON ST	NAPA	94559
	2002	IDA ST	NAPA	94558
	2006	IDA ST	NAPA	94558
	2010	IDA ST	NAPA	94558
	2022	IDA ST	NAPA	94558
	2027	IDA ST	NAPA	94558
	625	IMPERIAL WAY	NAPA	94559
	605	IST ST	NAPA	94559
	849	JACKSON ST	NAPA	94559
	1333	JEFFERSON ST	NAPA	94559
	1098	JORDAN LN	NAPA	94559
	1100-1125 (1132)	JORDAN LN	NAPA	94559
	1004	JUAREZ ST	NAPA	94559
Richmond Barbara A	1015	JUAREZ ST	NAPA	94559
	1017	JUAREZ ST	NAPA	94559
Db a Riverpointe Napa	500	LINCOLN AVE	NAPA	94558
	602	LINCOLN AVE	NAPA	94558
	1443	MAIN ST	NAPA	94559
	1542	MAIN ST	NAPA	94559
	665	MAPLEWOOD AVE	NAPA	94558
	669	MAPLEWOOD AVE	NAPA	94558
	670	MAPLEWOOD AVE	NAPA	94558
	1031	MCKINSTRY ST	NAPA	94559
NO HOUSE	1045	MCKINSTRY ST	NAPA	94559
	880	NAPA ST	NAPA	94559
	904	NAPA ST	NAPA	94559
	510	NORTHBAY DR	NAPA	94559

**Table of Properties That Are Repetitive Losses (Cont)**

COOWNER	SITENUMBER	SITESTREET	SITECITY	SITEZIP
	415	OIL COMPANY RD	NAPA	94559
	1500	SEMINARY ST	NAPA	94559
	1537	SEMINARY ST	NAPA	94559
	1543	SEMINARY ST	NAPA	94559
	1815	SILVERADO TRL	NAPA	94559
	1916	SILVERADO TRL	NAPA	94559
	1821 A	SILVERADO TRL	NAPA	94559
	222	SOSCOL AVE	NAPA	94559
	536	SOSCOL AVE	NAPA	94559
	583	SOSCOL AVE	NAPA	94559
	1710	SOSCOL AVE	NAPA	94559
Dbn Napa Valley Car	1745	SOSCOL AVE	NAPA	94559
	1835	SOSCOL AVE	NAPA	94559
	1943	SOSCOL AVE	NAPA	94559
	2134	SOSCOL AVE	NAPA	94558
	1701	TANEN ST	NAPA	94559
	1746	TANEN ST	NAPA	94559
	390	TAYLOR ST	NAPA	94559
	431	TAYLOR ST	NAPA	94559
	900	VALLEJO ST	NAPA	94559
	1038	VALLEJO ST	NAPA	94559
	1546	YAJOME ST	NAPA	94559

## **Flood Hazard**

Flooding in the Napa Valley results from heavy rainfall and drainage into the Napa River, mainly from December through March, and can result in major damage to urban areas and farmlands. Historically, more than ten damaging valley floods have occurred since 1940, with damage to commercial, industrial, residential, and agricultural areas. Utilities, roads, bridges, and streets also are subject to damage and require repair and clean up. Since the early 1960's Napa County residents and businesses have suffered over \$500 million in property damages.

### **Regional Setting**

Napa County is located in the Central Coast Range of northern California. The major surface hydrologic feature of this area is the Napa River, which flows from Mount St. Helena to San Pablo Bay. The river runs approximately 40 miles in length through mountains, vineyards, pastures, urban and industrial development, and marshlands. All but the southern 3.4 miles of the river lie in Napa County.

In 1950, the U.S. Army Corps of Engineers (COE) completed a navigation channel, making the river navigable from San Pablo Bay to Third Street in Downtown Napa. The natural siltation process necessitates periodic dredging of the lower reaches of the river in the navigation channel. Since completion of the channel in 1950, the COE has dredged the river a total of four times.

### **Napa River Watershed**

The Napa River drains a watershed encompassing approximately 426 square miles. Eight tributaries feed the Napa River, with four of these tributaries (Napa Creek, Redwood Creek, Browns Valley Creek, Camille Creek, and Tulocay Creek) lying in the City of Napa. The most significant of these tributaries is Napa Creek, which drains approximately 15 square miles of watershed before merging with the Napa River at the First Street Bridge.

### **Tidal Influence**

Within the City of Napa, the Napa River can be characterized as a tidal influenced estuarine system. Upstream of Trancas Street, the Napa River is largely freshwater. As the river proceeds through the city, the water quality transitions to a brackish marsh. Tidal influences on the river affect both discharges to San Pablo Bay and water surface elevations extending upstream approximately 0.5 mile north of the City.

### **Stream Flows**

Stream flows within the Napa River vary significantly from season to season and from year to year depending upon total rainfall. The average annual rainfall in the City of Napa is 24 inches (based on data recorded from 1877 to 1980), with total rainfall varying between 10 and 48 inches per year. Snowfall is rare within Napa County, and

snowmelt does not contribute significantly to total runoff or streamflows. The “normal” Napa River channel capacity through the City of Napa is 12,000 cubic feet per second, although this varies throughout the length of the river depending on vegetation and debris, tidal conditions, and sediment deposits. The highest streamflows occur from December to March, while the lowest flows occur in the summer and early fall. During dry years, the river recharges the groundwater in the upper reaches of the river, resulting in intermittent streamflow in the upper and middle reaches. The groundwater discharges to the river farther downstream, maintaining streamflows in the lower reaches of the Napa River throughout the year.

Flooding of the Napa River usually occurs from December to March during periods of heavy rainfall. Flood events resulting in major damage to urban areas and farmlands typically result from rainfall events, which persist over the entire Napa River basin for a period of 12 hours or more. Maximum river stages and discharges occur approximately 13 to 14 hours following the most intense rainfall periods.

### **History of Flooding in the Napa River Basin**

Flooding occurs in the Napa Valley due to heavy rainfall, which occurs predominantly from December through February. Streamflow of flood-producing magnitude is the result of precipitation over the entire river basin for a period in excess of 12 hours. After the periods of most intense rainfall, maximum river stages and discharges in the City can be expected from 13 to 14 hours later. Streamflow in the southern part of the Napa River is also affected by tide conditions, which can affect the River as far upstream as Trancas Street.

Flood events in Napa have been recorded since 1892. Historically, the most significant flood events occurred in 1940, 1942, 1955, 1960, 1963, 1965, 1967, 1973, 1979, 1982, 1983, 1986, 1995, 1997, 1998, 2002 and most recently in 2005/2006. Major floods have resulted in damage to commercial, industrial, residential, and agricultural areas. Utilities, roads, bridges, and streets also are subject to damage and require repair and clean up after a flood event. Flooding causes business slow down or stoppage, wage loss, and interruptions to traffic and the flow of goods. Flooding also has significant effects on human life and health (both physical and mental). The 1986 flood, which was the result of a 50-year storm, inundated most of the land adjacent to the Napa River and caused \$100 million in property damage, killed 3 people, injured 27 people, destroyed 250 homes, and damaged 2,500 residences county-wide.

Flooding in the City occurs when the Napa River’s flow at Oak Knoll Avenue (just north of the City limits) exceeds about 15,000 cubic feet per second. Some areas (typically agricultural land) remain flooded for several weeks due to inadequate drainage, but one to three days under water is more typical. Flood hazard conditions can exist along the entire length of the Napa River as it flows through the City as well as along the course of several tributary creeks.

In particular, Napa Creek floodwaters have had a major impact on the City’s core. For example, during the 1986 flood, Napa Creek overflowed on the south side of its banks, flooding areas along Coombs Street and the parkway Plaza Mall as the floodwaters

coursed through the downtown, a replay of the February 1942 flood. Two other main tributaries, Milliken and Tulocay Creeks, add to the Napa River’s flood flows within the City, but do not themselves cause significant flooding in the heavily developed parts of the City.

**Floodplain and Floodway**

The 100-year floodplain boundary defines the geographic area having a 1 percent chance of being in a flood in any given year. The boundary of the 100-year floodplain is typically used as the basic planning criterion to demarcate areas of unacceptable public safety hazards. Outside the floodplain boundary, the degree of flooding risk is not considered sufficient to justify the imposition of floodplain management regulations, while inside the 100-year floodplain, some level of regulation is desired to protect public health, safety, and welfare.

The 100-year floodplain is divided into a floodway and floodway fringe. The floodway is defined as the channel of a stream, plus any adjacent floodplain areas that must be kept free of development so that a 100-year flood can be carried away without substantial increases in flood heights. (FEMA defines “substantial increase” as 1.0 foot above the normal 100-year flood elevation.) The area between the floodway and the boundary of the 100-year floodplain is known as the floodway fringe. This portion of the floodplain could be used for development, as fill within this area will not increase the surface elevation of the 100-year flood more than 1.0 foot at any point.

<b>Relationship of Flood Water Depth to Property Damage</b>		
<b>Depth (feet)</b>	<b>Percent of Damage to Structure</b>	<b>Percent of Damage to Contents</b>
1	8	0
2	26	35
3	45	60
4	60	70
5	70	75
6	80	80
7	85	90
8	100	100
9	100	100

*Source: U.S. Army Corps of Engineers 1989*

## Flood Damage Statistics

The City of Napa is the fifth-most flood prone community in California in terms of flood damage payments from the Federal Emergency Management Agency. There are 3,146 properties in the flood plain and over 60 have made more than one flood damage claim to FEMA.

In 1986, flooding along the Napa River reached the 50-year frequency level, or a 2% chance of occurrence per year. Twenty (20) inches of rain fell on Atlas Peak in two days. Thirty (30) inches of rain fell over ten days in Calistoga. Throughout Napa County there were three deaths, 27 injuries, 250 destroyed homes, 2,500 damaged residences and over \$100 million in damage. There was also an unknown amount of un-reimbursed damaged such as reduced tourism, personal hardships, and delayed public projects.

Between 1961 and 1997, flooding has caused \$587 million of property damage in Napa County. Since 1862, twenty-eight major floods have struck the Napa Valley. Major flood events occurred in 1940, 1942, 1955, 1960, 1963, 1965, 1967, 1973, 1979, 1982, 1983, 1986, 1993, 1995 and 1997, 1998, 2002 and 2005/2006.

In January and March of 1995, the City of Napa was flooded by two 10-year frequency floods, which have a 10% chance of occurrence every year and a 65% chance of occurrence every decade. The City of Napa requested \$8 million to pay for damage to City property. FEMA also paid individual property owners separately.

If someone lives in Napa for thirty years, they have a 26% chance of seeing a 100-year flood which would probably last several days and flood the City from Silverado Trail to Soscol Avenue in the north half of the City and from Silverado Trail to Coombs Street in the south half of the City.

During a 100-year flood, more than 325,000 gallons of floodwater per second would flow through the City of Napa, or five times the volume of Lake Hennessey, over the span of the flood. More than 3,500 people and 2 million square feet of business and office space would be inundated. Between 1989 and 1994, the President of the United States declared 291 federal disasters and 80% were flood related. Floods cause an average of \$4 billion in property damage a year.

Six inches of fast moving floodwater can knock a person off their feet. Water moving at six feet per second or four miles per hour and only one foot deep has a drag force of 63 pounds on a person. Two feet of fast moving floodwater can float a car down the river. The ground under the floodwaters is usually covered with mud, so it is slippery, which makes it even harder to resist the drag force of the moving water.

To reduce flood damages and insurance rates, the City participates in the National Flood Insurance Program, acquired and elevated homes with FEMA Hazard Mitigation Grant Funds, participated in the design of the Napa River/Napa Creek Flood Reduction Project, created an Emergency Plan, constructed drainage system improvement projects, and monitored rainfall and stream level gauges to give more flood preparation time. The City has the "Citizen's Guide

to Flooding and Flood Recovery” available and provides free sandbags and sand on the first Saturday of November through March.

Prepared by: Graham Wadsworth, Civil Engineer (currently employed by the City of Yountville)  
Rev. by Karen Harnois 8-18-09  
City of Napa, Public Works Department

## **Flood Hazard Area**

As part of the National Flood Insurance Program, the Federal Emergency Management Agency (FEMA) conducts Federal Insurance Studies (FIS) of areas subject to flooding to determine insurance rates and to assist local communities in developing sound floodplain management policies. In 1979, FEMA completed a flood insurance study to develop flood risk data that could be used in a program that would establish local flood insurance rates and promote sound floodplain and floodway management. A Flood Insurance Rate Map was prepared that showed the flood hazard area (the area inundated by a 100-year flood), the floodway, the floodplain, and other flood-related information. This map was revised in 1988 to include data from the 1986 flood and was made available with a Flood Insurance Study publication explaining the floodway concept. New Digital Flood Insurance Rate Maps were issued and became effective September 26, 2008. The process to revise the Flood Insurance Rate Maps began again in August of 2009 with an expectation that it will be approved in late 2009 or early 2010. The current (as of November of 2009) Flood Insurance Rate Map floodway and flood plain boundaries are shown on the following page.

## **Flood Losses and Methodology Used to Determine Amounts**

The following graph provides a variety of statistics on the documented floods in Napa’s past. They include: severity, water levels, chance of occurrence and dollar losses. Dollar losses are difficult to accurately determine and are usually estimated on the lower scale do to the difficulty in obtaining information. The figures shown are from FEMA and reflect the amounts paid to property owners from individual assistance, public assistance and monies not reimbursed. Not included are the losses sustained by those who did not have insurance and who did not report the damage. FEMA has paid out a total of \$8.5 million in flood damage since 1979. There have been 10 different floods years since 1979 giving an average of \$850,000 per flood. Each flood caused different amounts of damage due to differing water levels, subsequently causing a different dollar amount. There are 2450 residential units and 690 commercial structures in the 100 year flood zone. While the risk of flooding continues to occur the potential damage that will occur continues to decrease each year due to the flood control project. Projects such as home elevations, rebuilding infrastructure such as the City’s bridges, ordinances requiring property owners to remodel or build new structures meeting updated standards all lessen potential damage to the City.

## City of Napa Record of Historic Floods

DATE	FLOOD FREQUENCY IN NAPA (YEAR)	CHANCE OF OCCURRENCE (%/YEAR)	DAYS OF RAIN	TOTAL RAIN AT CONN & MILLIKEN (INCHES)	DAILY RAINFALL AT DAMS (INCHES)	PEAK STAGE AT LINCOLN AVE. (FEET)	PEAK STAGE AT THIRD ST. (FEET)	COST (IN \$ MILLIONS)	PEAK FLOW RATE AT OAK KNOLL (CFS)	PEAK STAGE AT OAK KNOLL (FEET)
12/31/1996	1.1 - 1.5	66 - 91	2	3.6 & 4.4	1.7 & 2.1	Local (11.8)	?	0	10,376	20.51
11/21/1977	1.1 - 1.5	66 - 91	2	5.0 & 8.0	3.5 & 6.6	Creeks(<18)	?	?	< 4,700	<13.0
3/12/1983	1.1 - 1.5	66 - 91	2	3.0 & 4.5	2.6 & 4.5	Creeks(<18)	?	?	17,100	23.4
1/20/1993	1.1 -1.5	66 - 91	3	4.4. & 5.1	1.9 & 2.5	Creeks (16.5)	?	(0.15)	19,300	24.7
1/22/1997	1.1 - 1.5	66 - 91	3	4.5 & 4.6	3.2 & 3.8	Creeks (16.9)	?	(0.3)	19,089	24.60
1/5/1965	1.5 - 2	50 - 66	4	4.9 & 5.1	2.5 & 2.1	Creeks (18.3)	9	?	18,100	25.1 to 25.9
12/16/2002	1.5 - 2	50 - 66	4	10.2 & 6.5	4.3 & 2.1	Creeks (18.2)	?	1.0	18,400	26.47
1/31/1963	1.5 - 2	50 - 66	3	7.9 & ?	3.0 & ?	19.8 to 20.5	13	0.5	25,000	27.59
2/3/1998	2 - 5	20 - 50	3	5.9 & 5.7	4.8 & 4.3	20.2	12.5	(0.3)	21,000	26.72
1/9/1995	2 - 5	20 - 50	4	11.9 & 8.0	5.5 & 3.7	20.5	?	5.5 (2)	22,000	26.8
12/22/1955	2 - 5	20 - 50	5	16 & ?	4.8 & ?	20.6	13.7	1?	25,000?	27.5 to 28.2
1/1/1997	5 - 10	10 - 20	3	7.6 & 9.1	4.0 & 4.7	21.4	13.5	3.5 (1.5 )	26,722	28.07
2/27/1940	10 - 25	4 - 10	3	10 & ?	5.6 & ?	22.3	15.4	0.15	26,400 ?	28 ?
1/21/1967	10 - 25	4 - 10	3	6.8 & 5.8	4.0 & 3.3	22.7 to 23.2	13.6	?	21,400	26.47
3/9/1995	10 - 25	4 - 10	2	7.6 & 6.1	4.4 & 3.8	22.8	<18	10.5 (6)	32,600	30.50
12/31/05	25- 50	2- 4	2	6.6 & 8.9	6.4 & 8.7	23.04	<15	47(4)	29,400	29.85
2/17&18/86	50	2	7	14.2 & 16.5	3.6 & 4.9	24.2	17.9	50 (1.5)	37,100	30.20
?	100	1	?	?	?	25.0	19	140?	48,500	32.0
?	500	0.2	?	?	?	27.5	21.5	150?	50,300?	33.0 ?

NOTE: The Napa River flooded in Napa to unknown depths in 2/24/1902, 3/18/1907, 12/31/1913, 1/3/1916, 2/12/1925, 2/6/1942, 2/24/1958, and 1/16/1973.

The Napa River flooded in Napa with depths at Oak Knoll of 23.10 on 2/8/1960, 21.54 on 1/16/1978, 25.65 on 1/4/1982, and 24.73 on 3/1/1983

CFS = Cubic Feet Per Second = 450 gallons per minute. 37,000 CFS = 16.6 million gallons per minute. Lake Hennessey has a volume of 31,000 acre feet or 10 billion gallons of water.

*City of Napa Hazard Mitigation Plan*

Costs are only what FEMA and OES were asked to pay (in the year of the flood dollars) and does not include intangible costs. Costs in ( ) exclude private property losses in City.

Time from the peak stage at Oak Knoll to Lincoln Avenue is 1 to 3 hours. Time from peak rainfall up-valley to peak flood at Lincoln is 13 to 15 hours.

The maximum recorded 24-hour rainfall for the Napa Valley was 15.3 inches on Atlas Peak on February 17, 1986 where the mean annual rainfall is 32 inches.

Localized street flooding and Creek flash floods are more dependent on the location, duration and intensity of the storm. Three inches in six hours will usually cause flooding.

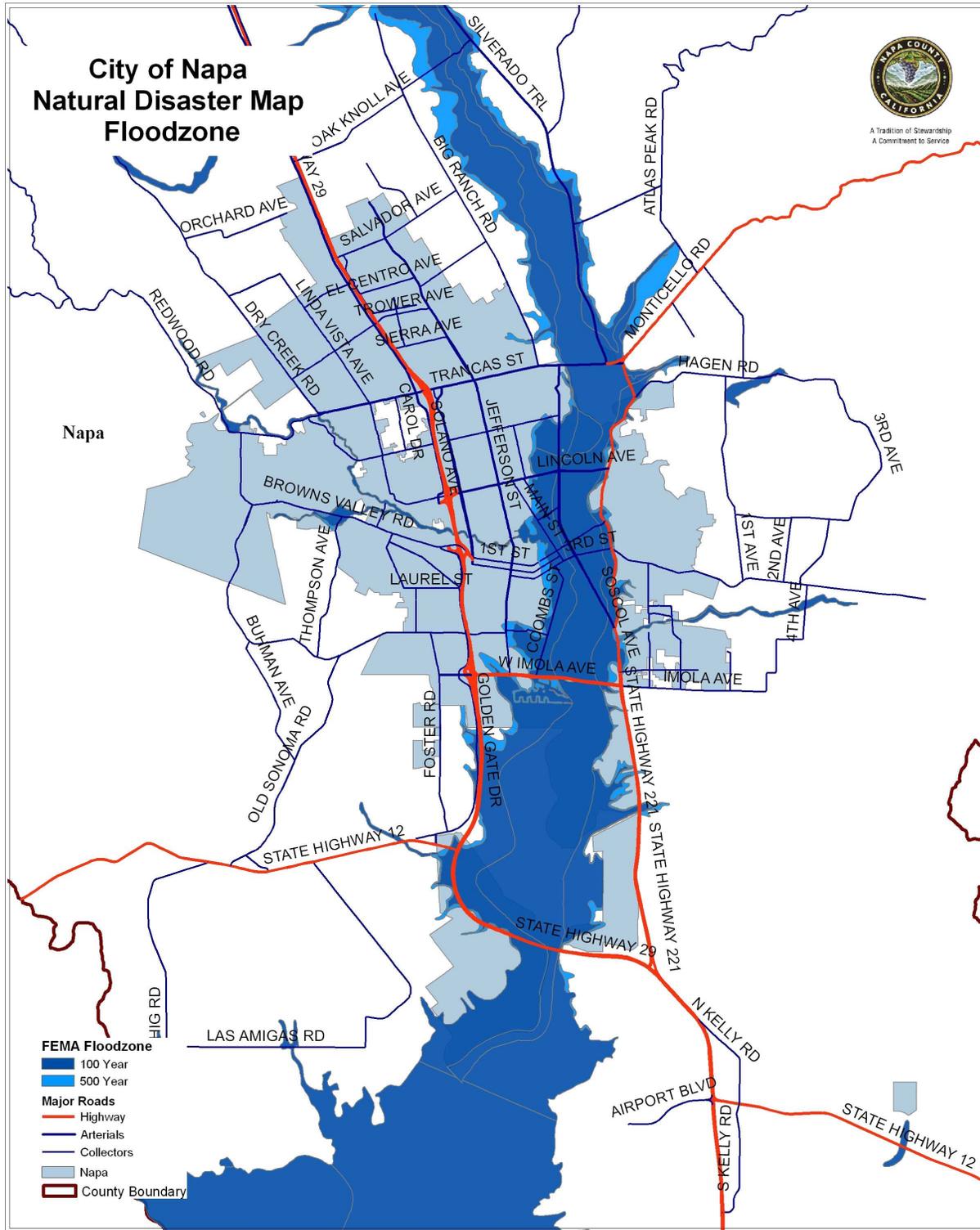
Stage elevations are in 1929 National Geodetic Vertical Datum.

Prepared by: Graham Wadsworth, Department of Public Works, Bridge and Urban Drainage Division.

G:PUBWKS/BUD/GRAHAM/STORMWATCH/STORM2.DOC

Revised 10/18/06

Napa Operational Area Hazard Mitigation Plan



County of Napa GIS  
August 2009



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## **Napa River Flood Management Project**

The Napa River Flood Control Project was authorized as a federal project in 1965 but early studies met with considerable resistance from local citizens. In 1975 a project design was developed incorporating local issues of concern. In 1976 a referendum to determine the acceptability of the flood control project narrowly passed, but a subsequent referendum in 1977 opposing the project passed and placed the project on inactive status.

Following the devastating flood of 1986, the Napa County Flood Control and Water Conservation District petitioned Congress to reactivate the flood control project. In response, the Army Corps of Engineers prepared an action plan and began engineering design studies in 1989. The Corps, as the responsible lead agency, subsequently prepared a set of studies and a Draft Environmental Impact Report (DEIR) that was available for public comments up until May 1995. The selected flood control project described in the Design Memorandum consists of levees, setback floodwalls, sheetpile walls, streambank protection, channel excavation, and a bypass channel at the Oxbow. Maintenance roads, recreation trails, hazardous material review, remediation of project lands, and environmental mitigation are included in the plan.

In response to public concern about the project's design, visual impacts, loss of recreational opportunities, and other environmental impacts, the Corps' flood control project's executive committee agreed to investigate a "Two Track Design Concept." Track 1, the primary track proposed that the Corps revise the construction plans and respond to the concerns raised during public review of the DEIR. Track 2 proposed the establishment of a Technical Design Committee to study alternatives such as watershed management, dams, alternatives to flood walls, and opportunities for river restoration under the guidance of a Community Coalition, which would formulate a community consensus of alternatives to the Corps' flood control project design.

By June 1996, the Community Coalition completed a lengthy set of workshops and public meetings, and proposed a plan for both flood protection and watershed management. Key features included: 1) land acquisition for river widening; 2) business and home relocation assistance; 3) recreational facilities and open space; 4) toxic cleanup; 5) an Oxbow "dry bypass;" 6) utility relocations and pumping plants; 7) levee and floodwall construction; and 8) bridge improvements.

In December 1997, using the Community Coalition's conceptual plan for a "Flood Management Project", the Corps reissued a General Design Memorandum (GDM) and Supplemental Environmental Impact Statement/Report (SEIS/SEIR). In March 1998, a ½-cent sales tax ballot initiative passed by a 68% vote, allowing the District to provide the required 50% local share of funding to implement the project.

The project has been named the "Napa River/Napa Creek Flood Protection Plan". The project design covers a 6-mile stretch of the Napa River, primarily in the City of Napa. It is comprised of four basic components: the widening of the river channel through the creation of both marsh plain and flood plain terraces; the replacement of a series of bridges; the creation of a "dry-bypass" overflow channel in downtown Napa, and the use of a series of floodwalls and levees where necessary. Approximately 300 parcels will be

acquired and 109 buildings will be removed in order to facilitate the project design. Construction began in 2000, and will be complete sometime around 2015.

## Flood Hazard Areas Inventory

Every two years the City of Napa submits an inventory to FEMA of structures in flood hazard areas. Inventory provided for the 2007-2008 biennial report was summarized as follows:

FLOOD HAZARD AREAS INVENTORY					
	PERMANENT POPULATION	YEAR-ROUND	1-4 STRUCTURES	FAMILY	ALL OTHER STRUCTURES INCLUDING COMMERCIAL
ENTIRE COMMUNITY	77,106		21,421		2,540
FLOOD HAZARD AREAS	17,380		2,453		690

*Source: Napa Community Development Department estimate 2/04 based on 2000 Census information, land use maps. Area includes land mass for 100 year flood.*

There are 2,636 residential structures, 404 commercial structures and an estimated population of 17,497 in the City's Flood Overlay zoning district. The above graph shows the number of buildings in the flood plain compared to the entire community.

## Methodology Used to Determine Inventory

The following tables list the inventory of residential structures, and the population residing within the flood zone. Each of the values is categorized by census tracts and depicts potential losses from flooding. It should be noted that the information regarding the residential units was obtained from census data. The information on the commercial structures was obtained by manually counting the commercial structures from an aerial photo of the flood plan. As of this date, there is no easy or quick method for isolating the commercial structures as has been done for residential. Attempts will be made to produce a method.

<b>FLOOD INVENTORY, RESIDENTIAL</b>							
<b>2000 U.S. Census Data</b>			<b>Flood Inventory</b>				
			<b>Structures</b>			<b>Demographics</b>	
<b>Block/Group/Tract</b>	<b>Pop</b>	<b>HU's</b>	<b>1 - 4 Unit</b>	<b>5+ Unit</b>	<b>Total</b>	<b>Tot H U's</b>	<b>Pop</b>
Block 1000, Block Group 1, Census Tract 2002.01	47	27	11	0	11	16	28
Block 1001, Block Group 1, Census Tract 2002.01	117	50					-
Block 1002, Block Group 1, Census Tract 2002.01	219	98					-
Block 1003, Block Group 1, Census Tract 2002.01	147	72	-	15	15	220	449
Block 1004, Block Group 1, Census Tract 2002.01	-	-	-	-	-	-	
Block 3013, Block Group 3, Census Tract 2002.01	43	22	30	-	30	30	59
Block 1000, Block Group 1, Census Tract 2002.02	-	-					
Block 1001, Block Group 1, Census Tract 2002.02	-	-					
Block 1002, Block Group 1, Census Tract 2002.02	-	-					
Block 1003, Block Group 1, Census Tract 2002.02	73	46					
Block 1004, Block Group 1, Census Tract 2002.02	33	11					
Block 1005, Block Group 1, Census Tract 2002.02	17	8					
Block 1006, Block Group 1, Census Tract 2002.02	11	7					
Block 1007, Block Group 1, Census Tract 2002.02	130	108	49	2	51	170	205
Block 1011, Block Group 1, Census Tract 2002.02	-	-	-	-	-	-	0
Block 1012, Block Group 1, Census Tract 2002.02	-	-	-	-	-	-	0
Block 1014, Block Group 1, Census Tract 2002.02	-	-	-	-	-	-	0
Block 1015, Block Group 1, Census Tract 2002.02	-	-	-	-	-	-	0
Block 1016, Block Group 1, Census Tract 2002.02	-	-	-	-	-	-	0
Block 1017, Block Group 1, Census Tract 2002.02	-	-	-	-	-	-	0
Block 1018, Block Group 1, Census Tract 2002.02	-	-	-	-	-	-	0
Block 2000, Block Group 2, Census Tract 2002.02	-	-	-	-	-	-	0
Block 2001, Block Group 2, Census Tract 2002.02	194	-	-	-	-	-	0
Block 2002, Block Group 2, Census Tract 2002.02	41	-	-	-	-	-	0
Block 2008, Block Group 2, Census Tract 2002.02	38	-	-	-	-	-	0
Block 2009, Block Group 2, Census Tract 2002.02	13	7	5	-	5	7	13
Block 2010, Block Group 2, Census Tract 2002.02	10	5	3	-	3	5	10
Block 2011, Block Group 2, Census Tract 2002.02	-	-	-	-	-	-	0
Block 2012, Block Group 2, Census Tract 2002.02	-	-	-	-	-	-	0
Block 2013, Block Group 2, Census Tract 2002.02	-	-	-	-	-	-	0
Block 2015, Block Group 2, Census Tract 2002.02	219	72	17	5	22	72	219
Block 2016, Block Group 2, Census Tract 2002.02	75	24	11	1	12	24	75
Block 2017, Block Group 2, Census Tract 2002.02	88	55	12	7	19	55	88
Block 2018, Block Group 2, Census Tract 2002.02	38	19	14	-	14	17	34
Block 3001, Block Group 3, Census Tract 2002.02	155	31	4	3	7	31	155
Block 3002, Block Group 3, Census Tract 2002.02	92	38	19	2	21	38	92
Block 3003, Block Group 3, Census Tract 2002.02	68	24	11	1	12	24	68
Block 3004, Block Group 3, Census Tract 2002.02	66	39	16	2	18	39	66
Block 3005, Block Group 3, Census Tract 2002.02	67	35	8	3	11	23	44
Block 3014, Block Group 3, Census Tract 2002.02	79	37	20	2	22	37	79
Block 3015, Block Group 3, Census Tract 2002.02	128	41	23	1	24	41	128
Block 3016, Block Group 3, Census Tract 2002.02	183	45	17	2	19	45	183
Block 3017, Block Group 3, Census Tract 2002.02	23	9	4	-	4	9	23

<b>FLOOD INVENTORY, RESIDENTIAL (continued)</b>							
<b>2000 U.S. Census Data</b>	<b>Flood Inventory</b>						
	<b>Structures</b>					<b>Demographics</b>	
<b>Block/Group/Tract</b>	<b>Pop</b>	<b>HU's</b>	<b>1 – 4 Unit</b>	<b>5+ Unit</b>	<b>Total</b>	<b>Tot H U's</b>	<b>Pop</b>
Block 1007, Block Group 1, Census Tract 2002.03	29	15	5	1	6	10	19
Block 2000, Block Group 2, Census Tract 2002.03	-	-	-	-	-	-	
Block 2001, Block Group 2, Census Tract 2002.03	421	86	6	6	12	6	29
Block 2002, Block Group 2, Census Tract 2002.03	154	43	14	2	16	2	7
Block 2003, Block Group 2, Census Tract 2002.03	289	104	30	-	30	30	83
Block 3000, Block Group 3, Census Tract 2002.03	109	27	8	1	9	22	89
Block 3001, Block Group 3, Census Tract 2002.03	67	24	15	-	15	17	47
Block 3002, Block Group 3, Census Tract 2002.03	55	28	26	-	26	28	55
Block 3003, Block Group 3, Census Tract 2002.03	38	17	14	-	14	14	31
Block 3004, Block Group 3, Census Tract 2002.03	33	17	9	-	9	9	17
Block 3005, Block Group 3, Census Tract 2002.03	56	22	22	-	22	22	56
Block 3006, Block Group 3, Census Tract 2002.03	348	119	42	-	42	42	123
Block 3007, Block Group 3, Census Tract 2002.03	65	19	21	-	21	21	72
Block 3008, Block Group 3, Census Tract 2002.03	42	13	8	-	8	8	26
Block 3009, Block Group 3, Census Tract 2002.03	72	18	19	-	19	19	76
Block 3010, Block Group 3, Census Tract 2002.03	213	56	36	-	36	36	137
Block 3011, Block Group 3, Census Tract 2002.03	174	45	25	-	25	25	97
Block 2000, Block Group 2, Census Tract 2003	357	137					
Block 2006, Block Group 2, Census Tract 2003	29	11					
Block 2007, Block Group 2, Census Tract 2003	33	21					
Block 2008, Block Group 2, Census Tract 2003	33	11					
Block 2009, Block Group 2, Census Tract 2003	38	17					
Block 2010, Block Group 2, Census Tract 2003	-	-					
Block 2011, Block Group 2, Census Tract 2003	-	-					
Block 2012, Block Group 2, Census Tract 2003	7	3					
Block 2013, Block Group 2, Census Tract 2003	-	-					
Block 2014, Block Group 2, Census Tract 2003	-	-					
Block 2015, Block Group 2, Census Tract 2003	-	-					
Block 2016, Block Group 2, Census Tract 2003	-	-					
Block 2017, Block Group 2, Census Tract 2003	183	99	140	1	141	146	270
Block 2018, Block Group 2, Census Tract 2003	-	-					
Block 2019, Block Group 2, Census Tract 2003	17	12					
Block 2024, Block Group 2, Census Tract 2003	-	-					
Block 2026, Block Group 2, Census Tract 2003	139	32					
Block 2028, Block Group 2, Census Tract 2003	86	44					
Block 3002, Block Group 3, Census Tract 2003	73	28					
Block 3003, Block Group 3, Census Tract 2003	46	18					
Block 3007, Block Group 3, Census Tract 2003	100	34					
Block 3008, Block Group 3, Census Tract 2003	36	10	120	-	120	120	432
Block 2001, Block Group 2, Census Tract 2004	2	1	1	-	1	1	2
Block 2006, Block Group 2, Census Tract 2004	114	48	28	2	30	30	71
Block 2007, Block Group 2, Census Tract 2004	126	48					
Block 2011, Block Group 2, Census Tract 2004	17	14					
Block 2012, Block Group 2, Census Tract 2004	-	-					
Block 2013, Block Group 2, Census Tract 2004	-	-					

<b>FLOOD INVENTORY, RESIDENTIAL (continued)</b>							
<b>2000 U.S. Census Data</b>	<b>Flood Inventory</b>						
	<b>Structures</b>					<b>Demographics</b>	
<b>Block/Group/Tract</b>	<b>Pop</b>	<b>HU's</b>	<b>1 – 4 Unit</b>	<b>5+ Unit</b>	<b>Total</b>	<b>Tot H U's</b>	<b>Pop</b>
Block 2018, Block Group 2, Census Tract 2004	14	6					
Block 2019, Block Group 2, Census Tract 2004	-	-					
Block 2020, Block Group 2, Census Tract 2004	34	17					
Block 2021, Block Group 2, Census Tract 2004	6	2					
Block 2022, Block Group 2, Census Tract 2004	-	-					
Block 2023, Block Group 2, Census Tract 2004	19	7					
Block 2024, Block Group 2, Census Tract 2004	8	4	66	-	66	66	132
Block 3030, Block Group 3, Census Tract 2005.01	170	61	61	-	61	61	170
Block 3034, Block Group 3, Census Tract 2005.01	2	1	1	-	1	1	2
Block 3035, Block Group 3, Census Tract 2005.01	69	37	2	-	2	3	6
Block 3042, Block Group 3, Census Tract 2005.01	76	36	9	-	9	36	76
Block 3044, Block Group 3, Census Tract 2005.01	11	5	5	-	5	5	11
Block 1007, Block Group 1, Census Tract 2005.02	569	232	34	-	34	34	83
Block 1008, Block Group 1, Census Tract 2005.02	9	3	3	-	3	3	9
Block 1009, Block Group 1, Census Tract 2005.02	59	20	20	-	20	20	59
Block 1011, Block Group 1, Census Tract 2005.02	59	20	20	-	20	20	59
Block 1012, Block Group 1, Census Tract 2005.02	41	10	10	-	10	10	41
Block 2000, Block Group 2, Census Tract 2005.02	85	20	2	3	5	20	85
Block 2002, Block Group 2, Census Tract 2005.02	155	98					
Block 2003, Block Group 2, Census Tract 2005.02	14	9					
Block 2004, Block Group 2, Census Tract 2005.02	1,438	474					
Block 2005, Block Group 2, Census Tract 2005.02	4	3					
Block 2006, Block Group 2, Census Tract 2005.02	80	44					
Block 2007, Block Group 2, Census Tract 2005.02	57	21					
Block 2008, Block Group 2, Census Tract 2005.02	31	9					
Block 2009, Block Group 2, Census Tract 2005.02	103	35					
Block 2010, Block Group 2, Census Tract 2005.02	90	30					
Block 2011, Block Group 2, Census Tract 2005.02	157	43					
Block 2012, Block Group 2, Census Tract 2005.02	62	21	229	101	330	787	2,324
Block 2013, Block Group 2, Census Tract 2005.02	70	21	21	-	21	21	70
Block 3000, Block Group 3, Census Tract 2005.02	167	72					
Block 3001, Block Group 3, Census Tract 2005.02	275	97					
Block 3003, Block Group 3, Census Tract 2005.02	135	49	186	1	187	194	534
Block 3004, Block Group 3, Census Tract 2005.02	1,054	340					
Block 3005, Block Group 3, Census Tract 2005.02	53	13					
Block 3006, Block Group 3, Census Tract 2005.02	10	4					
Block 3007, Block Group 3, Census Tract 2005.02	59	25					
Block 3008, Block Group 3, Census Tract 2005.02	57	19	164	9	173	388	1,164
Block 1006, Block Group 1, Census Tract 2005.03	138	67	-	-	-	-	
Block 1009, Block Group 1, Census Tract 2005.03	77	32	1	-	1	4	10
Block 1010, Block Group 1, Census Tract 2005.03	40	13	1	-	1	3	9
Block 1011, Block Group 1, Census Tract 2005.03	13	3	1	-	1	3	13
Block 1012, Block Group 1, Census Tract 2005.03	2	1	1	-	1	1	2
Block 1013, Block Group 1, Census Tract 2005.03	54	23	12	1	13	23	54

<b>FLOOD INVENTORY, RESIDENTIAL (continued)</b>							
<b>2000 U.S. Census Data</b>	<b>Flood Inventory</b>						
	<b>Structures</b>					<b>Demographics</b>	
<b>Block/Group/Tract</b>	<b>Pop</b>	<b>HU's</b>	<b>1 – 4 Unit</b>	<b>5+ Unit</b>	<b>Total</b>	<b>Tot H U's</b>	<b>Pop</b>
Block 1025, Block Group 1, Census Tract 2005.03	4	-	-	-	-	-	
Block 1026, Block Group 1, Census Tract 2005.03	32	12	7	1	8	12	32
Block 1027, Block Group 1, Census Tract 2005.03	76	44	24	2	26	57	98
Block 1029, Block Group 1, Census Tract 2005.03	28	8	3	-	3	8	28
Block 1030, Block Group 1, Census Tract 2005.03	27	13	10	-	10	13	27
Block 1031, Block Group 1, Census Tract 2005.03	61	25	5	-	5	5	12
Block 1032, Block Group 1, Census Tract 2005.03	-	-	-	-	-	-	
Block 1033, Block Group 1, Census Tract 2005.03	-	-	-	-	-	-	
Block 2000, Block Group 2, Census Tract 2005.03	7	3	3	-	3	3	7
Block 2001, Block Group 2, Census Tract 2005.03	-	-	-	-	-	-	
Block 2002, Block Group 2, Census Tract 2005.03	12	4	1	-	1	4	12
Block 2003, Block Group 2, Census Tract 2005.03	-	-	-	-	-	-	
Block 2004, Block Group 2, Census Tract 2005.03	26	11	-	-	-	-	
Block 2005, Block Group 2, Census Tract 2005.03	2	2	-	-	-	-	
Block 2006, Block Group 2, Census Tract 2005.03	-	-	-	-	-	-	
Block 2007, Block Group 2, Census Tract 2005.03	12	4	-	-	-	-	
Block 2008, Block Group 2, Census Tract 2005.03	42	20	11	-	11	17	36
Block 2009, Block Group 2, Census Tract 2005.03	67	23	12	-	12	21	61
Block 2010, Block Group 2, Census Tract 2005.03	7	4	4	-	4	4	7
Block 2011, Block Group 2, Census Tract 2005.03	10	4	-	-	-	-	
Block 2012, Block Group 2, Census Tract 2005.03	-	1	2	-	2	2	-
Block 2013, Block Group 2, Census Tract 2005.03	17	5	3	-	3	4	14
Block 2014, Block Group 2, Census Tract 2005.03	-	1	1	-	1	1	
Block 2015, Block Group 2, Census Tract 2005.03	-	-	-	-	-	-	0
Block 2016, Block Group 2, Census Tract 2005.03	-	-	-	-	-	-	0
Block 2017, Block Group 2, Census Tract 2005.03	-	-	-	-	-	-	0
Block 2018, Block Group 2, Census Tract 2005.03	-	-	-	-	-	-	0
Block 2019, Block Group 2, Census Tract 2005.03	-	-	-	-	-	-	0
Block 2020, Block Group 2, Census Tract 2005.03	5	4	3	-	3	5	6
Block 2021, Block Group 2, Census Tract 2005.03	15	7	7	-	7	8	17
Block 2022, Block Group 2, Census Tract 2005.03	2	1	1	-	1	1	2
Block 2023, Block Group 2, Census Tract 2005.03	-	-	-	-	-	-	0
Block 1001, Block Group 1, Census Tract 2007.01	137	42	11	-	11	11	36
Block 1002, Block Group 1, Census Tract 2007.01	30	11	6	-	6	6	16
Block 1006, Block Group 1, Census Tract 2007.01	149	20	5	-	5	5	37
Block 1009, Block Group 1, Census Tract 2007.01	96	33	18	-	18	18	52
Block 4003, Block Group 4, Census Tract 2007.01	215	89	17	-	17	17	41
Block 4010, Block Group 4, Census Tract 2007.01	51	20	17	-	17	17	43
Block 4011, Block Group 4, Census Tract 2007.01	17	10	11	-	11	11	19
Block 4012, Block Group 4, Census Tract 2007.01	121	57	4	-	4	4	8
Block 4018, Block Group 4, Census Tract 2007.01	640	273	4	6	10	244	572
Block 1000, Block Group 1, Census Tract 2007.03	103	39	25	-	25	25	66
Block 1025, Block Group 1, Census Tract 2007.03	15	7	7	-	7	7	15
Block 1026, Block Group 1, Census Tract 2007.03	360	141	27	-	27	27	69
Block 1027, Block Group 1, Census Tract 2007.03	30	14	2	-	2	2	4

<b>FLOOD INVENTORY, RESIDENTIAL (continued)</b>							
<b>2000 U.S. Census Data</b>		<b>Flood Inventory</b>					
		<b>Structures</b>				<b>Demographics</b>	
<b>Block/Group/Tract</b>	<b>Pop</b>	<b>HU's</b>	<b>1 – 4 Unit</b>	<b>5+ Unit</b>	<b>Total</b>	<b>Tot H U's</b>	<b>Pop</b>
Block 1036, Block Group 1, Census Tract 2007.03	-	-	-	-	-	-	
Block 1037, Block Group 1, Census Tract 2007.03	26	12	12	-	12	12	26
Block 3000, Block Group 3, Census Tract 2008.01	109	57	28	-	28	28	54
Block 3001, Block Group 3, Census Tract 2008.01	35	14	10	-	10	10	25
Block 3002, Block Group 3, Census Tract 2008.01	116	32	20	-	20	20	73
Block 3000, Block Group 3, Census Tract 2008.02	49	29					
Block 3001, Block Group 3, Census Tract 2008.02	23	11					
Block 3002, Block Group 3, Census Tract 2008.02	21	10					
Block 3003, Block Group 3, Census Tract 2008.02	69	38					
Block 3004, Block Group 3, Census Tract 2008.02	47	36					
Block 3005, Block Group 3, Census Tract 2008.02	152	83					
Block 3006, Block Group 3, Census Tract 2008.02	-	-					
Block 3007, Block Group 3, Census Tract 2008.02	225	105	104	9	113	207	444
Block 3008, Block Group 3, Census Tract 2008.02	21	8					
Block 3009, Block Group 3, Census Tract 2008.02	560	327					
Block 3011, Block Group 3, Census Tract 2008.02	476	215	30	-	30	30	66
Block 3016, Block Group 3, Census Tract 2008.02	106	50					
Block 3017, Block Group 3, Census Tract 2008.02	83	40					
Block 3018, Block Group 3, Census Tract 2008.02	81	33					
Block 3019, Block Group 3, Census Tract 2008.02	24	11					
Block 3020, Block Group 3, Census Tract 2008.02	34	19	123	-	123	148	265
Block 1014, Block Group 1, Census Tract 2009	-	-	-	-	-	-	
Block 1015, Block Group 1, Census Tract 2009	20	-	-	-	-	-	
Block 1016, Block Group 1, Census Tract 2009	-	-	-	-	-	-	
Block 1017, Block Group 1, Census Tract 2009	-	-	-	-	-	-	
Block 1018, Block Group 1, Census Tract 2009	-	-	-	-	-	-	
Block 1019, Block Group 1, Census Tract 2009	2	1	1	-	1	1	2
Block 1022, Block Group 1, Census Tract 2009	-	-	-	-	-	-	
Block 1001, Block Group 1, Census Tract 2010.01	-	-	-	-	-	-	
Block 1003, Block Group 1, Census Tract 2010.01	-	-	-	-	-	-	
Block 1004, Block Group 1, Census Tract 2010.01	-	-	-	-	-	-	
Block 1009, Block Group 1, Census Tract 2011	14	6	10	-	10	10	23
Block 5004, Block Group 5, Census Tract 2014	-	-	-	-	-	-	
<b>Totals</b>	<b>17,120</b>	<b>6,610</b>	<b>2,437</b>	<b>199</b>	<b>2,636</b>	<b>4,450</b>	<b>11,402</b>

## Hazard Mitigation Activities Since 1995 Flood

There have been 19 floods in Napa County over the past 51 years, and the County has suffered over \$500 million in damages between 1960 and 1997. The city of Napa is the sixth most flood prone community among about 500 communities in California. In 1998, two thirds of Napa County voters passed a half-cent sales tax to fund flood protection in each community in Napa County. Hazard mitigation funds have been an important component toward achieving flood protection in Napa County.

The City of Napa, County of Napa, and Town of Yountville have received several FEMA Hazard Mitigation Grants, FEMA flood Mitigation Grants and NRCS Emergency Watershed Protection Program Grants. The largest Hazard Mitigation project has been the Napa River Flood Management Plan, which is funded by a Napa County half-cent sales tax and U.S. Army Corps of Engineers funding. The projects are broken down by jurisdiction below.

## **Prior Mitigation Efforts By Napa County**

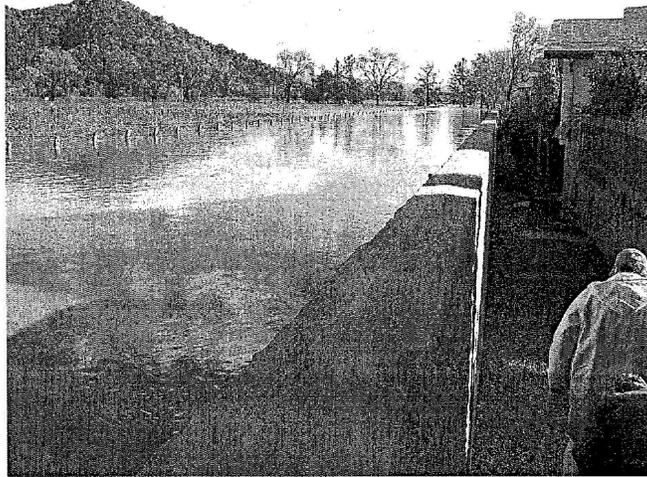
### **Napa River Flood Management Plan**

Subsequent to a significant flood in 1986, local officials throughout Napa County began efforts to reactivate previous failed flood control efforts in conjunction with the U.S. Army Corps of Engineers. (There were two failed elections during the mid-1970s.) By 1995, this resulted in a design released by the corps that was ultimately rejected by the local communities due to its adverse environmental impacts.

The Corps then agreed to participate in a newly-established "Community Coalition for Flood Management" of 400 people and 24 agencies to redesign the project in such a way that it would provide both 100-year flood protection to the city of Napa as well as environmental benefits. Over a 2-year period, this broad-based process resulted in a new design that would essentially widen the river channel rather than deepen it, along with several other significant changes.

In 1997, the Napa County Flood Control and Water Conservation District (District) and the Corps jointly prepared several documents that would be used to define and describe the project including an Environmental Impact Report/Statement (EIR/EIS) and the "Citizen's Guide to the Napa River / Napa Creek Flood Protection Project." The latter was primarily intended as a simplified description of the Napa Flood Project and its impacts for the general public, since the public was going to vote on a proposed ½-cent sales tax which was required to provide the local share (50%) of the project cost, with the remainder to be paid for by the Federal government.

These documents were released in late 1997 and early 1998 in anticipation of this election on March 3, 1998. However, since the primary project being funded by the sales tax was for the benefit of the City of Napa – but a countywide vote was necessary – an agreement was executed with all of the cities in the County that provided proportional return to source of the sales tax revenue to each of the cities, along with proposed flood control projects in each of the jurisdictions. Due to financing requirements and the sheer size and cost of the Napa project, it was necessary for the other cities to defer their own projects for several years, although Yountville's (mobile home park flood wall) has been completed and St. Helena's is getting underway, after multiple years of design and litigation. A total of more than \$2.3 million of local sales tax revenues has already been expended on these two projects.



The required 2/3 majority was accomplished, thereby signifying the broad-based support for this project throughout the County. The Napa Flood Project cost-sharing arrangement provided for the "local sponsor" (District) to acquire all the necessary property and relocate and/or replace all utilities and 10 bridges. The federal funds were to be spent doing all the excavation work and flood wall and levee construction which, by their very nature, has to be accomplished subsequent to the District's work. Approximately \$142 million of local sales tax revenues has already been expended on the project.



Although the sales tax revenue generated to pay for the local share of the cost has accrued in excess of expectations – thereby allowing all the bridge replacements to have already been completed and much of the land acquisition, as well – the federal budgetary process has not provided the anticipated funding thus far. This has slowed the progress of the \$250 to \$300 million Napa Flood Project, which was originally anticipated to be completed during the coming year, but is only halfway completed.

### **Hazard Mitigation Projects**

On a parallel track, beginning in 1996, the City of Napa, Town of Yountville, and Napa County applied for and received grant funds from the FEMA/OES Hazard Mitigation Grant Program. These funds were used to acquire property that was at risk of residential development to be used for disposal of soil being excavated for the project, for the acquisition of 7 homes along Napa Creek (in an area to be utilized for the Napa Project), as well as for the elevation of homes that would not otherwise be protected from flooding in both the city and the unincorporated County, emanating from the disaster declaration from the 1995 flood event.

The County was able to pre-qualify 30 homes in the unincorporated area (based upon cost-benefit analysis) that would be eligible for 75% reimbursement in the event that they would elevate their homes to a level whereby their first floor would be at least one foot above the local Base Flood Elevation. However, after several extensions in order to expand the program (between 1998 and 2004), only 9 homeowners took advantage of this offer, quite possibly due to the significant upfront payment required on their part (these elevations tend to cost a minimum of \$40,000). The County – and, ultimately, the homeowners – received reimbursement from the Hazard Mitigation Grant Program in the amount of \$310,646, with an additional \$160,000 (approximately) in cost absorbed by the homeowners themselves. Additional information is included in Attachment A, “Project Accomplishments and Results Statement” and Attachment B, “ Project Budget Summary”.



HMGP ELEVATION PROGRAM  
GLAZIER-1964 SILVERADO TRAIL

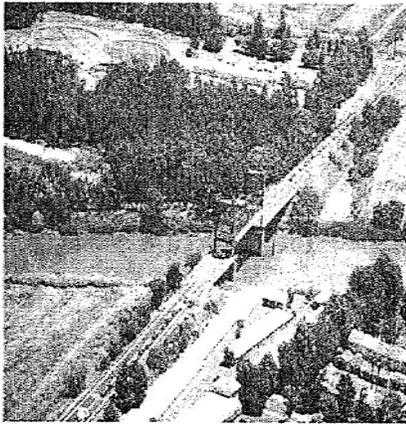
## **Prior Mitigation Efforts by the City of Napa**

### **Napa River/Napa Creek Flood Protection Project**

There are 2,600 properties in the one percent per year base floodplain and 1,400 policyholders pay about \$1 million in flood insurance premiums per year. Between 1979 and 2000, over \$16 million in individual claims and \$8 million in public assistance have been paid out by FEMA. The City of Napa has a class 7 rating in the FEMA Community Rating System, which reduces most flood insurance rates by 15 percent. Before the 2005 flood, the City has demolished six of 66 repetitive loss structures. The Napa Flood

Project will remove over 90% of the 2,600 properties from the base floodplain and create an annual savings of \$21 million in avoided property damages.

The NCFCWCD and the City entered agreements for the City to administer about \$90 million in bridge, property acquisition, and recreation work as part of the Flood Project. The City used Federal Highway Administration (FHWA), and Measure A half-cent sales tax funds to construct the Third Street Bridge over the Napa River, Soscol Avenue Bridge over the Napa River Bypass and the First Street Bridge over Napa Creek and Bypass. The City also administered the design of the Maxwell Bridge Replacement Project on Imola Avenue, and Caltrans is scheduled to complete the construction in the summer of 2006.



Old Maxwell Bridge prior to Replacement



New Maxwell Bridge currently under Construction

About 50 homes and businesses have been acquired and relocated as part of the Flood Project, and did not suffer damages in 2005. The longer and higher bridges and terrace excavation by the Corps reduced the depth of the 2005 flood. Even though the peak stage at the Lincoln Avenue gauge was slightly higher in 2005 than in March 1995, about 100 structures were outside of the 2005 flood inundation area and more than 100 structures had a lower depth of flooding.

### **Hazard Mitigation Projects**

The City of Napa used \$3.3 million of FEMA HMGP funding to acquire a 58 acre part of the Ghisletta property at the south end of Jefferson Street as a soil disposal site for the Napa / River Napa Creek Flood Protection Project. The \$1.1 million local share was paid by the Measure A half-cent sales tax for Flood Protection. The removal of agricultural levees and excavation in the "South Wetland Opportunity Area" reduced the depth flooding in parts of Napa during the 2005 flood.

The City used \$1.12 million of FEMA HMGP funding to acquire and demolish five single family homes 1305, 1315, 1325, and 1335 Arroyo Drive and 1325 Brown Street for the Napa / River Napa Creek Flood Protection Project. About \$250, 000 in Flood Mitigation Assistance Grant funding was spent to acquire 1345 Arroyo Drive . The 25% local share was paid by the half-cent sales tax for Flood Protection. It is estimated that there would

have been an average of three feet of flooding in these houses, which prevented about \$130, 000 in repetitive flood damage.



The current flood event affected the area where homes were removed on Arroyo Drive

The City used \$2.12 million of FEMA HMGP funding and about \$150,000 in Flood Mitigation Assistance Grant funding to administer the elevation of the following single-family homes, the 25% local share was paid by the property owner. The primary focus was to elevate homes that will not be protected by the flood project. The secondary focus was to elevate homes in the Napa Creek floodplain, which flooded in 2002 and floods more frequently than the Napa River. The other property owners did not want to wait for flood protection from the Flood Project. It is estimated that the elevation projects prevented about \$420, 000 in flood damage. The following is a list of elevated homes:

- (1) 1552 Behrens
- (2) 245 Brown street
- (3) 255 Brown Street
- (4) 293 Brown Street
- (5) 349 Brown Street
- (6) 705 Carolina
- (7) 722 Carolina
- (8) 404 Cross
- (9) 1153 Eggleston
- (10) 1175-1181 Eggleston
- (11) 2002 Ida
- (12) 2006 Ida
- (13) 2007 Ida
- (14) 682 Maplewood
- (15) 1520 seminary
- (16) 1543 Seminary
- (17) 1625 Silverado Trail
- (18) 1916 Silverado Trail

(19) 444 Taylor

The City used \$366,525 of FEMA HMGP funding to design and construct the Shetler-Harding – Imola Drainage Intercept Project to protect Highway 121/ Soscol Avenue between Shetler Avenue and Kansas Avenue from flooding. The 25% local share was paid by the City’s Storm Water System Service Fee. Even though Tulocay Creek flooded businesses along Soscol Avenue, the flooding would have been worse if interior drainage was not diverted to another watershed downstream of Imola Avenue.

**Public Assistance Projects**

The City received funding from FEMA, FHWA, and the Natural Resources Conservation Service (NRCS) after the 1995 and 1997 floods repair damages to current standards. The scour repair at the \$106,000 First Street Bridge over the Napa River, the \$570,000 replacement of the 12-foot diameter Robinson Lane Culvert, replacement of the \$310,000 12-foot diameter McCormick Lane Culvert, The \$84,000 Fourth Street Boat Dock Replacement, and the \$390,000 Conn Creek bank stabilization next to the 36” water transmission line prevented damages in 2005. If the 650 feet of Conn pipeline was not protected by the NRCS Emergency Watershed Protection Program project and failed, it would have cut off the only water source for the City of Calistoga, cost about \$500,000 per day in losses, and cost about \$400,000 to repair.



Streambank protection for City’s water pipeline was overtopped by record high flow

**Attachment A – Project Accomplishments & Results**

Subgrantee: County of Napa  
HMGP Project No: FEMA- 1203- DR-CA; OES Project #154C 4442  
Project Name: Home Evaluation Program

In March 1998, the voters of Napa county passed “Measure A”, in order to approve a half-cent tax for 20 years for the purpose of providing flood protection from the Napa River and its tributaries, The primary project, in partnership with the U.S. Army Corps of

Engineers, intended to provide flood protection along a 6 to 7 mile stretch of the Napa River and a ½ - mile stretch of Napa Creek.

Additional Flood protection projects in the smaller cities and towns of Napa County are also being funded by these revenues. However, there is a large portion of unincorporated Napa County that has not yet – and in some cases, will not – receive sufficient flood protection benefits from these projects to protect them from the 100-year flood event.

In 1997 and 1998, FEMA and OES authorized up to 30 such homes, primarily along the Napa River for eligibility in the Hazard Mitigation Grant Program Home Elevation Program. This program would reimburse eligible homeowners for up to 75% of their costs, if they resulted in the home’s first floor being elevated to one foot above the Base Flood Elevation. Unfortunately, only nine (9) of those homeowners chose to participate, perhaps due to the front-end investment that was required of them.

The total cost to elevate those nine homes was approximately \$469,000, with the reimbursement formula providing them an aggregate total of \$310,646 In HMGP Grant Funds (approximately 66%)

## Attachment B – Project Budget Summary

Subgrantee: County of Napa  
 HMGP Project No. FEMA-1203-DR-CA; OES Project #154C 4442  
 Project Name: Home Elevation Program

Item	Description	Total Project Cost	Street Address	Total Cost	OES
1	Reimbursement (@75%) of 9 Home Elevations	Gordon - \$70,000	1006 Bale Lane (SH)	*Note: each Reimbursement would be 74% of the Total Project Cost listed in the Prior column, up to a	
		Holder - \$61,500	953 Galleron (SH)		
		Goldberg- \$58,602	1146 Ragatz (Y’ville)		
		Durrance - \$48,000	149 Silverado Trail (SH)		
		Threadgall - \$34,000	3785 Silv. Trl.		
		Galusha - \$35,540	201 Silv. Trl. (SH)		

		Riphey - \$50,000 Lang - \$65,042 Glazier - \$46,656 <b>Total - \$469,338</b>	1839 Silv. Trl. (Napa) 5265 Silv. Trl. 1954 Silv. Trl. (Napa)	maximum of \$37,500 per.  <b>\$310,646</b>
2	Administration	\$ 25,000		\$ - 0 -
3	<b>Total Project Cost</b>	<b>\$ 494,338</b>		<b>\$310,646</b>
4	<b>OES Funds Received</b>			<b>\$271,500</b>
5	<b>OES Funds Due</b>			<b>\$39,146</b>

Note: All Sites are located in the unincorporated area (with nearby cities included in parenthesis).

## **Seismic Hazards**

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Earthquakes occur along fault lines. They occur infrequently, but can inflict major damage. Faults within and outside the County could affect the City of Napa in the event of an earthquake. These include two active fault zones in the region outside the county: the San Andreas and Hayward faults. Three active faults within Napa County -- the Rodgers Creek, the Concord/Green Valley and the West Napa faults -- also pose a risk to Napa residents and property. In addition, on September 3, 2000 an earthquake registering 5.1 occurred on a previously unknown and unmapped fault 10 miles northwest of the City of Napa. There are four principle seismic hazards: earthquake-induced ground rupture, ground shaking, liquefaction, or water movement. There are no known active faults running directly through the City of Napa, so that ground rupture is presumably not a hazard at this time and with the available scientific data.

### **Ground Shaking**

The primary seismic concern is ground shaking associated with regional and local faults. A large area south of Napa is subject to very strong to very violent ground shaking.

Earthquake-generated ground shaking can cause both structural and nonstructural hazards, such as falling ceilings and light fixtures, toppling exterior parapets, shattered glass, and the dislodging of furniture and equipment. As with most communities in the San Francisco Bay Area near active earthquake faults, much of Napa would be susceptible to violent ground shaking.

### **Liquefaction**

Another earthquake-induced hazard, liquefaction, occurs when water-saturated, cohesionless soil loses its strength and liquefies during intense and prolonged ground shaking. Areas that have the greatest potential for liquefaction are those areas where the water table is less than 50 feet below the surface and soils are predominantly clean, composed of relatively uniform sands, and are of loose-to-medium density. The poorly consolidated younger alluvium that occupies areas south of the City and along the Napa River are considered to have high to very high potential for liquefaction. The younger soils found on the valley floor in the western part of the City are also subject to moderate to high potential for liquefaction.

### **Dam Failure**

Another hazard associated with major earthquakes is the collapse or failure of dams. Because dams can fail for reasons other than seismic activity, and the resultant hazard is from flooding, dam inundation hazards are described in the Technology Hazards section of this Plan.

## Regional and Local Fault Zones in the Napa Vicinity

### Regional Faults

The Coast Range, which traverses northern California in a northwest to southwest direction, is characterized by numerous active faults. The active regional fault zones that have the potential to affect the Napa area include the San Andreas, the Hayward, the Calaveras, and the Rodgers Creek faults. A fault zone is an area of crustal weakness characterized by a series of faults across which there has been relative displacement of the two sides parallel to the zone. An active fault is one that has shown movement during the last 10,000 years, based on documented, geologic evidence.

- **San Andreas Fault Zone**

This fault zone is located approximately 33 miles southeast of Napa. The maximum credible earthquake (MCE) capable of being generated along this system, which was responsible for the 1989 Loma Prieta earthquake (Richter magnitude 7.1), is 8.3 on the Richter scale. The United States Geological Survey (USGS) has estimated a relatively low probability of 2 percent that an earthquake of Richter magnitude 8.0 would occur along the North Coast segment (USGS 1990).

- **Hayward Fault Zone**

This fault zone is located approximately 21 miles southeast of Napa. According to the Working Group on California Earthquake Probabilities, as cited by the California Division of Mines and Geology (CDMG) (1990), this fault has a 25 percent chance of producing an earthquake of magnitude 7.0 or greater within the next 30 years.

- **Calaveras Fault Zone**

This fault zone is located approximately 18 miles southeast of Napa. The northern segment of this fault from the Calaveras Reservoir to Danville has an estimated 200-year recurrence time. At least 160 years have passed since the last earthquake of Richter magnitude 7.0 (Applied Technology Council 1994). The southern segment of the fault between the Calaveras Reservoir and Hollister was responsible for the 1984 Morgan Hill magnitude 6.2 earthquake.

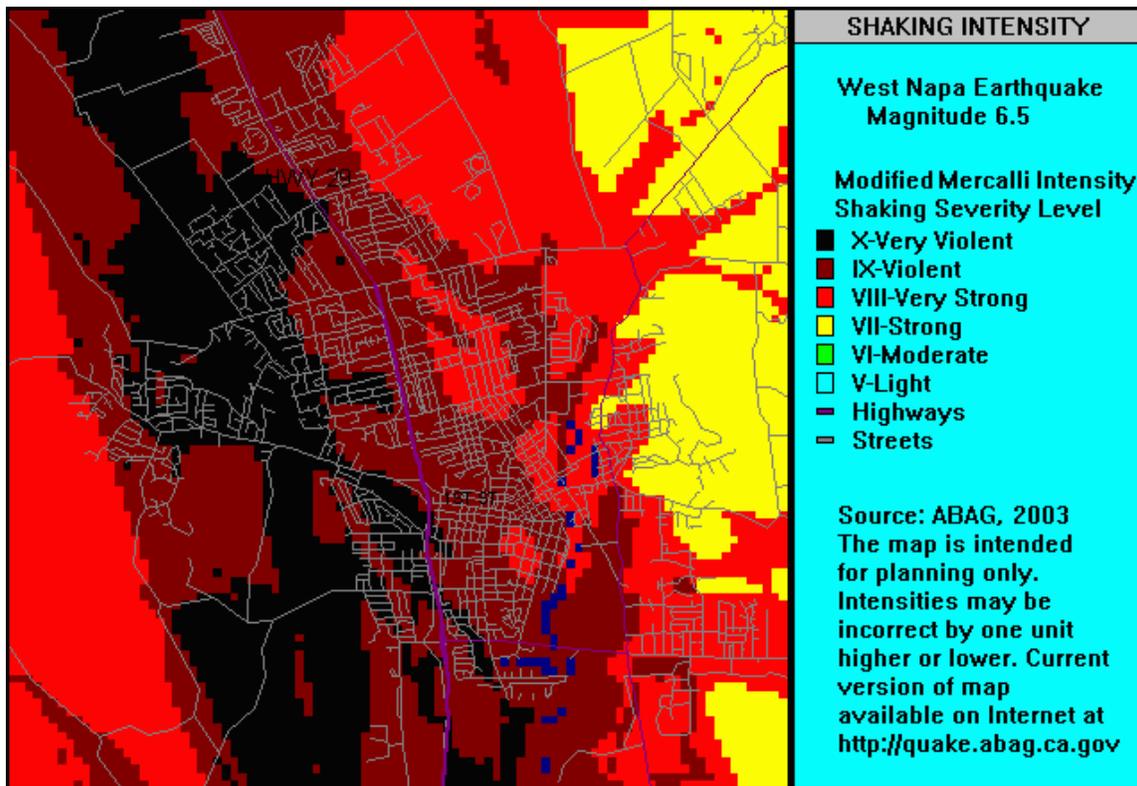
- **Rodgers Creek Fault Zone**

This fault zone lies 12 miles to the west of Napa and is part of the San Andreas Fault system; it may also be the northward continuation of the Hayward fault. Trenching studies across the fault by the USGS have resulted in an estimated 250-year recurrence interval for magnitude 7.0 earthquakes (Budding et al 1989, as cited by CDMG 1991). The last major earthquake along this fault was in 1808, and the USGS considers this fault a prime potential for future large earthquakes (CDMG 1991). ABAG estimates a 22 percent chance of a 7.0 magnitude earthquake on this fault in the next 25 years (ABAG 1992).

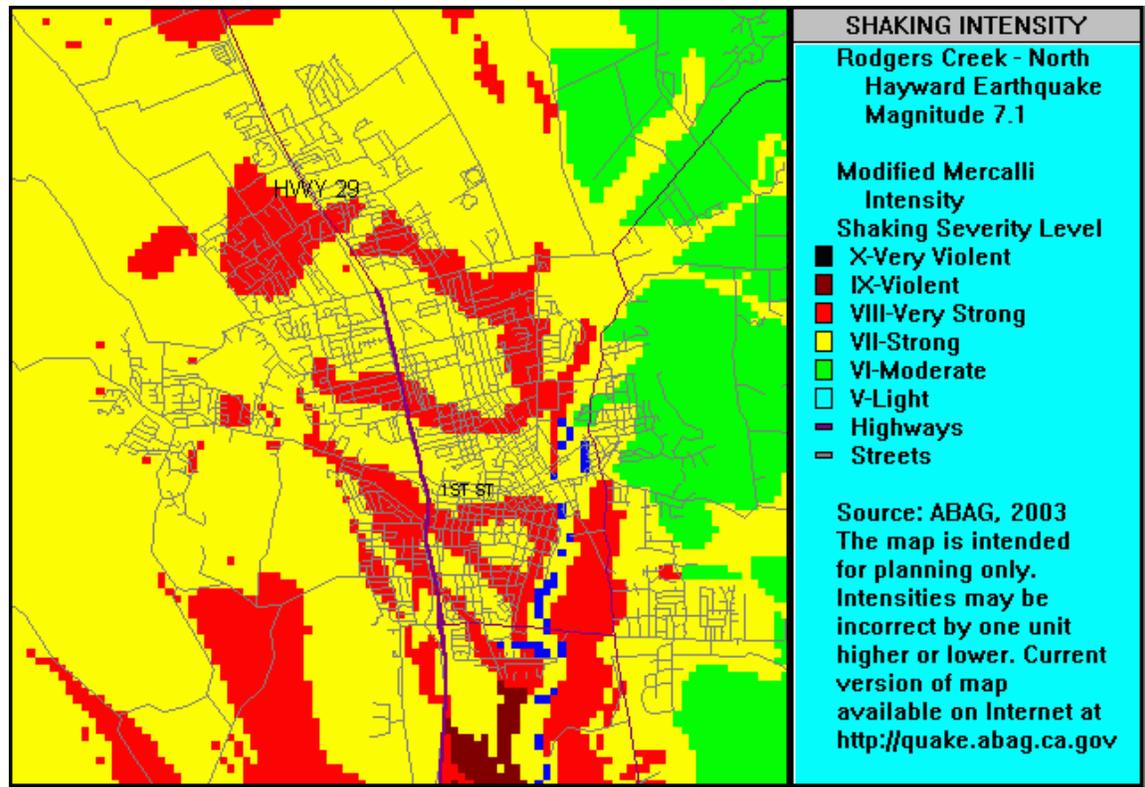
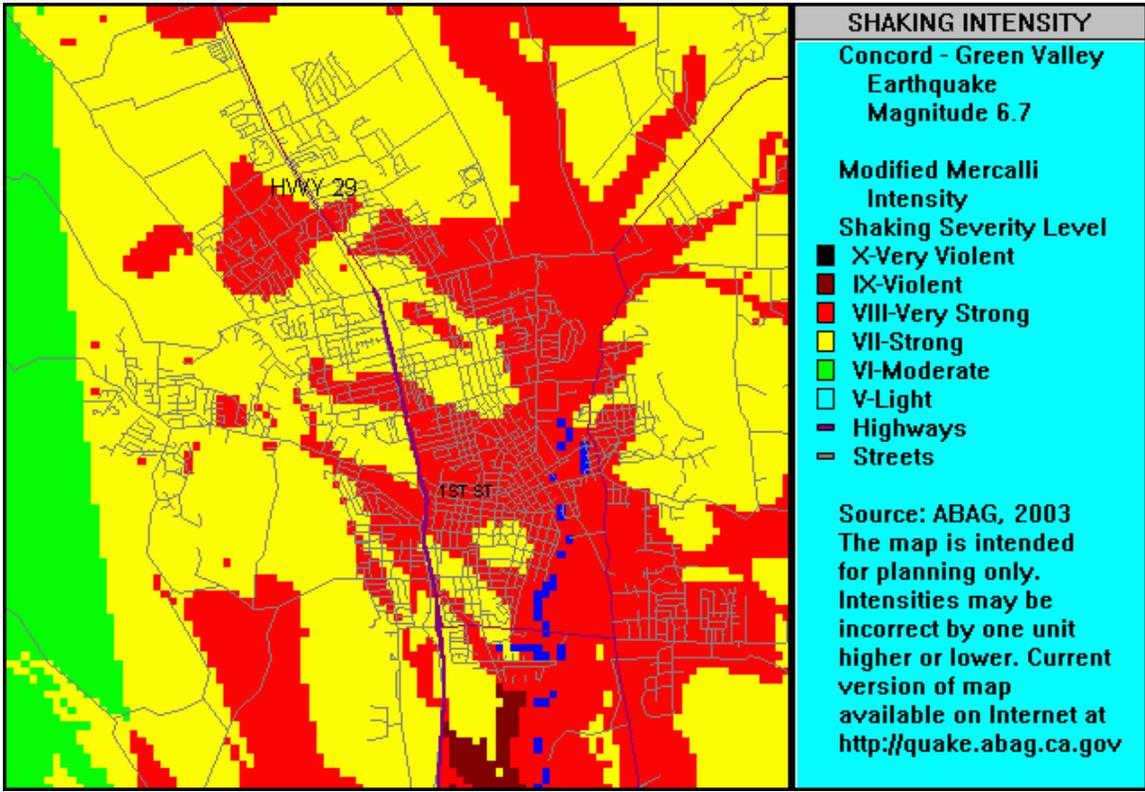
## Local Faults

There are three active faults within Napa County that are known at this time. They are the Cordelia, the Green Valley, and the West Napa faults. It is estimated that these faults are capable of producing earthquakes with a Richter magnitude of up to 6.75. A fourth local fault, the Soda Creek fault, lies east of the West Napa fault and is considered potentially active with a predicted maximum Richter magnitude of 6.25 (Wills 1994). This fault displays evidence of displacement during the late Quaternary period (7000,000 to 10,000 years ago) but has not been active during the Holocene period (10,000 years ago to present) (Bryant 1982). Other less significant faults in the Napa area include the Carneros, Mill Valley, and Browns Valley faults.

The following maps show the potential shaking intensity for the West Napa Fault, the Concord-Green Valley Fault and the Rodgers Creek Fault.



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## **Special Studies Zones**

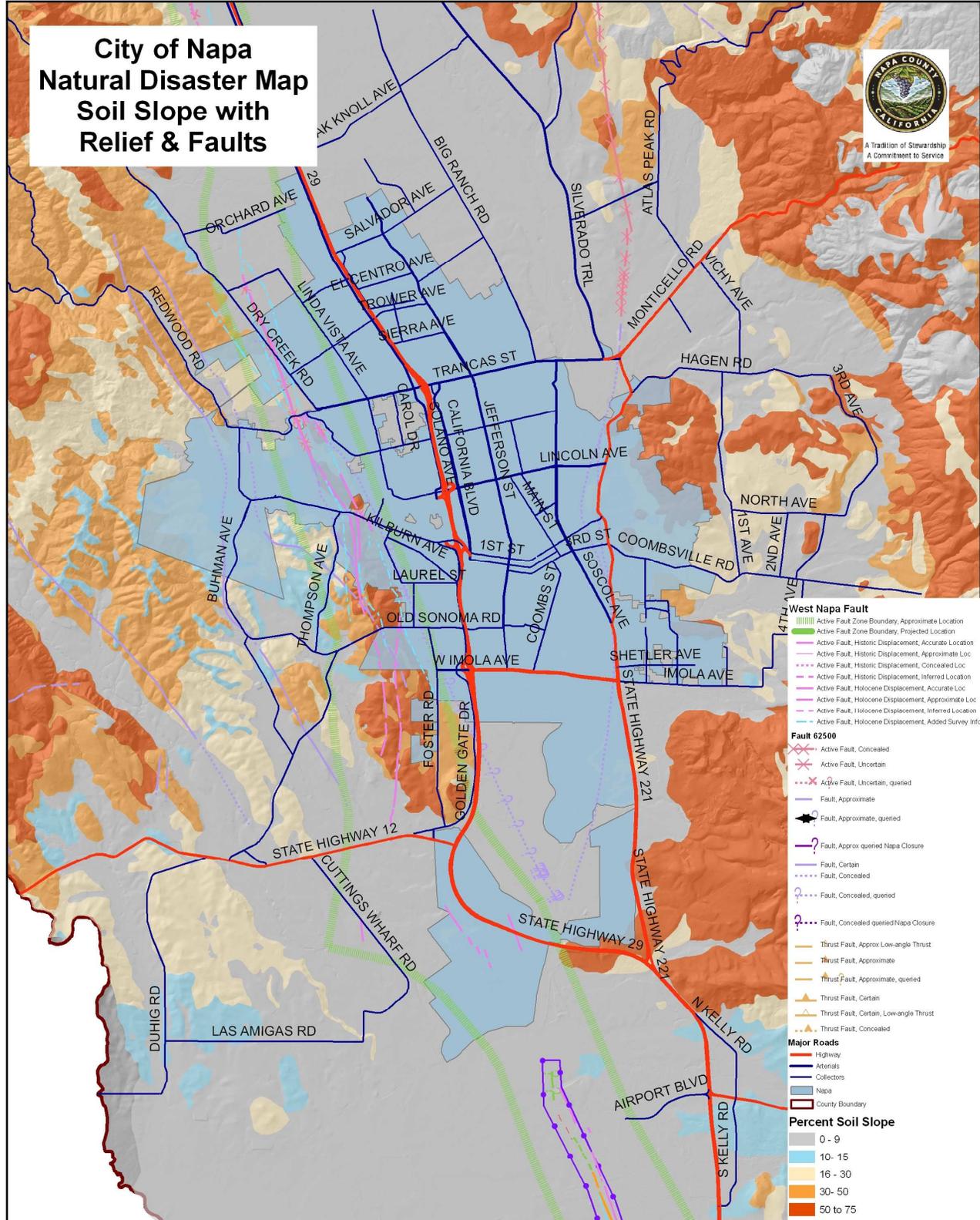
California Division of Mines and Geology (CDMG) classify faults as either active or potentially active according to the Alquist-Priolo Special Studies Zone Act of 1972 (CDMG 1972). A fault that has exhibited surface displacement (movement) within the Holocene Epoch (the last 10,000 years) is defined as active by the CDMG. The CDMG suggests that this definition be used to evaluate faults located within a 60-mile radius of a project site. A fault that has exhibited surface displacement during the Pleistocene Epoch (1.6 million years ago to 10,000 years ago) is defined as potentially active.

The State of California enacted the Alquist-Priolo Special Studies Zone Act in 1972 to assure that homes, offices, hospitals, public buildings, and other structures for human occupancy are not built on active faults, thereby preventing or avoiding potential damage resulting from fault surface rupture. Surface rupture is a break in the ground surface and associated deformation resulting from fault movement. The act requires a geological investigation before a local government can approve most development projects in special studies zones.

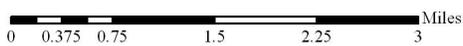
In the Napa County area, Alquist-Priolo Special Studies Zones have been established for the Rodgers Creek, the southern portion of the West Napa and the Green Valley faults. The portion of the West Napa fault that is within the City of Napa is not included in the Alquist-Priolo Special Studies Zone.

## **Earthquake Maps**

On the following pages are maps showing the faults and soil conditions in relationship to critical facilities in the City of Napa. A complete list of critical facilities can be found in Appendix A.

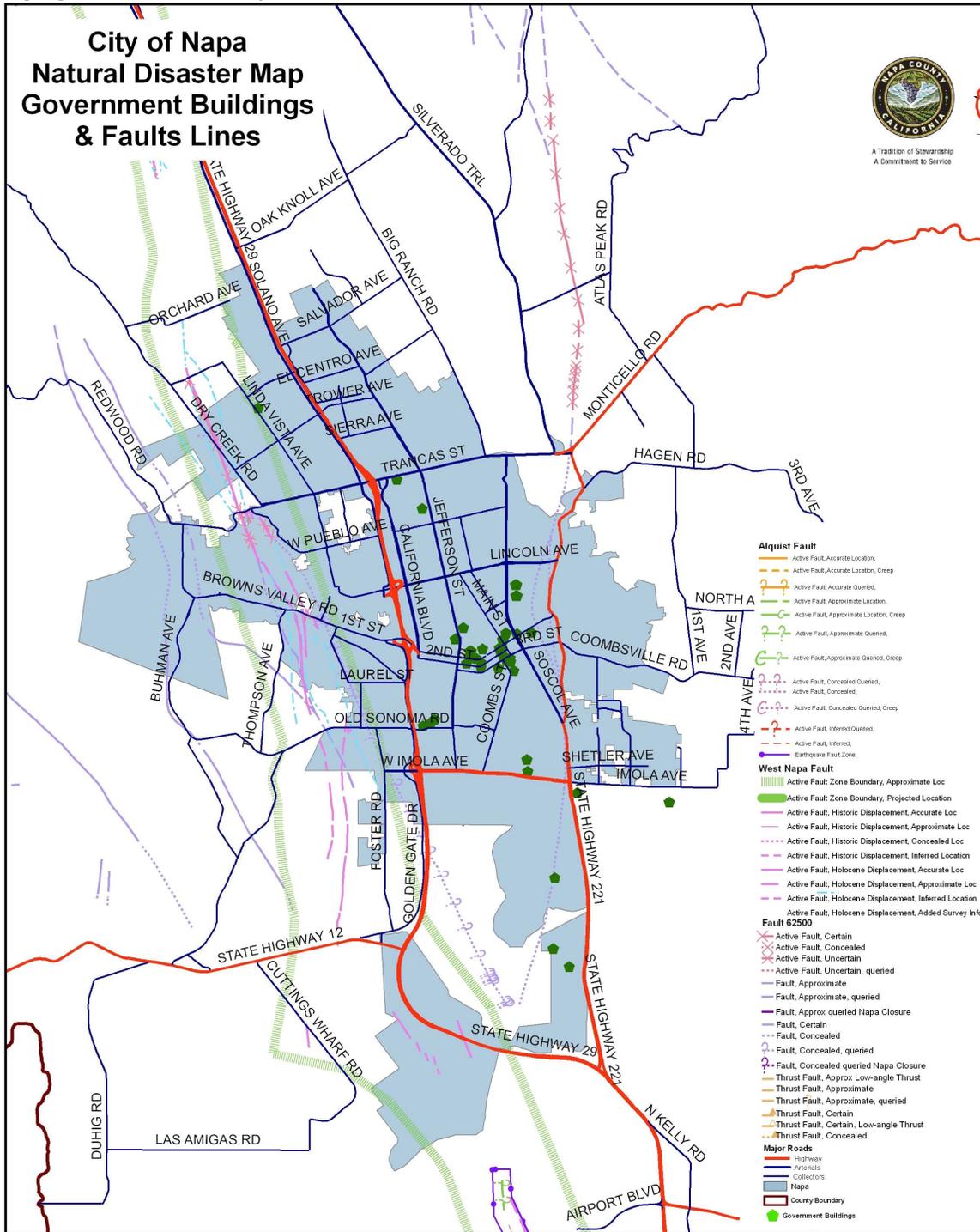


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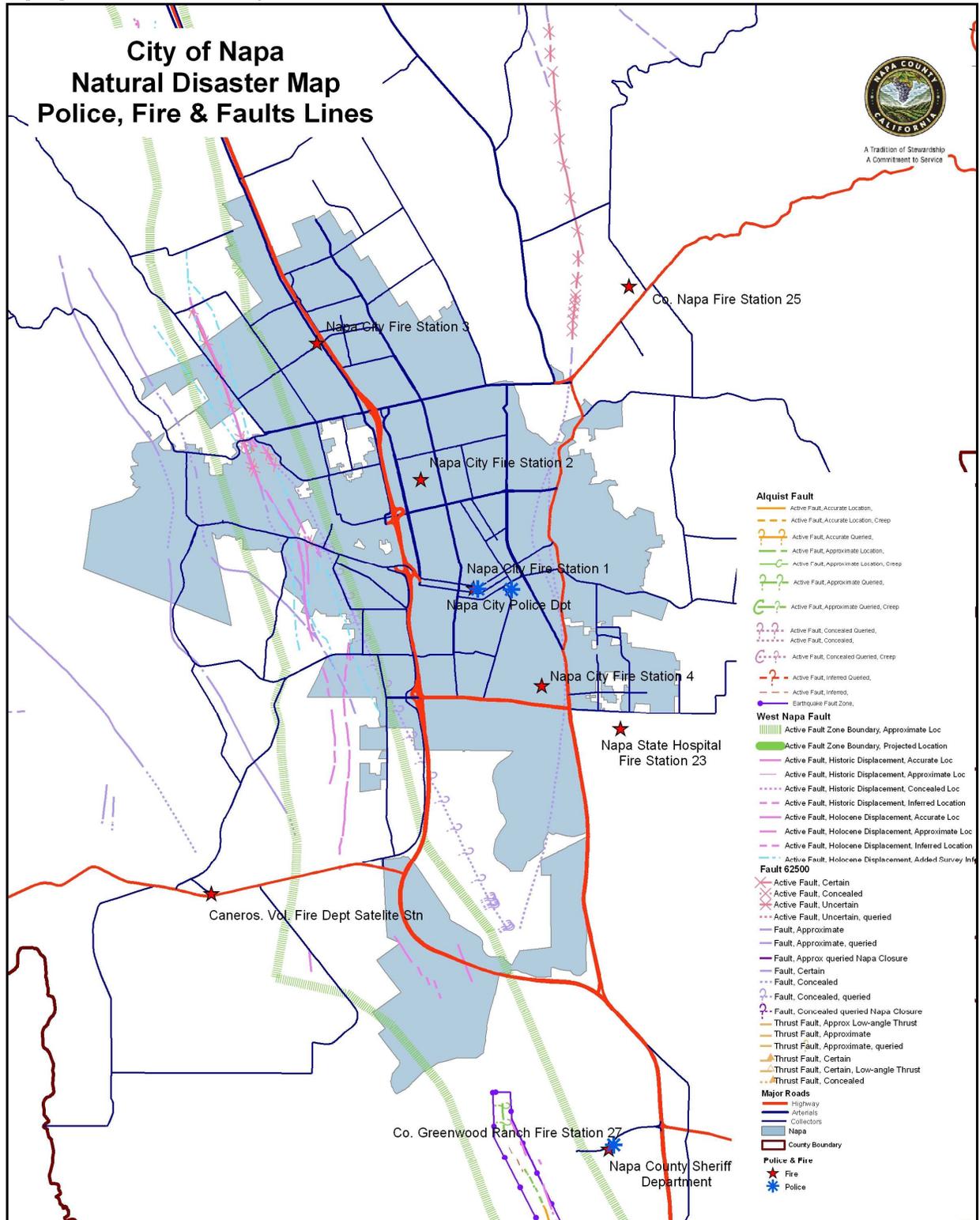
Napa Operational Area Hazard Mitigation Plan



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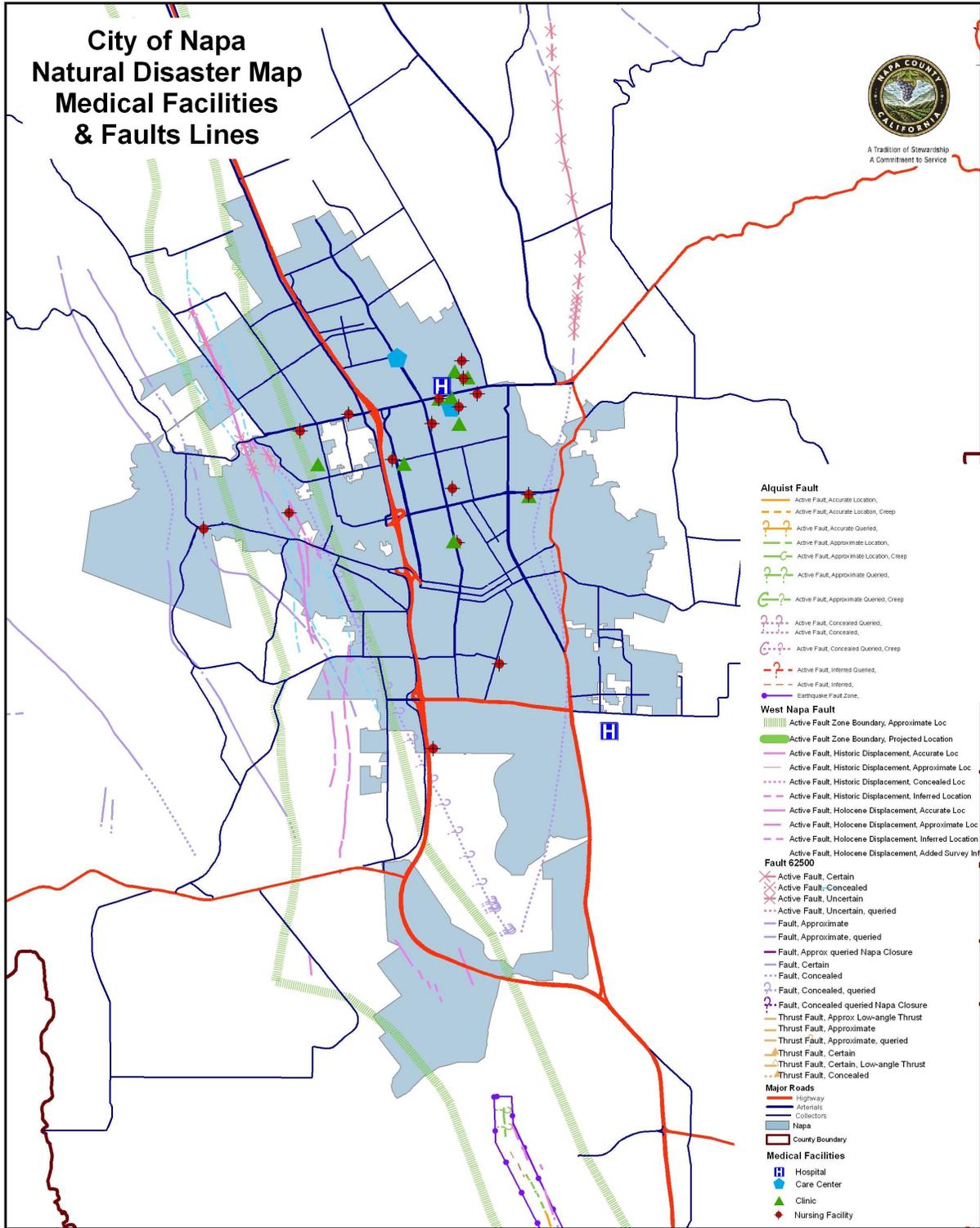


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Napa Operational Area Hazard Mitigation Plan

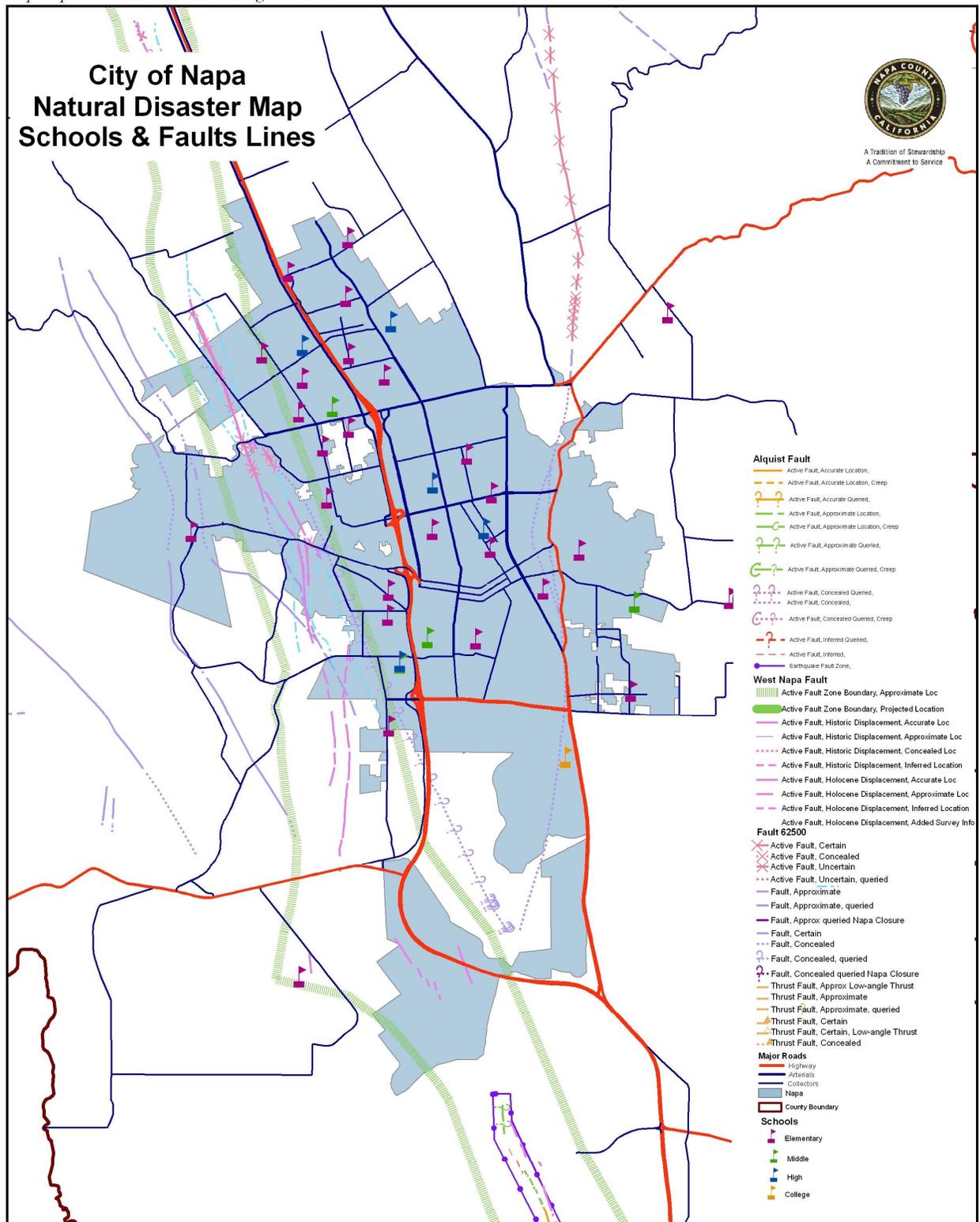


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0 0.375 0.75 1.5 2.25 3 Miles



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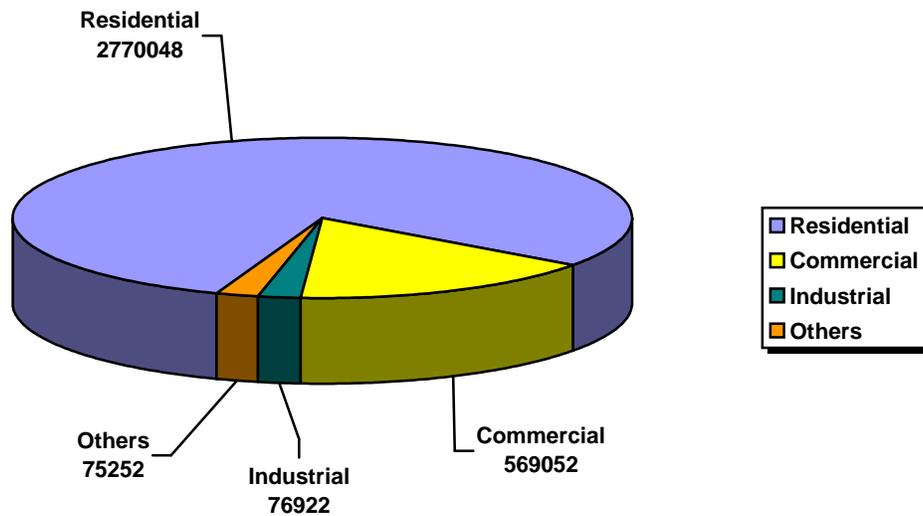


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## WEST NAPA FAULT HAZUS DAMAGE ESTIMATES

**Scenario Name:** West Napa Mid Point  
**Longitude of Epicenter:** -122.312  
**Latitude of Epicenter:** 38.2846  
**Earthquake Magnitude:** 6.5  
**Depth (Km):** 10  
**Rupture Length (Km):** 28.8403

Figure 1: Building Exposure by Occupancy Type  
(Thousands of Dollars)



### Transportation System Lifeline Inventory

System	Component	# Locations / # Segments	Replacement Value (Millions of Dollars)
Highway	Major Roads	12	561
	Bridges	38	86
	Tunnels	2	20
	<b>Subtotal</b>		<b>667</b>
Railways	Rail Tracks	10	50
		<b>Subtotal</b>	<b>50</b>
		<b>Total</b>	<b>717</b>

### Utility System Lifeline Inventory

System	Component	Replacement Value (Millions of Dollars)
Potable Water	Pipelines	0.0
	Distribution Lines	51.8
		<b>51.8</b>
Waste Water	Distribution Lines	31.1
		<b>31.1</b>
Natural Gas	Distribution Lines	20.7
		<b>20.7</b>
Electrical Power	Distribution Lines	15.5
		<b>15.5</b>
Communication	Facilities	8.0
	Distribution Lines	6.9
		<b>14.9</b>
		<b>134.1</b>

### Expected Building Damage By Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Residential	4,961	98.24	6,961	98.35	4,812	97.00	1,242	96.89	452	95.36
Commercial	73	1.45	93	1.31	120	2.42	54	4.91	21	4.43
Industrial	8	0.16	13	0.18	17	0.34	11	0.83	1	0.21
Agriculture	1	0.16	1	0.00	1	0.02	1	0.08	0	0.00
Religion	5	0.10	6	0.00	7	0.14	3	0.23	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	2	0.04	4	0.06	4	0.08	1	0.08	0	0.00
<b>Total</b>	<b>5,050</b>		<b>7,078</b>		<b>4,961</b>		<b>1,325</b>		<b>474</b>	

### Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	35	0.7	28	0.4	38	0.8	18	1.4	2	0.4
Mobile Homes	51	1.0	121	1.7	291	5.9	249	18.8	82	17.3
Precast Concrete	24	0.5	14	0.2	31	0.6	16	1.2	3	0.6
Reinforced Masonry	412	8.2	319	4.5	426	8.6	262	19.8	87	18.4
Steel	220	4.4	264	3.7	536	10.8	345	26.1	120	25.3
Unreinforced Masonry	9	0.2	23	0.3	54	1.1	60	4.5	68	14.3
Wood	4,299	85.1	6,309	89.1	3,585	72.3	372	28.1	112	23.6

### Expected Damage to Essential Facilities

Classification	Total	Number of Facilities		
		Least Moderate Damage > 50%	Complete Damage > 50%	Functionality > 50% at day 1
Hospitals	2	1	0	0
Schools	45	27	0	0
Fire Stations	2	0	0	0

### Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations / Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50%	
					After Day 1	After Day 7
Highway	Roads	12			12	12
	Bridges	38	9	3	29	36
	Tunnels	2	0	0	2	2
Railways	Tracks	0			10	10

### Expected Utility System Facility Damage

System	Number of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	With Functionality > 50%	
				After Day 1	After Day 7
Communication	4	3	0	0	4
<b>Total</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>4</b>

### Expected Potable Water and Electric Power System Performance (Level 1)

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	23,491	11,363	10,224	7,634	0	0
Electric Power	23,491	19,142	14,202	7,118	638	0

### Causality Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Residential	214	47	5	10
	Non-Residential	7	2	0	1
	<b>Total</b>	<b>221</b>	<b>49</b>	<b>5</b>	<b>11</b>
2 PM	Residential	59	13	1	3
	Non-Residential	358	99	16	31
	Commute	0	0	1	0
	<b>Total</b>	<b>418</b>	<b>113</b>	<b>18</b>	<b>34</b>
5 PM	Residential	71	15	2	3
	Non-Residential	113	31	5	10
	Commute	1	1	2	0
	<b>Total</b>	<b>184</b>	<b>48</b>	<b>9</b>	<b>13</b>

### Building-Related Economic Loss Estimates (Millions of Dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building loss	Structural	51.7	19.7	2.4	2.5	<b>76.3</b>
	Non-Structural	213.6	53.4	6.1	7.1	<b>280.2</b>
	Content	61.0	26.1	4.0	3.2	<b>94.3</b>
	Inventory	N/A	0.4	0.5	0.0	<b>0.9</b>
	<b>Subtotal</b>	<b>326.3</b>	<b>99.6</b>	<b>13.1</b>	<b>12.8</b>	<b>451.7</b>
Business Interruption Loss	Wage	3.0	24.3	0.4	0.7	<b>28.4</b>
	Income	1.3	18.3	0.2	0.2	<b>20.0</b>
	Rental	20.2	8.6	0.2	0.4	<b>29.4</b>
	Relocation	38.0	14.9	0.9	3.3	<b>57.1</b>
	<b>Subtotal</b>	<b>62.4</b>	<b>66.1</b>	<b>1.8</b>	<b>4.5</b>	<b>134.8</b>
<b>Total</b>	<b>388.7</b>	<b>165.7</b>	<b>14.8</b>	<b>17.3</b>	<b>586.5</b>	

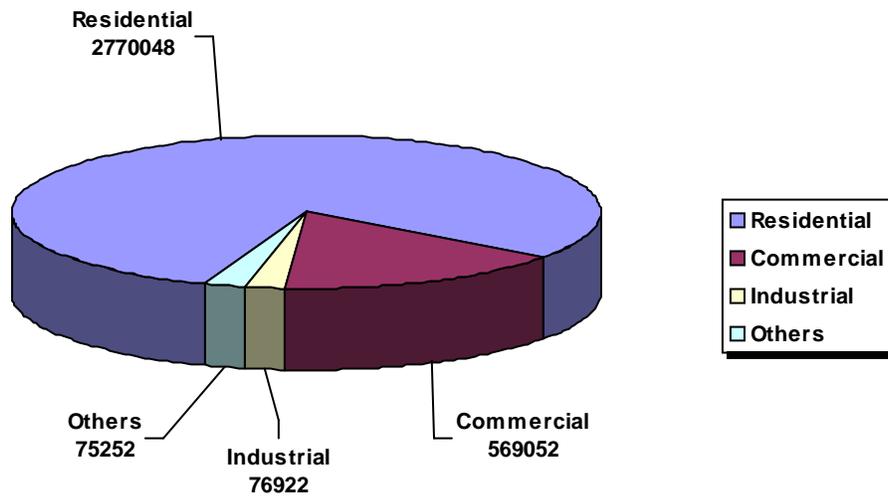
### Transportation System Economic Losses (Millions of Dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Roads	561.2	0.0	0.0
	Bridges	86.0	5.2	6.0
	Tunnels	20.0	0.8	4.0
	<b>Subtotal</b>	<b>667.2</b>	<b>6.0</b>	<b>10.0</b>
Railways	Tracks	50.1	0.0	0.0
	<b>Subtotal</b>	<b>50.1</b>	<b>0.0</b>	<b>0.0</b>
		<b>717.3</b>	<b>6.0</b>	<b>0.8</b>

## CONCORD-GREEN VALLEY FAULT HAZUS ESTIMATES

**Scenario Name:** Concord-Green Valley Mid Point  
**Longitude of Epicenter:** -122.15  
**Latitude of Epicenter:** 38.2777  
**Earthquake Magnitude:** 6.8  
**Depth (Km):** 10  
**Rupture Length (Km):** 44.26

Figure 1: Building Exposure by Occupancy Type  
(Thousands of Dollars)



### Transportation System Lifeline Inventory

System	Component	# Locations / # Segments	Replacement Value (Millions of Dollars)
Highway	Major Roads	12	561
	Bridges	38	86
	Tunnels	2	20
	<b>Subtotal</b>		<b>667</b>
Railways	Rail Tracks	10	50
	<b>Subtotal</b>		<b>50</b>
	<b>Total</b>		<b>717</b>

### Utility System Lifeline Inventory

System	Component	Replacement Value (Millions of Dollars)
Potable Water	Pipelines	0.0
	Facilities	0.0
	Distribution Lines	51.8
		<b>51.8</b>
Waste Water	Distribution Lines	31.1
		<b>31.1</b>
Natural Gas	Distribution Lines	20.7
		<b>20.7</b>
Electrical Power	Distribution Lines	15.5
		<b>15.5</b>
Communication	Facilities	8.0
	Distribution Lines	6.9
		<b>14.9</b>
		<b>134.1</b>

### Expected Building Damage By Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Residential	10,006	97.96	5,492	97.95	2,255	95.88	556	96.36	85	97.70
Commercial	162	1.59	92	1.64	77	3.27	19	3.29	2	2.30
Industrial	24	0.23	13	0.23	12	0.51	2	0.35	0	0.00
Agriculture	4	0.23	1	0.00	1	0.04	0	0.00	0	0.00
Religion	10	0.10	6	0.00	5	0.21	0	0.00	0	0.00
Government	2	0.02	0	0.00	0	0.00	0	0.00	0	0.00
Education	6	0.06	3	0.05	2	0.09	0	0.00	0	0.00
<b>Total</b>	<b>10,214</b>		<b>6,758</b>		<b>2,352</b>		<b>577</b>		<b>87</b>	

### Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Mobile Homes	139	1.4	188	3.4	298	12.7	144	25.0	20	23.0
Precast Concrete	49	0.5	16	0.3	18	0.8	3	0.5	0	0.0
Reinforced Masonry	822	8.0	278	5.0	266	11.3	126	21.9	15	17.2
Steel	514	5.0	341	6.1	416	17.7	185	32.2	27	31.0
Unreinforced Masonry	40	0.4	45	0.8	64	2.7	42	7.3	25	28.7
Wood	8,579	84.0	4,714	84.1	1,267	53.9	72	12.5	0	0.0

### Expected Damage to Essential Facilities

Classification	Total	Number of Facilities		
		Least Moderate Damage > 50%	Complete Damage > 50%	Functionality > 50% at day 1
Hospitals	2		0	1
Schools	45	2	0	2
Fire Stations	2	0	0	0

### Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations / Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50%	
					After Day 1	After Day 7
Highway	Roads	12			12	12
	Bridges	38	3	0	38	38
	Tunnels	2	0	0	2	2
Railways	Tracks	0			10	10

### Expected Utility System Facility Damage

System	Number of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	With Functionality > 50%	
				After Day 1	After Day 7
Communication	4	1	0	4	4
<b>Total</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>4</b>

### Expected Potable Water and Electric Power System Performance (Level 1)

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	23,491	1,468	489	0	0	0
Electric Power	23,491	13,632	6,788	1,992	20	0

### Causality Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Residential	71	12	1	2
	Non-Residential	2	1	0	0
	<b>Total</b>	<b>73</b>	<b>13</b>	<b>1</b>	<b>3</b>
2 PM	Residential	20	3	0	1
	Non-Residential	121	28	4	8
	Commute	0	0	0	0
	<b>Total</b>	<b>140</b>	<b>31</b>	<b>4</b>	<b>9</b>
5 PM	Residential	23	4	0	1
	Non-Residential	38	9	1	3
	Commute	0	0	0	0
	<b>Total</b>	<b>62</b>	<b>13</b>	<b>2</b>	<b>3</b>

### Building-Related Economic Loss Estimates (Millions of Dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building loss	Structural	20.2	8.4	1.1	1.0	<b>30.7</b>
	Non-Structural	84.1	23.1	2.9	2.9	<b>112.9</b>
	Content	28.8	12.9	2.0	1.5	<b>42.2</b>
	Inventory	N/A	0.2	0.2	0.0	<b>0.5</b>
	<b>Subtotal</b>	<b>130.1</b>	<b>44.6</b>	<b>6.1</b>	<b>5.4</b>	<b>186.3</b>
Business Interruption Loss	Wage	1.0	10.9	0.2	0.3	<b>12.4</b>
	Income	0.5	8.3	0.1	0.1	<b>8.9</b>
	Rental	7.6	3.9	0.1	0.2	<b>11.7</b>
	Relocation	14.5	7.0	0.5	1.4	<b>23.4</b>
	<b>Subtotal</b>	<b>23.6</b>	<b>30.1</b>	<b>0.9</b>	<b>1.9</b>	<b>56.5</b>
<b>Total</b>	<b>153.7</b>	<b>74.7</b>	<b>7.0</b>	<b>7.4</b>	<b>242.8</b>	

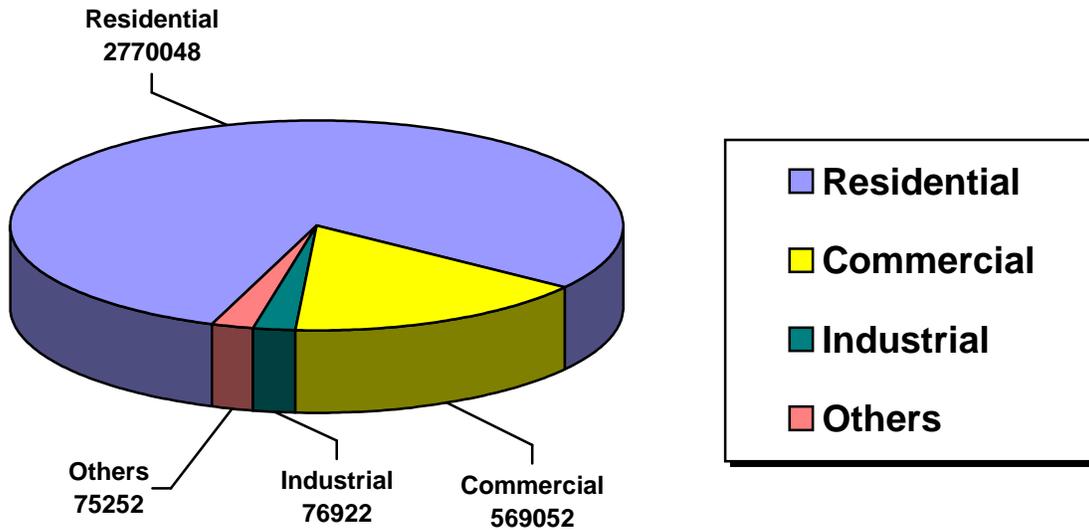
### Transportation System Economic Losses (Millions of Dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Roads	561.2	0.0	0.0
	Bridges	86.0	1.3	1.5
	Tunnels	20.0	0.2	1.0
	<b>Subtotal</b>	<b>667.2</b>	<b>1.5</b>	<b>0.2</b>
Railways	Tracks	50.1	0.0	0.0
	<b>Subtotal</b>	<b>50.1</b>	<b>0.0</b>	<b>0.0</b>
		<b>717.3</b>	<b>1.5</b>	<b>0.2</b>

## RODGERS CREEK FAULT HAZUS DAMAGE ESTIMATES

**Scenario Name:** Rodgers Creek Mid Point  
**Longitude of Epicenter:** -122.452  
**Latitude of Epicenter:** 38.1886  
**Earthquake Magnitude:** 7.1  
**Depth (Km):** 12  
**Rupture Length (Km):** 67.9204

**Figure 1: Building Exposure by Occupancy Type**  
 (Thousands of Dollars)



### Transportation System Lifeline Inventory

System	Component	# Locations / # Segments	Replacement Value (Millions of Dollars)
Highway	Major Roads	12	561
	Bridges	38	86
	Tunnels	2	20
	<b>Subtotal</b>		<b>667</b>
Railways	Rail Tracks	10	50
	<b>Subtotal</b>		<b>50</b>
	<b>Total</b>		<b>717</b>

### Utility System Lifeline Inventory

System	Component	Replacement Value (Millions of Dollars)
Potable Water	Pipelines	0.0
	Facilities	0.0
	Distribution Lines	51.8
		<b>51.8</b>
Waste Water	Distribution Lines	31.1
		<b>31.1</b>
Natural Gas	Distribution Lines	20.7
		<b>20.7</b>
Electrical Power	Distribution Lines	15.5
		<b>15.5</b>
Communication	Facilities	8.0
	Distribution Lines	6.9
		<b>14.9</b>
		<b>134.1</b>

### Expected Building Damage By Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)								
Residential	1,937	99.13	5,720	98.69	7,034	97.91	2,379	95.50	1,406	94.17
Commercial	17	0.87	61	1.05	121	1.68	90	3.61	69	4.62
Industrial	0	0.00	7	0.12	17	0.24	14	0.56	11	0.74
Agriculture	0	0.00	1	0.00	1	0.01	1	0.04	1	0.07
Religion	0	0.00	5	0.00	7	0.10	5	0.20	4	0.27
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	2	0.00	4	0.06	2	0.08	2	0.13
<b>Total</b>	<b>1,954</b>		<b>5,796</b>		<b>7,184</b>		<b>2,491</b>		<b>1,493</b>	

### Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	14	0.7	23	0.4	41	0.6	25	1.0	20	1.3
Mobile Homes	8	0.4	41	0.7	190	2.6	308	12.4	249	16.7
Precast Concrete	8	0.4	5	0.1	32	0.4	21	0.8	22	1.5
Reinforced Masonry	174	8.9	24	4.2	455	6.3	349	14.0	288	19.3
Steel	70	3.6	121	2.1	158	6.4	498	20.0	332	22.2
Unreinforced Masonry	0	0.0	7	0.1	26	0.4	48	1.9	133	8.9
Wood	1,680	86.0	5,357	92.4	5,982	83.3	1,242	49.9	449	30.1

### Expected Damage to Essential Facilities

Classification	Total	Number of Facilities		
		Least Moderate Damage > 50%	Complete Damage > 50%	Functionality > 50% at day 1
Hospitals	2	2	0	0
Schools	45	44	0	0
Fire Stations	2	2	0	0

### Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations / Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50%	
					After Day 1	After Day 7
Highway	Roads	12			12	12
	Bridges	38	20	9	21	23
	Tunnels	2	0	0	2	2
Railways	Tracks	0			10	10

### Expected Utility System Facility Damage

System	Number of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	With Functionality > 50%	
				After Day 1	After Day 7
Communication	4	4	1	0	4
<b>Total</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>4</b>

### Expected Potable Water and Electric Power System Performance (Level 1)

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	23,491	21,435	21,302	21,004	17,888	0
Electric Power	23,491	22,142	20,434	15,491	5,253	0

### Causality Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Residential	503	126	15	29
	Non-Residential	16	5	1	2
	<b>Total</b>	<b>519</b>	<b>131</b>	<b>17</b>	<b>31</b>
2 PM	Residential	140	38	4	8
	Non-Residential	840	258	44	86
	Commute	1	2	2	0
	<b>Total</b>	<b>980</b>	<b>295</b>	<b>50</b>	<b>95</b>
5 PM	Residential	166	41	5	10
	Non-Residential	264	81	14	27
	Commute	3	4	7	1
	<b>Total</b>	<b>433</b>	<b>127</b>	<b>25</b>	<b>38</b>

### Building-Related Economic Loss Estimates (Millions of Dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building loss	Structural	105.7	37.3	4.5	4.8	<b>152.3</b>
	Non-Structural	442.2	104.8	11.6	14.5	<b>573.1</b>
	Content	120.7	47.4	7.3	6.3	<b>181.8</b>
	Inventory	N/A	0.7	0.9	0.1	<b>1.7</b>
	<b>Subtotal</b>	<b>668.6</b>	<b>190.3</b>	<b>24.4</b>	<b>25.6</b>	<b>909.0</b>
Business Interruption Loss	Wage	6.1	43.0	0.8	1.2	<b>51.0</b>
	Income	2.6	32.5	0.4	0.3	<b>35.8</b>
	Rental	40.7	14.7	0.3	0.7	<b>56.4</b>
	Relocation	74.8	24.7	1.4	5.9	<b>106.9</b>
	<b>Subtotal</b>	<b>124.2</b>	<b>114.9</b>	<b>2.9</b>	<b>8.1</b>	<b>250.2</b>
<b>Total</b>	<b>792.8</b>	<b>305.2</b>	<b>27.4</b>	<b>33.8</b>	<b>1,159.2</b>	

### Transportation System Economic Losses (Millions of Dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Roads	561.2	0.0	0.0
	Bridges	86.0	15.9	18.4
	Tunnels	20.0	2.3	11.5
	<b>Subtotal</b>	<b>667.2</b>	<b>6.0</b>	<b>2.7</b>
Railways	Tracks	50.1	0.0	0.0
	<b>Subtotal</b>	<b>50.1</b>	<b>0.0</b>	<b>0.0</b>
		<b>717.3</b>	<b>18.2</b>	<b>2.5</b>

## Summary of Projected Hazus Damage

Queen of the Valley Hospital and Napa State Hospital (including a facility for the criminally insane) are located in the City of Napa. St Helena Hospital is located in the unincorporated town of Angwin, and the State Veterans Home's Holderman Hospital is located in town of Yountville. Approximately half of the beds could be lost during a major earthquake due to the age and construction type of each of the hospitals. Smaller private medical facilities such as the Kaiser Clinic can augment the ability of our hospitals to care for their client populations.

Telephone systems will be affected by system failure, overloads, loss of electrical power and possible failure of some alternate power systems. Immediately following an event, numerous failures will occur, compounded by system use overloads. This will likely disable up to 80% of the telephone system for one day. County UHF/VHF and microwave radio systems are expected to operate at 40% effectiveness the first 12 hours following an earthquake, increase to 50% for the second 12 hours, then begin to slowly decline to approximately 40% within 36 hours. Microwaves systems will likely be 30% or less effective following a major earthquake.

Electrical transmission lines are vulnerable to many hazards due to their length and, in many areas, the remoteness of the lines. Damage to generation plants or substations may cause outages. Damage to generation plants will affect electrical production. Damage to substations will affect delivery. Repairs to electrical equipment may require physically clearing roadways and movement of special equipment. Restoration of local electrical power will be coordinated with regional and local utility representatives. Up to 60% of the system load may be interrupted immediately following the initial earthquake shock wave. Much of the affected area may have service restored in days; however; severely damaged areas with an underground distribution system may create longer service delays.

Damage to natural gas facilities serving the Napa communities will consist primarily of isolated breaks in major transmission lines. Breaks in mains and individual service connections within the distribution system will be significant, particularly near the fault zones, especially in the City of Napa and in American Canyon just to the south of Napa. These many leaks pose a fire threat in the susceptible areas of intense ground shaking and/or unstable ground near the shoreline. Breaks in the system will affect large portions of the City and restoration of natural gas service could be significantly delayed.

Water availability, distribution for supporting life, and treating the sick and injured are of major concern to the City of Napa. It is expected that the primary water source, Lake Hennessey, may be inaccessible due to damage to the pipelines that distribute potable water. However, Napa is also connected to the State Water project at Jameson Canyon and has a tertiary source in Milliken Dam Water treatment facility. Any one of these three facilities remaining in operation will be able to supply the emergency potable water needs to the City of Napa and its immediately contiguous County areas, if the distribution system can be repaired.

There are three water reservoirs within the City of Napa that have all been recently retrograded and covered. If the reservoirs and water tanks remain intact, they will likely provide ample potable water to meet demands during the time the water treatment stations are being repaired.

The three reservoirs in Napa are on solid ground and are expected to be usable after a major earthquake. However, the other cities' water tank survivability is low. Therefore, potable water will most likely have to be supplied in these area communities.

Significant damage is expected on the road system. State Highway 12 is expected to be impassable from Cordelia to the Highway 29 Intersection. Interstate 80 could suffer severe surface distortion in the Fairfield and Vacaville areas, as well as damage to its numerous bridges and viaducts in the greater Bay Area. Highway 128 is subject to landslides both up valley toward Geyserville and in the hills around Lake Berryessa. Highway 29 leaving the County to the north is subject to landslides and debris flows to the south as it crosses over old bay mud and fill areas and is subject to liquefaction and surface distortion. Any combination of failures to these main highways could isolate the County for up to 72 hours with complete road restoration taking perhaps several weeks. Vehicular traffic will be limited on the foothill roads due to potential and actual landslides.

Soil liquefaction problems could cause the closure of several roads in American Canyon and areas of other cities built on unconsolidated river soils. The Napa Valley Wine Train, a tourist rail system in Napa, is expected to be severely damaged restricting travel on the system for several weeks to months. The California Northern railway system, which transverses the south County from Interstate 80 at Cordelia to Shellville along Highway 12 and crossing the Napa River Delta area south of the 12/29 Intersection through Napa Junction, will likely be severely damaged and unusable. The freight yard, repair shops and rail yard that are located at Napa Junction are expected to be severely damaged. Railroad commercial and passenger service will be restricted for at least 72 hours and possibly several weeks.

There are ten dams in Napa County, which have completed inundation studies and maps in sufficient detail to plan evacuation, mass care and emergency medical care for populations displaced by failure or threat of dam failure. Maintenance programs and activities of the Conn Dam are regularly performed, and the potential catastrophic failure of the 70-year old dam is considered to be improbable during most scenario earthquakes.

Sewage collection systems throughout the County are expected to sustain widespread damage. In the City of Napa a sanitation plant is located in a highly probable liquefaction area near the Maxwell Bridge. The Napa Sanitation District plant will also experience liquefaction and commercial electrical power losses. If backup generating systems fail, the result could be the discharge of raw sewage into the river. The sanitation plant could be out of service from one to four months, depending on damage.

Based on this modeling it is clear that any number of mitigation techniques are applicable to this threat. California already has the strictest building codes in the

country, the highest construction standards for schools and the most dynamic design and construction standards for highways, bridges and other transportation infrastructure. The recent experience of the 2003/2004 earthquakes illustrated this. Paso Robles in California suffered from the effects of being in near proximity of a moderate 6.5 Richter scale event. Paso Robles suffered significant damage of about \$150 million but with very little loss of life, injuries or damage to modern structures.

## UNREINFORCED MASONRY BUILDINGS

### Background and the URM Law

The City of Napa has prepared a report considering the possible adoption of a mandatory seismic retrofit ordinance. Attention to the Downtown's Unreinforced Masonry buildings is prompted by several factors:

Public criticism of vacant, unkempt, and deteriorating buildings in the downtown, the economic impacts created by unsafe, URM, and/or blighted buildings, and a "challenge" to some individual building owners to take care of their properties;

The magnitude 6.5 earthquake in San Simeon on 12/22/03, resulting in two deaths, over 40 serious injuries, and economic devastation to downtown Paso Robles;

A subsequent editorial calling for Napa to "fix earthquake unsafe buildings" (*Napa Valley Register*, 12/26/03).

The Downtown Napa Mixed-Use Study, which has focused attention on under-utilized buildings and/or sites; and

Increased visibility, activity and interest in general in the overall development of downtown Napa.

In 1986, the California URM Law SB 547 became effective, requiring local jurisdictions in Seismic Zone 4 (high risk areas) to comply with three directives:

1. Create an inventory of unreinforced masonry buildings in their jurisdictions;
2. Establish an earthquake loss reduction program for these buildings; and
3. Report all information about these efforts to the Seismic Safety Commission in a yearly progress report.

The City of Napa prepared and finalized its URM inventory in 1990, and those building owners were notified as provided for in the law. A URM task force was formed, consisting of City staff and property owners, as well as representatives from the building/contracting, banking, real estate, preservation, and architecture and engineering professions. They met periodically to discuss financial issues, public education, building/engineering issues, and incentives for compliance.

In 1994, a mandatory seismic retrofit ordinance drafted by the Building Official was considered by City Council, but not adopted. The cost of seismic retrofit improvements was a concern voiced by owners at that time. Council directed staff to continue working with the URM owners to achieve voluntary efforts. Today, Napa has a mandatory seismic retrofit ordinance. URM upgrades are mandatory. The City of Napa presently has 12 structures on this list. Three are vacant, the rest are occupied by active commercial uses.

The City's loss reduction program was enacted in 1997 when the Redevelopment Agency adopted its Seismic Retrofit Program. This program was created with input from members of the original URM Task Force, and combined incentives provided by many other jurisdictions in California, especially the City of Sonoma where a mandatory retrofit ordinance was in effect. The program provided financial incentives in the form of reimbursements to owners for a portion of the cost of architectural and engineering documents (\$1 / sq. ft.) and for construction (\$1 / sq. ft.). The Agency also funded the costs for seismic strength testing up to \$1,000. The program was amended in 1999 to provide the following incentives:

- Assists owners of commercial properties by offering reimbursement for a portion of the architectural and engineering plan costs. Properties must be located within the Redevelopment Project Area.
- Reimbursements are calculated based on commercial square footage of the building: \$2.50 / square foot.
- A maximum of \$1,000 is also reimbursable for seismic testing.
- After the structural plans are approved by the Building Official, the reimbursement is made in the form of a loan, and owners must sign a loan agreement and promissory note. A building permit must be obtained within one year of reimbursement. Retrofit construction must be completed within five years from reimbursement. One extension may be granted.

The City's loss reduction program was enacted in 1997 when the Redevelopment Agency adopted its Seismic Retrofit Program. Since 1997, nine owners have participated in this program for a total of \$145,880 in reimbursements. Five additional owners have had their properties removed from the URM list upon engineering analysis, and have been reimbursed a total of \$ 7,460 from the program. This \$ 153,340 in public contributions leveraged approximately \$4.3 million in private funds."

Property	Agency Participation
Tuscany Restaurant	\$9,000.00
Napa Valley Register Building: Sushi Mambo/Fershko, Lewis & Blevans Attys.	\$13,250.00
Migliavacca Building: Café Ciccerio/Shoes On First, et al.	\$16,750.00
First National Bank Building: Ristorante Allegria/Napa Co. Landmarks	\$14,650.00
Winship Building: NV Coffee Roasting, Morgan Lane Real Estate, et al.	\$22,392.50
Napa Labor Temple: Uboldi & Heinke/Napa Steam Laundry Investors	\$24,687.50

Overall, City records indicate that 29 URM properties have been seismically retrofitted in Downtown Napa and removed from the inventory. Since the 1990 inventory was prepared, several buildings thought to be URM have been analyzed by a structural engineer and determined to be reinforced. These have been removed from the inventory, resulting in the current list of 13.

There are 366 jurisdictions subject to Seismic Zone 4 URM Law. Of these, 251 jurisdictions have implemented loss reduction programs, including 130 that have enacted Mandatory Seismic Retrofit Ordinances. There are currently 82 cities/counties that now report no URM buildings on their inventory due to their mitigation programs – URM buildings have been either seismically upgraded or demolished.

### Earthquake Damage Statistics

Earthquake	Date	Fault	Magnitude	Severity in Napa	Damage in Napa	Injuries in Napa
Great 1906 San Francisco	4/18/06	San Andreas	8.25	Moderate to Severe	Moderate Unknown amount \$	Unknown
Bolinas	8/17/99		4.7	Not felt	None	None
Cloverdale	1/10-1/8/2000	Rogers	4.0, 4.2, 4.0	Not felt	None	None
Santa Rosa	1969	Rogers	5.6 and 5.7	Weak	None to Slight	None
Yountville	9/3/2000	Rogers	5.2	Severe	65 million FEMA awarded 5.5 million in grants, 2300 building permits issued for repairs	40 minor 2 severe

*Earthquakes with an epicenter 60 miles from Napa since 1906 4.0 or greater*

The City of Napa is located in close proximity to four known earthquake faults: Rodgers Creek (the continuation of the Hayward Fault across San Pablo Bay) 15 miles west of Napa, Concord-Green Valley located 10 miles east of Napa, the West Napa Fault which runs just west and parallel to Highway 29, and the previously-unknown Mt. Veeder/Yountville Fault which impacted Napa in September, 2000. Although the length of that fault has not been mapped, the epicenter was 10 miles northwest of Napa. It lasted for 18 seconds, was calculated at Magnitude 5.1, occurred approximately 5.8 miles underground, and caused about \$65 million in property damage.

The Rodgers Creek Fault is considered one of two in the Bay Area that pose the greatest threat for earthquake probability, the other being San Andreas. The US Geological Survey has determined that the Bay Area Regional Quake Probability of experiencing a M 6.7 event or greater is 62% before 2032. The USGS Earthquake Loss Estimation Model projects losses of \$520 Million in Napa County if the Rodgers Creek Fault experienced a M 7.1 quake. *(From USGS Brochure prepared 2/5/01).*

The 2000 Napa earthquake was analyzed in a report prepared by the Stanford University Earthquake Engineering Center. The analysis reported unusually strong ground accelerations recorded on seismograph instrumentation at Napa Valley College, Carmenet Winery, and Fire Station 3, three geographically dispersed locations. Although the epicenter was approximately 10 miles northwest of Napa, USGS engineers identify two factors accounting for the significant shaking intensity. First, the shaking was amplified by the soft sediments of alluvial soils along the Napa River and in the lower lying areas south of the City. Second, the rupture propagated from the epicenter directly to the City of Napa, shown in the shaking intensity map illustrations generated just after the quake. The intensity levels recorded in Napa were 5 to 8 times greater than shaking within one mile of the epicenter. The final summary of the Stanford report confirmed that observation and concluded with:

*"These accelerations are significantly higher than most of those recorded in other California earthquakes under similar conditions. Many of the structures we visited, in particular URM masonry buildings with unbraced parapets in their facades and old wooden houses on tall crawl spaces supported by cripple walls, would have suffered more damage in our opinion if ground motions at these locations corresponded to spectral displacements of 4 cm or spectral accelerations near 1g. Thus, this earthquake should not be interpreted as an indication of adequate behavior of these types of constructions. On the contrary, this earthquake should serve as a wakeup call for owners of these types of construction to undergo at least a small level of retrofitting of their constructions. In particular bracing and anchoring of URM walls and parapets as well as lateral bracing and anchoring of cripple walls are needed."* (Brief Report on the September 3, 2000 Yountville/Napa California Earthquake, by Eduardo Miranda and Hesam Aslani, John A. Blume Earthquake Engineering Center, Stanford University).

Statistics bear out this finding as well. Within the first six months after Napa's quake, the City Public Works Building Division had issued over 1,480 building permits for earthquake related repairs. Eventually, 2,300 building permits were issued. The US Small Business Administration approved 1,324 loans totaling \$22.6 million to Napa homeowners and businesses; FEMA awarded \$5.5 million in grants for home quake repairs. Officials stated that rarely will a M 5.1 quake result in a federal disaster declaration, but the damage in Napa exceeded that which

would have been normally predicted. Forty people reported injuries, the most seriously a 5-year old boy who was crushed by a fallen fireplace

The December 2003 San Simeon Earthquake most heavily impacted the City of Paso Robles, about 40 miles to the east of the epicenter. Like Napa's 2000 quake, the rupture propagated from San Simeon to Paso Robles. Although Paso Robles does have a mandatory seismic retrofit ordinance, the deadline for compliance was 2007. Many buildings in Paso Robles were damaged, though those that had undergone seismic retrofit sustained relatively minor damage, such as broken glass or loosened bricks.

## CURRENT LIST OF UNREINFORCED BUILDINGS 2009

NO.	ADDRESS	Vacant	CITY Landmark Inventory	HRI MAP SCORE	Date Construction to be Complete	Extension Granted?
1	1210 First			3	6/1/2009	NO
2	1025 Coombs			3	6/1/2009	NO
	1212 First	X		1	6/1/2009	NO
3	1015 First				6/1/2009	YES DESIGN 8/1/08
4	829 Main				6/1/2009	YES DESIGN 9/1/08
5	815 Main	X			6/1/2009	YES DESIGN 9/1/08
6	813 Main	X		1	6/1/2009	YES DESIGN 6/16/08
7	807 Main	X			6/1/2009	YES DESIGN 6/16/08
8	810-816 Brown			1	6/1/2009	NO
9	822 Brown				6/1/2009	YES DESIGN 8/1/08
10	830 Brown	X			6/1/2009	NO
11	902 Main		Yes	2	6/1/2009	YES PERMIT 9/1/08
12	376 Soscol	X	Yes		6/1/2009	NO

\* Listed on the City of Napa Historic Resources Inventory

\*\* Property is outside of 100-year flood boundary; however, finished floor elevation is below base flood elevation.

Properties on National Register and City Landmark Inventory are exempt from flood-proofing requirements.

*Italics denotes historic building name.*

Overall, City records indicate that as of November 2009, twenty-nine URM properties have been seismically retrofitted in downtown Napa and removed from the inventory.

### Seismic Hazard Mitigation Activities since 2004

The City's most significant gain in mitigating losses from seismic activity has been in its efforts to seismically retrofit the URM inventory in the City. City of Napa Ordinance O2006 1 became effective in April 2006, establishing Chapter 15.110, Review, Rehabilitation, and Abatement of Existing Seismically Unsafe Buildings. The new ordinance set forth directives and schedules for seismic retrofitting of the 23 Un-reinforced Masonry structures remaining on the City's inventory. The original URM inventory was prepared in 1989 as a result of SB 547, which directed cities and counties in Seismic Zone 4 to identify potentially dangerous URMs and adopt plans for mitigating the hazards posed by these buildings. Through building code requirements,

voluntary upgrades, and Agency financial incentives, the number of structures on the inventory decreased from 45 to 13 from 1989-2009.

The review of 2007 showed that of the original number of 45 buildings, there are 13 left in the city that requires retrofitting. The City-owned "Borreo Building" was completed in 2007. These last 13 buildings must submit plans for seismic retrofitting by June of 2008 and complete the work by June 1 of 2009. The City has granted one year extensions for some of the properties to complete the work.

In 2008 the City adopted the 2007 California Building Code.

## **Wildland Interface Fire Hazards**

The City is characterized by a narrow valley floor surrounded and intermingled with steep, hilly terrain that contains areas that are very susceptible to wildland fires. Such fires expose residential and other development within the city to an increased risk of conflagration. The hilly/mountainous terrain to the City's west and east strongly influences both wildland fire behavior and the suppression capability of firefighters and their equipment. Such rough topography places limitations on accessibility for firefighting equipment so that travel time from the suppression station to a fire can greatly exceed the City's maximum acceptable response time of five minutes.

Wind is a predominant factor in the spread of fire in that burning embers are carried with the wind to adjacent exposed areas. The City has a characteristic southerly wind that originates from the San Francisco Bay and becomes a factor in fire suppression. Also, during the dry season the City experiences an occasional north wind of significant velocity that is recognized by fire fighters to be a significant factor in the spread of wildland fires.

The City is divided geographically into three parts by the Napa River and the north/south section of State Highway 29. The River and the Highway can be significant barriers to fire suppression response in times of floods or earthquakes (the City is susceptible to both). Smaller waterways that are tributaries to the River (Napa, Redwood, Dry and Tulocay Creeks) can be barriers to street extensions and linkages thereby exacerbating access difficulties.

### **Wildland / Urban Interface**

The term "wildland/urban interface" was coined in 1976 by CalFire to identify the condition where highly flammable native vegetation meets high value structures, primarily residences. In most cases, there is not a clearly defined boundary or interface between the structures and vegetation that present the hazard. Historically, residences in these ill-defined wildland/urban intermix boundary areas were particularly vulnerable to wildfires because they were constructed with a reliance on fire department response for protection rather than fire resistance, survivability and self-protection. However, in the recent past, there has developed a greater appreciation for the need to regulate development in these hazardous areas as a result of a number of serious statewide

wildland fire conflagrations. (CalFire recently modified the terminology for these areas to "wildland/urban intermix".)

When a wildfire ignites in a high risk wildland/urban intermix area, the priority is life and property protection. Historically, CalFire forces began their attack from the most advantageous topographical or physical location, and surrounded the fire perimeter. Now, with hundreds or even thousand of structures inside the fire perimeter, the CalFire's initial and extended resources are forced to divert to individual structure protection. This causes wildfire control to become secondary to protecting lives and property, thus allowing wildfires to spread unchecked, threatening and destroying more houses and natural resources.

The major wildland fire hazard risks for residential development are in the City's hilly areas characterized by steep slopes, poor fire suppression delivery access, inadequate water pressure and highly flammable vegetation.

The severity of the wildland fire hazard is determined by the relationship between three factors: fuel classification, topographic slope, and critical fire weather frequency. The box below lists fuel classifications; Napa's Fire Hazard Areas generally fall into the Medium Fuel category. Critical fire weather conditions occur in periods of relative low humidity, high heat and high winds. The Napa area typically has critical fire weather from two to seven days annually. Fuel, slope, and weather conditions combine to give Napa urban wildland interface areas and overall "Moderate" hazard rating based on the Federal Emergency Management Agency's *Urban Wildland Interface Code: 2000*.

**Fire Hazard Severity**

Critical Fire Weather Frequency									
Fuel Classification	< 1 Day/Year			2 to 7 Days/Year			> 8 Days/Year		
	Slope (%)			Slope (%)			Slope (%)		
	< 40	41 – 60	> 61	< 40	41 – 60	> 61	< 40	41 – 60	> 61
Light Fuel	M	M	M	M	M	M	M	M	H
Medium Fuel	M	M	H	H	H	H	E	E	E
Heavy Fuel	H	H	H	H	E	E	E	E	E

M – Moderate

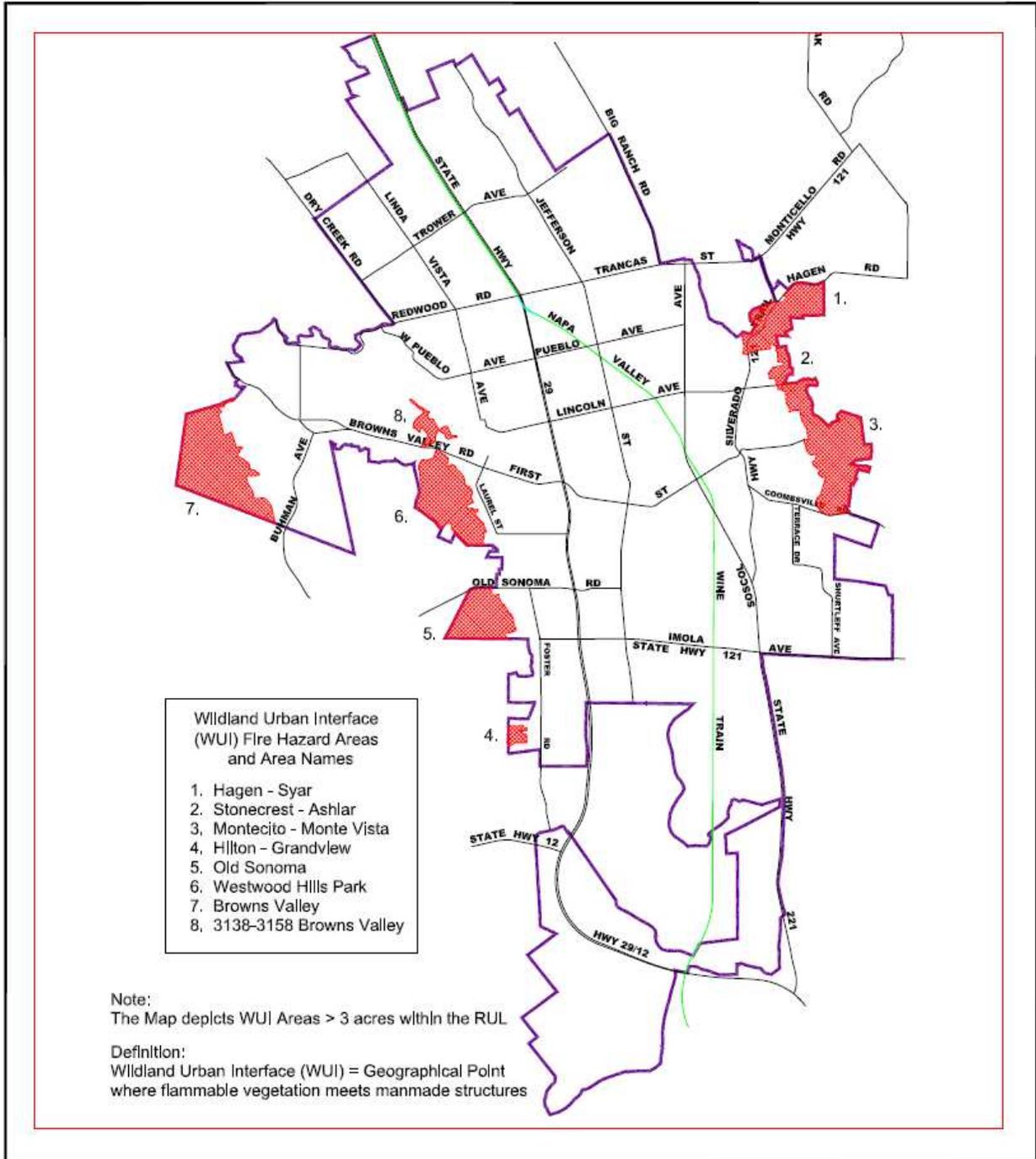
H – High

E – Extreme

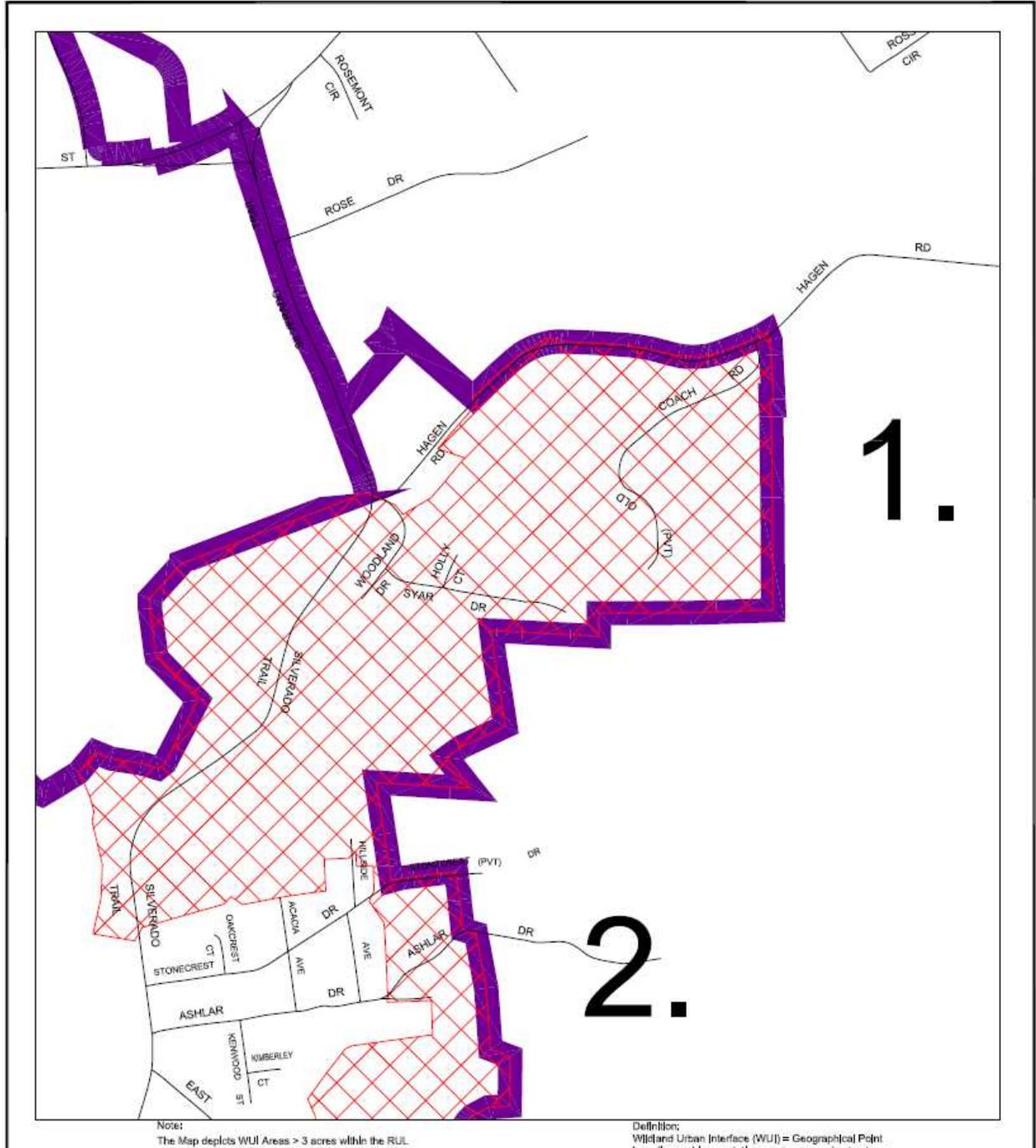
**Fuel Classifications**

**Heavy fuel** ----- vegetation consisting of round wood 3 to 8 inches in diameter  
**Medium fuel** ----- vegetation consisting of round wood 1/3 to 3 inches in diameter  
**Light Fuel** ----- vegetation consisting of herbaceous plants and round wood less than 1/4 inch in diameter.

The map on the following page identifies the Wildland Interface Fire potential in the City of Napa and depicts the areas or neighborhoods that have the greatest potential for a vegetation fire extending into the urban interface.



City of Napa General Plan	Updated 11/09
Figure 8-8 <b>Wildland Urban Interface (WUI) Fire Hazard Areas</b>	<div style="display: flex; align-items: center; justify-content: center;"> <div style="text-align: left;">                     Fire Hazard Area  <span style="display: inline-block; width: 20px; height: 10px; background-color: red; border: 1px solid black; margin-bottom: 2px;"></span>                     RUL Boundary  <span style="display: inline-block; width: 20px; border-bottom: 2px solid purple; margin-bottom: 2px;"></span> </div> </div>
While every effort has been made to insure the accuracy of the information shown on this page, the City of Napa assumes no responsibility for liability from any errors or omissions.	



Note:  
The Map depicts WUI Areas > 3 acres within the RUL

Definition:  
Wildland Urban Interface (WUI) = Geographical Point  
where flammable vegetation meets manmade structures

City of Napa Fire Wildland Urban Interface

Updated 11/09

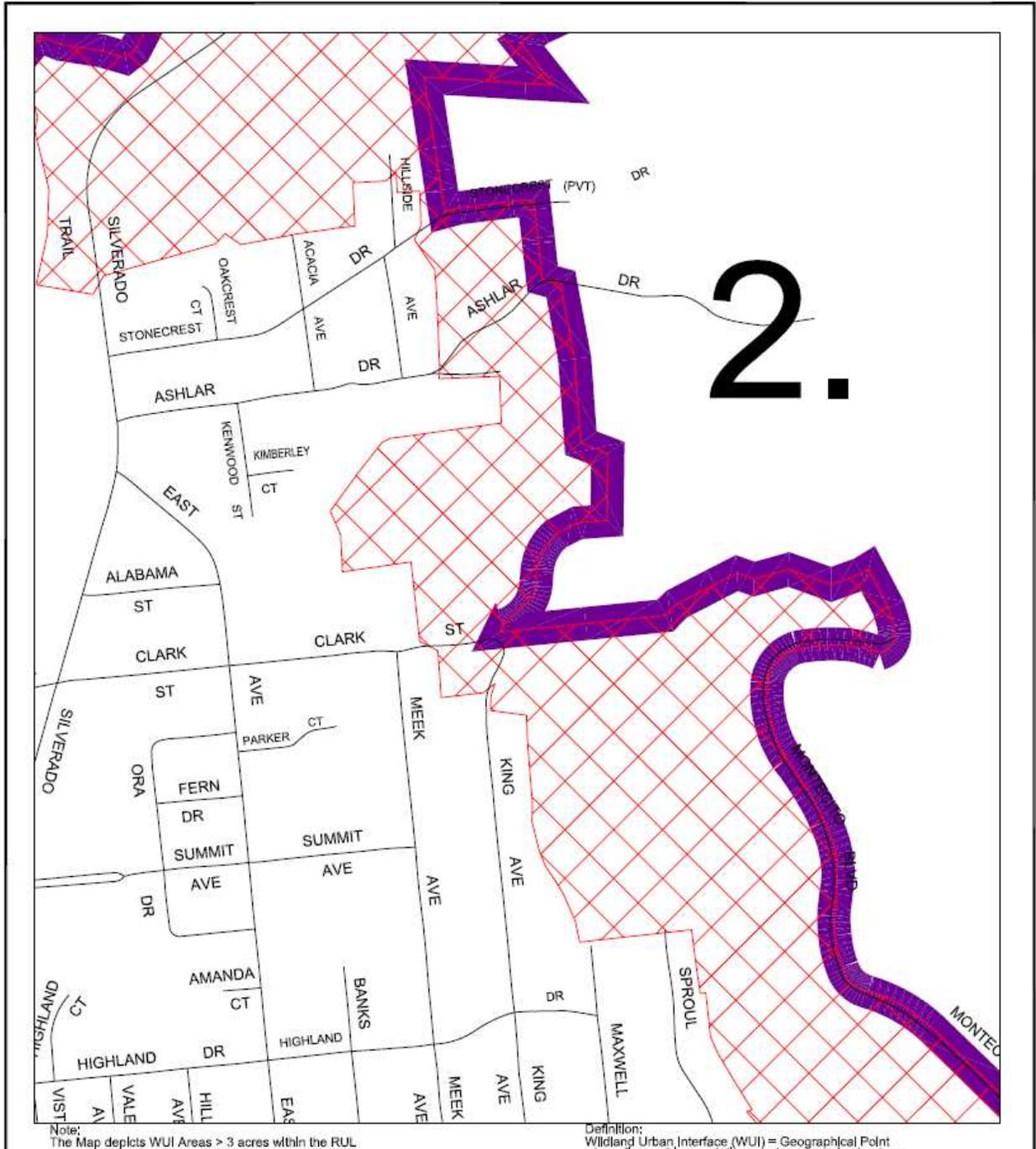
Figure 1  
**HAGEN-SYAR - Area #1**  
Fire Wildland Urban  
Interface (WUI)



Fire Hazard Area  
RUL Boundary



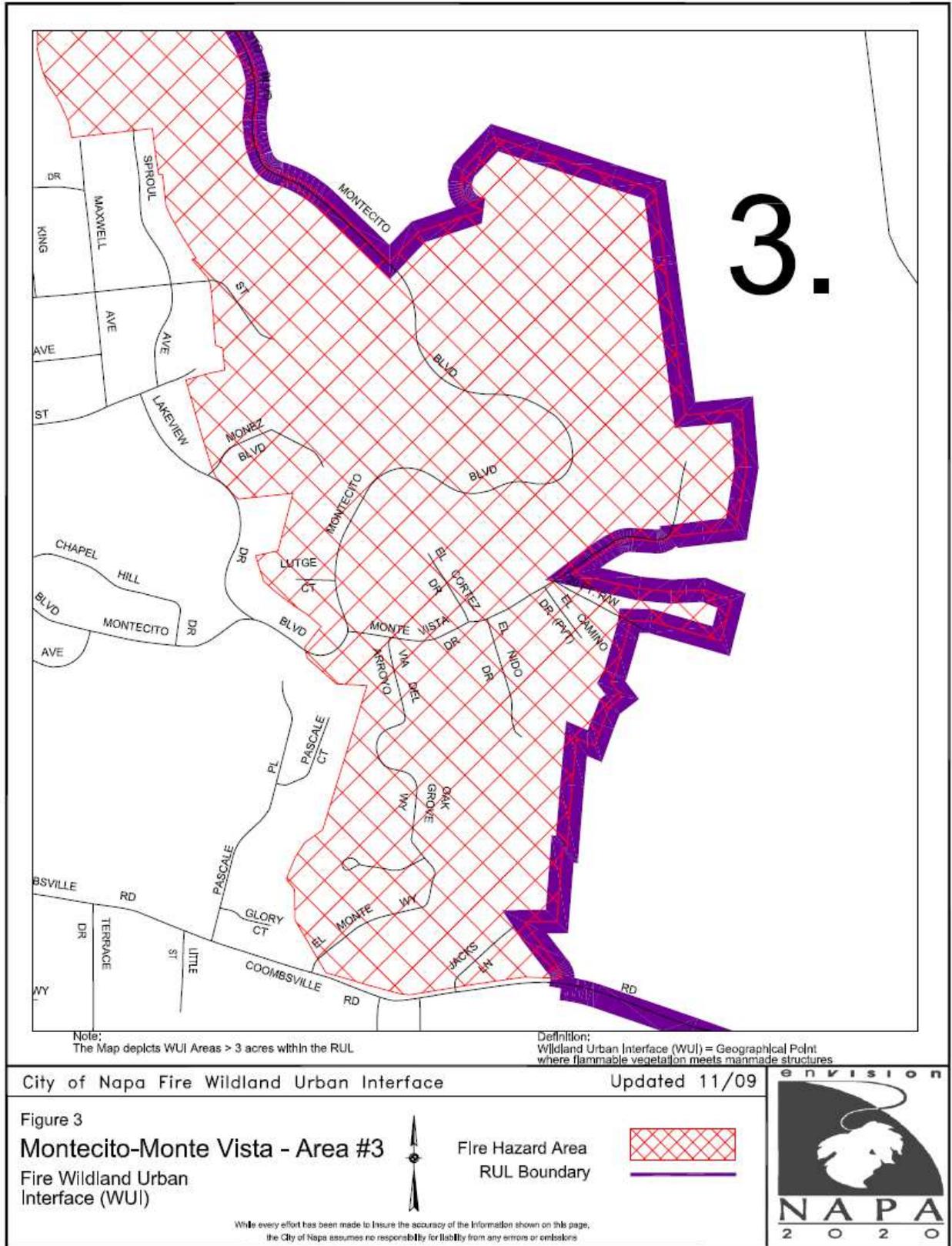
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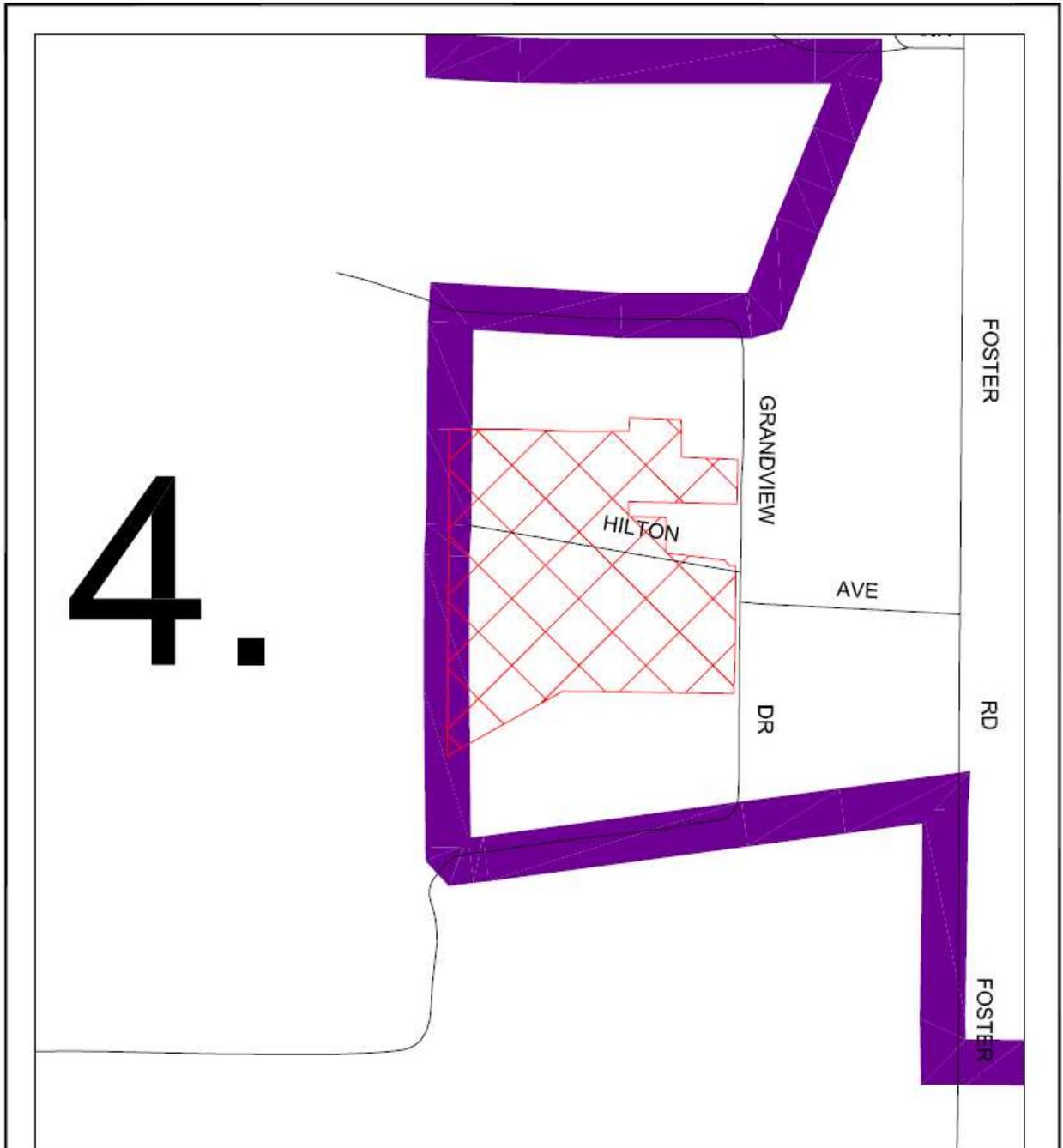


Note: The Map depicts WUI Areas > 3 acres within the RUL

Definition: Wildland Urban Interface (WUI) = Geographical Point where flammable vegetation meets manmade structures

City of Napa Fire Wildland Urban Interface		Updated 11/09	
<p>Figure 2  <b>STONECREST-ASHLAR - Area #2</b>                  Fire Wildland Urban Interface (WUI)</p>		<p>Fire Hazard Area                  RUL Boundary</p>	
<p>While every effort has been made to insure the accuracy of the information shown on this page, the City of Napa assumes no responsibility for liability from any errors or omissions.</p>			





Note:  
The Map depicts WUI Areas > 3 acres within the RUL.

Definition:  
Wildland Urban Interface (WUI) = Geographical Point  
where flammable vegetation meets manmade structures.

City of Napa Fire Wildland Urban Interface

Updated 11/09

Figure 4  
**HILTON-GRANDVIEW - Area #4**  
Fire Wildland Urban  
Interface (WUI)



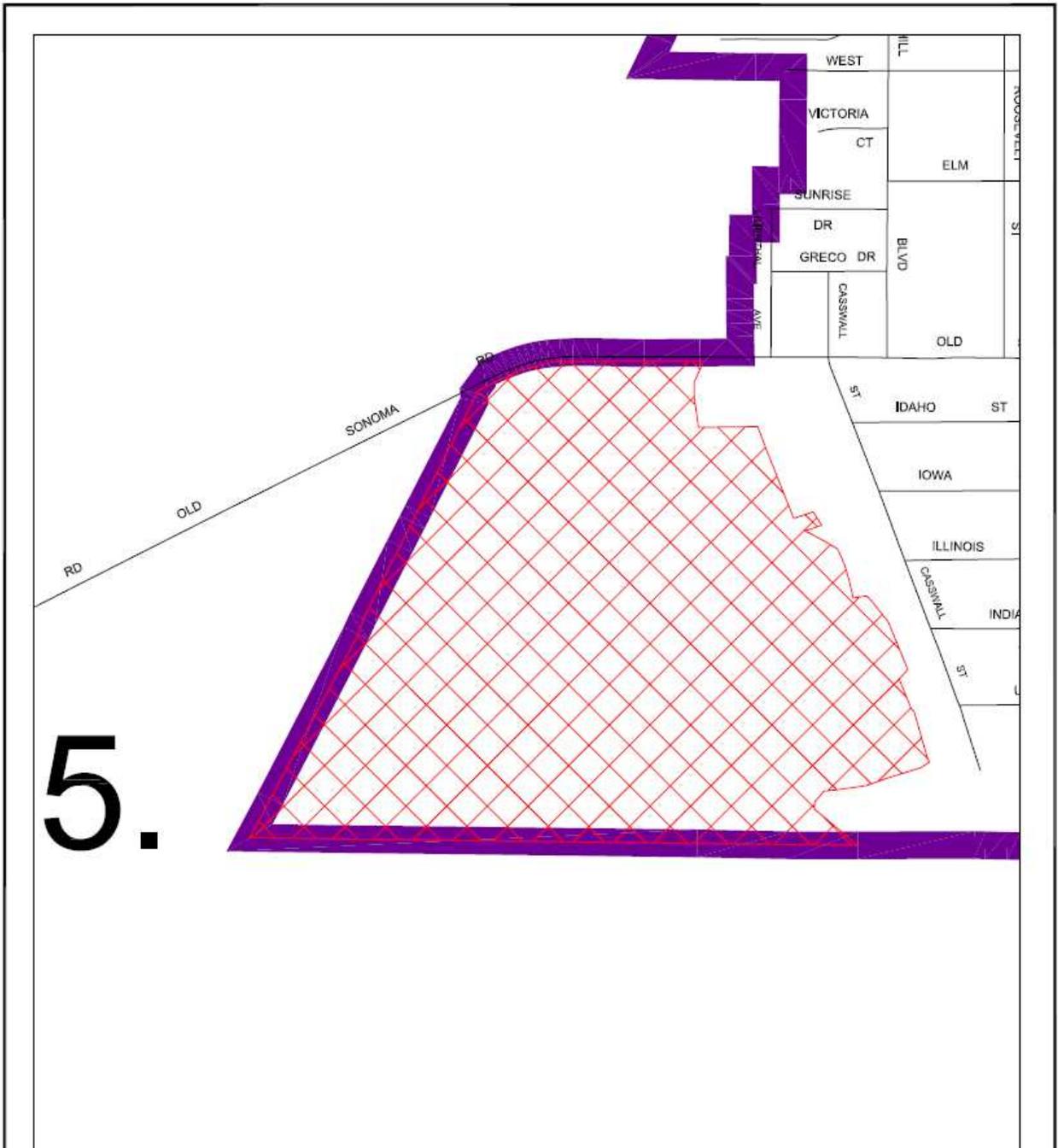
Fire Hazard Area  
RUL Boundary



W:\GIS\FIG4\Hilton\_Grandview\Wildland\_Interfaces.dwg

While every effort has been made to insure the accuracy of the information shown on this page,  
the City of Napa assumes no responsibility for liability from any errors or omissions.





Note:  
The Map depicts WUI Areas > 3 acres within the RUL

Definition:  
Wildland Urban Interface (WUI) = Geographical Point where flammable vegetation meets manmade structures

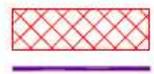
City of Napa Fire Wildland Urban Interface

Updated 11/09

Figure 5  
**OLD SONOMA - Area #5**  
Fire Wildland Urban Interface (WUI)

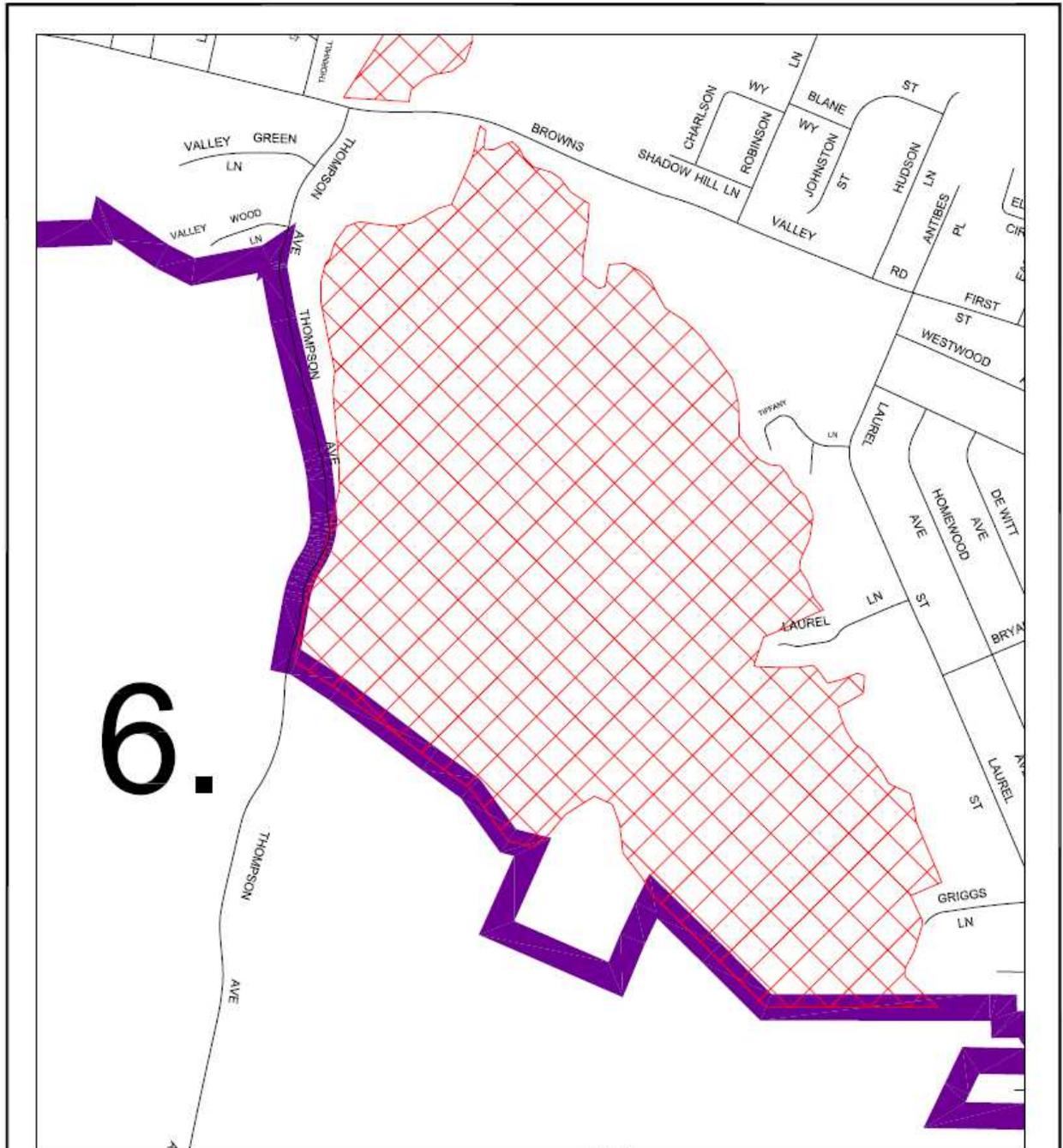


Fire Hazard Area  
RUL Boundary



VEGETATION/Urban/Wildland Interface/Map

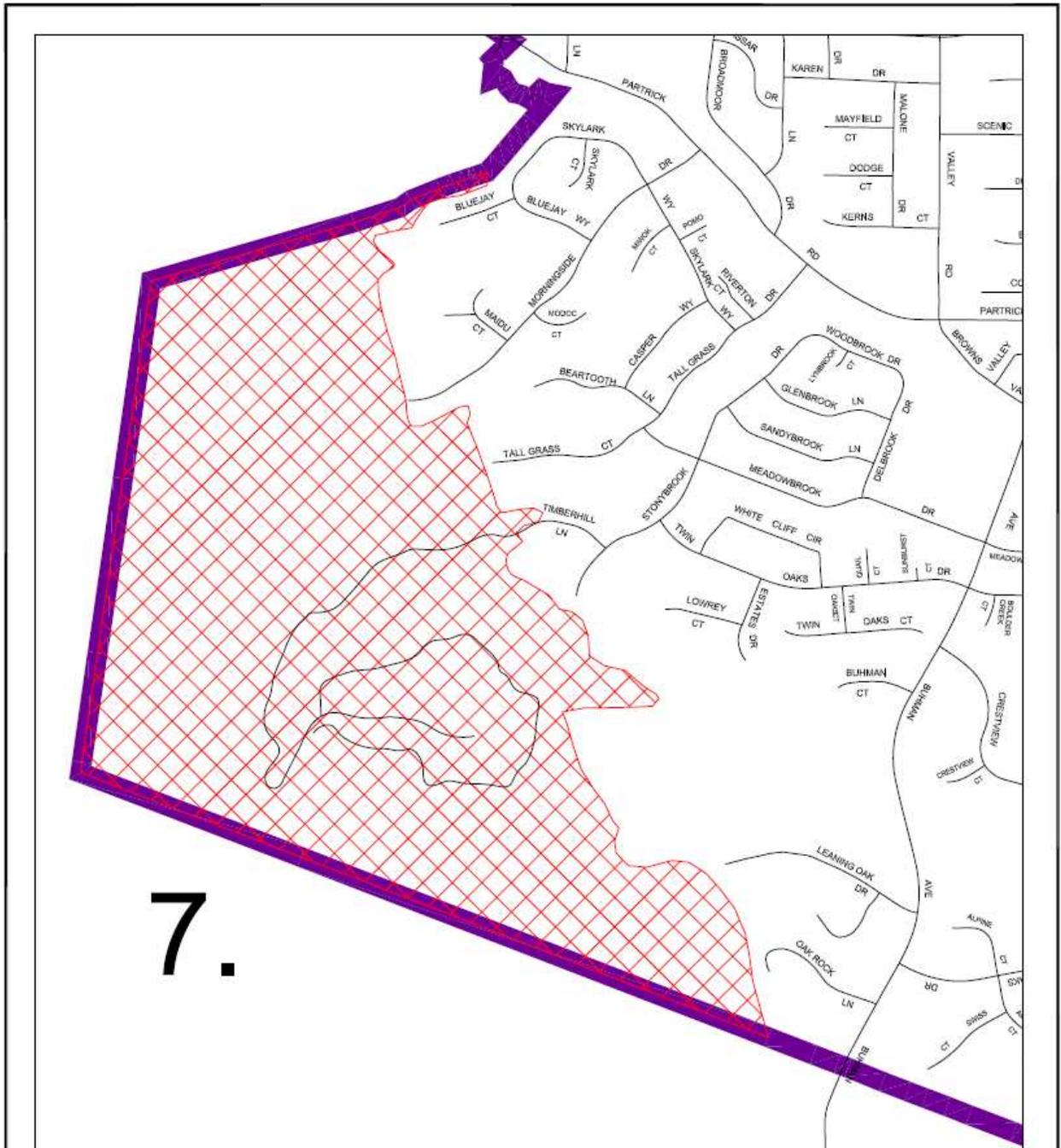
While every effort has been made to insure the accuracy of the information shown on this page, the City of Napa assumes no responsibility for liability from any errors or omissions.



Note:  
The Map depicts WUI Areas > 3 acres within the RUL

Definition:  
Wildland Urban Interface (WUI) = Geographical Point  
where flammable vegetation meets manmade structures

City of Napa Fire Wildland Urban Interface		Updated 11/09	
<p>Figure 6 <b>WESTWOOD HILLS - Area #6</b> Fire Wildland Urban Interface (WUI)</p>		<p>Fire Hazard Area RUL Boundary</p>	
		 	<p><b>NAPA</b> 2 0 2 0</p>
<p>While every effort has been made to insure the accuracy of the information shown on this page, the City of Napa assumes no responsibility for liability from any errors or omissions.</p>			



Note:  
The Map depicts WUI Areas > 3 acres within the RUL.

Definition:  
Wildland Urban Interface (WUI) = Geographical Point where flammable vegetation meets manmade structures.

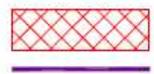
City of Napa Fire Wildland Urban Interface

Updated 11/09

Figure 7  
**BROWNS VALLEY - Area #7**  
Fire Wildland Urban Interface (WUI)

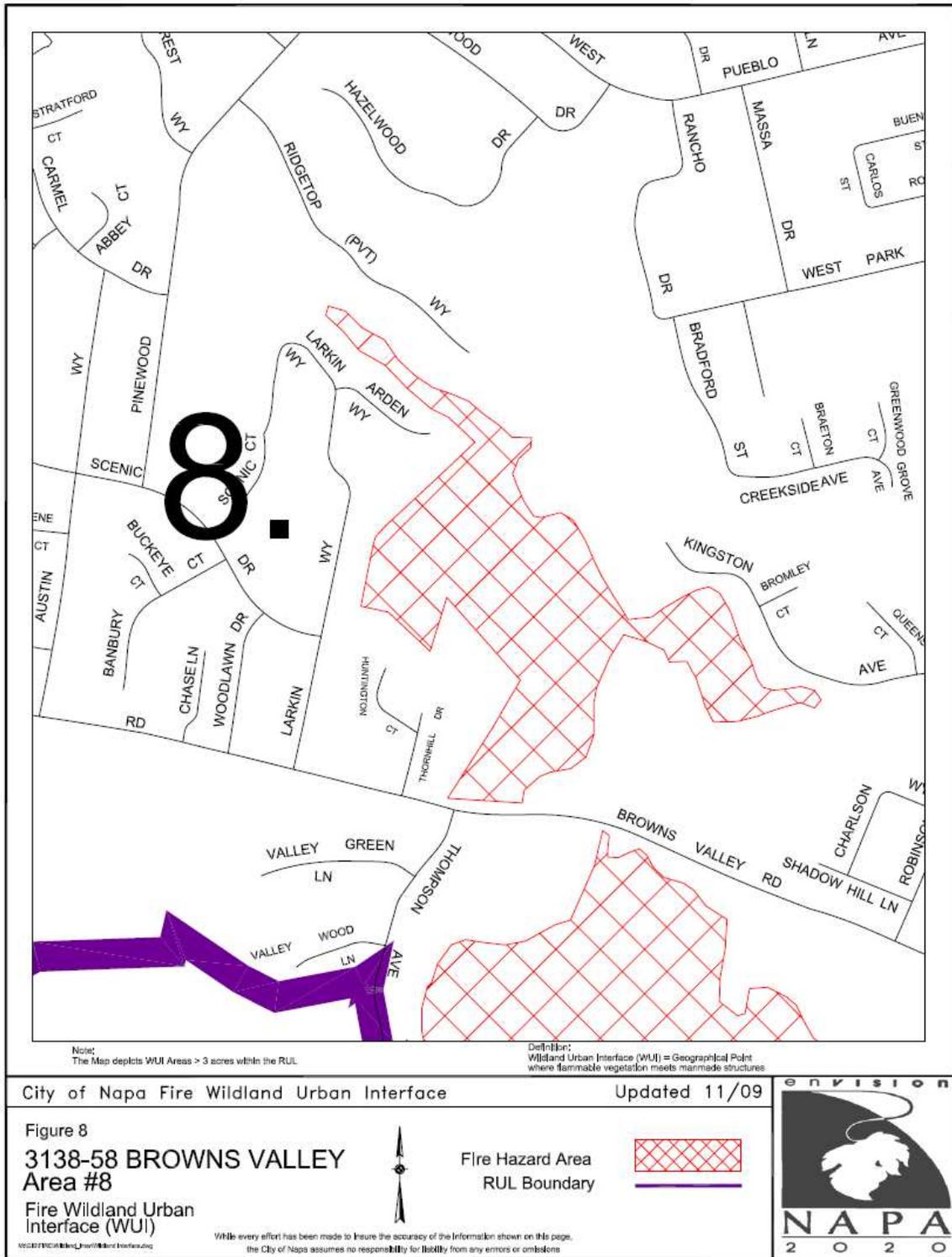


Fire Hazard Area  
RUL Boundary



VEGETATION/Map/Urban/Wildland Interface.dwg

While every effort has been made to ensure the accuracy of the information shown on this page, the City of Napa assumes no responsibility for liability from any errors or omissions.



## Fire Hazard Areas Inventory

The following table is an estimate of structures in the 19 identified Fire Hazard Areas shown in the Wildland-Urban Interface Fire Hazard Areas Map on the previous page. This inventory is derived from the HAZUZ 99 database, which relies on the 1990 U.S. Census.

Table 3-1

<b>Building Inventory, Fire Areas</b>									
<b>Fire Area</b>	<b>Geographic area</b>	<b>Residential</b>	<b>Commercial</b>	<b>Industrial</b>	<b>Agriculture</b>	<b>Religion</b>	<b>Government</b>	<b>Education</b>	<b>Total</b>
<b>1 &amp; 2</b>	<b>Hagn/ Stonecrest</b>	192	2	0	5	0	0	0	<b>199</b>
<b>3</b>	<b>Montevista/ Montecieto</b>	310	3	2	0	1	2	0	<b>318</b>
<b>4</b>	<b>Hilton Grandview</b>	100	0	0	0	0	0	0	<b>100</b>
<b>5</b>	<b>Old Sonoma Rd</b>	21							<b>21</b>
<b>6</b>	<b>Westwood Hills</b>	164	1						<b>164</b>
<b>7</b>	<b>Browns Valley</b>	520	3	3	1	2	0	0	<b>529</b>
<b>8</b>	<b>3138 – 3158 Browns Valley Rd</b>	24							<b>24</b>
<b>Total</b>		<b>1,331</b>	<b>9</b>	<b>5</b>	<b>6</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>1,355</b>

## Historical Losses From Urban Interface Fires

While the City of Napa has not sustained losses from an Interface fire, there is great potential. There have been two destructive fires in the County that have threatened areas of the City in 1964 and again in 1986. The graph below demonstrates the potential losses and confirms the reasons why the City must work towards implementing the identified mitigation action items.

## Potential Wildland-Urban Fire Losses

Potential losses from fires at the wildland-urban interface are shown in the table below. These assumptions are worst-case for each fire area. This means that worst case fire weather conditions are assumed resulting in the loss of every building in a given Fire Hazard Area. Estimated values are for structures only and do not include the cost to fight the fires. Due to the short response times in the areas, it is assumed that there would not be any fatalities.

### Methodology Used to Determine Losses for Wildfires

The figures shown for losses due to wildfire were generated by calculating the number of structures in the medium and high hazard areas and assume that all of them would be lost in a worst case fire. The value of these structures was then calculated by prorating the number of structures in the hazard area as a percent of the number of structures in the census tract according to the data in Hazus. This percentage was then multiplied against the total value of the structures in the census tract as shown in Hazus.

<b>Potential Wildland-Urban Fire Losses (\$1,000's)</b>									
<b>Fire Area</b>	<b>Geographic Area</b>	<b>Residential</b>	<b>Commercial</b>	<b>Industrial</b>	<b>Agriculture</b>	<b>Religion</b>	<b>Government</b>	<b>Education</b>	<b>Total</b>
<b>1 &amp; 2</b>	<b>Hagen/ Stonecrest</b>	22,088	2,165	618	4	128	40	115	<b>25,158</b>
<b>3</b>	<b>Montevista Montecieto</b>	30,551	2,909	2,074	12	428	134	387	<b>36,495</b>
<b>4</b>	<b>Hilton Grandview</b>	8,247	603	251	9	110	52	64	<b>8,736</b>
<b>5</b>	<b>Old Sonoma Rd</b>	3,472	245	61	2	46	13	27	<b>3,866</b>
<b>6</b>	<b>Westwood Hills</b>	26,477	1,936	463	16	354	96	205	<b>29,451</b>
<b>7</b>	<b>Browns Valley</b>	67,105	4,716	4,933	247	2,476	237	547	<b>80,261</b>
<b>8</b>	<b>3138 – 3158 Browns Valley Rd</b>	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
<b>Total</b>		<b>157,940</b>	<b>12,574</b>	<b>8,400</b>	<b>290</b>	<b>3,542</b>	<b>572</b>	<b>1,345</b>	<b>184,663</b>

Wildland Hazard Rating forms, included on the following pages, are used to design public education programs for the community in the most hazardous areas and for fire pre-planning and structural defense by the Fire Department.

**Wildfire Hazard Rating Form**  
**-Subdivision-**

<b>Name of Subdivision:</b>		3138-3158 Browns Valley Road		<b>Date:</b>	July 16, 2003	
<b>County:</b>	Napa	<b>Size (Acres):</b>	44.53	<b># of Lots:</b>	15	
<b>Rating:</b>	Moderate Hazard	<b>Comments:</b>				
		<b>Points</b>				<b>Points</b>
<b>A. Subdivision Design</b>				<b>C. Topography</b>		
<b>1. Ingress/Egress</b>				<b>1. Predominant Slope</b>		
Two or more primary roads		1		8% or less		1
One road		3		More than 8%, but less than 20%		4
One way in, one way out		5	5	20% or more, but less than 30%		7
				30% or more		10
						10
<b>2. Width of primary Road</b>				<b>D. Roofing Material</b>		
20 feet or more		1		Class A rated		1
20 feet or less		3	3	Class B rated		3
				Class C rated		4
<b>3. Accessibility</b>				Not rated		10
Road grade 5% or less		1				
Road grade 5% or more		3	3			
				<b>E. Fire Protection – Water Source</b>		
<b>4. Secondary Road Terminus</b>				500 GPM hydrant within 1,000 feet		1
Loop roads, cul-de-sacs with outside turning radius of 45 feet or greater		1		Hydrant farther than 1,000 feet or draft site		2
				Water source within 20 minutes, round trip		5
Cul-de-sac turnaround radius is less than 45 feet		2		Water source farther than 20 minutes, but less than 45 minutes round trip		7
Dead-end roads 200 feet or less in length		3		Water source farther than 45 minutes, round trip		10
Dead-end roads greater than 200 feet in length		5	5			
				<b>F. Existing Building Construction Materials</b>		
<b>5. Average Lot Size</b>				Noncombustible siding/deck		1
10 acres or larger		1		Noncombustible siding/combustible deck		5
Larger than 1 acre, but less than 10 acres		3		Combustible siding and deck		10
1 acre or less		5	5			10
				<b>G. Utilities</b>		
<b>6. Street Signs</b>				All underground utilities		1
Present				One underground, one above ground		3
Not present		1		All above ground		5
		5	5			
<b>B. Vegetation</b>						
<b>1. Fuel Types</b>				<b>TOTAL FOR SUBDIVISION</b>		<b>69</b>
Light		1		<b>Rating Scale</b>		
Medium		5	5	Moderate Hazard		40-59
Heavy		10		High Hazard		60-74
				Extreme Hazard		75+
<b>2. Defensible Space</b>						
70% or more of site		1				
30% or more, but less than 70%		3				
Less than 30% of site		5	5			

**Wildfire Hazard Rating Form**  
**-Subdivision-**

<b>Name of Subdivision:</b> Buhman/Leaning Oak		<b>Date:</b> July 16, 2003	
<b>County:</b> Napa	<b>Size (Acres):</b> 44.53	<b># of Lots:</b> 15	
<b>Rating:</b> Moderate Hazard	<b>Comments:</b>		
	<b>Points</b>		<b>Points</b>
<b>A. Subdivision Design</b>		<b>C. Topography</b>	
<b>1. Ingress/Egress</b>		<b>1. Predominant Slope</b>	
Two or more primary roads	1	8% or less	1
One road	3 3	More than 8%, but less than 20%	4
One way in, one way out	5	20% or more, but less than 30%	7
		30% or more	10 10
<b>2. Width of primary Road</b>		<b>D. Roofing Material</b>	
20 feet or more	1	Class A rated	1
20 feet or less	3 3	Class B rated	3 3
<b>3. Accessibility</b>		Class C rated	4
Road grade 5% or less	1	Not rated	10
Road grade 5% or more	3 3		
		<b>E. Fire Protection – Water Source</b>	
<b>4. Secondary Road Terminus</b>		500 GPM hydrant within 1,000 feet	1 1
Loop roads, cul-de-sacs with outside turning radius of 45 feet or greater	1	Hydrant farther than 1,000 feet or draft site	2
Cul-de-sac turnaround radius is less than 45 feet	2	Water source within 20 minutes, round trip	5 5
Dead-end roads 200 feet or less in length	3	Water source farther than 20 minutes, but less than 45 minutes round trip	7
Dead-end roads greater than 200 feet in length	5 5	Water source farther than 45 minutes, round trip	10
		<b>F. Existing Building Construction Materials</b>	
<b>5. Average Lot Size</b>		Noncombustible siding/deck	1
10 acres or larger	1	Noncombustible siding/combustible deck	5 5
Larger than 1 acre, but less than 10 acres	3 3	Combustible siding and deck	10
1 acre or less	5	<b>G. Utilities</b>	
		All underground utilities	1
<b>6. Street Signs</b>		One underground, one above ground	3 5
Present		All above ground	5
Not present	1 1		
	5		
<b>B. Vegetation</b>			
<b>1. Fuel Types</b>		<b>TOTAL FOR SUBDIVISION</b>	<b>42</b>
Light	1 1	<b>Rating Scale</b>	
Medium	5		
Heavy	10	Moderate Hazard	40-59
<b>2. Defensible Space</b>		High Hazard	60-74
70% or more of site	1 1	Extreme Hazard	75+
30% or more, but less than 70%	3		
Less than 30% of site	5		

### Wildfire Hazard Rating Form

-Subdivision-

<b>Name of Subdivision:</b>		Foster/Hilton/Grandview		<b>Date:</b>	July 16, 2003	
<b>County:</b>	Napa	<b>Size (Acres):</b>	41.94	<b># of Lots:</b>	37	
<b>Rating:</b>	Moderate Hazard	<b>Comments:</b>				
		<b>Points</b>				<b>Points</b>
<b>A. Subdivision Design</b>				<b>C. Topography</b>		
<b>1. Ingress/Egress</b>				<b>1. Predominant Slope</b>		
Two or more primary roads		1		8% or less		1
One road		3	3	More than 8%, but less than 20%		4
One way in, one way out		5		20% or more, but less than 30%		7
				30% or more		10
<b>2. Width of primary Road</b>						
20 feet or more		1		<b>D. Roofing Material</b>		
20 feet or less		3	3	Class A rated		1
				Class B rated		3
<b>3. Accessibility</b>				Class C rated		4
Road grade 5% or less		1		Not rated		10
Road grade 5% or more		3	3			
				<b>E. Fire Protection – Water Source</b>		
<b>4. Secondary Road Terminus</b>				500 GPM hydrant within 1,000 feet		1
Loop roads, cul-de-sacs with outside turning radius of 45 feet or greater		1		Hydrant farther than 1,000 feet or draft site		2
Cul-de-sac turnaround radius is less than 45 feet		2		Water source within 20 minutes, round trip		5
Dead-end roads 200 feet or less in length		3		Water source farther than 20 minutes, but less than 45 minutes round trip		7
Dead-end roads greater than 200 feet in length		5	5	Water source farther than 45 minutes, round trip		10
				<b>F. Existing Building Construction Materials</b>		
<b>5. Average Lot Size</b>				Noncombustible siding/deck		1
10 acres or larger		1		Noncombustible siding/combustible deck		5
Larger than 1 acre, but less than 10 acres		3	3	Combustible siding and deck		10
1 acre or less		5		<b>G. Utilities</b>		
				All underground utilities		1
<b>6. Street Signs</b>				One underground, one above ground		3
Present				All above ground		5
Not present		1	1			
		5				
<b>B. Vegetation</b>						
<b>1. Fuel Types</b>				<b>TOTAL FOR SUBDIVISION</b>		<b>42</b>
Light		1	1	<b>Rating Scale</b>		
Medium		5		Moderate Hazard		40-59
Heavy		10		High Hazard		60-74
				Extreme Hazard		75+
<b>2. Defensible Space</b>						
70% or more of site		1	1			
30% or more, but less than 70%		3				
Less than 30% of site		5				

### Wildfire Hazard Rating Form

-Subdivision-

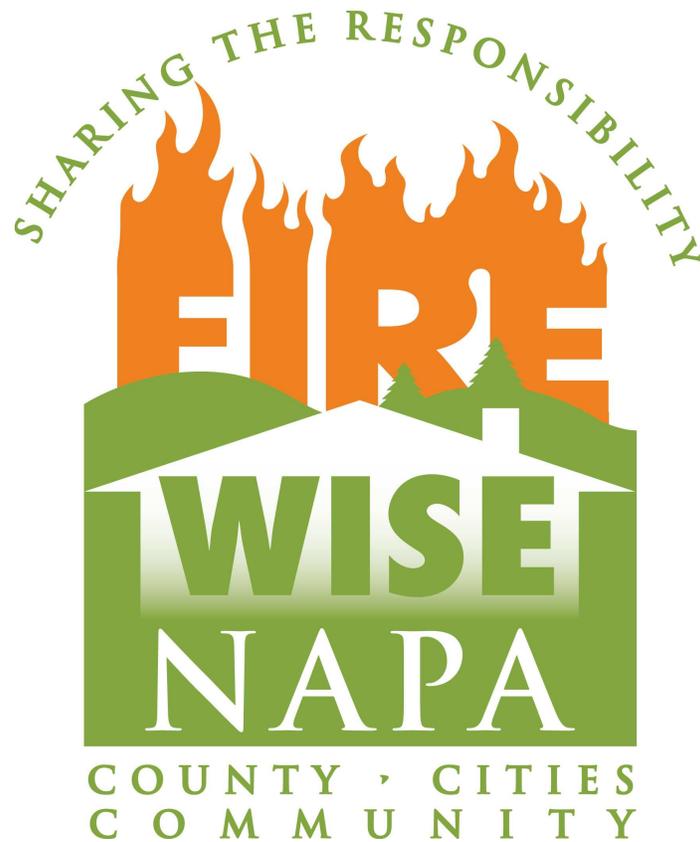
<b>Name of Subdivision:</b> Montecito Heights		<b>Date:</b> August 31, 2009	
<b>County:</b> Napa	<b>Size (Acres):</b> 236.57	<b># of Lots:</b> 100 (Approximate)	
<b>Rating:</b> High Hazard	<b>Comments:</b>		
	<b>Points</b>		<b>Points</b>
<b>A. Subdivision Design</b>		<b>C. Topography</b>	
<b>1. Ingress/Egress</b>		<b>1. Predominant Slope</b>	
Two or more primary roads	1	8% or less	1
One road	3	More than 8%, but less than 20%	4
One way in, one way out	5	20% or more, but less than 30%	7
		30% or more	10
<b>2. Width of primary Road</b>			
20 feet or more	1	<b>D. Roofing Material</b>	
20 feet or less	3	Class A rated	1
		Class B rated	3
<b>3. Accessibility</b>		Class C rated	4
Road grade 5% or less	1	Not rated	10
Road grade 5% or more	3		
		<b>E. Fire Protection – Water Source</b>	
<b>4. Secondary Road Terminus</b>		500 GPM hydrant within 1,000 feet	1
Loop roads, cul-de-sacs with outside turning radius of 45 feet or greater	1	Hydrant farther than 1,000 feet or draft site	2
Cul-de-sac turnaround radius is less than 45 feet	2	Water source within 20 minutes, round trip	5
Dead-end roads 200 feet or less in length	3	Water source farther than 20 minutes, but less than 45 minutes round trip	7
Dead-end roads greater than 200 feet in length	5	Water source farther than 45 minutes, round trip	10
		<b>F. Existing Building Construction Materials</b>	
<b>5. Average Lot Size</b>		Noncombustible siding/deck	1
10 acres or larger	1	Noncombustible siding/combustible deck	5
Larger than 1 acre, but less than 10 acres	3	Combustible siding and deck	10
1 acre or less	5	<b>G. Utilities</b>	
		All underground utilities	1
<b>6. Street Signs</b>		One underground, one above ground	3
Present	1	All above ground	5
Not present	5		
<b>B. Vegetation</b>			
<b>1. Fuel Types</b>		<b>TOTAL FOR SUBDIVISION</b>	<b>53</b>
Light	1	<b>Rating Scale</b>	
Medium	5	Moderate Hazard	40-59
Heavy	10	High Hazard	60-74
		Extreme Hazard	75+
<b>2. Defensible Space</b>			
70% or more of site	1		
30% or more, but less than 70%	3		
Less than 30% of site	5		

**Wildfire Hazard Rating Form**

-Subdivision-

<b>Name of Subdivision:</b> Stonecrest/Ashlar		<b>Date:</b> July 16, 2003	
<b>County:</b> Napa	<b>Size (Acres):</b> 97.16	<b># of Lots:</b> 20	
<b>Rating:</b> Moderate Hazard	<b>Comments:</b> The end of Ashlar is narrower than Stonecrest		
	<b>Points</b>		<b>Points</b>
<b>A. Subdivision Design</b>		<b>C. Topography</b>	
<b>1. Ingress/Egress</b>		<b>1. Predominant Slope</b>	
Two or more primary roads	1 1	8% or less	1
One road	3	More than 8%, but less than 20%	4
One way in, one way out	5	20% or more, but less than 30%	7 7
		30% or more	10
<b>2. Width of primary Road</b>		<b>D. Roofing Material</b>	
20 feet or more	1 1	Class A rated	1
20 feet or less	3	Class B rated	3 3
<b>3. Accessibility</b>		Class C rated	
Road grade 5% or less	1	Not rated	10
Road grade 5% or more	3 3		
		<b>E. Fire Protection – Water Source</b>	
<b>4. Secondary Road Terminus</b>		500 GPM hydrant within 1,000 feet	
Loop roads, cul-de-sacs with outside turning radius of 45 feet or greater	1	Hydrant farther than 1,000 feet or draft site	2 2
Cul-de-sac turnaround radius is less than 45 feet	2	Water source within 20 minutes, round trip	5
Dead-end roads 200 feet or less in length	3	Water source farther than 20 minutes, but less than 45 minutes round trip	7
Dead-end roads greater than 200 feet in length	5 5	Water source farther than 45 minutes, round trip	10
		<b>F. Existing Building Construction Materials</b>	
<b>5. Average Lot Size</b>		Noncombustible siding/deck	
10 acres or larger	1	Noncombustible siding/combustible deck	5
Larger than 1 acre, but less than 10 acres	3 3	Combustible siding and deck	10 10
1 acre or less	5		
		<b>G. Utilities</b>	
<b>6. Street Signs</b>		All underground utilities	
Present	1 1	One underground, one above ground	3 3
Not present	5	All above ground	5
<b>B. Vegetation</b>			
<b>1. Fuel Types</b>		<b>TOTAL FOR SUBDIVISION</b>	
Light	1		<b>52</b>
Medium	5	<b>Rating Scale</b>	
Heavy	10 10	Moderate Hazard	40-59
<b>2. Defensible Space</b>		High Hazard	
70% or more of site	1	Extreme Hazard	60-74
30% or more, but less than 70%	3 3		75+
Less than 30% of site	5		

## Wild-fire Hazard Mitigation Activities since 2004



The City has made the greatest strides in mitigating the losses due to wildfire by assisting in the organizing of Fire Safe Councils and through developing and regularly using local and national standards for the construction of buildings in Wildland Urban Interface areas.

Napa Firewise is a comprehensive public education and marketing campaign that is heading into its fifth year. Several independent groups have organized throughout the County to identify and promote fire awareness and education within those communities and neighborhoods that are at risk from wildfire. The program also provides specific steps each person can take to protect themselves, their family and their neighbors in the event a wildland fire occurs. Napa Firewise is collaboration between Napa County and the various city governments within the county and the citizens who participate on the *Fire Safe Councils*. Pete Munoa, Napa County Fire Marshal, and Darren Drake, Division Chief and Fire Marshal for the City of Napa, direct the day-to-day activities of the program.

Stakeholders are made up of the community and include:

- Residents and Homeowners
- Homeowner Associations
- Building Associations

- Landscape Associations
- Nurseries and Gardening Groups
- Architects
- Planners
- Insurance Industry
- Banking and Financial Institutions
- County Agriculture Commission
- Farm Bureau
- Bureau of Land Management
- Environmental Organizations
- Local Media
- Local Schools and Colleges
- Napa Valley Vintners and Growers

Several workshops were held for the Alta Heights/Montecito Area. The first workshop included an evacuation drill for the residents. The second was titled “**Home Ignition Zone Workshop,**” and covered topics including; *Our Risk, Fire Codes, The Role of Defensible Space* and *The Steps Homeowners can take.*

#### **Chipping and Fuel management Programs:**

We are in our fifth year of chipping, we anticipate funding with this grant up to 150 days of chipping, as of today we have chipped over 1225000 cubic yards of waste from over 200 sites. This is a very cost effective mitigation effort! We are studying the possibility of getting a free chipper and tow vehicle from the Bay Area Air Pollution control district, and exploring with our county corrections department, public works and risk management staff the possibility of creating a year round program using supervised inmate labor. Mechanical fuel reduction is critical in the Bay area as the number of burn days even for agricultural products is extremely limited. The reduction in fire danger to structures is currently the most efficacious means of creating defensible space, the keystone of a Firesafe community. Additionally the Department has tracked the volunteer labor involved in creating piles to be chipped and over 12600 voluntary hours have been expended in this program.

Final chipping program update: as of December 1, 2009 the program will move to a year round program. The program has chipped over 160,000 cubic yards during the last year. By chipping and spreading these piles the Department reduced fuel loads by the equivalent of burning 35,000 cords of wood fuel. The Firewise and environmental beneficial impacts of this program is now a very recognized part of service to the residents of the county. The partnership developed under the grant has led to a locally funded, sustainable program using donated chippers, county correctional labor, and city and county fire managed annuitant supervisors who manage the program and the inmates assigned to the project.

A comprehensive list of Firewise activities is included below:

- Firewise Trade Conference

- Direct mail outreach to promote chipping program
- Countywide free chipping program
- Public Service Announcements (Radio) promoting fire prevention
- Utility bill inserts promoting defensible space
- Newspaper ads promoting free chipping program
- "Door Hangers" promotion defensible space planning
- Update of Countywide risk map
- Defensible space inspection class for qualified contractors
- Information display at Home & Garden Show and Earth Day
- Sponsorship of free defensible space home inspections
- Update and management of Napa Firewise website
- Period press releases announcing Firewise events
- Bi-weekly Firewise columns in Napa Register (fire prevention messages)
- Display banners promoting fire prevention and DS planning
- Ongoing support for Fire Safe Councils and community action organizations

## **Technology/Terror Hazards**

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### **Hazardous Materials**

A wide variety of hazardous materials are present in Napa County. These materials are stored, used in manufacturing and agriculture, and moved by truck, train and pipeline. The materials may be poisonous, corrosive, explosive or flammable. The poison effect may be due to chemical, radioactive or biological properties of the materials. The physical state may be as a solid, fine powder, liquid or gas, perhaps under great pressure. Quantities range from a few grams in a test tube to large storage tanks. The Napa County Department of Environmental Management is the designated administering agency for the County Area Hazardous Material Monitoring Program. In the event of a spill or release, this agency should be notified immediately.

The table on the following page demonstrates the known level fixed threats that exist within the City. Numerous other sources are also found in smaller quantities throughout the City and County especially in agricultural facilities.

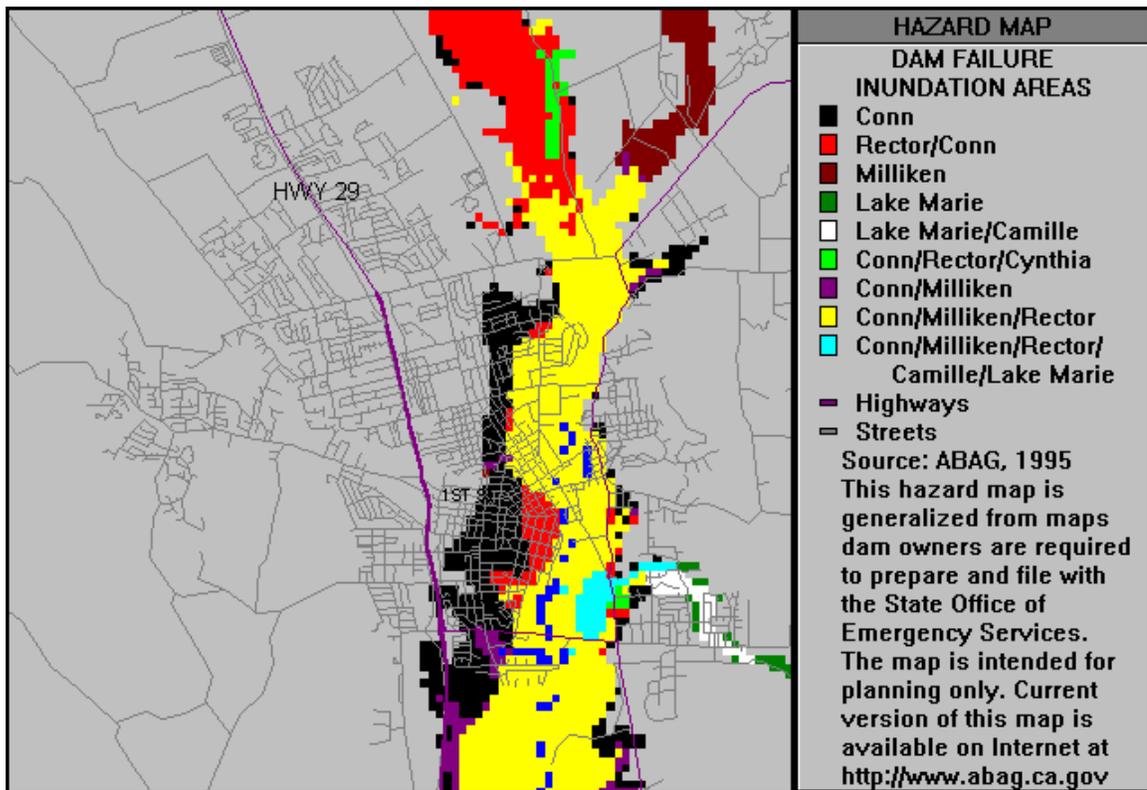
<b>City of Napa Acutely Hazardous Materials Facilities List (AHM)</b>				
<b>Rank</b>	<b>HP#</b>	<b>Facility Name/Address</b>	<b>AHM</b>	<b>Amount</b>
1.	0277	Queen of the Valley Hospital/1000 Trancas Street	Carbon dioxide Nitrogen	3400 CF 3810 CF
2.	1331	Dey Laboratories/2751 Napa Valley Corporate Drive	Acetylestine Hydrochloric Acid	2500 Lbs 1500 Gal
3.	1172	Kaiser Clinic/3285 Claremont Way	Liquid Oxygen Nitrous Oxide	517 CF 404 CF
4.	1096	Napa County Farm Supply/4407 Solano Avenue	Sulphur Ureacarloadide	4800 Lbs 5000 Lbs
5.	1023	Airgas, Northern CA & NV/568 Northbay Drive	Acetylene Helium	17000 CF 25000 CF
6.	0207	Department of Transportation: Jefferson/3161 Jefferson Street	Gasoline Diesel #2	4000 Gal 4000 Gal
7.	0109	Piner's Welding Supply Services/1820 Pueblo Avenue	Acetylene Nitrogen	15000 CF 25000 CF
8.	0951	Northern California Diagnostics Lab/2748 Jefferson Street	Hydrogen-Helium Nox/N	520 CF 910 CF
9.	0711	Golden State Vintners/1075 Golden Gate Drive	Sulfur Dioxide Calcium Hypochlorite Granular Propane Gas	400 Lbs 100 Lbs 500 Gal
10.	1612	Decrevel, Inc./1836 Soscol Avenue	Ferric Chloride	110 Gal
11.	1745	Highway Safety Products/935 Enterprise Way	Calcium Carbonate Polyvinal Chloride Resin	50000 Lbs 4500 Lbs
12.	1550	California Peptide Research, Inc./918 Enterprise Way	Methylene Chloride Nitrogen	110 Gal 3500 CF
13.	2376	Electronic Data systems/2600 Napa Valley Corporate Drive	Diesel Sulfuric Acid	30000 Gal 16000 Lbs
14.	0871	Napa Valley Paint/527 Walnut Street	Vinyl Acrylic Latex Titanium Dioxide Ethanediol Solvent Blend	5000 Gal 10000 Lbs. 220 Gal 540 Gal
15.	0104	Redwood #76 2611169/2005 Redwood Road	Gasoline Lrasc Oil	12000 Gal 1000 Gal
16.	0046	Bell Products Inc./722 Soscol Avenue	Acetylene Carbon Dioxide Trichlorethare	500 CF 1200 CF 12 Lbs
17.	0030	Pacific Bell TC60T/650 Imperial Way	Sulfuric Acid	240 Gal
18.	0026	Napa Valley Register/1615 Second Street	Ammonium Thiosulfate Propane Treated Petroleum Oil	110 Gal 75 Gal 20000 Gal
19.	0117	PG&E Napa Service Center/300 Burnell Street	Methyl Chloroform Hydrogen Acetylene	365 Gal 500 CF 2500 CF
20.	0126	Pacific Bell: 1300 Clay Street/1300 Clay Street	Petroleum Hydrocarbon Lead/Acid Battery/Sulfuric Acid	5000 Gal 2454 Gal
21.	2531	PG&E Napa Service Center/ 300 Burnell Street	Sulfur Hexafluoride Sulfuric Acid	412 CF 32 Gal

22.	Jamieson Canyon Water Treatment Plant	Sodium Hypochlorite Caustic Soda Aluminum Hydroxide Orthopolyphosphate Diesel Fuel	10,000 Gal 10,000 Gal 10,000 Gal 5,000 Gal 1,500 Gal
23.	Hennessey Water Treatment Plant	Sodium Hypochlorite Caustic Soda Potassium permanganate Orthopolyphosphate	10,000 Gal 10,000 Gal 10,000 Gal 5,000 Gal
24.	Milliken Water Treatment Plant	Sodium Hypochlorite	2,000 Gal

**Dam Failure**

A dam failure will cause loss of life, damage to property and other ensuing hazards, as well as the displacement of persons residing in the inundation path. There could be loss of communications, damage to transportation routes and the disruption of utilities and other essential services. Public health would be a major concern. There are several dams in Napa County. The two that would cause the most inundation and damage if they were breached, while at full capacity, are the Hennessey Dam and Rector Dam.

The following map shows the potential dam inundation areas in the City of Napa.



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## **Terrorism**

Due to its proximity to many of the Bay Area military, governmental, and financial institutions, the City of Napa is actively making preparations to respond to acts of terrorism. Despite recent advances in equipment and training, our ability to deal with problems within the City or provide mutual aid to the surrounding county is still limited. Due to its agricultural base, Napa may seem an unlikely target of terrorism, however, it could be subject to the fallout of a chemical or biological type attack targeted in one of many, highly populated cities located near its borders.

It is clear that the Federal government can and will provide many of the specialized resources to combat terrorism; however, the true effectiveness of any response to an act of terrorism will depend on what happens at the local public safety level.

Accordingly, the City of Napa has taken a number of positive steps in preparing the public safety response to acts of terrorism. Using funds from the 2003 Homeland Security Grant, the City of Napa has purchased some of the required specialized first responder equipment in order to effectively respond to acts of terrorism and protect life and property.

### **Napa Terrorism Working Group**

The Napa Terrorism Working Group (TWG) was formed in 2001 in response to 9/11 and the anthrax mailings. All emergency response agencies collaborated on a countywide protocol for response to terrorist incidents. In 2007 it was folded into the operational area council as a standing sub-committee.

When Homeland Defense grants became available, the same agencies decided that the TWG was best positioned to do needs assessments related to terrorism and determine allocations of any monies received for homeland defense issues. It was agreed by the members that such monies would be pooled and used based on needs assessments conducted by the group. The group was instrumental in completing two countywide threat and vulnerability assessments that maintained our eligibility for these grant programs. The TWG group agreed that the money is to be shared as equitably as possible. The main concept of the TWG was to form a cooperative, interagency group to deal with a host of issues related to terrorism and funding. Pooling the monies received and dispensing them according to the agreed upon needs of the group was one of the goals.

At the beginning of F/Y 03-04, in order to meet the state requirements for the Homeland Defense grants, an executive committee was formed within the group. This executive committee consisted of the County Sheriff, the County Fire Chief (or their representatives), a representative from the city's Fire Chiefs, from the city's Police Chiefs, and the County Public Health Officer. Napa County participated in the SHSGP from 1999-2007.

## **Terror/Technology Hazard Mitigation Activities Since 2004 and Planned Actions**

In the year 2005/2006 all Napa Police Department Officers attended the 8 hour POST mandated training course of "Law Enforcement's Response to Terrorism".

The Department was successful in establishing a respiratory protection and training program to protect first responder's health from airborne hazards or potentially hazardous materials during the performance of their work.

The Napa Police Department remains a member of the Napa County Terrorism Working Group and the Napa County Operational Plan. The Police Department intends to become more involved with the National Criminal Intelligence Sharing Plan in order to develop, gather, access, receive and share intelligence with other law enforcement agencies.

A Vulnerability Assessment was completed in 2003 which assessed the risk of 13 priority threats (including terrorist activities) that may harm the City's water system. None of the City's water assets received a "High Risk" rating. This is a result of the City having two separate large water treatment facilities located more than 20 miles apart (redundancy), numerous basic countermeasures already in place, and a very low rate of vandalism to our system in the past. All assets fell into the Low to Moderate Vulnerability Ranges because most facilities are concealed, fenced, buried or located in relatively remote areas, and as such there have been very few malevolent incidents in the entire history of the City of Napa's water system. Of the few incidents that have occurred, nearly all of them have been caused by teenaged vandals and none have resulted in any significant impacts to the system. While the results of the risk analysis do not indicate any assets in the "High Risk" area (highly critical and highly vulnerable asset), City of Napa Water would like to further reduce risk on the system and has prepared a plan to do so. This plan addresses many of the City's critical assets and single points of failure. City of Napa Water has implemented a number of security upgrades and installed new countermeasures that helped reduce the vulnerability of many of our assets. City of Napa Water is committed to continued improvements to reduce risk and has prepared a list of planned improvements to further reduce risk and ensure that the City's mission of providing a safe and reliable water supply for the City of Napa is met.

The 2007 review showed that the edges of Conn Dam (earthen dam) were cleared of vegetation so that the inspector could more accurately inspect for any seepage from the dam. Based on recommendations from the State, the City is installing holes in Milliken Dam to permanently lower the water surface elevation by 16 feet to avoid potential failure during a maximum credible earthquake. A \$1-million construction contract has been awarded to complete this work in 2008.

For the period 2009 – 2011, all members Napa Police Department command staff will attend the POST certified course, 'Law Enforcement Intelligence' as part of a cohesive national strategy to protect the United States from terrorism and the deleterious effects of transjurisdictional organized crime.

The Napa Sheriff's Department and the Napa Police Department have recently signed an MOU in order to better facilitate mutual aid responses and respond to hazardous and/or high risk incidents. The Napa Sheriff's Department Bomb Disposal Unit responds to any SWAT call-outs and is available for use within the City of Napa. The Napa Police Department and Napa Sheriff's Department currently train together on a quarterly basis, a minimum of four times per year.

Most recent CAD/RMS update was completed in 2009. This was a multi-year project that provided new hardware and software that modernized our dispatch center. The updated hardware provided mobile computer terminals in both the police and fire units.

The Communications Center and IT developed a new phone system with AT&T, which was completed in September 08. The new phone system allows telephone calls into the communications center to be rolled onto a phone tree. 911 calls from cellular phones will also be routed into the center instead of going to CHP. By summer 2010 the communications center will be able to receive 911 calls within the city limits from all cellular phone service providers. We are currently working with the county to also be able to receive cellular 911 from county jurisdictions and hope to have a contract or MOU by the end of 2010.

The Communications Center is expanding in size by adding two additional work centers in the center. The beginning of the remodel is scheduled to begin in winter 2009 and completion by spring 2010.

In the next two years complete the Bay Area Regional Interoperable Communications System (BayRICS) project. This is a federally engineered project that is currently determining the best and most effective way that 10-county Bay Area can have interoperability with radio communications.

In the next three years the Communications Center would like to acquire the technology to be able to receive text, data and digital images from community members devices that which to report emergencies and crimes. The City would like to be able to exchange and disseminate information to the public alerting them of emergencies and send images of data and digital images to the police squad cars.

## **Disaster Resistant Hazard Mitigation Activities Since 2004**

Prior to this years storm season the Department sent fire department personnel out into our most flood prone areas and handed out flood education materials by going door to door In addition the City had its flood inundation map printed in the local newspaper. This ended up happening the day before the City experienced major flooding.

Through the fire department the City provided introductory SEMS training for all local public schools teachers, staff, and administrators within the City of Napa.

This particular action item is very important and needs to be included in the Hazard Mitigation Plan.

This is an ongoing action item due to a normal employee attrition cycle within the City. All of the City's new employees are required to take the SEMS Introductory course. The City provides additional SEMS training depending on an employee's level of responsibility and job description in the City during a disaster event. In addition to the Introductory SEMS class, all new employees will now also receive the NIMS 700 course as well

In the last year, City employees required to have training beyond the SEMS introductory class have passed a SEMS 200 / NIMS 700 course. The SEMS 200 portion of the class served as a refresher for employees. The City also partnered with Napa County to offer ICS 300 on four different occasions. All field supervisors and managers in public works, Fire, Parks and Recreation and the Police Department that had not previously attended the course were required to attend and pass the class. The City is approximately 96 % SEMS compliant and 70% NIMS compliant at this time.

The Volunteer Center of Napa Valley hosted three SEMS Disaster preparedness-training sessions for three separate community groups. They consisted of the business community, non-profits and faith-based groups.

The two primary public service organizations the City works with in preparation for and in a disaster are the Red Cross and Volunteer Center of Napa Valley. The City has an excellent working relationship with both organizations. The City is very supportive of their educational and awareness programs. The City is working to organize CERT graduates through the Volunteer Center so the City may utilize them during a disaster. During our recent New Year's Flood the City did mobilize CERT graduates through the Volunteer Center to assist the City for support roles.

The action item of mobilizing CERT graduates through the Volunteer Center is approximately 80% complete. The level of support and cooperation between City and public service organizations has been excellent.

Through the Department of Homeland Security's we have implemented the Government Emergency Telecommunications Service (GETS) Program which provides an increased probability of completing calls during an emergency when normal calling methods fail.

The City has a disaster committee which includes every jurisdiction within Napa County. The committee meets and plans disaster exercises on a regular basis. In the course of the last calendar year the City experienced an actual flood event which was a Federally declared Disaster. In addition to having an actual event the City also held an Emergency Operations Center functional exercise in August of this year. Every jurisdiction along with other necessary agencies participated in the event.

The City of Napa Fire Department is entering into a County-wide MOU for the purpose of creating a joint Urban Search and Rescue Team (USAR). This team will manage confined space, trench and collapse emergencies. 2006 was a year for writing policy and procedures, training and developing the MOU. During the year 30 members of the NFD were able to attend and receive certification for Trench Rescue, Confined Space and Advance Rope Rescue. This was made possible due to receiving a Grant from the

Federal Government for \$266,667,000. The long term goal is for the County Team to be certified with OES as a Type 2 USAR Team.

The City of Napa Fire Department is nearing its goal of becoming State OES certified as a Type 2 Water Rescue Team. During 2005 and 2006 the team has been upgrading its policy and procedures, training and equipment inventories to make this possible. The Team received a \$20,000 grant from Fireman's Fund which allowed much of the required equipment to be purchased.

## **SECTION 4: MITIGATION STRATEGY**

Mitigation strategies and action items were developed for the City of Napa through the process of public meeting and public-private partnership committees as mentioned in the first section of this Plan. The list of action items in this section identifies mitigation projects and includes a project ranking based upon time horizon, cost, risk, benefit and input from local stakeholders. The action items were developed to provide public policy makers with a list for potential implementation as mitigation resources, time, equipment and funding become available for the selected projects.

### **Local Hazard Mitigation Goals**

The mitigation goals describe the overall direction that the City of Napa agencies, organizations, and citizens propose to take toward mitigating risk from natural and man-caused hazards. Goals and objectives of the Plan were developed during interviews and meetings with public officials and at public meetings. Napa hazard mitigation goals are identified below.

- Promote a flood safe community
- Promote an earthquake safe community
- Promote a fire safe community
- Promote a technology/terror safe community
- Create a more disaster resistant community

### **Cost-Benefit Review**

City staff has attended FEMA provided training and used the Mitigation Benefit Cost Analysis (BCA) Toolkit to conduct benefit/cost analysis of potential mitigation projects (including the Borreo Building Seismic Retrofit Project). Staff has also reviewed *Developing the Mitigation Plan (FEMA 386-3)* and FEMA's *Guidelines for Benefit-Cost Analysis of PDM Applications* and is, therefore, knowledgeable of methods used for benefit cost analysis.

Projects likely to exceed 1.0 BCR were included in the PDM plan; projects unlikely to exceed 1.0 BCR were not included. Therefore, while formal cost benefit review was not completed for all mitigation actions/projects during the prioritization process, the City is confident the mitigation projects included in the PDM Plan merit future consideration for PDM funding.

## Mitigation Objectives and Action Items – How were they prioritized

The broad range of potential mitigation activities were considered, and below is a list of mitigation objectives and the actions identified by the City. After the Risk Assessment was completed, ideas for *Mitigation Action Items* were generated by individual employees, Supervisors and Managers in each Department, City Departments in general, the Disaster Education Task Force and the Terrorism Working Group and from the Public Workshops. City Staff reviewed the list and items were chosen based on need, ability to meet a mitigation strategy, and a cost-benefit review. In addition, there was an effort to collaborate with Napa County and action items were chosen based on meeting a cooperative need. Similarly they were prioritized based on need, ability and ease of completion, level of importance to the community and a realistic ability to fund to action item. The City will review the Action Items on an annual basis and change, add or adjust them as necessary.

The following tables were developed to rank the mitigation projects using the following criteria; each project was assigned a priority rank, an approximate cost, a time horizon from commencement of the project to completion, and an assumption as to whether or not the project would be subject to CEQA or federal EIR requirements.

A more detailed explanation of the Objectives and Action Items follows the tables.

Description of Project	Priority	Time Horizon	Approximate Project Cost	Subject to CEQ/EIR
<b>Flood Hazards Projects</b>				
Complete approved Flood Control Project	1	Mid	\$200,000,000	Yes completed
Storm Drainage Projects	1	Long	\$8,552,600	Yes
Improve Countywide flood surveillance/early warning system	1	Near	\$100,000 per annum	Yes
Interior Drainage Study	1	Near	\$425,000	Yes
Flood Plain Management	1	Mid	Current or grant funding	Yes
Increase coverage of Storm Watch sensors	2	Near	\$25,000	Yes
Distribute NOAA weather radios	3	Mid	\$ 25,000	No
<b>Earthquake Hazard Projects</b>				
Structural and Infrastructure Safety Program	1	Near	Current Funding	Yes
High Occupancy Structure Program	1	Near	\$100,000	Yes
Building Earthquake Safety Program	1	Mid	\$5,000	No
<b>Fire Hazard Projects</b>				
Develop Structural Protection Plans for Urban Interface Areas	1	Mid	\$100,000	No
Support the development of Fire Safe Councils	1	Near	\$135,000	No
Upgrade water utility infrastructure	2	Long	\$1,200,000	Yes
Review building plans in WUI areas	3	Near	\$50,000	Yes
Vegetation Management Program	3	Mid	\$200,000	Yes
<b>Technology/Terror Hazard Projects</b>				
Improve existing communication systems	1	Mid	\$2,600,000	No
Training for Public Safety personnel regarding terrorism	1	Mid	\$100,000	No
Develop training to improve response to civil unrest and riots	1	Near	\$15,000	No
Build an alternate EOC	1	Near	\$60,000	No
Provide terrorism training	2	Near	\$100,000	No
Improve response to Mass Casualty/WMD incidents	2	Near	\$10,000	No
Increase agency coordination in dealing with terrorism	2	Mid	\$50,000	No
Modify and increase resources to decrease crime	3	long	\$300,00	No
Purchase a armored citizen rescue vehicle	3	Long	\$85,000	No

Improve support of Napa County Hazardous Device Team	3	Long	\$100,000	No
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Description of Project	Priority	Time Horizon	Approximate Project Cost	Subject to CEQ/EIR
<b>Technology/Terror Hazard Projects (continued)</b>				
Create a Remote Workers Infrastructure	3	Long	\$250,000	No
<b>Disaster Resistant Community Projects</b>				
Promote greater public awareness	1	Near	Current Funding	No
Maintain and equip primary Emergency Operations Center	1	Near	\$5,000 per annum	No
Maintain a program on dam safety	1	Near	\$10,000	No
Invest in water infrastructure to withstand drought years	1	Mid	Current funding	Yes
Coordinate efforts with health community to respond to communicable diseases	1	Near	Current or grant funding	No
Identify and develop programs to be instituted to assist businesses to prepare for and recover from a disaster	1	Near	Current funding	No
Identify and develop programs to be instituted to assist residents to prepare for and recover from a disaster	1	Near	Current funding	No
Develop short-term shelter options for residents and animals	1	Near	Current funding	No
Post Disaster Restoration Ordinances	2	Mid	\$5,000	No
Establish the position of Disaster Coordinator for the City of Napa	2	Near	\$60,000	No
Ensure that the city, the hospitals and the County Health Dept. coordinate efforts to educate, prepare for and respond to outbreaks of communicable disease	2	Near	Current or grant funding	No
Identify critical businesses and prepare emergency response plans to protect against economic loss and speedy recovery	2	Mid	Current funding	No
Develop inventories of specific types of businesses and buildings and prepare procedures for post-disaster recovery efforts	2	Mid	Current funding	No
Prepare a secondary EOC site	3	Long	\$125,000	No
Develop and practice evacuation routes in sensitive facilities	3	Long	\$50,000	No
Develop a Climate Action Plan applicable with state and federal law	3	Long	Current funding	Yes

## **Goal: To Promote a Flood Safe Community**

**Objective 1.1:** The City shall support programs and methods to reduce the flooding of the Napa River and its tributaries.

### ***Ideas for Implementation***

**Action 1.1.1:** The City shall continue to assist the U.S. Army Corps of Engineers, Napa County Flood Control and Water Conservation District, other responsible agencies, and the public to maintain funding for the development of the Napa River Flood Protection Project.

**Coordinating Organization:** Community Development  
Department and Public Works

**Timeframe:** Ongoing

**Funding:** \$200,000,000

**Action 1.1.2:** The City shall pursue funding for the design and construction of storm drainage projects to protect properties that will not be fully protected by the Flood Protection Project, including home elevations, property acquisitions, upstream storage such as detention basins, and channel widening with the associated right-of-way acquisitions, relocations and environmental mitigations. A complete breakdown of the projects can be found in Appendix B.

**Coordinating Organization:** Community Development  
Department and Public Works

**Timeframe:** Ongoing

**Funding:** \$8,552,600

**Action 1.1.3:** The City shall periodically update the Storm Drain Master Plan by performing watershed analysis including the creation of related storm drain system maintenance plans.

**Coordinating Organization:** Community Development  
Department and Public Works

**Timeframe:** Ongoing

**Funding:** Current or grant funding

**Action 1.1.4:** The City shall periodically update the Local Hazard Mitigation Plan, Floodplain Management Plan and Emergency Management Plan.

**Coordinating Organization:** Community Development  
Department and Public Works

**Timeframe:** Ongoing

**Funding:** Current or grant funding

**Objective 1.2:** The City shall continue to provide for floodplain management to protect its residents and property from the hazards of development in the floodplain of the Napa River and its tributaries.

***Ideas for Implementation***

**Action 1.2.1:** The City shall continue to apply floodplain management regulations for development in the flood plain and floodway.

**Coordinating Organization:** Community Development  
Department and Public Works

**Timeframe:** Ongoing

**Funding:** Current funding

**Action 1.2.2:** The City shall continue to participate in the Federal Emergency Management Agency's National Flood Insurance Program and Community Rating System.

**Coordinating Organization:** Community Development  
Department and Public Works

**Timeframe:** Ongoing

**Funding:** Current funding

**Action 1.2.3:** The City shall continue to utilize the Federal Emergency Management Agency's Flood Insurance Rate Map to define the special flood hazard area, the floodway and the floodplain.

**Coordinating Organization:** Community Development  
Department and Public Works

**Timeframe:** Ongoing

**Funding:** Current funding

**Action 1.2.4:** The City shall balance the housing needs of its residents against the risk from potential flood-related hazards.

**Coordinating Organization:** Community Development  
Department and Public Works

**Timeframe:** Ongoing

**Funding:** Current funding

**Action 1.2.5:** Should funding opportunities become available the City would encourage private property owners to participate in home elevation and acquisition programs.

**Coordinating Organization:** Community Development  
Department and Public Works  
**Timeframe:** Ongoing  
**Funding:** Funding from Grant Programs

**Action 1.2.6:** Climate Change Studies – As more information becomes available the City of Napa will evaluate the impact on our current development standards as it relates to rising sea levels.

**Coordinating Organization:** Community Development  
Department and Public  
Works  
**Timeframe:** Unknown  
**Funding:** No Present funding known

**Action 1.2.7:** The City shall coordinate with Napa County to create a plan to reduce woody debris from vineyards upstream that cause flooding in the City of Napa. The City shall coordinate with Napa County for dredging of channels to clear debris from creeks and other tributaries.

**Coordinating Organization:** Community Development  
Department and Public  
Works  
**Timeframe:** Unknown  
**Funding:** Current or grant funding

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**Objective 1.3:** Develop and improve the countywide flood surveillance and early warning system.

***Ideas for Implementation***

**Action 1.3.1:** The City and County of Napa have created an automated system of rain and flood gauges on the major tributaries and storm approach path to the greater Napa River Drainage system. The system is web enabled and accessible from both flood operation centers and the City website. The tool is constantly used for surveillance during the rainy season.  
<http://cityofnapa.org>  
<http://napa.onerain.com/home.php>

**Coordinating Organization:** City and County Public Works

**Timeframe:** Ongoing  
**Funding:** \$100,000 per annum

**Action 1.3.2:** Increase coverage of Storm Watch sensors to include small streams that, due to land use changes, have demonstrated an impact on existing streams and urban flooding.

**Coordinating Organization:** City and County Public Works  
**Timeframe:** 1 – 3 years  
**Funding:** \$25,000

**Action 1.3.3:** Distribute NOAA weather Radios to high risk, limited income families living in flood zones. Develop program of at cost NOAA radios for families in the various flood zones in Napa County. Provide weather radios to block captains.

**Coordinating Organization:** County Disaster Education Taskforce  
**Timeframe:** 1 – 3 years  
**Funding:** \$25,000

**Action 1.3.4:** The City shall provide sandbags and plastic to the disabled and the elderly upon request during flood events.

**Coordinating Organization:** Community Development Department and Public Works  
**Timeframe:** Ongoing  
**Funding:** Current or grant funding

**Objective 1.4:** Study of Interior drainage – residual ponding areas after the Flood Project is completed.

***Ideas for Implementation***

**Action 1.4.1:** Soscol Interior Drainage Project – Preliminary Design

**Coordinating Organization:** Napa Community Redevelopment Agency  
City of Napa Public Works Department

**Time Frame:** September 2009-December 2010

**Funding:** \$425,000 (approximately)  
Napa Community Redevelopment Agency  
Property tax increment revenue

**Objective 1.5:** Study of levee systems

**Action 1.1.5:** The City shall pursue funding for the analysis, certification and maintenance of existing and new levee systems within the City of Napa.

**Coordinating Organization:** Community Development  
Department and Public Works  
**Timeframe:** Ongoing  
**Funding:** Current or grant funding

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**Goal: To Promote an Earthquake Safe Community**

**Objective 2.1:** The City shall continue to require that all new buildings and infrastructure be designed and constructed to resist stresses produced by earthquakes.

***Ideas for Implementation***

**Action 2.1.1:** The City shall require all new buildings to conform to the structural requirements of the most recently adopted edition of the *California Building Code*.

**Coordinating Organization:** Community Development Dept.  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 2.1.2:** The City shall continue to discourage the placing of facilities necessary for emergency services, major utility lines and facilities, manufacturing plants using or storing hazardous materials, high occupancy structures (such as multi-family residences and large public assembly facilities), or facilities housing dependent populations (such as schools and convalescent centers) within areas subject to very strong, violent, or very violent ground shaking, as indicated in the ABAG Ground shaking Intensity Maps on pages 45 and 47, unless no alternative is available and adequate mitigation measures can be incorporated into the project.

**Coordinating Organization:** Community Development Dept.  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 2.1.3:** The City shall continue to require soils and geologic studies for proposed development with large client populations (such as schools and convalescent centers) within areas subject to very strong, violent, or very violent ground shaking, as indicated in the ABAG Shaking Intensity Map. Such studies should determine the actual extent of the

seismic hazards, optimum location for structures, the advisability of special structural requirements, and the feasibility and desirability of a proposed facility in a specified location. Mitigation measures shall be incorporated as conditions of any project approval.

**Coordinating Organization:** Community Development Dept.  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 2.1.4:** The City shall continue to require special construction features in the design of structures where site investigations confirm potential seismic hazards.

**Coordinating Organization:** Community Development Dept.  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 2.1.5:** The City shall Continue to require that facilities necessary for emergency services be capable of withstanding a maximum credible earthquake from any of the seven known active faults in the region and remaining operational to provide emergency response.

**Coordinating Organization:** Community Development Dept.  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 2.1.6:** Inventory non-ductile concrete, tilt-up concrete (such as converted lofts), and other privately owned potentially structurally vulnerable residential building.

**Coordinating Organization:** Community Development Dept.  
**Time Frame:** 1-3 years  
**Funding:** Current Funding

**Action 2.1.7:** Adopt the 2009 international Existing Building Code or the latest applicable standard for the design of voluntary or mandatory retrofit or privately-owned seismically vulnerable buildings.

**Coordinating Organization:** Community Development Dept.  
**Time Frame:** 1-3 years  
**Funding:** Current Funding

**Action 2.1.8:** Utilize or recommend adoption of a retrofit standard that includes standard plan sets and construction details for voluntary bolting of homes to their foundations and bracing of outside walls of crawl spaces.

**Coordinating Organization:** Community Development Dept.  
**Time Frame:** 1-3 years  
**Funding:** Current Funding

**Action 2.1.9:** Encourage local government building inspectors to take classes on periodic basis on retrofitting of single-family homes.

**Coordinating Organization:** Community Development Dept.  
**Time Frame:** 1-3 years  
**Funding:** Current Funding

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**Objective 2.2:** Identify options, incentives and funding sources for structural retrofitting of structures that are identified as seismically vulnerable.

***Ideas for implementation***

**Action 2.2.1:** The City shall develop a program to educate the community on the various methods of retrofitting pre-earthquake code designed structures, which would include: workshops, literature and public safety announcements.

**Coordinating Organization:** Community Development Dept.,  
Napa County Redevelopment Agency  
**Timeframe:** 1 – 3 years  
**Funding:** \$5,000

**Action 2.2.2:** The City shall encourage the study and rehabilitation of high occupancy structures (such as multi-family residences and large public assembly facilities) susceptible to collapse or failure in an earthquake.

**Coordinating Organization:** Community Development Dept.  
**Timeframe:** Ongoing  
**Funding:** \$100,000

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## **Goal: To Promote a Fire Safe Community**

**Objective 3.1:** The City shall compile and disseminate information regarding the fire threat to identified Wildland Urban Interface Areas.

### ***Ideas for Implementation***

**Action 3.1.1:** The City shall prepare a community base map in Wildland Urban Interface areas (WUI) showing emergency vehicle access routes, escape routes, safety zones, water sources and location of structures.

**Coordinating Organization:** Fire Department  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 3.1.2:** The City shall prepare Structure Protection Plans for each of the identified Wildland Urban Interface Areas as they are updated.

**Coordinating Organization:** Fire Department  
**Timeframe:** 1- 3 years  
**Funding:** \$100,000

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**Objective 3.2:** The City shall encourage implementation of wildfire mitigation activities in a manner consistent with the goals of promoting sustainable ecological management and community stability.

### ***Ideas for implementation***

**Action 3.2.1:** The City shall include in its weed abatement procedures a vegetation program to provide for the clearing or thinning of non-fire resistive vegetation along a minimum 10 feet along emergency vehicle access roads and driveways.

**Coordinating Organization:** Fire Department, Community Development Department and Property Owners  
**Timeframe:** 1 – 3 years  
**Funding:** \$50,000

**Action 3.2.2:** The City shall provide an ongoing vegetation management program such as the *City's Weed Abatement* ordinance to prohibit the spread of wildfire in ground and aerial fuels and to assist homeowners in developing defensible space.

**Coordinating Organization:** Fire Department, Community Development Department and Property Owners  
**Timeframe:** 1 – 3 years  
**Funding:** \$200,000

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**Objective 3.3:** The City shall attempt to decrease the potential risk associated from wildfires within the City Limits and surrounding area through a variety of actions.

***Ideas for Implementation***

**Action 3.3.1:** The City shall continue to review new development in WUI areas to assure that adequate emergency vehicle access roads, fire flow onsite fire protection systems, signage, ignition resistant building materials, and defensible space are provided as needed.

**Coordinating Organization:** Fire Department, Community Development Department, Napa Communities Firewise Foundation, Property Owners, and Public works Department  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 3.3.3:** The City shall continue to upgrade existing water utility infrastructure to increase redundancy in high fire hazard areas especially at the rural and urban interface to minimize the risk of losing access to infrastructure during an event.

**Coordinating Organization:** Public Works  
**Timeframe:** 3-5 years  
**Funding:** \$1,200,000

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**Objective 3.4:** The City shall increase communication, coordination and collaboration between wildland/urban interface property owners, local and county fire officials to address risks, existing mitigation measures, and state and federal assistance programs to create a more fire safe community.

***Ideas for Implementation***

**Action 3.4.1:** The City shall encourage owners and occupants of single-family residences to have an emergency plan in the event of a wildfire or other natural disaster.

**Coordinating Organization:** Fire Department, Community Development Department, Napa communities Firewise foundation, and Property Owners  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 3.4.2:** The City shall insure the Fire Department review all building plans in WUI areas for defensible space, emergency vehicle access, fire flow and ignition resistant construction requirements.

**Coordinating Organization:** Fire Department  
**Timeframe:** 1 – 3 years  
**Funding:** \$50,000

**Action 3.4.3:** The City shall investigate the development and adoption of minimum standards to locate, design and construct buildings and structures or portions thereof for the protection of life and property, to resist damage from wildfires, and to mitigate building and structure fires from spreading to wildland fuels.

**Coordinating Organization:** Fire Department, Community Development Department and Property Owners  
**Timeframe:** 1 – 3 years  
**Funding:** \$10,000

**Action 3.4.4:** Encourage the formation of a community-based approach to wildfire education and action through the *Fire Wise Program* and formation of Fire Safe Councils.

**Coordinating Organization:** Fire Department, Community Develop Dept., Napa Communities Firewise Foundation, City Council and Property Owners  
**Timeframe:** 1 – 3 years

**Funding:** \$135,000

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**Goal: Promote a Technology/Terror Safe Community**

**Objective 4.1:** Improve existing communication systems to effectively deal with acts of terrorism and civil unrest.

***Ideas for Implementation***

**Action 4.1.1:** Increase the number of Mobile Data Computers. Develop automated scheduling program to ensure personnel coverage in the event of a terrorist act.

**Coordinating Organization:** Napa Police Department  
**Timeframe:** 3 – 5 years  
**Funding:** \$2,600,000

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**Objective 4.2:** The City shall enhance and reevaluate the needs of the department and make necessary modifications to specialty units, such as the Special Enforcement Unit, DARE Curriculum and School Resource Officers in order to better utilize personnel to decrease crime within the city of Napa.

**Action 4.2.1:** Evaluate the need to increase manpower in the Special Enforcement Unit (Gang Unit), recently increased from two officers to four officers and a sergeant.

**Coordinating Organization:** Police Department  
**Timeframe:** 1 – 5 years  
**Funding :** \$450,000

**Action 4.2.2:** Evaluate the need to incorporate School Resource Officers into the Special Enforcement Unit to better utilize resources.

**Coordinating Organization:** Police Department  
**Timeframe:** 1 – 5 years  
**Funding:** Current Funding

**Objective 4.3:** Encourage training for Public Safety personnel in understanding what terrorism is and the risk associated with such an incident.

***Ideas for Implementation***

**Action 4.3.1:** Encourage first responder participation in attending available local, state and federal agency training on the effects of terrorist events. Training should include a better understanding on the potential outcomes associated with a terrorist event, and the ability to recognize the presence of, and identify, criminal activity or terrorism in an emergency. Training should also include information on weapons of mass destruction and chemical, biological, and nuclear hazards.

**Coordinating Organization:** Napa Police Department  
**Timeframe:** 1 – 3 years  
**Funding:** \$100,000

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**Objective 4.4:** Increase inter- and intra-agency coordination on potential terrorist activity.

***Ideas for Implementation***

**Action 4.4.1:** Improve and increase the exchange of information related to terrorist activity between the Napa Police Department and local, state and federal law enforcement agencies. This can be accomplished by participating in County and State-wide committees, and researching potential technology based programs.

**Coordinating Organization:** Napa Police Department  
**Timeframe:** 1 – 3 years  
**Funding:** \$50,000

**Objective 4.5:** Improve support of the Napa County Hazardous Device Team.

***Ideas for Implementation***

**Action 4.5.1:** Identify and train personnel who can assist the Napa County Sheriff Department Hazardous Device Team. Currently the team provides service for Napa County residents as well as residents of the City of Napa. The major services provided by the team include: investigation of suspicious packages, render safe operations performed on explosive devices, disposal of found explosive materials and explosive chemicals, collection of evidence at bombing scenes, and technical assistance for the Napa Police Department SWAT Team.

**Coordinating Organization:** Napa Police Department  
**Timeframe:** 3 – 5 years

**Funding:** \$100,000

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**Objective 4.6:** Develop training to improve response to civil unrest and riots.

***Ideas for Implementation***

**Action 4.6.1:** Improve the strategic response to civil unrest and riots through increased training and awareness. Utilizing the department's SWAT Team, coordinate a mutual training day with the Napa Sheriff's Department SWAT Team focusing on team tactics and response to civil unrest.

**Coordinating Organization:** Napa Police Department

**Timeframe:** 1 – 3 years

**Funding:** \$15,000

**Action 4.6.2:** Improve the city of Napa equipment needs for response to high risk incidents, such as purchasing an armored citizen rescue vehicle.

**Coordinating Organization:** Napa Police Department

**Timeframe:** 3 – 5 years

**Funding:** \$85,000

**Action 4.6.3:** Training for personnel in explosive breaching operations. In order to improve the departments ability to make entry into fortified buildings in possible hostage rescue situations.

**Coordinating Organization:** Napa Police Department

**Timeframe:** 1 – 3 years

**Funding:** \$10,000

**Funding:** \$75,000

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**Objective 4.7:** Improve response to Mass Casualty/WMD Incidents.

***Ideas for Implementation***

**Action 4.7.1:** Increase the Napa Police Department response to mass casualty and weapons of mass destruction incidents by participating in realistic, countywide, full-scale exercises to test the effectiveness of first responders.

**Coordinating Organization:** Napa Police Department

**Timeframe:** 1 – 3 years

**Funding:** \$10,000

**Objective 4.8:** Design and build an alternate processing and emergency operations center. The City of Napa Hazard Mitigation Plan of 2004 identified the establishment of an alternate Emergency Operations Facility as a requirement to meet the goal of a disaster resistant community. The City of Napa’s current emergency operations infrastructure is riddled with single points of failure. The information Technology Division is proposing a distributed emergency operation infrastructure that would allow for emergency operation in the event of the loss of City Hall, or the Public Safety building. Currently, the loss of either of these facilities would eliminate our technology infrastructure.

**Action 4.8.1:** Alternate processing for critical computer applications and telecommunications system.

**Coordinating Organization:** Napa Fire Department, IT Dept.  
**Timeframe:** 1-3 years  
**Funding:** \$60,000

**Action 4.8.2:** City maintained wireless infrastructure for telephone, radio and data communication

**Coordinating Organization:** IT Department  
**Timeframe:** 1 -3 years  
**Funding:** Current funding

**Action 4.8.3:** Automated off site data storage with self healing network Infrastructure.

**Coordinating Organization:** IT Department  
**Timeframe:** 1 – 3 years  
**Funding:** \$750,000

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**Objective 4.9:** Develop and create a remote workers infrastructure

**Action 4.9.1:** The requirement for remote access to city data and applications is a constant evolving need. The information Technology Division is proposing a remote worker infrastructure that unifies that look and feel of the users experience on the network. The intent is to provide secure, remote deployable access to City applications and data without the need for information technology staff to configure the remote computer

**Coordinating Organization:** IT Department  
**Timeframe:** 1 – 3 years  
**Funding:** \$250,000

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## **Goal: To Create a Disaster Resistant Community**

**Objective 5.1:** The City shall promote greater public awareness and understanding of natural hazards.

### **Ideas for Implementation**

**Action 5.1.1:** Provide disaster preparedness education in the Napa Community utilizing our public education officer and other appropriate City resources.

**Coordinating Organization:** City of Napa Fire Department  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.1.2:** The City shall support the continuation of a mandatory hazards response Education program to meet the State of California’s SEMS training and Federal NIMS training curriculum.

**Coordinating Organization:** City of Napa Fire Department  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.1.3:** The City shall continue to support the education and awareness Programs developed and distributed by public service organizations.

**Coordinating Organization:** Napa Fire Department  
**Timeframe:** Ongoing  
**Funding:** Current funding

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**Objective 5.2:** The City shall continue to investigate and pursue opportunities to improve public safety communication throughout the county operational area as well as adjacent operational areas throughout the Bay Area and Region II. In addition we must continue to seek through modern technology methods of communication with the public during significant emergencies or disaster events.

### ***Ideas for Implementation***

**Action 5.2.1:** The Fire and Police Departments will continue to make improvements in the communication system as it relates to interoperability.

**Coordinating Organization:** Fire Department, Police Department  
**Timeframe:** 3 – 5 years  
**Funding:** current or grant funding

**Action 5.2.2:** Continue to work toward improving our radio system by incorporating more common radio frequencies for emergency personnel to communicate within the county during a significant emergency or disaster event.

**Coordinating Organization:** Fire Department, Police Department, Public Works  
**Timeframe:** 3 – 5 years  
**Funding:** current or grant funding

**Action 5.2.3:** The City of Napa shall work to insure the ability to maintain priority phone communication during a significant disaster which can overwhelm the telephone system.

**Coordinating Organization:** IT Department  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.2.4:** Make upgrades to the Computer Aided Dispatch (CAD) System in order to accommodate wireless 911 calls in the center.

**Coordinating Organization:** Information Technology  
**Timeframe:** 1 – 3 years  
**Funding:** Current funding

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**Objective 5.3:** The City shall review and update its resources, including material information and human, in an ongoing effort to maintain a state of readiness in the event of an emergency.

***Ideas for Implementation***

**Action 5.3.1:** The City shall coordinate the revision of the City of Napa Emergency Plan to address local needs and to satisfy all State and Federal Emergency Management system requirements.

**Coordinating Organization:** Fire Department and Personnel Department  
**Time frame:** Ongoing  
**Funding:** Current utilizing Fire Department overtime budget.

**Action 5.3.2:** The City shall coordinate training exercises that rehearse the procedures established by the Emergency Plan in order to maintain optimum readiness for disasters.

**Coordinating Organization:** Fire Department  
**Timeframe:** Ongoing  
**Funding:** \$5,000

**Action 5.3.3:** The City shall maintain and equip an Emergency Operation Center(EOC) for immediate availability in the event of a disaster.

**Coordinating Organization:** Fire Department, All City Departments, Public Works and Finance Department  
**Timeframe:** Ongoing  
**Funding:** \$5,000 per annum

**Action 5.3.4:** As funding becomes available, the City shall secure a site and the necessary equipment to operate a back-up Emergency Operations Center.

**Coordinating Organization:** Fire Department, All City Departments, Public Works and Information Technology  
**Timeframe:** 1 – 3 years  
**Funding:** \$125,000

**Action 5.3.5:** The City shall hire a permanent part time disaster coordinator to help facilitate disaster programs in the City of Napa.

**Coordinating Organization:** Fire Department, All City Departments, Public Works and Finance Department  
**Timeframe:** 1 – 3 years  
**Funding:** \$60,000

**Action 5.3.6:** The City will collect data to complete and improve future risk analysis efforts

**Coordinating Organization:** Community Development, Fire Department, Public Works, Police Department  
**Timeframe:** 1 – 3 years  
**Funding:** Current funding coupled with Grant opportunities

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**Objective 5.4:** The City shall develop mechanisms in advance of a major emergency to cope with the subsequent rebuilding and recovery phases.

*Ideas for implementation*

**Action 5.4.1:** The City shall develop mechanisms in advance of a major emergency to cope with the subsequent rebuilding and recovery phases.

**Coordinating Organization:** Community Development, Fire Department  
**Timeframe:** 1 – 3 years  
**Funding:** Current funding

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**Objective 5.5:** Explore opportunities to participate in Mutual-Aid and other agreements with Napa County, Cal Fire, and other agencies where there is a mutual benefit to both parties.

*Ideas for Implementation*

**Action 5.5.1:** Reassess current agreements and explore for new opportunities to expand current mutual, automatic aid, and combined specialized team agreements with other agencies.

**Coordinating Organization:** Fire Department  
**Timeframe:** ongoing  
**Funding:** Current funding

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**Objective 5.6:** Require all sensitive facilities (facilities housing large numbers of people who have restricted mobility, i.e., hospitals, nursing homes, day care facilities, assisted care facilities, jails, etc.) to maintain and regularly update emergency response plans identifying safety procedures and evacuation routes.

***Ideas for Implementation***

**Action 5.6.1:** Develop a program to identify evacuation routes and procedures for all sensitive facilities and implement programs to practice evacuation and safety maneuvers.

**Coordination Organization:** Napa Fire Department, Community Development Department, Public Works, and Police Department  
**Timeframe:** Ongoing  
**Funding:** \$50,000

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**Objective 5.7:** Enhance outreach and education programs aimed at mitigating, reducing or preventing the hazards from dam failure.

***Ideas for Implementation***

**Action 5.7.1:** Provide education and distribute information to the community regarding flood preparedness from dam failure.

**Coordinating Organization:** Fire Department  
**Timeline:** Ongoing  
**Funding:** Current Funding

**Action 5.7.2:** Continue to support the education and awareness programs developed and distributed by public service organizations such as Red Cross and the Napa County Disaster Education Task Force.

**Coordinating Organization:** Fire Department  
**Timeline:** Ongoing  
**Funding:** Current Funding

**Action 5.7.3:** Through the public education division of the Napa Fire Department, provide people and materials to facilitate required assistance.

**Coordination Organization:** Fire Department  
**Timeline:** Ongoing  
**Funding:** Current Funding

**Action 5.7.4:** Request the State to minimize the risk to the City of damage from inundation resulting from failure of Rector Reservoir Dam by maintaining the dam in a safe condition.

**Coordination Organization:** Napa Fire Department, Disaster Education Task Force and Public Works  
**Timeline:** Ongoing  
**Funding:** Current Funding Available

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**Objective 5.8:** Integrate updated information and improved technical analysis of Dam Failure into Policy and Procedure.

***Ideas for Implementation***

**Action 5.8.1:** Update the City Water Division’s Emergency Response Plan to include new information received from an updated Vulnerability Assessment.

**Coordination Organization:** Public Works  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 5.8.2:** Conduct a risk analysis emphasizing the threat of terrorist activity and implement recommendations including higher security fencing and electronic surveillance, alarms and monitoring.

**Coordination Organization:** Public Works  
**Timeframe:** 3-5 years  
**Funding:** \$140,000

**Action 5.8.3:** Maintain a program of reservoir dam safety review and continue to cooperate with the State Division of Dam Safety in addressing any needed dam maintenance or structural improvements.

**Coordination Organization:** Public Works, Community Development Department, and Napa Police Department  
**Timeframe:** Ongoing  
**Funding:** \$10,000

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**Objective 5.9:** Work to ensure that the City/County of Napa Health Departments and local Hospitals coordinate with each other to prepare for outbreaks of communicable diseases that affect the Community.

***Ideas for Implementation***

**Action 5.9.1:** In coordination with the County Health Dept. and the local hospitals,

develop response strategies for responding to outbreaks of communicable Disease.

**Coordinating organization:** Fire Dept.  
**Timeframe:** Ongoing  
**Funding:** Current or available grants

**Action 5.9.2:** Through a coordinated effort with the County Health Dept and local Hospitals provide education to the community on how to prevent and properly respond to an outbreak of communicable disease.

**Coordinating Organization:** Fire Dept.  
**Timeframe:** Ongoing  
**Funding:** Current or available grants

**Action 5.9.3:** Participate with the County Health Dept. and the local medical community in training exercises to prepare for a break out of communicable disease

**Coordinating Organization:** Fire Dept  
**Timeframe:** Ongoing  
**Funding:** Current or available grants

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**Objective 5.10:** The City shall continue to invest in water infrastructure and diversify the portfolio of water supplies.

***Ideas for Implementation***

**Action 5.10.1:** The City shall secure internal and external water supply sources and maintain reservoir levels to withstand drought years.

**Coordinating Organization:** Public Works Dept.  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 5.10.2:** The City shall continue to educate the community about conservation and the importance of efficient water use.

**Coordinating Organization:** Public Works Dept.  
**Timeframe:** Ongoing  
**Funding:** Current funding

**Action 5.10.3:** The City shall implement best management practices and establish a drought policy to identify triggers for low supplies during dry years, implement conservation and include fines and enforcement for water waste during times of draught.

**Coordinating Organization:** Public Works Dept.

**Timeframe:** 1-2 years  
**Funding:** Current funding

**Action 5.10.4:** The City shall continue to identify local groundwater and surface water sources as well as external water supply sources to insure availability of water during critical dry years and multiple dry years.

**Coordinating Organization:** Public Works Dept.  
**Timeframe:** 2-3 years  
**Funding:** 260,000

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**Objective 5.11:** Identify a series of programs and tools that should be instituted to assist local Businesses to prepare for and recover after a natural disaster or security threat.

***Ideas for implementation***

**Action 5.11.1:** Work with local businesses to prepare Emergency Preparedness Plans by working with other agencies and advocacy organizations to distribute to and assist businesses with the preparation of plans in the case of disaster.

**Coordinating Organization:** Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.11.2:** Encourage business owners to assist their employees in developing a family disaster plan for their home.

**Coordinating Organization:** Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.11.3:** Develop a Continuity-of -Operation plan that includes off-site back-up and storage of vital records, such as critical business client files, tax returns, financial statements and documents, software ownership and purchase information, insurance information, employee records, business inventory lists, photographs, video documentation of premises and equipment, plans, etc.

**Coordinating Organization:** Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.1.4:** Develop a short-term and intermediate term plan of action for sheltering of employees and connecting them with family members post-disaster, securing the facilities, implementing safety precautions, as well as providing tools and information one would need if the business owner were incapacitated or unavailable in the hours directly after the disaster.

**Coordinating Organization:** Economic Development / Fire Dept  
**Timeframe:** Ongoing  
**Funding:** Current

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**Objective 5.12:** Identify and develop a series of programs and procedures to assist residents and property owners to prepare for and recover after a natural disaster or security threat

***Ideas for Implementation***

**Action 5.12.1:** Develop and distribute culturally appropriate materials related to disaster mitigation and preparedness.

**Coordinating Organization:** Economic Development Dept / Fire Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.12.2:** Work with local school officials to ensure age-appropriate training for students in the event of an occurrence during school hours.

**Coordinating Organization:** Economic Development Dept / Fire Prevention  
**Timeframe:** Ongoing  
**Funding:** Current

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**Objective 5.13:** Identify and assess the most vulnerable critical business and infrastructure facilities in the case of a natural disaster or security threat and prepare emergency response plans to protect against economic loss and speedy recovery

***Ideas for Implementation***

**Action 5.13.1:** Inventory and map critical businesses such as hospitals, fire stations, etc. and infrastructure such as dams, bridges, transit and rail systems, communications facilities, streets and lights, water and sewer lines, utility (electric or gas) facilities, etc.

**Coordinating Organization:** Economic Development Dept / I. T. / Planning  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.13.2:** Develop plans to ensure the speedy repair and functional restoration of critical businesses and infrastructure after a disaster through pre-planning, stocking piling of materials, etc. Prepare and distribute disaster operational plans and a process to check facilities and infrastructure after a disaster

**Coordinating Organization:** Building / Economic Development Dept / Building  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.13.3:** Conduct mock training exercises to ensure appropriate actions are taken to restore operations of critical infrastructure and facilities and promote multi-jurisdictional coordination efforts.

**Coordinating Organization:** Fire / Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.13.4:** Support the efforts of other agencies to plan and prepare for disasters.

**Coordinating Organization:** Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

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**Objective 5.14:** Develop inventories of historic buildings, governmental buildings, soft-story commercial or industrial buildings, unreinforced buildings, etc. to speed and target post-disaster response inspections and develop recovery permit assistance procedures to speed post-disaster recovery efforts.

***Ideas for Implementation***

**Action 5.14.1:** Develop procedures for inspecting and tagging business for occupancy after a disaster.

**Coordinating Organization:** Building / Economic Development Dept

**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.14.2:** Create educational programs for owners of historic or architecturally significant properties to assist them to undertake measures that will minimize the impact of a disaster on the structure and the likelihood of demolition after a disaster – such as the Secretary of the Interior’s Guidelines for Rehabilitation.

**Coordinating Organization:** Planning / Cultural Heritage / Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.14.3:** Educate property owners of soft-story and unreinforced buildings of the mandatory need to seismically retrofit these buildings. Notify tenants or potential lessees that the building is unreinforced.

**Coordinating Organization:** Building / Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.14.4:** Identify locations for recovery permit assistance centers, and develop a protocol for processing specialized plans, streamline plan checking, inspections, etc. to expedite recovery and rebuilding efforts.

**Coordinating Organization:** Economic Development Dept / Planning  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.14.5:** Develop and enforce a “reconstruction ordinance” to ensure that damaged buildings or structures are repaired in an appropriate and timely manner

**Coordinating Organization:** Planning / Building / Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.14.6:** Establish preservation-sensitive measures for the repair and re-

occupancy of historic buildings including requirements for temporary shoring or stabilization, arrangements for consulting with preservation professionals, and expedited permit procedures.

**Coordinating Organization:** Building / Planning / Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.14.7:** Provide this information to the designated Public Information Officer so that notifications may be announced as early as possible after the disaster has occurred.

**Coordinating Organization:** Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

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**Objective 5.15:** Work with various organizations to ensure that residents and animals have short-term shelter after a disaster.

***Ideas for Implementation***

**Action 5.15.1:** Develop a plan for shorter-term sheltering of residents and animals in the community after a disaster by working with the American Red Cross, Humane Society, animal shelters, pet stores, local veterinarians and others. Identify locations, necessary facilities, responders, etc.

**Coordinating Organization:** Economic Development Dept  
**Timeframe:** Ongoing  
**Funding:** Current

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**Objective 5.16:** Develop energy efficiency programs and activities to ensure the most advanced. business practices, and develop sustainability programs to ensure integrated-system buildings that are designed for high-performance, efficiency, security, etc.

***Ideas for Implementation***

**Action 5.16.1:** The City will develop a Climate Action Plan and Energy Strategy to reduce its greenhouse gas emissions in compliance with applicable state and federal law (AB 32).

**Coordinating Organization:** Public Works / Building / City Manager Dept  
**Timeframe:** Ongoing

**Funding:** Current

**Action 5.16.2:** The City will provide training to appropriate staff who evaluate building plans and perform inspections on LEED-rated buildings so that they may ensure that sustainability goals and measures are met and incorporated.

**Coordinating Organization:** Building / Planning Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.16.3:** The City will adopt policy and purchasing guidelines that give preference to projects that incorporate sustainability and safe systems components in their designs

**Coordinating Organization:** Building / Public Works / Dept  
**Timeframe:** Ongoing  
**Funding:** Current

**Action 5.16.4:** Develop and maintain an integrated and secure digital Emergency Management software system for use by responding, assisting, and collaborating agencies.

Program Description: This project would develop a secure net based Emergency Management Operating system for sharing immediate disaster information and give a common operational picture to response, assisting and cooperating agencies. This emergency management, and data and image sharing capability would greatly enhance real time disaster intelligence in both crises and day to day emergencies.

**Coordinating Organizations:** County Communications/OES  
Napa County, St. Helena, Calistoga,  
Yountville, American Canyon, the  
American Red Cross, and other CBOs  
involved with disaster response  
**Time Frame:** 1-3 years  
**Funding required:** \$75,000 per annum

## **SECTION 5: PLAN MAINTENANCE PROCEDURES**

The City of Napa Hazard Mitigation Plan will be used to prioritize projects. Mitigation projects will be considered for funding through federal and state grant programs, and when other funds are made available to the City. The City Disaster Committee will be the coordinating agency for project implementation. The Napa Fire Department and Public Works Department will be responsible for mitigation project administration.

A number of state and local regulations and policies form the legal framework to implement the City of Napa's hazard mitigation goals and projects. A list of these Regulations and Plans can be found at the end of this section.

### **Plan Maintenance**

The Plan will be maintained by formal process to ensure that the Napa Hazard Mitigation Plan remains an active and relevant document. The Plan maintenance process includes a schedule for monitoring and evaluating the Plan and producing a Plan revision every five years. This section describes how the City will integrate public participation throughout the Plan maintenance process.

#### **Monitoring, Evaluating And Updating The Plan**

The Napa Hazard Mitigation Plan will be reviewed every year, or sooner as deemed necessary by knowledge of new hazards, vulnerabilities, or other pertinent reasons. The review will determine whether a Plan update is needed prior to the required five-year update. The Plan review will identify new mitigation projects and evaluate the effectiveness of mitigation priorities and existing programs.

The Napa Fire Department will be responsible for scheduling a meeting of the Napa City Disaster Committee every year to review and update the Plan as needed. The meeting will be open to the public and advertised in the local newspaper and local radio stations to solicit public input. The public will have the opportunity to review the goals and mitigation projects at these meetings, review changing hazard situations in the City, and changes in state or federal policy relating to this Plan to ensure that it addresses current and expected needs.

The City Disaster Committee and public will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any newly available data. The list of critical facilities will also be reviewed and enhanced with additional details.

The Disaster Committee will develop status reports detailing the success of various mitigation projects, difficulties encountered, success of coordination efforts and which strategies should be revised.

The Napa Fire Department, with the assistance of other City Departments, will be responsible for the five-year update of the Plan, and will submit to the City Council and public for review and approval. Before the end of the five-year period, the updated Plan will be submitted to the State Hazard Mitigation Officer and the FEMA for acceptance. The Fire Department will notify all holders of the City Plan when changes have been made.

## Implementation through existing Planning Mechanisms

Within six months of formal adoption of the Napa City Hazard Mitigation Plan, mitigation goals will be incorporated into future versions of the Napa City Emergency Plan. Meetings of the City Council and public hearings will provide an opportunity for local officials to report back on the progress made on the integration of mitigation planning elements into City planning documents and procedures.

The City adopts a capital improvement program as part of its two-year budget. Capital improvement programs included in the Hazard Mitigation Plan will be reviewed with all others recommended by Departments in coming up with a set of CIP recommendations for the next budget cycle.

The City updates its General Plan periodically (typically every 7-10 years, with minor updates occurring more frequently). The last comprehensive update was adopted in December 1998 however some updates were approved in 2009. Programs and policies found in the Health and Safety Element have been closely coordinated with those in the Hazard Mitigation Plan to assure that they are consistent. Any future updates of the Hazard Mitigation Plan (or the General Plan) will also be coordinated so that they reinforce each other.

The City adopted a comprehensive Zoning Ordinance update in 2003. The Zoning Ordinance implements the General Plan and includes a: *FP Floodplain Overlay District* approved by FEMA, and a Flood Evacuation Area requirement beyond that which FEMA requires covering properties within the floodplain. Other zoning site development regulations used in Napa to reduce site development hazards include:

- building creek setbacks, erosion control standards and standards for protection of riparian corridors;
- a specific strict process for early geotechnical review of projects in the West Napa fault Zone;
- requirements for fire hazard reduction plans in identified fire hazard areas.

The Community Development Department, Building Division, updates its local building codes periodically and has adopted the most recent edition of the California Building Code in accordance with the Hazard Mitigation Plan recommendation relating to seismic safety. The Community Development Department also reviews development projects against General Plan policies and programs, local area plan standards and zoning regulations.

## **Continued Public Involvement**

Napa is dedicated to involving the public directly in review and updates of the Napa Hazard Mitigation Plan. Copies of the Plan will be catalogued and kept at all appropriate agencies in the City as well as posted on the City's web site and made available on read only files on CD ROM.

Public meetings will be held annually and as part of the required five-year update of the Plan. The meetings will provide a forum for public input to the Plan.

### Checklist for Annual Review of the Hazard Mitigation Plan

Point of Contact:	Local Plan Reviewed by:
Title:	
Agency:	
Phone Number:	

<b>PLAN REVIEW CRITERIA REFERENCE PAGE #</b>	<b>ITEMS TO BE REVIEWED</b>	<b>LOCATION IN THE PLAN</b>	<b>COMMENTS</b>
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#### PLANNING PROCESS

Documentation of the Planning Process	Is the City continuing to document the planning process, how it was prepared, who was involved and how.		
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#### RISK ASSESSMENT

Identifying Hazards	Are there new hazards threatening the City?		
Profiling Hazard Events	1. Can the hazard assessment be updated? 2. Has the jurisdiction experienced a hazard event since the last review?		
Assessing Vulnerability: Identifying Hazards	Is there new information regarding the types and numbers of existing and future buildings,		

	infrastructure and critical facilities located in the City?		
ASSESSING VULNERABILITY: ESTTIMATING LOSSES	Is there a change in the potential dollar losses to vulnerable structures?		
Assessing Vulnerability: Analyzing Development Trends	Describe any changes to land uses and development trends. Do mitigation options need to be considered?		

**MITIGATION STRATEGY**

Local Hazard Mitigation Goals	Do the mitigation goals need to be changed or updated?		
Identification and Analysis of Mitigation Measures	1. Describe any Actions Items that have been completed. 2. Are there new Action Items that need to be added? 3. Are there any changes to existing Action Items?		
Implementation of Mitigation Measures	Are there changes to the action plan describing how the actions identified will be prioritized, implemented, and administered?		

**PLAN MAINTAINANCE PROCEDURES**

Monitoring, Evaluating and Updating the Plan	State when the plan will be reviewed in the future.		
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Continued Public Involvement	Describe how the community was involved in the review of this plan.		
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The Disaster Committee will develop status reports detailing the success of various mitigation projects, difficulties encountered, success of coordination efforts and which strategies should be revised. These status reports will be published on the Napa City web site and an executive summary will be published in the local newspaper to update the citizens of Napa.

## **SECTION 6: FEDERAL, STATE & LOCAL REGULATIONS & POLICIES**

### **Federal Environmental Protection & Historic Preservation Laws:**

- National Environmental Policy Act (NEPA)
- Executive order 11990 Wetland Protection
- Executive Order 11988 Floodplain Management
- Clean Water Act (Section 404)
- Clean Water Act (Section 401)
- Executive Order 12898 Environmental Justice
- Wild and Scenic Rivers Act
- National Historic Preservation Act
- Endangered Species Act
- Robert T. Stafford Disaster Relief and Emergency Assistance Act
- Disaster Mitigation Act of 2000

### **California Environmental Protection & Historic Preservation Laws:**

- California Environmental Quality Act (CEQA)
- Farmland Protection Act
- Coastal Zone Management Act

The City of Napa recognizes that environmental compliance and historic preservation are essential components of the mitigation project planning and approval process. The City is committed to examining each proposed mitigation measure and project to determine if there are any environmental or historic issues that would require studies or reviews. The City will be compliant with federal, state and local laws and regulations including but not limited to the following:

## **Local Ordinances**

### **Napa Municipal Code:**

- Title 17 Zoning Ordinance: regulations governing uses and setting development standards including but not limited to Chapter 17.38 Floodplain Overlay district, Chapter 17.52 Site and Use Regulations. This latter chapter includes Seismic/Landslide Hazard Area regulations, Wetland and Creek Regulations and the River/Napa Creek Flood Protection Project Regulations.
- Chapter 8.28 Hazardous Materials
- Chapter 13.10 – 13.12 Moderate and Severe Water Shortage Regulations
- Chapter 15.50 Standard City Mitigation Measures and Project Conditions which the City establishes through Policy Resolution 27.
- Chapter 15.52 Historic Preservation
- California Building Code
- California Fire Code
- General Plan Policy Document
- US Army Corps of Engineers, Napa River/Napa Creek Flood Protection Project General Design Manual and Supplemental EIR/EIS, 1997
- City of Napa Urban Water Management Plan, 2005 update, adopted 2006

# **APPENDIX A**

## **CRITICAL FACILITIES**

## CRITICAL FACILITIES

<b>NAPA CITY AND COUNTY GOVERNMENT BUILDINGS</b>				
	<b>Name</b>	<b>Address</b>	<b>City</b>	<b>Zip</b>
1	Administration	1195 Third Street	Napa	94559
2	Hall of Justice	1125 Third Street	Napa	94559
3	Communications	1220 Fourth Street	Napa	94559
4	County Library	580 Coombs Street	Napa	94559
5	Juvenile Hall	2350 Old Sonoma Road	Napa	94558
6	Emergency Medical Services	1500 Third Street	Napa	94559
7	Soscol Professional Plaza	1710 Soscol Avenue	Napa	94558
8	Soscol Business Park	650 Imperial Way	Napa	94559
9	Soscol Office Building	1804 Soscol Avenue	Napa	94559
10	Carither's Building	1127 First Street	Napa	94559
11	Alexandria Building	1001 Second Street	Napa	94559
12	County Court House	825 Brown Street	Napa	94559
13	Family Suport Legal	1546 First Street	Napa	94559
14	H&HS EMS	1721 First Street	Napa	94559
15	County Sanitation\Animal Shelter	942 Imola Avenue	Napa	94559
16	Health & Human Service/Public Health	2344 Old Sonoma Road	Napa	94559
17	H&HS SIU	1500 Third Street	Napa	94559
18	Napa Police Department	1539 First Street	Napa	94559
19	City Hall	955 School Street	Napa	94559
20	Community Services	1600 First Street	Napa	94559
21	Housing Authority/Economic Development	1600 Clay Street	Napa	94559

<b>NAPA MEDICAL FACILITIES</b>						
	<b>Facility</b>	<b>Address</b>	<b>City</b>	<b>Zip Code</b>	<b>Phone Number</b>	<b>Type</b>
1	Napa Valley Dialysis	1100 Trancas Street #267	Napa	94558	224-6533	Care Center
2	Piner's Care Center	1800 Pueblo Avenue	Napa	94558	224-7925	Care Center
3	Pleasant Care	2465 Redwood Road	Napa	94558	255-3012	Care Center
4	Roberts Nursing Home	3415 Browns Valley Road	Napa	94558	257-3515	Care Center
5	Urgent Care Ctr Of Napa	3230 Beard Road	Napa	94558	254-7778	Care Center
6	Napa Valley Dialysis	1100 Trancas Street #267	Napa	94558	224-6533	Care Center
9	Primrose Care Home	3698 Jefferson Street	Napa	94558	255-8594	Care Center
10	Adapt Day Treatment Program	1600 Myrtle Avenue	Napa	94558	253-9136	Clinic
11	Community Health Clinic Ole	935 Trancas Street # 4c	Napa	94558	254-1770	Clinic
12	Excel Quality Care	575 Lincoln Avenue #240	Napa	94558	426-6522	Clinic
13	Napa State Hospital	2100 Napa Vallejo Highway	Napa	94558	253-5260	Clinic
14	Rohlffs Manor	2400 Fair Drive	Napa	94558	255-9555	Clinic
15	Senior Life Care Inc	3460 Villa Lane	Napa	94558	224-2285	Clinic
16	Transitions-St Helena Hospital	1000 Professional Drive	Napa	94558	259-2840	Clinic
17	Queen Of The Valley Hospital	1000 Trancas Street	Napa	94558	252-4411	Hospital
21	A Hidden Knoll	3158 Browns Valley Road	Napa	94558	258-1873	Nursing Home
22	A'Egis Of Napa	2100 Redwood Road	Napa	94558	251-1409	Nursing Home

<b>NAPA MEDICAL FACILITIES (continued)</b>						
<b>ID</b>	<b>Facility</b>	<b>Address</b>	<b>City</b>	<b>Zip Code</b>	<b>Phone Number</b>	<b>Type</b>
23	Heart of Napa	2300 Brown Street	Napa	94558	226-1821	Nursing Home
24	Heart That Matters	68 Coombs Street #9	Napa	94559	252-7569	Nursing Home
25	Home Care Nurses Registry	1712 Jefferson Street	Napa	94558	255-8719	Nursing Home
26	Home Care Svc-Queen-Valley	1100 Trancas Street # 300	Napa	94558	257-4124	Nursing Home
27	Meadows Care Center	1900 Atrium Parkway	Napa	94558	257-4990	Nursing Home
28	Napa Nursing Center	3275 Villa Lane	Napa	94558	257-0931	Nursing Home
29	Sierra Vista Nursing & Rehab	705 Trancas Street	Napa	94558	255-6060	Nursing Home
30	Sunrise Assisted Living-Napa	3700 Valle Verde Drive	Napa	94558	255-1100	Nursing Home
31	Your Home Nursing Service	3188 Jefferson Street	Napa	94558	225-7800	Nursing Home

<b>NAPA PUBLIC SAFETY FACILITIES</b>						
<b>ID</b>	<b>Facility</b>	<b>Address</b>	<b>City</b>	<b>Zip</b>	<b>Phone</b>	<b>Type</b>
1	Napa Fire Prevention	1600 First Street	Napa	94559	257-9590	Fire
2	Napa Fire Department	1539 First Street	Napa	94559	257-9593	Fire
3	Napa City Police Department	1539 First Street	Napa	94559	257-9223	Police
4	Napa County Sheriffs Department	1195 Third Street	Napa	94559	253-4415	Police

## PUBLIC/PRIVATE SCHOOL FACILITIES

Name	Address	City	Zip	Phone
Alta Heights Elementary School	15 Montecito Boulevard	Napa	94558	253-3671
Bel Aire Park Elementary School	3580 Beckworth Drive	Napa	94558	253-3775
Browns Valley Elementary School	1001 Buhman Avenue	Napa	94558	253-3761
Casa Montessori School	780 Lincoln Avenue	Napa	94558	224-1944
El Centro Elementary School	1480 El Centro Avenue	Napa	94558	253-3771
Justin-Siena High School	4026 Maher Street	Napa	94558	255-3615
McPherson Elementary School	2670 Yajome Street	Napa	94558	253-3488
Napa Adventist Junior Academy	2201 Pine Street	Napa	94559	255-5233
Napa High School	2475 Jefferson Street	Napa	94558	253-3711
Napa Valley Christian Academy	2645 Laurel Street	Napa	94558	252-2191
New Technology High School	920 Yount Street	Napa	94558	259-8557
Northwood Elementary School	2214 Berks Street	Napa	94558	253-3471
Phillips Elementary School	1210 Shetler Avenue	Napa	94558	253-3481
Pueblo Vista Elementary School	1600 Barbara Road	Napa	94558	253-3491
Redwood Middle School	3600 Oxford Street	Napa	94558	253-3415
River School	2447 Old Sonoma Road	Napa	94558	253-6813
Salvador Elementary School	1850 Salvador Avenue	Napa	94558	253-3476
Shearer Elementary School	1590 Elm Street	Napa	94559	253-3508
Silverado Middle School	1133 Coombsville Road	Napa	94559	253-3688
Snow Elementary School	1130 Foster Road	Napa	94558	253-3666
St Apollinaris Catholic School	3700 Lassen Street	Napa	94558	224-6525
St Johns Lutheran School	3521 Linda Vista Avenue	Napa	94558	226-7970
St Johns the Baptist School	983 Napa Street	Napa	94558	224-8388
Sunrise Montessori Elementary	1226 Salvador Avenue	Napa	94558	257-2392
Sunrise Montessori Of Napa	4149 Linda Vista Avenue	Napa	94558	253-1105
Trinity Grammer & Prep	2055 Redwood Road	Napa	94558	258-9030
Valley Oaks High School	1600 Myrtle Ave	Napa	94558	253-3791
Vintage High School	1375 Trower Avenue	Napa	94558	253-3601
Westwood Elementary School	2700 Kilburn Avenue	Napa	94558	253-3678
Napa Valley Charter School	575 Third Street	Napa	94559	252-5522
West Park Elementary	2315 W Park Avenue	Napa	94558	253-3516
Kolbe Academy	1600 F Street	Napa	94559	256-4306
Napa Valley College	2277 Napa-Vallejo Highway	Napa	94559	253-3000
Blue Oak School	1436 Polk Street	Napa	94559	261-4500
Oxbow School	530 – 3 <sup>rd</sup> Street	Napa	94559	255-6000
Harvest Middle School	2449 Old Sonoma Road	Napa	94559	259-8866

# **APPENDIX B**

## **FLOOD MITIGATION ASSISTANCE PROGRAM CANDIDATE PROJECTS**

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## Flood Mitigation Assistance Program Candidate Projects

The Flood Mitigation Assistance Program (FMA) of the Federal Emergency Management Agency (FEMA) provides grants to communities for projects that reduce the risk of flood damage to structures that have insurance coverage. The City has received a FMA 1999 Planning Grant to identify projects with the Napa County Flood Control and Water Conservation District (District) that can be funded under the FMA program.

This chapter is limited to one aspect of the FMA program, to develop a recommended list of projects that meet the FMA criteria for funding. It is an outgrowth of West Yost & Associates' work on the Storm Drain Master Plan for the City and the Interior Drainage Study for the District.

Representatives from the City, District, State Office of Emergency Services and FEMA formed a Planning Grant Team to help manage the grant and to recommend projects for funding priority. WYA, as consultant to the City, is also a member of the committee. In its initial work, the committee reviewed the City's floodplain management ordinance in relation to the flood mitigation program and did not recommend any changes.

The City's FMA program is aimed at reducing repetitive flood losses. Properties with repetitive losses are defined as having two or more claims of at least \$1,000 paid by the National Flood Insurance Program. A map has been prepared by the City showing the location of repetitive loss properties.

Many of the repetitive loss properties were damaged by Napa River flooding. The flooding risk from the Napa River will be significantly reduced with construction of the Napa River Flood Protection Project (Project). Continuing flood threats will be from local drainage problems and from 100-year interior drainage that floods either by ponding in low areas or flowing overland at significant depths.

### Ongoing Studies

Construction has begun on the Napa River and Napa Creek Flood Protection Project. A description of facilities is included in the Supplemental General Design Memorandum, of the Corps of Engineers, October 1998. The Flood Protection Project has the primary objective of providing protection from 100-year Napa River flooding by constructing setback levees and floodwalls. It will reduce the risk of flooding to many of the repetitive loss properties.

As part of the Flood Protection Project, the Corps analyzed the interior drainage flooding that would occur after the protection project was completed. Interior drainage projects were formulated and made part of the Flood Protection Project. The project will construct interior drainage facilities including three pump stations, culverts through the levees, and floodwalls and storm drains.

An analysis was conducted for the District that identified residual flooding from a 100-year runoff event. An interior, behind the levees, 100-year runoff will pond in low areas and will cause flooding as it flows downhill toward one of the project's three large pump stations. Projects were recommended that would reduce the residual flooding area.

Other areas, for economic reasons, will remain in the floodplain and await future development proposals.

The Planning Grant Team appreciates the importance of mapping floodplains caused by sources of flooding beyond the protection offered by the Flood Protection Project. The project provides protection from the Napa River and from residual interior flooding. There are other interior drainage problems that will cause ponding and flooding during major rainfall events. These additional areas should be mapped as floodplains by FEMA. It is recommended that the Corps of Engineers publish a pre-FIRM mapping notice as a disclosure to the general public before the map is adopted by the City Council.

The City conducted a Storm Drain Master Plan that investigated storm drains in the City that are larger than 30 inches in diameter, determined design flow and pipe capacity and recommended additional storm drain improvements to provide a 10-year level of protection. Improvements were identified and listed by priority. This work also resulted in the identification of potential problem areas from a 100-year runoff.

## **Structural Flood Control Measures**

Flood control measures found to have the greatest potential for reducing the risk from flooding include storm drains and fill. Measures found to be less effective include upstream storage, floodwalls and levees, and pumps.

The upstream detention storage needed to reduce the relatively small areas of residual ponding is disproportionate to the benefits received. Floodwalls for individual properties were found to be uneconomical when compared to other measures. Pumps, also, were not considered because of location and high cost.

Additional storm drain capacity was often an effective solution. After detailed study, structural measures may be the most effective in many situations.

## **Non-Structural Flood Control Measures**

Storm drain improvements are but one method of mitigating repeat flooding. Storm drain improvements are presented here as a base condition that establishes a workable plan and a cost against which other methods can be measured. Non-structural solutions, if found to be economical, may be preferred.

Nonstructural methods require field surveys, identification of specific properties affected, formulation of a plan for each property, preparation of cost estimates, and construction. Flood mitigation projects can be divided into six methodologies; structural solutions including storm drains, floodwalls and levees; elevation of structures above the base flood elevation (100 year flood level); wet floodproofing; relocation of structures; dry floodproofing; and demolition. Wet floodproofing and elevation are likely candidates in the City.

Flood mitigation projects are presented below. It is recommended that field surveys and feasibility studies be initiated to determine if non-structural methods would be more economical solutions.

## Flood Problems and Mitigation Projects

Several problems have been identified and improvements proposed that will reduce the risk of flooding from interior runoff after the Napa River Flood Protection Project is complete. The following improvements, grouped by general areas within the City, will reduce residual flooding from a 100-year runoff.

Proposed projects are shown in Table 17-1. Projects are shown in to priorities. Priority A includes needed studies and projects showing the greatest benefit. Priority B includes projects that will result from the studies and field surveys.

### Soscol Avenue, East Side of Napa River

The Flood Protection Project assumes interior flood waters will continue to flow overland and along City streets, eventually reaching the lowest point in the watershed. A storage basin would collect runoff and pumps would lift it to Tulocay Creek and the Napa River. Between its source and the pump detention basin, flooding will occur caused by excessive depth of flowing water and from ponding in low areas. At the lower end, the combination of a very flat Soscol Avenue and new commercial buildings effectively limit runoff from flowing into the proposed basin.

A series of projects is proposed to reduce residual flooding along Soscol Avenue from the Expo Fairgrounds to the South Napa Marketplace.

1. **Spring Street, Silverado Trail to Napa River.** The storm drain at the north end of Juarez Street between Spring Street and the river is a combination pipe and open channel. Construction of a "sealed" drain to the river that will operate under pressure will assure that there is a positive outflow even during periods of high river stages and reduce the overland flow contributing to the Expo and Soscol Avenue flooding. If a pressurized storm drain is constructed for high stages, a second storm drain is needed to drain the lower shed to the river during low river stages.
2. **Taylor Street.** A similar situation exists at Taylor Street where a pressurized storm drain could maintain outflow to the river and reduce the flood volume flowing to Expo and Soscol Avenue. With the pipe pressurized, a second pipe would be needed to drain Taylor Street during periods of low river stages.
3. **Expo Fairgrounds.** Much of the overland flow resulting from a 100-year runoff and blocked outfalls to the river flows into the Third Street area and the Expo Fairgrounds. There is limited attenuation of peak flows because the topography only allows ponding to about two feet deep. Some control of this flood water is needed, either a drainage channel to convey the runoff or a detention basin to reduce downstream peaks.
4. **Soscol Avenue to Tulocay Wetlands.** Overland flow, up to 264-acre feet, tends to pond in Soscol Avenue and flood commercial properties on both sides of the street. As the depth increases, some water makes its way through parking lots, along Oil Company Road and overland to the Tulocay storage basin. To reduce flooding along Soscol Avenue and move floodwaters to the basin, a storm drain will

be needed from Oil Company Road and Soscol Avenue to a point near the basin where the pipe can empty into an open channel and then to the basin.

5. **Oil Company Road Watershed.** Hydrology results show uncontrolled runoff from the 270-acre watershed east of Souza Lane and Silverado Trail to be 96-acre feet. A more detailed drainage study of this shed is needed to formulate projects to control this runoff and reduce the volume of floodwater flowing to Soscol Avenue.

A storm drain has been included to convey this runoff to the Tulocay basin but a detailed study should be undertaken before a large capital outlay is committed.

6. **Soscol Avenue near Tulocay Creek.** A wide swath of overland flow will remain. A coordinated approach to acquire flowage easements will be needed to assure the unobstructed flow of water. Lower buildings will remain subject to flooding. Surveys and possibly elevation and/or floodproofing is recommended.

### **Soscol Avenue, West Side of Napa River**

Interior drainage north of Napa Creek will flow overland to a low point between the railroad tracks and Soscol Avenue. Pumps will remove the water to the river bypass, but without a storage facility, shallow street flooding will likely occur. Also, there are low areas that will not adequately drain to the pumps.

7. **Survey Structures and First Floor Elevations.** Without a significant pump storage basin, cycling units to minimize ponding becomes important. A balance must be obtained between running a pump dry and allowing water to pond to damaging depths. Field surveys are needed to develop the information needed to compute the depths of this short term flooding. Surveys are also needed north along Soscol to Jordan Lane.
8. **Soscol Avenue – Lincoln to Vallejo.** Field surveys are needed to identify structure in the resident flood plain and to determine suitability for elevation and/or floodproofing.
9. **Jordon Lane – Soscol Avenue.** A storm drain (30- and 36-inch) is needed to remove residual flooding near Jordan Lane, north of Lincoln Avenue and along lower Soscol Avenue. These may be candidate areas for nonstructural measures.

### **Riverside Drive**

10. **Sea Scout Building – Laurel and Riverside.** The Sea Scout on Riverside Drive is on the river side of the project levee and will not be protected by the flood protection project. This building must be surveyed and a decision made to elevate and/or floodproof.

### **Silverado Trail**

11. **County Garden Inn – 1815 Silverado Trail.** County Garden Inn on Silverado Trail will also not be protected by the project. Surveying is needed to obtain elevation data and allow a decision to elevate and/or floodproof.

## **Lincoln Avenue – Carolina Street to Jordan Lane**

12. **Buildings on Carolina, Ida and Maplewood Streets.** The residual floodplain includes several structures along Lincoln Street and on Carolina, Ida and Maplewood Streets. Two of these structures are described separately in numbers 13 and 14 below. Surveys will determine first floor elevation and street grades. A drain will then be made to elevate and/or floodproof or do nothing.
13. **River City Restaurant – 505 Lincoln.** The River City restaurant sits low along Lincoln Street in the floodplain. This structure will be included in the survey and the building may be elevated and/or floodproofed.
14. **517 Lincoln – Napa Small Animal Veterinary Hospital.** The Napa Small Animal Veterinary Hospital is on Lincoln Street in the Floodplain. This structure will be included in the survey and the building may be elevated and/or floodproofed.

## **Imola Avenue Basin**

15. **Imola – South Coombs.** The area around the proposed Imola Basin needs field surveys to identify structure type and first floor elevations. Structures at risk from overland floodwaters draining to the basin should be identified.
16. **South Coombs and Imola.** Floodproofing becomes a potential solution in the area adjacent to the pumps. Field surveys are needed to determine first floor elevations.
17. **Arboreo Street.** Arboreo Street has difficulty with overland flow draining. A storm drain is needed to drain the Arboreo Street area to the new drain in South Coombs Street.
18. **Brown Street – Elm Street. Along South Coombs Street.** A low area near the south end of Brown Street must be drained to the Imola Basin. A storm drain is proposed for construction along South Coombs Street.
19. **Jefferson Street.** A 72-inch drain is proposed along Jefferson Street to the detention basin to alleviate excessive street flows.

## **River Glen – Pike Drive Drain**

20. **River Glen – Trout Way.** Field surveys are needed to develop the information needed to route flows into the Lake Park detention basin and pump station facilities.
21. **Trout Way to Lake Park.** Alternatives that involve a combination of increased pipe capacity and flowage easements need to be identified. A pipeline is proposed, but further studies may result in a better solution.

## **Salvador Channel**

22. **Big Ranch Road to Solano Avenue.** A detailed drainage study of the Salvador Channel is recommended. 100-year floodplains needs to be developed and channel, levee and bridge needs should be identified so that the channel will contain a 100-year runoff.

23. **Big Ranch Road to Solano Avenue.** Improvements need to be designed and plans and specifications prepared after completion of the Salvador Channel study.

**Table 17-1. Flood Mitigation Assistance – Proposed Projects**

Project No.	Priority level	Location	Action/Improvement	Quantity	Unit Price (dollars)	Cost (dollars)
<b>Soscol Avenue East Side of River (Tulocay Creek Area)</b>						
1	B	Spring St, Silverado Trail, to Napa River	Design and construct 48" pressure pipe Design and construct 48" drain Drain inlets	1,000 lf 800 lf 12 ea	404 307 7,000	404,000 246,000 84,000
2	B	Taylor Street	Design and construct 48" pressure pipe Design and construct 48" drain	1,250 lf 850 lf	404 307	505,000 261,000
3	B	Expo Fairgrounds	Design and construct drainage channel	1,500 lf	LS	300,000
4	B	Soscol Avenue to Tulocay wetlands	Construct a 48" drain to the basin Drainage Ditch Acquire Flowage Easements	2,200 lf 600 lf	307 LS	675,000 150,000 10,000
5	B	Oil Company Road watershed	Drainage study of City/County shed Design and construct 72" drain	— 1,600 lf	— 350	20,000 570,000
6	B	Soscol Avenue near Tulocay Creek	Field Surveys / Elevate Buildings - Five Commercial Structures	5	100,000	500,000
<b>Soscol Avenue, West Side of River</b>						
7	B	Survey structures and 1 <sup>st</sup> floor elevations	Field surveys	3 days	1,800	5,400
8	B	Soscol Ave. – Lincoln to Vallejo	Elevate and/or floodproof structures	—	—	(a)
9	B	Jordan Lane – Soscol Ave. Construct drains	Construct 30" drain 36" drain s	1,800 lf 3,060 lf	225 263	405,000 805,000
<b>Riverside Drive</b>						
10	B	Sea Scout Building – Laurel & Riverside	Elevate Building or floodproof	1	100,000	100,000
<b>Silverado Trail</b>						
11	B	Country Garden Inn – 1815 Silverado Trail	Elevate Building or floodproof	1	100,000	100,000

Table T-1. Flood Mitigation Assistance – Proposed Projects, cont.

Project No.		Location	Action/Improvement	Quantity	Unit Price dollars	Cost dollars
<b>Lincoln Avenue</b>						
12	B	Buildings on Carolina, Ida & Maplewood Streets	Elevate Buildings or floodproof	16	60,000	960,000
13	B	River City Restaurant , 505 Lincoln	Elevate Building or floodproof	1	150,000	150,000
14	B	517 Lincoln Napa Small Animal Veterinary Hospital	Elevate Building or floodproof	1	100,000	100,000
<b>Imola Avenue Basin, West Side of River</b>						
15	B	Imola – South Coombs	Survey structures and 1 <sup>st</sup> floor elevations	1 day	1,800	1,800
16	B	South Coombs and Imola	Floodproof, elevate, and remove structures	—	—	(a)
17	B	Arboreo Street	36" drain	250 lf	263	66,000
18	B	Brown Street – Elm Street, along South Coombs Street	36" drain 48" drain	800 lf 1,600 lf	263 307	210,000 491,000
19	B	Jefferson Street	72" drain	3,000 lf	356	1,068,000
<b>River Glen – Trout Way</b>						
20	B	River Glen - Trout Way	Survey structure, 1 <sup>st</sup> floor elevations, street profiles, design survey, Trout Way to Lake Park	3 days	1,800	5,400
21	B	Trout Way to Lake Park	Design and construct 36" drain	800 lf	203	210,000
<b>Salvador Channel</b>						
22	B	Big Ranch Rd to Solano Avenue	Conduct Drainage Study	—	—	150,000 <sup>(b)</sup>
23	B	Big Ranch Rd to Solano Avenue	Construct channel and structure improvements	—	—	<sup>(b)</sup>

Notes: (a) Survey data are needed to determine number of structures and if elevation of floodproofing is preferable.  
 (b) Salvador Channel needs a detailed engineering study.

The projects in Table 17-1 will reduce the risk of residual flooding although not all the projects identified may be funded under FMA. There are properties that have a flooding history and that are located in areas where some flooding is expected after the Flood Protection Project is completed. After detailed study and surveys, these properties may be candidates for floodproofing or elevating. Some projects may be funded as part of the Flood Protection Project. Other projects may be financed as drainage improvements as part of the storm drain master plan improvements. All properties shown on the map as residual drainage properties are shown in table 17-2.

**Conclusion**

All of Proposed significantly reduce the risk of flooding to properties in the lower areas behind the Flood Protection Project levees and floodwalls. Some of the proposed projects do not directly protect repetitive loss properties. Pre-design studies are recommended. Engineering studies and detailed cost estimates will result in more effective allocation of grant funds.

**Table 17-2. Properties Not Protected by Project**

Street Number	Apt	Street
1038	1040	Vallejo Street
904		Napa Street
900		Vallejo Street
880	884	Napa Street
1546		Yajome
520		Third Street
1916		Silverado Trail

**Table 17-3 Properties Protected by the Project But May Be Subject to Residual Flooding**

Street Number	Apt	Street
706		Carolina St
419		FirStreet Street
1017	1019	Juarez Street
1015		Juarez Street
301		FirStreet Street
1004		Juarez Street
600		Fourth Street
842		Dewoody Street
431		Taylor Street
390		Taylor Street
2134		Soscol Avenue
670		Maplewood Street
665		Maplewood Avenue
669		Maplewood Avenue

Street Number	Apt	Street
1835		
602		Lincoln Ave
500	#A	Lincoln Ave
505		Lincoln Ave
510		Northbay Dr
1710		Soscol Ave
625		Imperial Way
1100	25	Jordan Ln
218		Soscol Ave
1701		Soscol Ave
1098		Jordan Ln
1947		Soscol Ave
1790		Soscol Ave

**Table 17-4. Properties Protected by the Project and Not Subject to Residual Flooding**

<b>Street Number</b>	<b>Apt</b>	<b>Street</b>
1333		Jefferson St
1821		Silverado Tr
1815		Silverado Tr
1543		Seminary Dr
1540	1542	Behrens St
1552		Behrens St

**NAPA RIVER/NAPA CREEK FLOOD PROTECTION PROJECT  
SCHEDULE HIGHLIGHTS AND CONTRACT PRIORITIES  
May 2009**

Key Contract Priorities			Comments
Year	Local Sponsor NCFWCD	Corps of Engineers	
2009	1. Project Monitoring 2. Napa Creek Acquisitions <b>City of Napa</b> 1. Complete Construction of First Street Bridge over the River	1. (S) Railroad Relocation Contract (awarded 9/2008) 2. (S) Complete Napa Creek Design 3. Conduct Pump Station Pre-Design FS 4. (S) Continue Oxbow/Bypass Design 5. Complete C2E Revegetation 6. Complete NSD Revegetation Design	The schedule takes into account April 2009 announcement of stimulus funds. Specific projects to be funded through stimulus funds shown with (S). All other work is pending federal budget capabilities but assumes a level of funding of approximately \$15 million each fiscal year. However, any year without at least \$15 million of funding will delay the schedule.
2010	1. <b>Complete Napa Creek Acquisitions</b>	1. (S) Complete Napa Creek Design 2. (S) Continue Railroad Relocation Contract 3. Complete Oxbow/Bypass Design (9/2010) 4. (S) Award Napa Creek Construction Contract 5. Design Contract 3 North of Oxbow to enable Local Sponsor to complete required acquisitions 6. NSD Revegetation Contract	
2011	1. Project Monitoring 2. <b>Contract 3 Acquisitions North of Oxbow</b>	1. (S) Complete Railroad Relocation Contract (12/2011) 2. (S) Complete Napa Creek Construction 3. Award Oxbow/Bypass Contract 4. Design Imola to Hatt Floodwalls (C2W) 5. Design Pump Stations (Contract 3)	
2012	1. <b>Complete Contract 3 Acquisitions North of Oxbow</b> 2. Project Operations, Maintenance and Monitoring 3. <b>NVWT Station Parking Phase 2</b>	1. Continue Oxbow/Bypass Construction 2. Award Tulocay Pump Station/Tulocay Creek Contract 3. Award C2E Floodwalls/Trail	
2013	1. <b>Complete any remaining Acquisitions</b> 2. Project Operations, Maintenance and Monitoring	1. Complete Oxbow/Bypass Construction 2. Complete Tulocay Pump Station Construction 3. Complete C2E Floodwalls/Trail Construction	
2014	1. Project Operations, Maintenance and Monitoring	1. Construct Imola to Hatt Floodwalls and Trail 2. Construct Imola Detention Basin and Pump Station 3. Award Contract 3 North of Oxbow	
2015	1. Project Operations, Maintenance and Monitoring	1. Complete Contract 3 North of Oxbow Floodwalls/Levees 2. Construct Soscol Detention Basin and Pump Station	

Contracts not completed in specified year will move to Priority #1 for the following year.  
**Boldface type** indicates a change of the schedule this month.

# **Appendix C**

## Asset inventory and Capability to respond

## CITY OF NAPA CAPABILITY TO RESPOND TO HAZARDS

The City of Napa uses the Standardized Emergency Management System (SEMS) to respond to hazardous situations. All Employees are each trained in SEMS to the level that is appropriate for their position and responsibility. In a major disaster, the Emergency Operations Center (EOC) is activated with the City Manager functioning as the Director of Emergency Services and the resources from the Fire, Police, Public Works and Community Resources functioning under the Operations Section. All field resources follow an Incident Action Plan in order to meet the defined objectives. If Mutual Aid is required it is requested through the Operational Area as outlined in the California Master Mutual Aid Agreement. The following information outlines the capabilities of the City of Napa to manage hazards.

### Fire Department

The Napa Fire Department has 56 sworn personnel, 7 non-sworn and 20 Reserve Firefighters for a total of 81 personnel. The department has four Fire Stations and staffs four Paramedic Engines, one Truck Company and the Battalion Chief. Minimum Staffing is thirteen with three person companies. The department has a Hazardous Material Team, a Water Rescue Team and a Fire Investigation Team.

### Napa Fire Department Inventory

EQUIPMENT	Fire Station 1					Fire Station 2		Fire Station 3				Fire Station 4			Boat 1& 2
	E1	T1	U1	E5	P1	E2	OES252	E3	E6	P3	Haz Mat	E4	E7	P4	
TYPE	I	TRK	UTILITY	I	IV	I	I / II	I	I	IV		I	I	IV	
JAWS		X	X												
AIR BAGS		X													
CLASS A FOAM	X			EDUC	X	X	X	X	EDUC	X		EDUC	EDUC	X	
CLASS B FOAM	X			EDUC		X		X	EDUC			EDUC	EDUC		
LTS PORTABLE	X	X	X	X		X	X	X	X			X	X		
LTS TOWER															
WATER VAC			X												
CO DETECTOR		X													
THERMAL IMAGER															
CIRCULAR SAW			X												
FAN(S)	EJ	X	2			EJ		EJ				EJ			
SALVAGE COVER	2	4	6	2		2	2	2	2			2	2		
STOKES		X													
SWIFTWATER RESCUE	X	X				X		X				X			
ROPE RESCUE	X	X	X	X		X	X	X	X			X	X		
PORTABLE PUMP							X								
CHAIN SAW		2	2			X	X								
PORTABLE TANK															
MATTRESS COVER		2	2	1		X		X	X			X	X		
ACETYLENE PACK			X												

## Law Enforcement

The Napa Police Department has 78 sworn Personnel, 59 non-sworn for a total of 127 personnel. The department has a SWAT team, a Boat Patrol, a Civilian Safety Team, a Hostage Negotiations Team and a Canine Program.

Patrol Cars	Trucks	Vans	SWAT Van	Transport. Truck	Motorcars	Boat	K-9
23	6	1	1	1	5	1	2

## Public Works

Public works oversees the following departments; Administrative Services, Bridges and Urban Drainage, Engineering Services, Fleet Management, Property Management, Recycling/Waste Reduction, Street, Electrical and Communications, Transit, Transportation/Engineering and Water. The department is capable of providing trained personnel and equipment to assist in flood fighting, debris removal, evacuations, water and sanitation emergencies as well as assistance in other areas.

The Public Works and Community Resources Department join forces and work under the leadership of Public Works during a disaster. In addition they fill roles in the Logistics, Operations and Planning Sections of the Emergency Operation Center.

Sedan	Van	Pickup	Dump Truck	Water Truck	Truck	Forklift	Backhoe
6	9	52	25	1	4	2	5
Asphalt Roller	Tractor	Generator	Trailer	Excavator	Compressor	Street Sweeper	
3	1	9	15	1	12	3	

## Capability Index

<b>Description</b>	<b>AmCan</b>	<b>Napa</b>	<b>Yount</b>	<b>St Helena</b>	<b>Calistoga</b>	<b>County</b>	<b>Totals</b>
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<b>General Resources</b>							
EOC	1	1	1	1	1	1	6
Alt EOC		1				2	3
Dispatch		1			1	1	3
Corp Yard	1	1	1	1	1	3	8
PD/SO	1	1	1	1	1	1	6
Firestations	1	4	1	1	1	11	19
Hospitals		2	1			1	4
Clinics	1	4	1	1	1	1	9
IC Veh/Trilaers	2	3		1	1	2	9

### Fire Resources

Engines Type I Ladder		1		1		0	2
Engines Type I	6	7	2	2	3	15	35
Engines Type II	1	1		1		3	6
Engines Type III		1		1		8	10
Engines Type IV	1	3			2		6
Water Tenders	2			1	1	3	7
Med/HVY Rescue Tm	1	1			1	1	4
Hazmat Tm	1	1				1	3
Utility	2	4	1	2	2	6	17
Personnel	40	60	12	33	33	100	278

### Police Resources

Sworn Officers	13	30	5	11	11	75	145
Admin Personnel		6				11	17
SWAT Teams		1				1	2
EOD Teams						1	1
Sp Teams	1	2		1		1	5
Patrol Vehicles	3						3
SAR						1	1
Dive						1	1

### Public Works Resources

Personnel	26	52	8	15	8	125	234
Backhoes	2	4	0	1	1	4	12
Dozers	0	0	0	0	0	2	2
Dump Trucks	2	14	0	1	2	14	33
Utility Vehicles	21	26	6	6	6	42	107
Water Tenders	0	2	0	0	0	2	4
Generators Portable	1	4	1	2	1	3	12
Loaders	1	2	0	0	1	4	8
Spill Trailers	0	0	0	0	0	1	1

Shelter Trailers	0	1	0	1	1	4	7
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**Description    AmCan    Napa    Yount    St Helena    Calistoga    County    Totals**

**Emergency Medical**

BLS Caches	1			1			2
ALS Caches		1					1
Ambulances PVT		9					9
Ambulances Fire	1	4				3	8
EMT Trained Personnel	30	60	12	30	30	150	312
Paramedics	2	5		2		50	59
Hospital Ers		2				1	2
Trauma Center		1					1

**Communications**

Microwave	y	y	y	y	y	y	y
RIMS	y	y	y	y	y	y	y
High speed Internet	y	y	y	y	y	y	y
Telephone	y	y	y	y	y	y	y
Sat Phones	y	y	n	n	y	y	y
OASIS	n	y	n	n	n	n	y

# **Appendix D**

## **Resolution Authorizing NFMP**

RESOLUTION R2009 112

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF  
NAPA, STATE OF CALIFORNIA, AUTHORIZING THE  
ADOPTION OF THE 2009 UPDATE TO THE CITY OF  
NAPA FLOODPLAIN MANAGEMENT PLAN

WHEREAS, Napa Municipal Code Section 17.38 authorizes the Public Works Director, Floodplain Administrator of the City of Napa, to prepare a City of Napa Floodplain Management Plan, subject to the approval of the City Council; and

WHEREAS, the Public Works Director in consultation with City staff, has developed recommended updates to the City's Floodplain Management Plan; and

WHEREAS, the City of Napa participates in the Community Rating System and has a current rating of a Class 8 whereby citizens in the City of Napa receive a 10% discount on flood insurance policy premiums; and

WHEREAS, it is a requirement to update the City of Napa's Floodplain Management Plan at least every 5 years in order to continue to receive credits in the Community Rating System; and

WHEREAS, the City Council has considered all information related to this matter, as presented at the public meetings of the City Council identified herein, including any supporting reports by City Staff, and any information provided during public meetings.

NOW, THEREFORE, BE IT RESOLVED, by the City Council of the City of Napa, as follows:

1. The City Council hereby finds that the facts set forth in the recitals to this Resolution are true and correct, and establish the factual basis for the City Council's adoption of this Resolution.
2. The City Council hereby approves the 2009 Update to the City of Napa's Floodplain Management Plan dated July, 2009.
3. This Resolution shall take effect immediately upon its adoption.

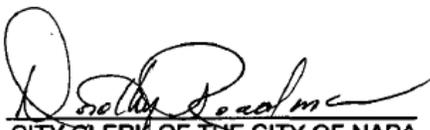
I HEREBY CERTIFY that the foregoing Resolution was duly adopted by the City Council of the City of Napa at a public meeting of said City Council held on the 1<sup>st</sup> day of September, 2009, by the following vote:

AYES: Techel, Inman, Krider, Mott, van Gorder

NOES: None

ABSENT: None

ABSTAIN: None

ATTEST:   
CITY CLERK OF THE CITY OF NAPA

Approved as to form:

  
Michael W. Barrett  
City Attorney

# **Appendix E**

## **Agenda Report of the adoption of the NFMP**

**CITY OF NAPA CITY COUNCIL  
AGENDA REPORT**

CONSENT CALENDAR  
Agenda Item No. 4C  
Date: September 1, 2009

To: Honorable Mayor and Members of City Council  
From:  Jacques R. LaRochelle, Public Works Director  
Prepared by: Karen Harnois, CFM, Senior Engineering Aide, 257-9404  
Subject: Adoption of the 2009 Update to the City of Napa Floodplain Management Plan

**ISSUE STATEMENT:**

Adopt a resolution authorizing the adoption of the 2009 Update of the City of Napa Floodplain Management Plan as required by the Community Rating System.

**DISCUSSION:**

The City of Napa participates in the FEMA's National Flood Insurance Program (NFIP) and the Community Rating System (CRS). One of the requirements of the CRS is to update the Floodplain Management Plan (FMP) at least every five years. While the Public Works Director is authorized to approve administrative revisions to the FMP (i.e., identification of personnel, resources and potential projects), each update must be submitted to the City Council for adoption.

The complete FMP is on file with the City Clerk and the Public Works Department.

The following is a 5-year summary of updated changes to the FMP:

- Council Resolution formally adopting the FMP
- A Letter of Map Revision dated April 2008 is being processed to revise the current Flood Insurance Rate Maps (FIRM) to include new and revised floodplain and floodway boundaries for the Napa River and its tributaries
- Urgency Ordinance O2009 7 and Ordinance O2009 8 were adopted to identify the updated boundaries for floodways and floodplains
- Repetitive loss properties have been prioritized for mitigation projects in Chapter 17 of the Storm Drain Master Plan dated April 2006
- An update to the Safety Element of the General Plan Resolution R2009 51
- Building Code Adoption Ordinance O2007 20

# **Appendix F**

## **Cooperating technical partners partnership agreement**

City Agreement # 8642  
Budget Account # \_\_\_\_\_

**COOPERATING TECHNICAL PARTNERS  
PARTNERSHIP AGREEMENT**

**AGREEMENT** is made on August 10, 2004, by these parties: the City of Napa, California, and the Federal Emergency Management Agency (FEMA).

**BECAUSE** the National Flood Insurance Program (NFIP) established by the National Flood Insurance Act of 1968 has several purposes, the most significant being:

- To better indemnify individuals from losses through the availability of flood insurance;
- To reduce future flood damages through community floodplain management regulations; and
- To reduce costs for disaster assistance and flood control;

**BECAUSE** a critical component of the NFIP is the identification and mapping of the nation's floodplains to create a broad-based awareness of flood hazards and to provide the data necessary for community floodplain management programs and to actuarially rate flood insurance;

**BECAUSE** FEMA administers the NFIP and is authorized by §1360 of the National Flood Insurance Act of 1968, as amended (42 U.S.C. 4101), to establish and update flood-risk zone data in floodplain areas;

**BECAUSE**, in the identification of flood prone areas, FEMA is authorized to consult with, receive information from, and enter into agreements or other arrangements with the head of any State, regional, or local agency;

**BECAUSE** FEMA encourages strong Federal, State, regional, and local partnerships for the purposes of reducing flood losses and disaster assistance; FEMA and its State, regional, and local partners have determined that it is advantageous to encourage and formalize greater cooperation in the flood hazard identification and mapping processes; and many communities and the agencies that serve them have developed considerable technical capabilities and resources that provide the opportunity to improve and expand the collection, development, and evaluation of flood hazard data; and

**BECAUSE** the community participates in the NFIP (or shares flood protection and/or floodplain management responsibilities with communities that participate in the NFIP), the community has been deemed by FEMA to be in good standing in the NFIP; and

**BECAUSE** the community has expressed a desire to perform certain functions in the flood hazard identification process and has provided evidence that it has sufficient technical capability and will dedicate the resources necessary to perform those functions.

**NOW, THEREFORE**, it is mutually agreed that the parties enter into this Agreement to work together to create and maintain accurate, up-to-date flood hazard data subject to the terms and conditions recited below.

**1. CONSULTATIONS**

The parties shall collaborate on flood hazard identification activities and shall consult with each other to fully integrate each other's contributions into flood hazard identification efforts. Questions regarding the execution of this Agreement will be resolved by an implementation committee consisting of a FEMA representative and a community representative. If the implementation

1

committee is unable to resolve technical issues, the issues may be resolved through alternative dispute resolution procedures.

**2. EVALUATION AND REPORTING**

The parties shall, on an annual basis, review the partnership created by this Agreement to determine and document the activities undertaken to maintain accurate flood hazard data and to revise the Agreement as necessary.

**3. RESOURCE COMMITMENT**

The parties agree to commit the appropriate and available human, technical, and financial resources sufficient to coordinate effectively with all entities impacted by flood hazard identification efforts to implement this Agreement.

**4. STANDARDS**

Unless otherwise agreed to by the parties, all flood hazard identification activities will be accomplished in accordance with the standards documented in *Guidelines and Specifications for Flood Hazard Mapping Partners*, dated April 2003, and all subsequent revisions.

**5. SPECIFIC INITIATIVES OR PROJECTS**

When specific initiatives, projects, or activities are to be performed, they will be forwarded through and negotiated by the community's Public Works, Planning, Community Development, or Building Department and shall be attached as negotiated Mapping Activity Statement (MAS) items. For this Memorandum of Agreement to go into effect, no MAS items are required.

**6. TERM**

The respective duties, responsibilities, and commitments of the parties in this Agreement shall begin on the date this Agreement is signed by the parties and may be periodically renewed, revised, or terminated at the option of any of the parties. The parties agree that a 60-day notice shall be given prior to the termination of this Agreement.

2

THEREFORE, each party has caused this Agreement to be executed by its duly authorized representatives on the date mentioned above.

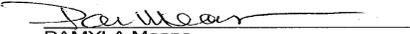
**CITY OF NAPA:**

  
MICHAEL N. O'BRYON  
Public Works Director

Sally Ziolkowski, Division Director  
Federal Insurance & Mitigation  
Division FEMA, Region IX

By: 

**ATTEST:**

  
PAMYLA Means  
City Clerk

**COUNTERSIGNED:**

  
JED CHRISTENSEN  
Finance Director

**APPROVED AS TO FORM:**

  
LINDA MILLS PUGH  
Assistant City Attorney