CITY OF San Dimas CALIFORNIA

NATURAL HAZARD MITIGATION PLAN

November 2004

Special Thanks & Acknowledgments

Project Steering Committee:

- City of San Dimas Administrative Services
- City of San Dimas Building and Safety Division
- City of San Dimas Community Development
- City of San Dimas Planning Commission
- City of San Dimas Public Safety Commission
- City of San Dimas Chamber of Commerce
- City of San Dimas Historical Society
- Bonita Unified School District
- Residents of the San Dimas Community
- Office of Disaster Management, Area D: Brenda Hunemiller, Coordinator

Project Technical Committee:

- Ken Duran, Assistant City Manager, City of San Dimas
- Carl Flores, Battalion Chief, County of Los Angeles Fire Department
- Ed McKenzie, Community Action Team, County of LA Sheriff's Department
- Eric Beilstein, Superintendent, Building and Safety, City of San Dimas
- Joe Vacca, Associate Planner, City of San Dimas
- John Lee, Administrative Aide, City of San Dimas
- Lynn Kelly, Administrative Intern, City of San Dimas

Project Advisory Committee:

- Ken Duran, Assistant City Manger, City of San Dimas
- David Bratt, Planning Commission, City of San Dimas
- Neil Oudejans, Public Safety Commission, City of San Dimas
- Robert Anderson, Public Safety Commission, City of San Dimas
- Paul Rippins, City of San Dimas Historical Society
- Eileen Mullen, Bonita Unified School District
- Ed McKenzie, Community Action Team, County of LA Sheriff's Department
- Laura Nash, City of San Dimas Community at Large
- Scott Dilley, Chamber of Commerce, City of San Dimas

Project Manager:

- Ken Duran, Assistant City Manager, City of San Dimas

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Executive Summary

Several years ago, Congress established the Disaster Mitigation Act of 2000 in order to reinforce the importance of mitigation planning in both pre- and post-disaster situations. This act mandated all local governments develop, adopt, and implement a Natural Hazard Mitigation Plan in order to be eligible for federal funding. California cities have until November 2004 to submit a plan to the Federal Emergency Management Agency (FEMA).

The City of San Dimas Natural Hazard Mitigation Plan (NHMP) includes resources and information to assist City residents, public and private sector organizations, and others interested in participating in planning for natural hazards. The plan details five major hazards that affect the Southern California region and assesses their potential risk. The mitigation plan also provides a list of activities that may assist the City in reducing risk and preventing loss from future natural hazard events. The action items address multi-hazard issues, as well as activities for earthquakes, earth movements, flooding, wildfires, and windstorms.

How is the Plan Organized?

The NHMP contains background information on the purpose and methodology used to develop the mitigation plan, a profile of the City of San Dimas, sections on five natural hazards that occur within the City, mitigation action items, as well as a number of appendices. All of the sections are described in detail in Section 1, the plan introduction.

Who Participated in Developing the Plan?

The City of San Dimas Natural Hazards Mitigation Action Plan is the result of a collaborative effort between residents, public agencies, non-profit organizations, the private sector, and regional and state organizations. Public participation played a key role in development of goals and action items. San Dimas residents were invited to participate in public meetings and provide feedback through a survey to assist in plan development. Project Steering, Technical, and Advisory Committees were formed and played crucial roles in guiding the process and development of the plan. Their roles are described in detail later in this plan.

The Steering Committee:

- City of San Dimas Administrative Services
- City of San Dimas Building and Safety Division
- City of San Dimas Community Development
- City of San Dimas Planning Commission
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What is the Plan Mission?

The mission of the City of San Dimas NHMP is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards. This can be achieved by increasing public awareness, documenting resources for risk reduction and loss-prevention, and identifying activities to guide towards building a safer community.

What are the Plan Goals?

The plan goals describe the overall direction that San Dimas agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards. These goals are stepping-stones between the broad direction of the mission statement and the specific recommendations outlined in the action items.

Protect Life and Property

- Implement activities that assist in protecting lives and property by making homes, businesses, infrastructure, and critical facilities more resistant to losses from natural hazards.

- Reduce losses and repetitive damages from chronic hazard events and promoting insurance coverage for catastrophic hazards.

- Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventive measures for existing development in areas vulnerable to natural hazards.

Increase Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards to minimize the loss of life and property.

- Provide informational items, partnership opportunities, and funding resource information to assist in implementing mitigation activities.

Strengthen Partnerships

- Strengthen communication and coordinate participation among public agencies, residents, non-profit organizations, business, and industry to provide a guidance in the implementation of mitigation measures.

- Encourage and support leadership within the private sector, non-profit agencies, and community based organizations to promote and implement local hazard mitigation activities.

City Emergency Services

- Establish policy to ensure the importance of mitigation programs and projects for critical facilities, services, and infrastructure.

- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.

- Coordinate and integrate natural hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

Environmental & Historical Preservation

- Balance land use planning with natural and manmade hazard mitigation to protect life, property and the environment.

How are the Action Items Organized?

Action items are activities in which City agencies and citizens can be engaged to reduce risk. Short-term action items are activities that City agencies may implement with existing resources and authorities within one to two years. Long-term action items may require new or additional resources or authorities, and may take between one and five years (or more) to implement. Ongoing activities occur continually throughout the implementation process.

The action items are organized by the following subsections, which list all of the multi-hazard and hazard-specific action items included in the mitigation plan. Data collection, research and the public participation process resulted in the development of these action items (see Appendix B).

Coordinating Organization: The coordinating organization is the public entity with regulatory responsibility to address natural hazards, and is willing and able to organize resources, and find appropriate funding. This agency must also be capable of the oversight of implementation, monitoring, and evaluation. Coordinating organizations may include local, county, or regional agencies that are responsible for implementing programs.

Time Line: Action items include short, long-term, and ongoing activities. Short-term action items are activities which City agencies are capable of implementing with existing resources and authorities within one to two years. Long-term action items may require new or additional resources or authorities, and may take between one and five years (or more) to implement. Ongoing activities occur continually throughout the implementation process.

Initiatives for Implementation: Each action item includes the initiatives that the City determined as the most beneficial and effective methods for implementing the action item.

Plan Goals Addressed: The plan goals addressed by each action item are included as a way to monitor and evaluate how well the mitigation plan is achieving its goals once implementation begins. The plan goals are organized into the following five areas:

1. Protect Life and Property
2. Public Awareness
3. Natural Systems
4. Partnerships and Implementation
5. Emergency Services

Partner Organizations. The Partner organizations are not listed with the individual action items or in the plan matrix, but can be found in Appendix A. These organizations are agencies that can assist in the implementation of action items by providing relevant resources to the coordinating organization.

Natural Hazard Mitigation Action Items

Hazard 1: Earthquakes

Action Item 1.1: Educate and assist the public on earthquake preparedness.
Implementation Initiatives:

Implementation Initiative 1.1.1 Conduct a community wide earthquake preparedness exercise.

Implementation Initiative 1.1.2 Educate the public on the availability of the California Earthquake Insurance Program.

Implementation Initiative 1.1.3 Encourage reduction of nonstructural and structural earthquake hazards in homes, schools, and businesses.

Coordinating Organizations: City Administration Department, Los Angeles County Sheriff's Department, City Building and Safety Division
Time line: Short-term, Ongoing.
Plan Goals Addressed: Increase public awareness.

Action Item 1.2: Enhance the sustainability of a functioning government during and after an earthquake.
Implementation Initiatives:

Implementation Initiative 1.2.1 Identify alternative structures to house government agencies.

Implementation Initiative 1.2.2 Encourage seismic strength evaluations of Civic Center buildings.

Coordinating Organizations: City Administration Department, City Building Division
Time line: Short-term.
Plan Goals Addressed: Strengthen City emergency services.

Action Item 1.3: Increase the number of retrofitted private structures.
Implementation Initiatives:

Implementation Initiative 1.3.1 Promote incentives, such as waiving permit fees, for retrofitting unreinforced or unanchored residential foundations.

Implementation Initiative 1.3.2 Evaluate an unreinforced masonry ordinance.

Implementation Initiative 1.3.2 Identify funding sources for structural and non-structural retrofitting of buildings that are identified as seismically vulnerable.

Coordinating Organizations: City Building Division, City Administration Department
Time line: Long-term.
Plan Goals Addressed: Protect life and property; Environmental and historical conservation.

Hazard 2: Landslide

Action Item 2.1: Provide education outreach on the dangers of potential landslides.
Implementation Initiatives:

Implementation Initiative 2.1.1 Provide information on vegetation and rodent control on slopes.

Coordinating Organizations: City Public Works Department
Time line: Short term.
Plan Goals Addressed: Increase public awareness.

Action Item 2.2: Increase emergency preparedness specific to landslides.
Implementation Initiatives:

Implementation Initiative 2.2.1 Continue to supply various locations with free sandbags and sand.

Implementation Initiative 2.2.2 Maintain the existing stockpile of k rails and update staging plans

Implementation Initiative 2.2.3 Develop an evacuation plan for Sycamore Canyon Equestrian Center.

Implementation 2.2.4 Maintain a database of debris basins from LA County Public Works and monitor the ongoing threat of sediment overflow.

Implementation 2.2.5 Include a USGS layer on GIS system to maintain a database of properties subject to landslide liquefaction.

Implementation 2.2.6 Develop an Action Plan to address the risk of isolation for residents in San Dimas Canyon because evacuation routes may be blocked by landslides.

Coordinating Organizations: City Public Works Department, Los Angeles County Sheriff's Department, City Administration Department

Time line: Short-term
Plan Goals Addressed: Strengthen City emergency services; Protect life and property.

Action Item 2.3: Reduce the risk of landslides in San Dimas Canyon, Sycamore Canyon and Hamm's Canyon.
Implementation Initiatives:

Implementation Initiative 2.3.1 Continue to require soils engineer's reports for new construction.

Implementation Initiative 2.3.2 Evaluate the potential for upgrade or replacement of identified bridge crossings.

*Implementation Initiative 2.3.3*Evaluate the potential for street intersection upgrades at Sycamore Canyon Road and San Dimas Canyon Road.

Coordinating Organizations: City Public Works Department
Time line: Long-term
Plan Goals Addressed: Protect life and property.

Action Item 2.4: Mitigate post fire debris flow.
Implementation Initiatives:

Implementation Initiative 2.4.1 Continue to supply various locations with free sand and sandbags.

Implementation Initiative 2.4.2 Continue to maintain the stockpile of k rails and update staging plans.

Implementation Initiative 2.4.3 Amend lease agreements with private property owners for the continued placement of trash racks in the canyons. Continue to monitor and maintain the trash racks.

Implementation Initiative 2.4.4 Monitor existing capacities and sediment flows with LA County Public Works.

Coordinating Organizations: City Public Works Department
Time line: Ongoing.
Plan Goals Addressed: Strengthen City emergency services; Protect life and property.

Hazard 3: Flooding

Action Item 3.1: Mitigate private property losses due to floods.
Implementation Initiatives:

Implementation Initiative 3.1.1 Encourage residents to participate in the flood hazard insurance program.

Implementation Initiative 3.1.2 Continue to monitor brush clearance in open channels and debris basins on private property.

Implementation Initiative 3.1.3 Educate residents on the importance of proper brush clearance.

Coordinating Organizations: City Public Works Department
Time line: Ongoing.
Plan Goals Addressed: Protect life and property; Increase public awareness.

Action Item 3.2: Enhance data and mapping for flooding information within the City. Identify and map flood-prone areas.
Implementation Initiatives:

Implementation Initiative 3.2.1 Develop and implement GIS system to map flood zones.

Coordinating Organizations: City Administration Department
Time line: Short.
Plan Goals Addressed: Protect life and property.

Action Item 3.3: Educate the public on the dangers and mitigation of post-fire flooding.
Implementation Initiatives:

Implementation Initiative 3.3.1 Create a public education program on sandbag techniques and other flood protection measures.

Coordinating Organizations: City Public Works Department, City Administration Department
Time line: Ongoing.
Plan Goals Addressed: Increase public awareness; Protect life and property.

Hazard 4: Wild Fire

Action Item 4.1: Modify building standards to reduce fire hazards in affected residences.
Implementation Initiatives:

Implementation Initiative 4.1.1 Continue to require all new residential developments in Fire Zone 4 to go through a thorough plan check by LA County Fire and the City of San Dimas.

Implementation Initiative 4.1.2 Continue to use the design and review board to review site plan design, building materials and landscape design.

Implementation Initiative 4.1.3 Continue to enforce the use non-combustible roof materials.

Implementation Initiative 4.1.4 Continue to enforce the zoning standard requiring a minimum separation requirement for structures in Specific Plan 25.

Implementation Initiative 4.1.5 Develop guidelines for a water availability assessment to be conducted for all new developments in Specific Plan 25

Coordinating Organizations: City Planning Department, City Public Works Department.
Time line: Ongoing, Short-term.
Plan Goals Addressed: Protect life and property; Environmental and historical preservation.

Action Item 4.2: Monitor the use of vacant parcels to reduce the risk and spread of fire.
Implementation Initiatives:

Implementation Initiative 4.2.1 Identify vacant parcels with problem vegetation and weeds.

Implementation Initiative 4.2.2 Maintain vigilant weed abatement enforcement and suggest replacement of brush with non-combustible vegetation.

Implementation Initiative 4.2.3 Coordinate efforts with Cal-Trans (and other agencies) regarding landscape clearance and replacement vegetation for perimeter areas.

Implementation Initiative 4.2.4 Encourage environmentally sensitive vegetation clearance techniques in hillside areas.

Coordinating Organizations: City Planning Department, City Public Works Department
Time line: Ongoing.
Plan Goals Addressed: Strengthen partnerships; Protect life and property; Environmental and historical preservation.

Action Item 4.3: Educate residents on the importance of brush clearance and hazards of fire.
Implementation Initiatives:

Implementation Initiative 4.3.1 Coordinate efforts with the Fire Department on conducting community fire safety expos.

Implementation Initiative 4.3.2 Educate the community on the Red Flag Warning System. Suggested outreach venues include the City newsletter, website, and public access channel.

Coordinating Organizations: Los Angeles County Fire Department, City Administration Department
Time line: Short-term
Plan Goals Addressed: Increase public awareness, Strengthen partnerships.

Hazard 5: Windstorms

Action Item 5.1: Educate the community on the dangers of windstorms and potential mitigation measures.
Implementation Initiatives:

Implementation Idea 5.1.1 Offer pruning and tree trimming education to residents.

Implementation Idea 5.1.2 Educate the community on voluntary upgrades to structures subject to wind damage. Place particular emphasis on mobile home park residents.

Coordinating Organizations: City Parks and Recreation Department, City Public Works Department
Time line: Short-term.
Plan Goals Addressed: Increase public awareness.

Action Item 5.2: Develop and implement programs to minimize the potential for city trees from threatening lives, property, and public infrastructure during windstorm events.
Implementation Initiatives:

Implementation Initiative 5.2.1 Develop a citywide tree inventory and maintenance monitoring system.

Implementation Initiative 5.2.2 Review tree-trimming frequency and practices for City trees.

Implementation Initiative 5.2.3 Develop a policy to evaluate the health of trees for possible proactive removal. Contract professional arborists to develop policies.

Coordinating Organizations: City Parks and Recreation Department
Time line: Short-term.
Plan Goals Addressed: Protect life and property; Environmental and historic preservation.

Action Item 5.3: Reduce the danger of structural damage to buildings along the Bonita Corridor
Implementation Initiatives:

Implementation Initiative 5.3.1 Evaluate the integrity of the facades of the buildings along the Bonita Corridor.

Implementation Initiative 5.3.2 Develop an Action Plan to encourage upgrades to sub-standard facades along the Bonita Corridor.

Coordinating Organizations: City Public Works Department, City Planning Department
Time line: Long-term.
Plan Goals Addressed: Protect life and property.

Hazard 6: Multi-Hazard

Action Item 6.1: Enhance data and mapping information within the City and identify and map hazard prone areas.
Implementation Initiatives:

Implementation Initiative 6.1.1 Develop a complete GIS system and provide training to all pertinent personnel.

Coordinating Organizations: City Administration Department
Time line: Short-term.
Plan Goals Addressed: Protect life and property.

Action Item 6.2: Develop, enhance, and implement education programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses, and schools.

Implementation Initiatives:

Implementation Initiative 6.2.1 Educate the public about emergency sheltering and evacuation procedures.

Implementation Initiative 6.2.2 Collaborate with the Bonita Unified School District on educational natural hazard awareness programs.

Implementation Initiative 6.2.3 Place public information brochures related to mitigating natural hazards at the Senior Center, Teen Center, Library, and City Hall.

Coordinating Organizations: City Administration Department
Time line: Ongoing.
Plan Goals Addressed: Increase public awareness.

Action Item 6.3: Enhance and expand the City's emergency response capabilities.
Implementation Initiatives:

Implementation Initiative 6.3.1 Develop and offer a CERT programs to residents.

Implementation Initiative 6.3.2 Augment training of Emergency Response Teams.

Implementation Initiative 6.3.3 Develop an employee communication response plan.

Implementation Initiative 6.3.4 Consider the feasibility of appointing a dedicated Emergency Preparedness Coordinator.

Coordinating Organizations: City Administration Department, Los Angeles County Sheriff's Department
Time line: Short-term, Ongoing.
Plan Goals Addressed: Strengthen City Emergency Services; Protect life and property.

Action Item 6.4: Integrate the goals and action items from the City of San Dimas' Natural Hazard Mitigation Plan into existing regulatory documents and programs where appropriate.
Implementation Initiatives:

Implementation Initiative 6.4.1 Consider incorporating mitigation goals and action items into the Safety Element of the City of San Dimas General Plan when the General Plan is next updated.

Implementation Initiative 6.4.2 Continue to change the City Building Code, where appropriate, to reflect future changes to the California Building Code.

Coordinating Organizations: City Planning Department, City Building and Safety Division
Time line: Long-term, Ongoing.
Plan Goals Addressed: Strengthen partnerships.

Action Item 6.5: Identify and pursue funding opportunities to develop and implement local mitigation activities.
Implementation Initiatives:

Implementation Initiative 6.5.1 Monitor the State Hazard Mitigation Office at the California Office of Emergency Services for information on hazard mitigation funding.

Implementation Initiative 6.5.2 Monitor the Federal Emergency Management Agency for grant programs to implement mitigation goals.

Implementation Initiative 6.5.3 Identify organizations and agencies that may support mitigation activities.

Coordinating Organizations: City Administration Department
Time line: Ongoing.
Plan Goals Addressed: Strengthen partnerships.

Action Item 6.6: Develop a warning system to alert residents of potential hazards as well as provide post-disaster information.
Implementation Initiatives:

Implementation Initiative 6.6.1 Evaluate the feasibility of a communication system to send out a blanket call to residents warning them of potential hazards.

Coordinating Organizations: City Administration Department
Time line: Long-term.
Plan Goals Addressed: Increase public awareness; Protect life and property.

How Will the Plan be Implemented, Monitored, And Evaluated?

The Plan Maintenance Section of this document details the formal process that will ensure the City of San Dimas NHMP remains an active and relevant document. The plan maintenance process includes an outline for monitoring and evaluating the Plan annually and producing a plan revision every five years. This section describes how City staff will integrate public participation throughout the process. Finally, there is a description of how the City intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms such as the City's General Plan, Capital Improvement Plans, and Building & Safety Codes.

Plan Adoption

Adoption of the Natural Hazard Mitigation Plan by City Council is one of the key requirements for approval of the plan. As the local governing body, City Council has the responsibility and authority to promote sound public policy regarding natural hazards. Staff will periodically re-adopt the plan as it is revised to meet changes in the risks and exposures in the community. The approved Natural Hazard Mitigation Plan will be significant in future growth and development of the community.

Coordinating Body

The Hazard Mitigation Advisory Committee will be responsible for coordinating implementation of Plan action items and undertaking the formal review process. The City Council will assign representatives from City agencies, including, but not limited to, the current Steering, Technical, and Advisory Committee members. The City Public Safety Commission will also take on a larger role in the implementation of the NHMP.

Convener

The Assistant City Manager will serve as a convener to facilitate the Hazard Mitigation Advisory Committee meetings, and will assign tasks such as updating and presenting the Plan to the members of the committee. Plan implementation and evaluation will be a shared responsibility among all of the Steering, Technical, and Advisory Committee Members, as well as City Council.

Implementation through Existing Programs

The City addresses statewide planning goals and legislative requirements through its General Plan, Capital Improvement Plans, and Building & Safety Codes. The Natural Hazard Mitigation Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs. The City will have the opportunity to implement recommended mitigation action items through existing programs and procedures.

Economic Analysis of Mitigation Projects

FEMA's approaches to identifying costs and benefits associated with natural hazard mitigation strategies or projects fall into two general categories: benefit-cost analysis and cost-effectiveness analysis. Conducting benefit-cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating natural hazards can provide decision makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects. A detailed description of the potential economic analysis process can be found in Appendix C.

Formal Review Process

The San Dimas NHMP will be evaluated on an annual basis to determine the effectiveness of programs, as well as reflect changes in land development or programs that may affect mitigation priorities. The evaluation process includes an approximate schedule and time line, and identifies the local agencies participating in plan evaluation. The convener will be responsible for contacting the Hazard Mitigation Advisory Committee members and organizing the annual meeting. Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan.

Continued Public Involvement

The City of San Dimas is dedicated to involving the public directly in the continual review and updates of the Hazard Mitigation Plan. Copies of the plan will be catalogued and made available at City Hall and at all City operated public libraries. The existence and location of these copies will be publicized in City newsletters. The City Administration Department will be responsible for keeping track of public comments on the Plan. In addition, copies of the Plan and any proposed changes will be posted on the City website. This site will also contain an email address and phone number to which people can direct their comments and concerns.

1 Introduction

Throughout its history, the residents of Southern California and the City of San Dimas have dealt with various natural hazards affecting the area. Photos, journal entries, and newspapers from the 1800's show that the residents were affected by earthquakes, landslides, flooding, wildfires, and windstorms. Although there were fewer people in the area, the natural hazards adversely affected the lives of those who depended on the land and climate conditions for food and welfare. As the population of the City and the region continues to rapidly increase, the exposure to natural hazards creates an even higher risk than previously experienced.

San Dimas is the 70th most populous city in Los Angeles County, and offers the benefits of living in a Mediterranean type of climate. The City is characterized by the unique and attractive landscape that makes the area popular. However, potential impacts of natural hazards associated with the terrain make the environment and population vulnerable to natural disaster situations. While it is impossible to predict exactly when these disasters will occur, or the extent of their damage, with careful planning and collaboration among public agencies, private organizations, and citizens within the community, it is possible to minimize the losses that can result from these natural disasters.

The City of San Dimas most recently experienced large-scale destruction during the Williams Fire in September 2002. Between September 22 and September 27 thousands of acres on the hillsides and canyons of San Dimas were destroyed.

The damage to the businesses, residences, and infrastructure in San Dimas was estimated at about $201,956, and $10 million to the entire San Dimas Canyon. Over 37,000 acres of wild lands were destroyed, and hundreds of homes, recreation facilities, and local canyons were at risk. In total, the fires cost $16.4 million to fight and contain in the area.

Following the Williams Fire, citizens of San Dimas were also at risk for landslides and debris flows that often result because of wild fires. The City sought federal assistance from the Natural Resources Conservation Services for its recovery effort including the installation of k-rails, sandbags, trash racks, debris removal, and selective channel clearing. The Federal Emergency Management Agency (FEMA) also contributed funds to the region to help fight the fires. Fortunately, the City of San Dimas was successful in mitigating the effects of post-fire hazards through this careful and thorough planning.

Why Develop a Mitigation Plan?

The rising cost of natural disasters has led to a renewed interest in recognizing effective ways to reduce vulnerability to disasters. This mitigation plan will assist our community in reducing risk from natural hazards by identifying resources, information, and strategies for risk reduction, while helping coordinate mitigation activities throughout the City.

The plan provides a set of action items to reduce risk from natural hazards through education and outreach programs and to foster the development of partnerships, and implementation of preventative activities such as land use programs that restrict and control development in areas subject to damage from natural hazards.

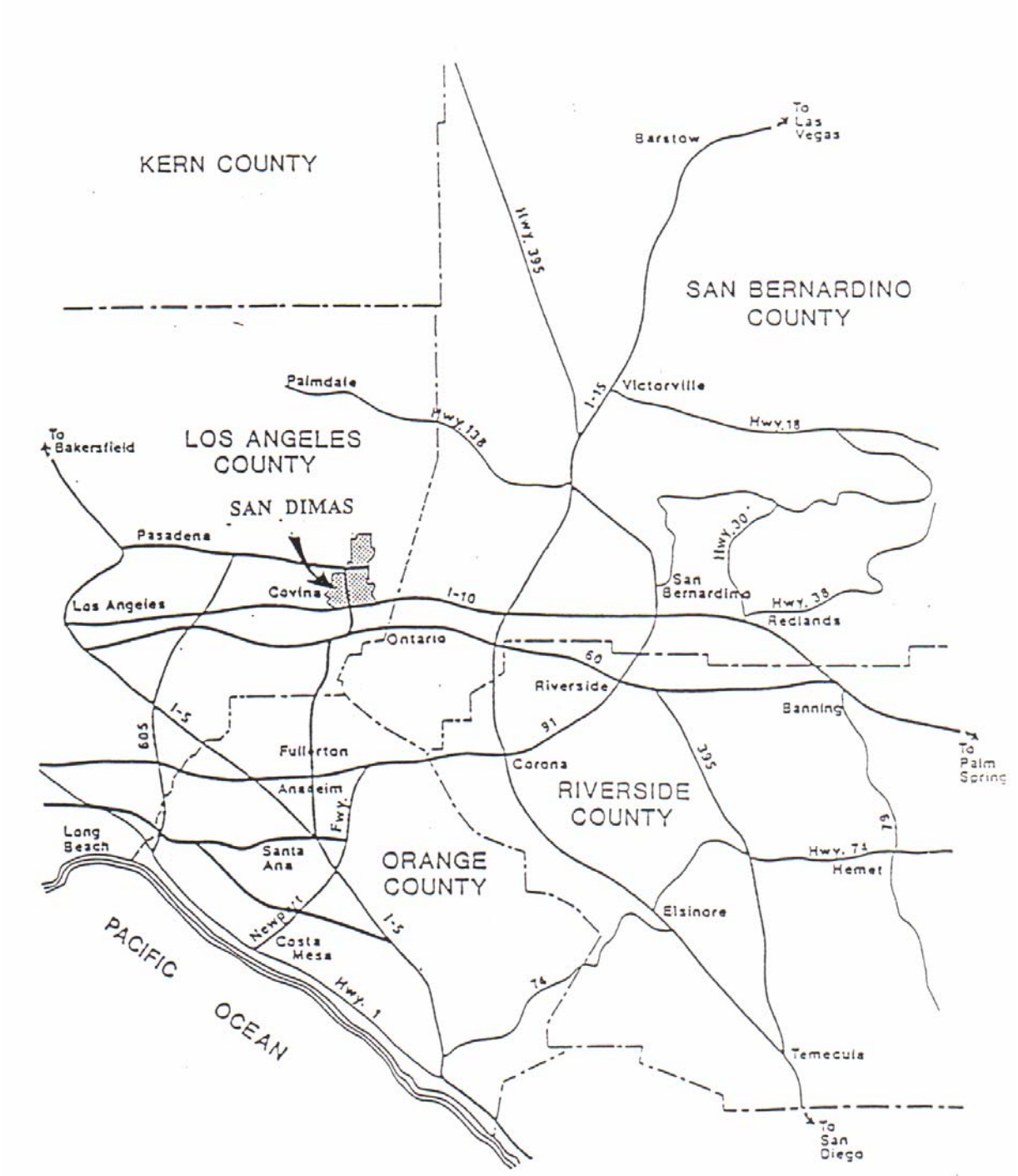
Numerous resources within the Mitigation Plan have been supportive in guiding the City throughout the planning process. They have established a basis for coordination and collaboration among agencies and the public in San Dimas. They have also helped identify and prioritize future mitigation projects. Finally, they assist in meeting the requirements of federal assistance programs.

For successful implementation of the Natural Hazard Mitigation plan, it is essential that it work in conjunction with other City plans, including, but not limited to, the General Plan and Emergency Operations Plans.

Whom Does the Mitigation Plan Affect?

The City of San Dimas NHMP affects the entire city. The resources and background information in the plan is applicable Citywide, and the goals and recommendations can lay groundwork for local mitigation plans and partnerships. Map 1-1 shows the City of San Dimas as well as the surrounding areas.

Map 1-1 The City of San Dimas



**Map Not To Scale*

Natural Hazard Land Use Policy in California

Planning for natural hazards is an integral element of any city's land use planning program. All California cities and counties have General Plans and implementing ordinances that are required to comply with the statewide planning regulations. The continuing challenge faced by local officials is to keep the network of local plans effective in responding to the changing conditions and needs of California's diverse communities, particularly in light of the very active seismic region in which we live. This is especially true where communities must balance development pressures with detailed information on the nature and extent of hazards.

Planning for these hazards requires local plans to include inventories, policies, and ordinances to guide development in hazard areas. These inventories should include the compendium of hazards facing the community, environment at risk, the personal property that may be damaged by hazards and most of all, the residents who live in the shadow of these events.

Support for Natural Hazard Mitigation

All mitigation is local; hence, the primary responsibility for development and implementation of risk reduction strategies and policies lies with local jurisdictions. Nevertheless, these jurisdictions do not need to act alone. Available partners and resources exist at the regional, state, and federal levels. Numerous California state agencies have a role in natural hazard mitigation. Some of these key agencies include:

- **The Governor's Office of Emergency Services** (OES) is responsible for disaster mitigation, preparedness, response, recovery, and the administration of federal funds after a major disaster declaration;

- **The Southern California Earthquake Center** (SCEC) gathers information about earthquakes and communicates this to end-users and the general public to increase earthquake awareness, reduce economic losses, and save lives.

- **The California Division of Forestry** (CDF) is responsible for all aspects of wild land fire protection on private, state, and administers forest practices regulations on non-federal lands.

- **The California Division of Mines and Geology** (DMG) is responsible for geologic hazard characterization, public education, the development of partnerships aimed at reducing risk.

- **The California Division of Water Resources** (DWR) plans, designs, constructs, and operates, the State Water Project. The DWR is also responsible for the regulation of dams and the provision of flood protection and emergency management, and technical assistance.

Plan Methodology

Information in the Mitigation Plan is based on research from a variety of sources. Staff from the City of San Dimas conducted data research and analysis, facilitated Steering Committee meetings and public workshops, and developed the final mitigation plan. The research methods and various contributions to the plan include:

Input from the Committees

The Steering Committee convened approximately every eight weeks to guide development of the Mitigation Plan. This Committee played an integral role in developing the mission, goals, and action items for the mitigation plan. The Committee consisted of representatives of public and private agencies and organizations throughout the City of San Dimas.

Project Steering Committee

- City of San Dimas Administrative Services
- City of San Dimas Building and Safety Division
- City of San Dimas Community Development
- City of San Dimas Planning Commission
- City of San Dimas Public Safety Commission
- City of San Dimas Chamber of Commerce
- City of San Dimas Historical Society
- Bonita Unified School District
- Residents of the San Dimas Community
- Office of Disaster Management, Area D: Brenda Hunemiller, Coordinator

A Technical Advisory Committee was formed to provide technical research and analysis and prepare the written plan. This committee held approximately seven meetings. The Technical Committee consisted of the following representatives:

Project Technical Committee

- Ken Duran, Assistant City Manager, City of San Dimas
- Carl Flores, Battalion Chief, County of Los Angeles Fire Department
- Ed McKenzie, Community Action Team, County of LA Sheriff's Department
- Eric Beilstein, Superintendent, Building and Safety, City of San Dimas
- Joe Vacca, Associate Planner, City of San Dimas
- John Lee, Administrative Aide, City of San Dimas
- Lynn Kelly, Administrative Intern, City of San Dimas

An Advisory Committee was formed in order to coordinate input from experienced residents with specialized knowledge in specific areas. The main functions of the Advisory Committee

were to provide feedback on mitigation items suggested by the Technical Committee, and to help guide a plan for implementation and monitoring.

Project Advisory Committee

- Ken Duran, Assistant City Manger, City of San Dimas
- David Bratt, Planning Commission, City of San Dimas
- Neil Oudejans, Public Safety Commission, City of San Dimas
- Robert Anderson, Public Safety Commission, City of San Dimas
- Paul Rippins, City of San Dimas Historical Society
- Eileen Mullen, Bonita Unified School District
- Ed McKenzie, Community Action Team, County of LA Sheriff's Department
- Laura Nash, City of San Dimas Community at Large
- Scott Dilley, Chamber of Commerce, City of San Dimas

State and Federal Requirements for Mitigation Plans

The following are federal requirements for approval of a Natural Hazard Mitigation Plan:

- Open public involvement, with discussion of the process and requirements.
- The public must be afforded opportunities for involvement in identifying and assessing risk, drafting a plan, and involvement in approval stages of the plan.
- An opportunity for community cooperation, including local government agencies, the business community, educational institutions, and non-profit input.
- Incorporation of local documents, including the local General Plan, the Zoning Ordinance, the Building Codes, and other pertinent documents.

The following components must also be part of the planning process:

- Complete documentation of the planning process
- A detailed risk assessment on hazard exposures in the community
- A comprehensive mitigation strategy, which describes the goals & objectives, including proposed strategies, programs, actions to avoid long-term vulnerabilities
- A plan maintenance process, which describes the method and schedule of monitoring, evaluating, and updating the plan and integration of the All Hazard Mitigation Plan into other planning mechanisms
- Formal adoption by the City Council
- Plan Review by both State OES and FEMA

These requirements are detailed in the following plan sections and supporting documentation.

The City of San Dimas exceeded the minimum requirement of two public workshops for public participation, in addition to the inclusion of representatives on the planning committee.

The City of San Dimas staff facilitated various public meetings to gather comments and ideas from citizens about mitigation planning and priorities for mitigation plan goals. The Natural Hazard Mitigation Plan was routinely briefed at City Council meetings, where residents were invited to comment. In addition, residents were encouraged to provide insight on natural hazard concerns via a survey that was distributed throughout City Hall, Senior Center, public library, and other community buildings. The survey was also available online at the City's website http://www.cityofsandimas.com. The data gathered from these forums was used to tailor the mitigation action items to best suit the City's needs. The resources and information cited in the mitigation plan provide a strong local perspective and help identify strategies and activities to make the City of San Dimas more disaster resilient.

The City of San Dimas staff examined existing mitigation plans from around the country, current FEMA hazard mitigation planning standards (386 series) and the State of California Natural Hazards Mitigation Plan Guidance. Local cities in the area also provided informative guidance and help through their own Hazard Mitigation Plans.

Other reference materials consisted of county and city mitigation plans, including:

- State of California Natural Hazard Mitigation Plan
- City of Duarte, CA Natural Hazard Mitigation Plan
- City of Cerritos, CA Natural Hazard Mitigation Plan
- City of Pomona, CA Natural Hazard Mitigation Plan
- County of Los Angeles, All Hazards Plan

City staff collected data and compiled research on five hazards: earthquakes, landslides, flooding, wildfires, and wind storms. Various research materials were obtained through state agencies including the OES and CDF. Research included historical local newspapers, census information, City Plans, and the knowledge of various City departments.

How is the Plan Used?

Each section of the mitigation plan provides information and resources to assist in understanding the City and the hazard-related issues facing citizens, businesses, and the environment. Combined, the sections of the plan work together to create a document that guides the mission to reduce risk and prevent loss from future natural hazard events.

The structure of the plan enables people to use a particular section that is of interest to them. It also allows the City government to review and update sections as new data becomes available. The ability to revise individual sections of the mitigation plan places less of a financial burden on the City budget. Decision-makers can allocate funding and resources to selected pieces in need of review, thereby avoiding a comprehensive update, which can be costly and time-consuming. New data can be easily incorporated, resulting in a natural hazards mitigation plan that remains current and relevant to San Dimas.

The mitigation plan is organized in three volumes. Volume I contains an executive summary, introduction, City profile, risk assessments, plan maintenance. Volume II contains the five natural hazard sections and Volume III includes the appendices. Each section of the plan is described below.

Volume I: Mitigation Action Plan

Executive Summary
The Action Plan provides an overview of the mitigation plan mission, goals, and action items. The included action items address multi-hazard issues, as well as hazard-specific activities that can be implemented to reduce risk and prevent loss from future natural hazard events.

Section 1: Introduction
This segment describes the background and purpose of developing the mitigation plan.

Section 2: Community Profile
This portion of the plan presents the history, geography, demographics, and socioeconomics of San Dimas. It also serves as a tool to provide an historical perspective of natural hazards.

Section 3: Risk Assessment
This section provides information on hazard identification, vulnerability, and risk associated with natural hazards.

Section 4: Multi-Hazard Goals and Action Items
This section provides information on the process used to develop goals and action items that cut across the five natural hazards addressed in the mitigation plan.

Section 5: Plan Maintenance
This section provides information on plan implementation, monitoring, and evaluation.

Volume II: Hazard Specific Information

Hazard-specific information on the five chronic hazards is incorporated into this plan. Chronic hazards occur with some regularity and may be predicted through historic evidence and scientific methods. The hazards addressed in the plan include:

- Section 6: Earthquakes
- Section 7: Landslides
- Section 8: Flooding
- Section 9: Wildfires
- Section 10: Windstorms

Catastrophic hazards do not occur with the frequency of chronic hazards, but can have devastating impacts on life, property, and the environment. Because of the geology and terrain in

Southern California, earthquakes, landslides, flooding and wildfires also have the potential to be catastrophic as well as chronic hazards.

Each of the hazard-specific sections includes information on the history, causes and characteristics, assessment, goals and action items, and local, state, and national resources.

Volume III: Resources

Plan appendices are designed to provide users of the City of San Dimas Natural Hazards Mitigation Plan with additional information to assist them in understanding the contents of the plan, and potential resources to support the implementation process.

Appendix A: Plan Resource Directory
The resource directory includes city, regional, state, and national resources and programs that may be of technical and/or financial assistance to the City during plan implementation.

Appendix B: Public Participation Process
This appendix includes specific information on the various public processes used during development of the plan.

Appendix C: Benefit Cost Analysis
This section includes FEMA's requirements for benefit cost analysis in hazard mitigation and approaches for conducting economic analysis of proposed mitigation activities.

Appendix D: List of Acronyms
This section provides a list of acronyms for city, regional, state, and federal agencies and organizations that may be referred to within the Natural Hazards Mitigation Plan.

Appendix E: Glossary
This section provides a glossary of terms used throughout the plan.

2 Community Profile

Why Plan for Natural Hazards in the City of San Dimas?

Natural hazards affect citizens, property, the environment, and the economy of the City of San Dimas. Earthquakes, landslides, flooding, wildfires, and windstorms have exposed residents and businesses to the financial and emotional costs of recovering after natural disasters. The risk associated with these hazards increases as more people move to areas affected by natural hazards.

Even in those communities that are essentially built-out, like San Dimas, population density continues to increase when low density housing is replaced with medium and high density development projects.

The inevitability of natural hazards, and the growing population and activity within the City create an urgent need to develop strategies, coordinate resources, and increase public awareness to reduce risk and prevent loss from future natural hazard events. Identifying the risks posed by natural hazards, and developing strategies to reduce the impact of an event can assist in protecting life and property of citizens and communities. Local residents and businesses can work together with the City to create a natural hazards mitigation plan that addresses the potential impacts of hazard events.

Geography and the Environment

San Dimas has an area of 15.5 total square miles and is located in the eastern portion of the San Gabriel Mountains. Located in Los Angeles County, it is approximately 25 miles northeast of the City of Los Angeles. San Dimas is a foothill community and is bordered on the north by the San Gabriel Mountains. The western border is shared with the cities of Covina and Glendora. The City of La Verne is to the east and the cities of Pomona and Walnut make up the southern border.

Elevations in the City range from 2,300-foot peaks at the foothills of the San Gabriel Mountains and the Angeles National Forest to a low of 940 feet in the southern border. The terrain of the City is characterized by a combination of flat and gently hilly topography.

The City of San Dimas has a rich history that originates in the nineteen century. The area comprising the City was settled in 1875 when its first school was constructed. The area was originally a part of a larger land grant of the Rancho San Jose, and San Dimas provided rich grassland for grazing and land for agriculture. The City was incorporated on August 4, 1960 as a general law City.

The Foothill Freeway (Interstate 210) and Interstate 10, Orange Freeway 57, Corona Express Way 71, along with the California State Route 30 provide major access to the City. Rail service is provided by the Atchison, Topeka, and Santa Fe Railroads, and there are two railroad rights of

way through the City. Metro Rail and the Southern Pacific Railroad carry both passengers and freight.

San Gabriel River

The nearest major river to San Dimas is the San Gabriel River. Because of its distance, the flow of the river does not have any great potential impact on the City; however, San Dimas may be affected indirectly, as part of the San Gabriel River Watershed. This waterhsed is bounded by the San Gabriel Mountains to the north, most of San Bernardino/Orange County to the east, the division of the Los Angeles River from the San Gabriel River to the west, and the Pacific Ocean to the south. The San Gabriel River runs from the San Gabriel Mountains to the Pacific Ocean.[1]

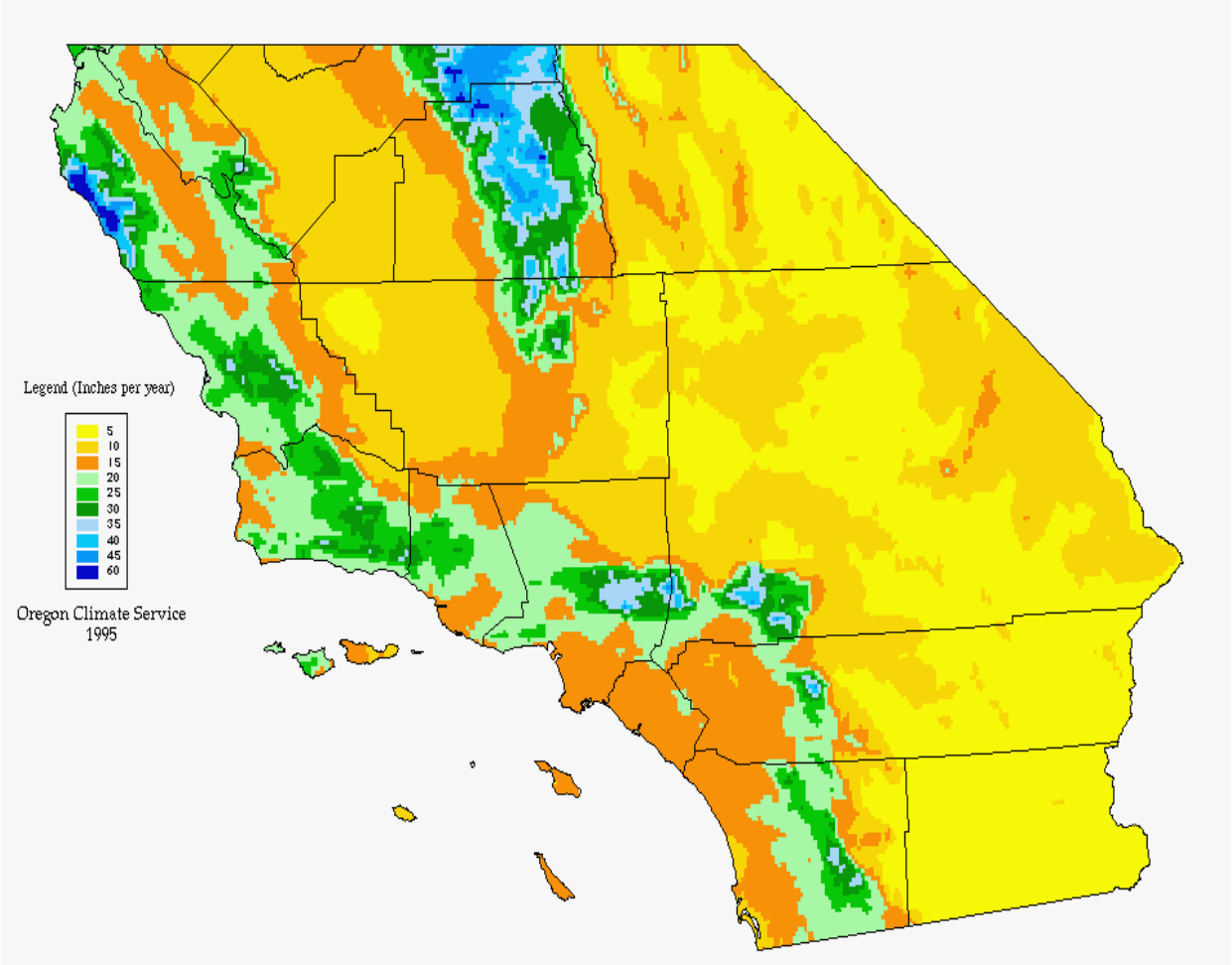
The River is 38 miles long within the basin flood plain, ten of which are entombed in concrete. The River was permanently altered in the 1930s in order to provide flood protection and irrigation. The Watershed is composed of approximately 640 square miles of land, with 26% of its total area developed. The major tributaries to the San Gabriel River include Walnut Creek, San Jose Creek, Coyote Creek, and numerous storm drains. The San Gabriel River is part of the County Flood Control District and Los Angeles County Public Works Department.[2]

Climate

The climate in San Dimas is Mediterranean or dry subtropical. Mean temperatures range from 48.8 degrees Fahrenheit in the winter months to 77.4 degrees Fahrenheit in the summer months. However, the temperatures can vary over a wide range, particularly when the Santa Ana winds blow, bringing higher temperatures and very low humidity. Temperatures sometimes exceed 100 degrees Fahrenheit in the summer months (June – September), and rarely drop below 30 degrees Fahrenheit in the winter months (November – March). Rainfall in the City averages 18.1 inches per year. In fact, San Dimas averages 5.1 more inches of rain than Los Angeles which because of its closer proximity to the San Gabriel Mountains.[3]

Actual rainfall in Southern California tends to accumulate in large amounts during sporadic and often heavy storms, rather than consistent, regular intervals. In short, rainfall in Southern California can be characterized as feast or famine within a single year. Because the metropolitan basin is largely built out, water originating in higher elevation communities can have a sudden impact on adjoining communities with lower elevations.

Map 2-1 Average Precipitation in Southern California



Minerals and Soils

The characteristics of the minerals and soils present in San Dimas indicate the potential types of hazards that may occur. Rock hardness and soil characteristics can determine whether or not an area will be prone to geologic hazards such as earthquakes, liquefaction and landslides.

Mineral resources in the City of San Dimas have included mining for precious metal, soil, and gas. Mining for precious metal on a small scale primarily have taken place in the Angeles National Forest. Mining has been administered by the U.S. Forest Services. No permits are being issued for mining and no permits have been authorized for the last fifteen to thirty years. There are no significant major oil and gas fields within the City.

San Dimas began as an agricultural town. Citrus orchards and row crops, such as strawberries

were grown when it was first settled. The U.S. Soil Conservation Service has analyzed the soils in the San Dimas area into Land Capability Classification groups. These soil classifications are based on their ability to produce common cultivated crops and pasture pants without soil deterioration over an extended period of time. The broadcast category places all soils into eight classes arranged from I to VIII. There are no Class I (prime agricultural) soils in the City. There are Class II (potential prime agricultural) soils located in the northern half of the city. Understanding the geologic characteristics of San Dimas is an important step in hazard mitigation and avoiding at-risk development.[4]

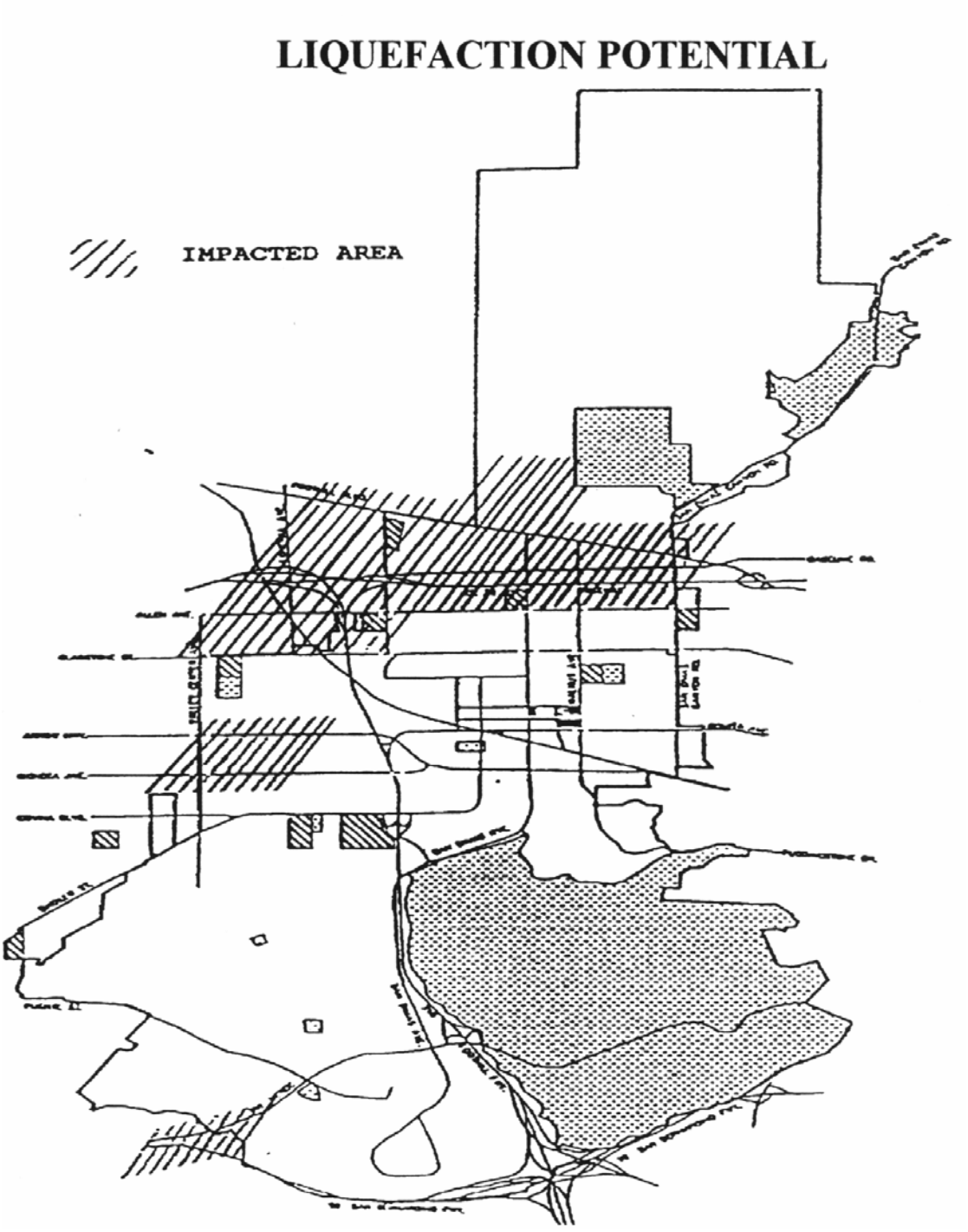
Significant Geologic Features

San Dimas, like most of the Los Angeles Basin, lies over the area of one or more known earthquake faults, and potentially many more unknown faults, particularly so-called lateral or blind thrust faults. Major faults that have the potential to affect the greater Los Angeles Basin, and therefore the City of San Dimas are the San Andreas, the San Jacinto, Whittier-Elsinore, and Newport-Inglewood. These faults will be described in more detail in Section 6 of this Plan.

The Los Angeles Basin has a history of powerful and relatively frequent earthquakes, dating back to the powerful 8.0+ San Andreas earthquake of 1857 that did substantial damage to the relatively few buildings that existed at the time. Paleo-seismological research indicates that large (8.0+) earthquakes occur on the San Andreas fault at intervals between 45 and 332 years with an average interval of 140 years.[5] Other lesser faults have also caused very damaging earthquakes since 1857. Notable earthquakes include the Long Beach earthquake of 1933, the San Fernando Earthquake of 1971, the 1987 Whittier Earthquake and the 1994 Northridge earthquake.

In addition, many areas in the Los Angeles Basin have sandy soils that are subject to liquefaction. Many areas may have buildings destroyed or unusable due to this phenomenon. Liquefaction is a phenomenon involving the loss of shear strength of a soil. The shear strength loss results from the increase of poor water pressure caused by the rearrangement of soil particles induced by shaking or vibration. Liquefaction has been observed in many earthquakes, usually in soft, poorly graded granular materials (i.e., loose sands), with high water tables. This process usually occurs in the soil during or shortly after a large earthquake. In effect, the liquefaction soil strata behave as a heavy fluid. Buried tanks may float to the surface and objects above the liquefaction strata may sink. Pipelines passing through liquefaction materials typically sustain a relatively large number of breaks in an earthquake. San Dimas has liquefaction zones as shown on Map 2-2.

Map 2-2

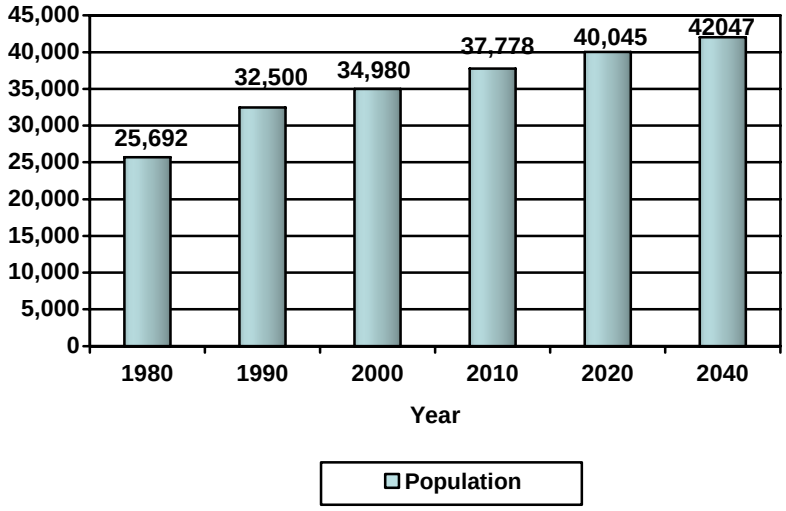


Soils most prone to liquefaction are medium to fine sand fractions located in areas where the water table is high. Since these unfavorable conditions overlap in few areas of the community, the overall liquefaction potential is low. The areas are generally north of Way Hill, central-southwestern portion of the City, and in the flood plains of San Dimas Wash near the western-central part of the City.

Population and Demographics

According to the 2000 Census, San Dimas has a population of about 34,980 people. The population of the City has vastly increased from the mid 1800's through 2000, and increased 7% from 1990 to 2000. According to the US Census, growth is expected to continue, but at a decreasing rate.

Figure 2-1 Historic and Projected Estimates of the Population in San Dimas



The increase of people living in the community creates more exposure to natural hazards, and forces change in how agencies prepare for and respond to natural hazards. For example, more people living on the urban fringe can increase risk of fire which has greater potential to injure people and cause property damage.

Increased density can also elevate risk. For example, narrower streets are more difficult for emergency service vehicles to navigate because the higher ratio of residents to emergency responders affects response times. Homes are located closer together because of the amplified density, which further increases the chance of fires spreading.

Natural hazards do not discriminate, but the impacts in terms of vulnerability and the ability to recover vary greatly among the population. According FEMA, 80% of the disaster burden falls

on the public, and within that number, a disproportionate burden is placed upon special needs groups: women, children, minorities, and the poor.[6] By observing the ethnic and cultural diversity in Figure 2-2, it is apparent that the City needs to address multi-cultural needs and services.[7]

Figure 2-2 Racial Breakdown of the City of San Dimas

Race	Percentage
Caucasian	73.7%
African American	3.3%
American Indian or Alaska Native	.7%
Asian	9.4%
Other	11.7%

The percentage of poverty in San Dimas is about 6.3%, which is less than .0004% that of the state's total. Of this population, 56.8% are under 18 years old, and 6.2% are over sixty-five. Vulnerable populations, including seniors, disabled citizens, women, and children, as well as those people living in poverty, tend to be disproportionately affected by natural hazards. Examining the reach of hazard mitigation policies to special needs populations may assist in increasing access to services and programs. FEMA's Office of Equal Rights addresses this need by suggesting that agencies and organizations planning for natural disasters identify special needs populations, make recovery centers more accessible, and review practices and procedures to remedy any discrimination in relief application or assistance.

The cost of natural hazards recovery can place an uneven financial responsibility on the general population while only a small proportion may benefit from the governmental funds used to rebuild private structures. Discussions about natural hazards that include local citizen groups, insurance companies, and other public and private sector organizations can help ensure that all stakeholders are a part of the decision-making processes.

Land and Development

From the early days of settlement, development in Southern California was a cycle of boom and bust. However, the Second World War dramatically changed that cycle. Military personnel and defense workers came to Southern California to fill the logistical needs created by the war effort. The available housing was rapidly exhausted and existing commercial centers proved inadequate for the influx of people.

Immediately after the war, construction began on the freeway system, and the face of Southern California was forever changed. Home developments and shopping centers seemed ubiquitous, and within a few decades, the central basin of Los Angeles County was essentially built-out. This continually pushed new development further away from the urban center. The City of San Dimas was one of a number of cities that incorporated during the boom of this 1950s and 1960s.

Because the environment of most Los Angeles County cities is nearly identical with that of their immediate neighbors, and the transition from one incorporated municipality to another is seamless to most people. Seamless too are the exposures to the natural hazards that affect all of Southern California.

The San Dimas General Plan addresses the use and development of private land, including residential and commercial areas. This is one of the City's most important tools in addressing environmental challenges and development. It includes information transportation and air quality, growth management; conservation of natural resources; clean water and open spaces

Housing and Community Development

The high demand for housing in rural settings and smaller cities, coupled with the recent low interest rates has led to a strong real estate market in the region. Substandard housing conditions may not a serious problem citywide, but areas of San Dimas have been identified with a number of substandard dwelling units. There were nearly 2,000 very low and low-income households in the City in 1990 (almost one of every five households) that spent more than 30 percent of gross household income on housing. According to the Southern California Association of Governments (SCAG), there is a projected need for 91 new housing units over the next five years.

As seen throughout the state, residential values have been steadily rising over the years. From 1991- 2001 home prices have gone up an average of 12% and continues to rise every year (2002 – 18 percent; 2003 – 19 percent; 2004 26.6 percent). Demand for low to medium priced homes continues to be strong. The average value for homes in the City of San Dimas is approximately $232,400.[8] The figure below demonstrates the breakdown of housing by type in the City.

Figure 2-3 Housing Breakdowns for the City of San Dimas[9]

Type	Number
Detached Single Family Homes	7654
Attached Single Family Homes	2100
Two – Four Multiple Units	357
Five Plus Multiple Units	1618
Mobile Homes	943
Total	**12,672**

Of the figures above, 73.7% of units in the City of San Dimas are owner occupied housing units, while 26.3% are occupied renters. There is a 1.0% homeowner vacancy rate and a 2.6% rental vacancy rate.

To address development issues, the City has engaged in activities that promote the quality of life for the citizens of San Dimas. The large-scale effort is termed the City of San Dimas Housing Program, and includes neighborhood and other public facility improvements, rehabilitation of

existing housing, and new housing development. Program activities must primarily benefit households or individuals who meet U.S. Department of Hosing and Urban Development (HUD) low and moderate-income limits. HUD provides funding for the program. Active federal programs include Community Development Block Grants (CDBG), Rehabilitation Loan Program, HOME Investment Partnership Program, and redevelopment housing set-aside funds. The primary resource available to address non-housing community development needs is the CDBG. The City's CDBG allocation for 2000 was $265,000.[10]

While there has been an increased concentration of resources and capital in San Dimas, the does not reflect how the income is distributed among residents of the area. The City's per capita personal income is increasing relative to California's and the United State's average per capita incomes, resulting in a more affluent community than the average population.

Subtle, but measurable changes occur constantly in communities that can increase the potential loss that will occur in a major disaster. There are number of factors contributing to this increasing loss potential. First, as populations continue to increase, more people are at risk within a region. Also, inflation continually increases the worth of real property and improvements. Finally, the amount of property owned per capita increases over time. The following figure demonstrates the dramatic changes in the US over the past thirty years.

Figure 2-4 Average Housing Standards Changes in the United States [11]

Amount of Property per person	1975	1998
Increased Size of new homes	1645 sq. ft.	2190 sq. ft.
% of homes with 4 + bedrooms	21%	33%
% of homes with 2 ½ or more baths	20%	52%

If we look at the greatest recorded earthquakes in American history, and compare the level of population and development today with that which existed at the time of the event, the scale of potential damage is staggering.[12] For examples, if the three worst earthquakes happened today, the results would be disastrous.

1886 Charleston, SC Earthquake M7.3
Estimated insured damage if happened today $10 Billion

1906 San Francisco Earthquake M8.3
Estimated insured damage if happened today $36 Billion

1811-12 New Madrid Earthquake Series (four earthquakes)
Estimated insured damage if happened today $88 Billion

Employment and Industry

In 2004, the City of San Dimas provided over 8997 jobs.[13] The principle industries and occupations are provided in Figure 2-5.

Figure 2-5 Census Information on Employment and Industry in the City of San Dimas

Industry	Percentage
Educational, Health, and Social Services	21.9%
Professional Services	13%
Manufacturing	12.9%
Retail Trade	11.8%
Finance, Insurance, Real Estate	7.4%
Arts and Entertainment	6.2%
Public Administration	5.2%
Construction	4.9%

It is important to remember that mitigation activities are needed at the business level to ensure the safety and welfare of workers and limit damage to industrial infrastructure. Employees commute from surrounding areas to business centers. This mobility creates a greater dependency on roads, communications, accessibility, and emergency plans to ensure safety during a disaster. Before a natural hazard event, both large and small businesses can develop strategies to prepare for natural hazards, respond efficiently, and prevent loss of life and property.

Transportation and Commuting Patterns

The City of San Dimas is the 70th largest in the Los Angeles Metropolitan Statistical Area (LAMSA), and is continually growing. Since private automobiles are the dominant means of transportation in Southern California and San Dimas, this growth could potentially lead to larger problems.

However, the City meets its public transportation needs through a mixture of a regional transit system (MTA), and various localized bus systems. MTA provides both bus and light rail service to the entire LA County Metropolitan area. In addition to these services, the City promotes alternative transportation activities.

The City has developed an extensive system of multi-use trails. These trails are primarily used for recreation, but they offer an alternative transportation mode to get to work, school, and shop. The local bikeway system, including the regional bike paths, also provides a substitute method of transportation with several loops in the downtown area and connecting links each with the Via Verde and Frank G. Bonelli Regional Park. Additional trails are being considered to improve the system.[14]

Almost fifty five percent of San Dimas' population works outside of the City. This suggests that

population growth is a more suburban phenomenon, where many residents live in San Dimas but work in other communities. However, a rapid growth rate in the high technology industry has attracted commuters to travel in the opposite direction as well, with more than one in three jobs filled by nonresidents.

San Dimas is served by the Foothill Freeway (Interstate 210), the Orange Freeway 57, Corona Express Way 71, the San Bernardino Freeway (Interstate 10), and California State Route 30, which connect the City to adjoining parts of Los Angeles County. As daily transit rises, there is an increased risk that a natural hazard event will disrupt the travel plans of residents across the region, as well as local, regional, and national commercial traffic. For example, localized flooding can render roads unusable. A severe winter storm has the potential to disrupt the daily driving routine of hundreds of thousands of people. Natural hazards can disrupt automobile traffic and shut down local and regional transit systems.

The inevitability of natural hazards, coupled with the growing population and activity within the City create an urgent need to develop strategies, coordinate resources, and increase public awareness to reduce risk and prevent loss from future natural hazard events. Identifying the risks posed by natural hazards, and developing strategies to reduce the impact of an event can assist in protecting life and property of citizens and communities. These risks are addressed in the following section of the Natural Hazard Mitigation Plan.

3 Risk Assessment

What is a Risk Assessment?

Risk assessments can provide information on the probable location of hazards, the value of existing land and property in hazard locations, and an analysis of risk to life, property, and the environment that may result from natural hazard events. The following steps are detailed in each of the five hazard sections. Specifically, the levels of a risk assessment are as follows.

1) Hazard Identification
This section describes the geographic extent, potential intensity and the probability of occurrence of a given hazard. Maps are frequently used to display hazard identification data. The City of San Dimas identified five major hazards that affect this geographic area. These hazards, earthquakes, landslides, flooding, wildfires and windstorms, were identified through an extensive process that utilized input from the Hazard Mitigation Committees. The geographic extent of each of the identified hazards and are illustrated by the maps listed in Table 3-1.

2) Profiling Hazard Events
This profile describes the characteristics of each hazard, historical impacts on San Dimas, and vulnerable parts of the City's population, infrastructure, and environment. A profile of each hazard discussed in this plan is provided in each hazard section. For a full description of the history of hazard specific events, please see the appropriate hazard chapter.

3) Vulnerability Assessment/Inventorying Assets
This is a combination of hazard identification with an inventory of the existing (or planned) property developments and populations exposed to a hazard. Critical facilities are of particular concern because these entities provide essential products and services to the general public that are necessary to preserve the welfare and quality of life in the City and fulfill important public safety, emergency response, and disaster recovery functions. The critical facilities have been identified, mapped, and are illustrated in Map 3 at the end of this section. A description of the critical facilities in the City is also provided in this section. In addition, each hazard section includes a community issues summary to identify the most vulnerable and problematic areas in the City.

4) Risk Analysis
Estimating potential losses involves assessing the damage, injuries, and financial costs likely to be sustained in a geographic area over a given period of time. Two measurable components of risk analysis are magnitude of the harm that may result and the probability of harm. Describing vulnerability in terms of dollar losses provides the community and the state with a common framework in which to measure the effects of hazards on assets.

5) Assessing Vulnerability/ Analyzing Development Trends

This step provides a general description of land uses and development trends within the community so that mitigation options can be considered in land use planning and future land use decisions. This plan provides comprehensive description of the character of the City of San Dimas in the Community Profile. This description includes the geography and environment, population and demographics, land use and development, housing and community development, employment and industry, and transportation and commuting patterns. Analyzing these components of San Dimas can help identify potential problems, and serve as a guide for incorporating goals contained in this mitigation plan into other community development areas.

Table 3-1 List of Hazard Mitigation Plan Charts and Maps

Table 10-2	Major Windstorms/ Santa Ana Wind Events 1961 – 2001
Table 10-3	Major Tornado-Like Events in the Region
Table 10-4	Beaufort Scale

Note: The City of San Dimas cannot accept any responsibility for any errors, omissions or positional accuracy, and therefore, there are no warranties that accompany these products. Although information from land surveys may have been used in the creation of these products, in no way does this product represent or constitute a land survey. Users are cautioned to field verify information on this product before making any decisions.

Hazard assessments are subject to the availability of hazard-specific data. Gathering data for an assessment requires a commitment of resources on the part of participating organizations and agencies. Each hazard-specific section of the plan includes a section on hazard identification using data and information from City, County, or State agency sources.

Regardless of the data available for hazard assessments, there are numerous strategies the City can take to reduce risk. These strategies are described in the action items detailed in each hazard section of this Plan. Mitigation strategies can further reduce disruption to critical services, reduce the risk to human life, and alleviate damage to personal and public property and infrastructure. Action items throughout the hazard sections provide recommendations to collect further data to map hazard locations and conduct hazard assessments.

Federal Requirements for Risk Assessment

Recent federal regulations for hazard mitigation plans outlined in 44 CFR Part 201 include a requirement for risk assessment. This risk assessment requirement is intended to provide information that will help communities identify and prioritize mitigation activities that will reduce losses from the identified hazards. The Federal criteria for risk assessment and how the City of San Dimas Natural Hazard Mitigation Plan complied with those guidelines is outlined in Table 3-2 below.

Table 3-2 Federal Criteria for Risk Assessment

Section 322 Plan Requirement	How is this addressed?
Identifying Hazards	Each hazard section includes an inventory of the best available data sources that identify hazard areas. The City utilized maps when identifying the location of the hazard in the City. The Executive Summary and the Risk Assessment sections of the plan include a list of the hazard maps.
Profiling Hazard Events	Each section includes documentation of the history, causes, and characteristics of each hazard in the City.

Assessing Vulnerability: Identifying Assets	Where data is available, the vulnerability assessment for each hazard addressed in the mitigation plan includes an inventory of all publicly owned land within hazardous areas. Each hazard section also identifies potential mitigation strategies.
Assessing Vulnerability: Estimating Potential Losses:	The Risk Assessment Section of this mitigation plan identifies key critical facilities and lifelines in the City and includes a map of these facilities. Vulnerability assessments have been completed for the hazards addressed in the plan, and quantitative estimates were made for each hazard where data was available.
Assessing Vulnerability: Analyzing Development Trends	The City of San Dimas Profile Section of this plan provides a description of the development trends in the City, including the geography and environment, population and demographics, land use and development, housing and community development, employment and industry, and transportation and commuting patterns.

Critical Facilities and Infrastructure

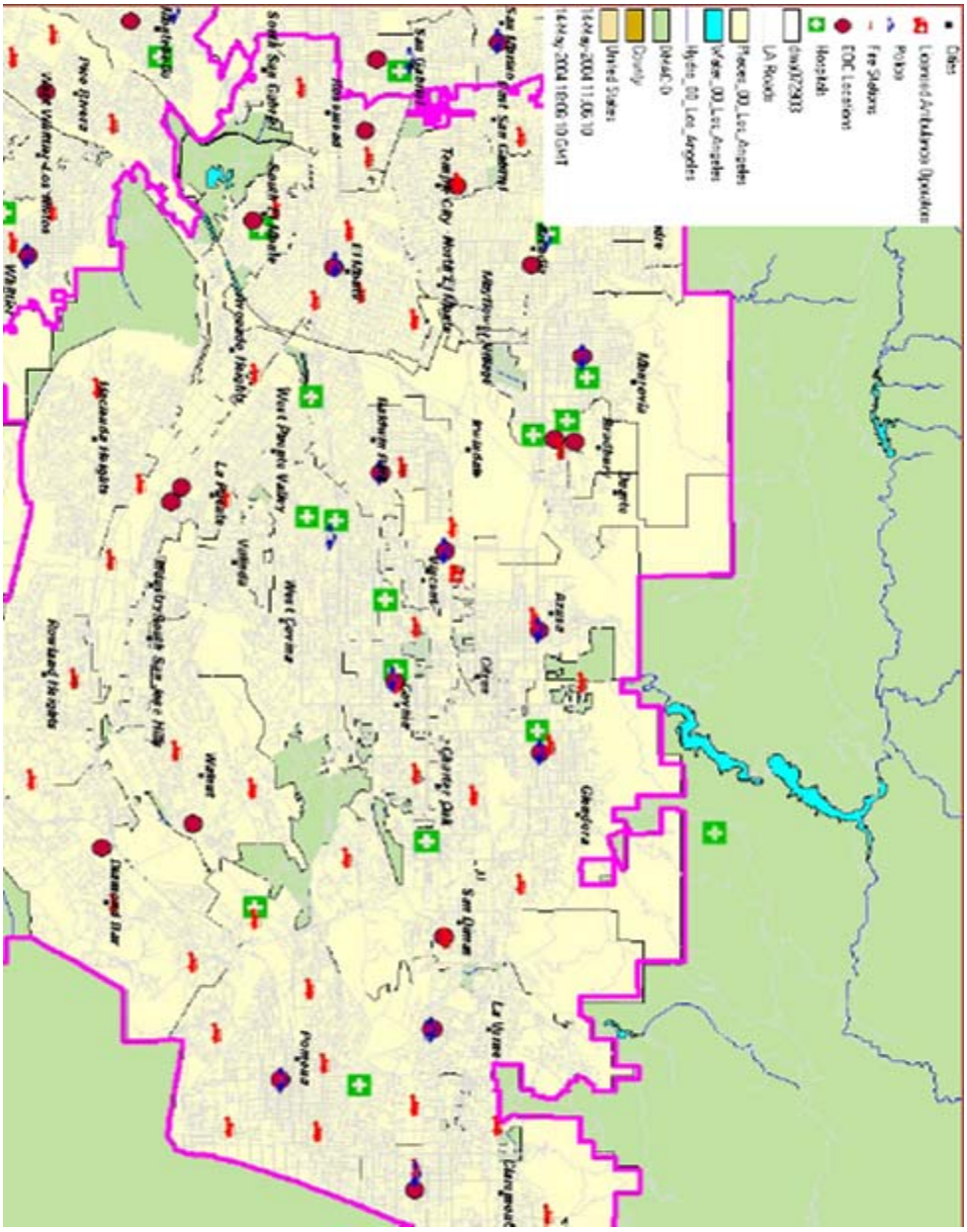
Facilities critical to government response and recovery activities (i.e., life safety and property and environmental protection) include: emergency operations centers, police and fire stations, public works facilities, communications centers, sewer and water facilities, hospitals, bridges and roads, shelters. Facilities that, if damaged, could cause serious secondary impacts may also be considered critical.

Critical and essential facilities are those facilities that are vital to the continued delivery of key government services or that may significantly affect the public's ability to recover from the emergency. These facilities may include jails, law enforcement centers, public services buildings, community corrections centers, courthouses, juvenile services building, and other public facilities such as schools. The charts and maps on the following pages illustrate the critical facilities, essential facilities, public infrastructure, and emergency transportation routes within the City of San Dimas

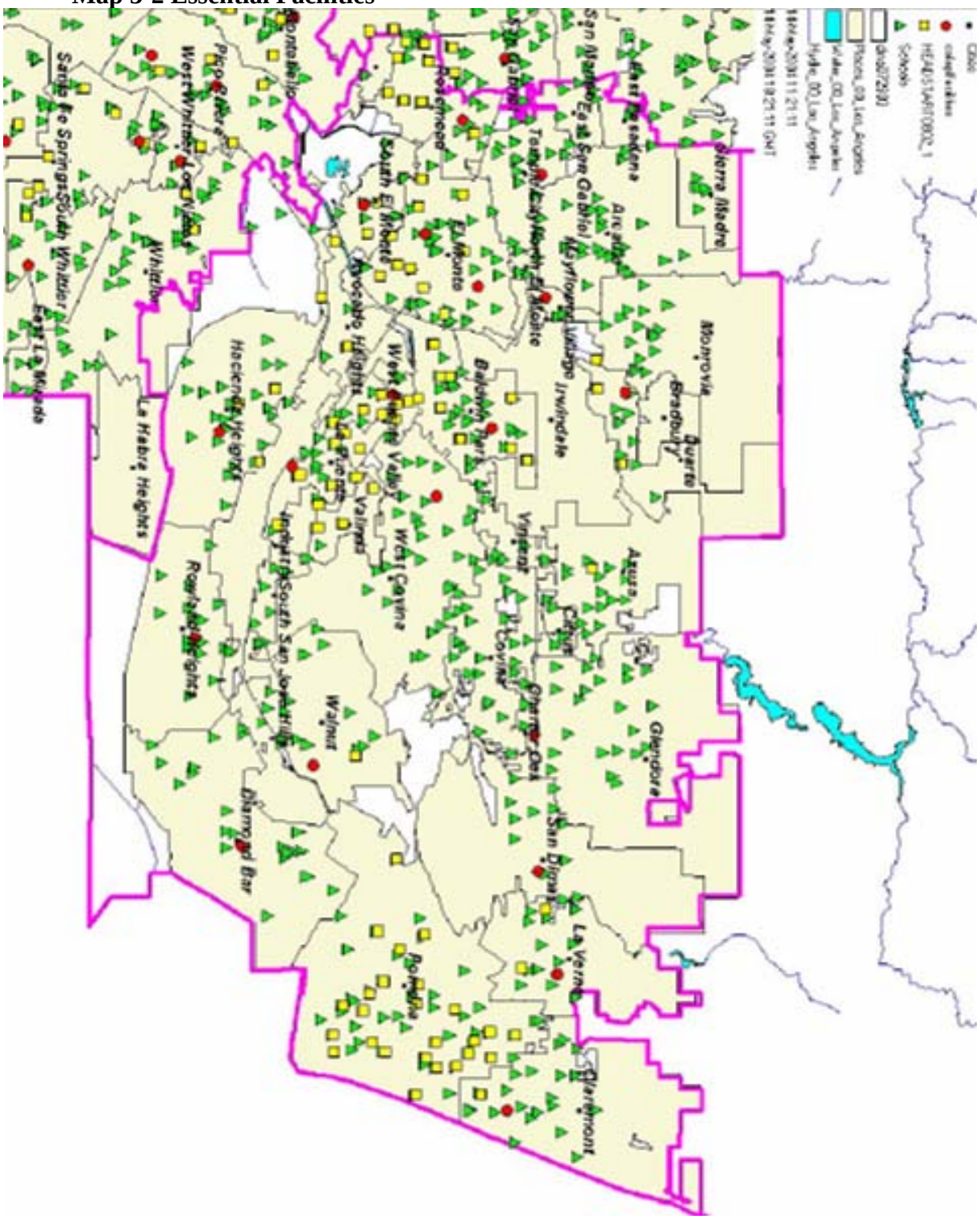
Summary

Natural hazard mitigation strategies reduce the impacts concentrated at large employment and industrial centers, public infrastructure, and critical facilities. Mitigation for industries and employers includes developing relationships with emergency management services and their employees before disaster strikes. Collaboration among the public and private sector to create mitigation plans and actions can reduce the impacts of natural hazards.

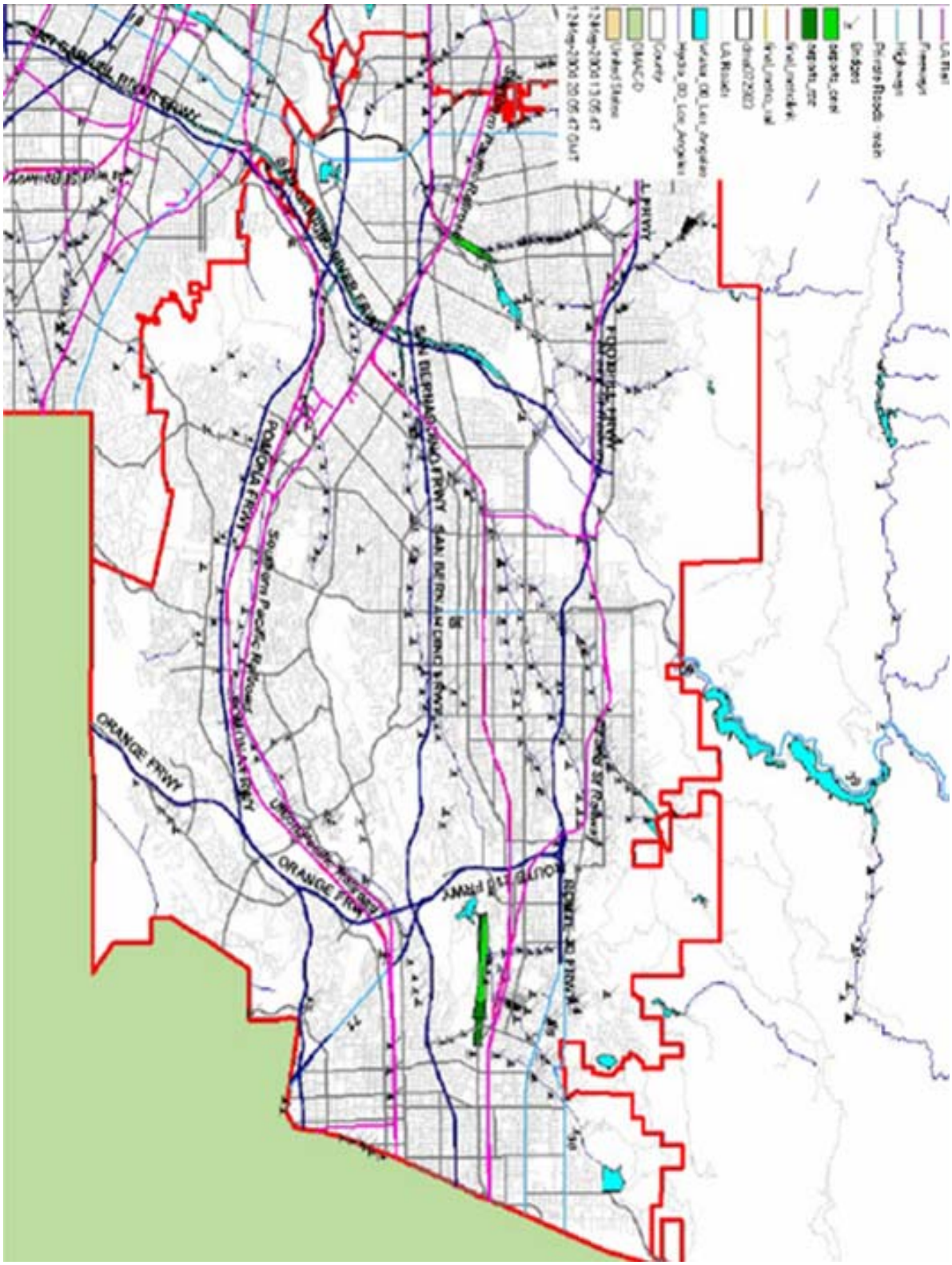
Map 3-1 Critical Facilities



Map 3-2 Essential Facilities



Map 3-3 Infrastructure



4 Multi-Hazard Goals & Action Items

This section provides information on the process used to develop goals and action items that pertain to the five natural hazards addressed in the mitigation plan. It also contains the framework that focuses the plan on developing successful mitigation strategies. This section consists of three parts: the Mission, Goals, and Action Items.

Mission

The mission of the San Dimas NHMP is to establish and promote a comprehensive mitigation policy and program designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards. This can be achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the City towards building a safer, more sustainable community.

Goals

The plan goals describe the overall direction that the City of San Dimas, organizations, and citizens can take to minimize the impacts of natural hazards. The goals are stepping-stones between the broad direction of the mission statement and the specific recommendations that are outlined in the action items.

Action Items

The action items are a list of activities in which City agencies and citizens can be engaged to reduce risk. Each action item includes an estimated time line for implementation. Short-term action items are activities that City agencies may implement with existing resources and authorities within one to two years. Long-term action items may require new or additional resources or authorities, and may take between one and five years (or more) to implement.

Mitigation Plan Goals and Public Participation

The Plan goals help to guide direction of future activities aimed at reducing risk and preventing loss from natural hazards. The goals listed here serve as checkpoints as agencies and organizations begin implementing mitigation action items.

Protect Life and Property

- Identify natural hazards that threaten life and property in the City of San Dimas.
- Implement programs and projects that assist in protecting lives by making infrastructure, critical facilities, and other property more resistant to losses.
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.

- Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventive measures for existing development in areas vulnerable to natural hazards.

Public Awareness

- Increase public awareness of existing threats and the means to reduce these threats by conducting educational and outreach programs to all the various community groups in the City.
- Provide informational items, partnership opportunities, and funding resource information to assist in implementing mitigation activities.

Partnerships and Implementation

- Strengthen communication and coordinate participation among and within public agencies, residents, non-profit organizations, business, and industry to gain a vested interest in the implementation of mitigation measures.
- Encourage and support leadership within the private sector, non-profit agencies and community-based organizations to promote and implement local hazard mitigation activities.

Emergency Services

- Establish policy to ensure the importance of mitigation programs and projects for critical facilities, services, and infrastructure.
- Continue providing emergency services with training and equipment to address all identified hazards.
- Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services.

Environmental & Historical Preservation

- Balance land use planning with natural and manmade hazard mitigation to protect life, property and the environment.

Public Participation

The City of San Dimas staff facilitated various public forums to gather comments and ideas from citizens about mitigation planning and priorities for mitigation plan goals. The Natural Hazard Mitigation Plan was routinely briefed at City Council meetings, where attendees were invited to comment. In addition, residents were encouraged to provide insight on natural hazard concerns via a survey that was distributed throughout City Hall, Senior Center, public library, and other community buildings. The survey was also available online at the City's website http://www.cityofsandimas.com. The data gathered from these forums was used to tailor the

mitigation action items to best suit the City's needs. The resources and information cited in the mitigation plan provide a strong local perspective and help identify strategies and activities to make the City of San Dimas more disaster resilient.

Natural Hazard Mitigation Plan Action Items

The mitigation plan identifies short and long-term action items developed through data collection and research, and the public participation process. Mitigation plan activities may be considered for funding through Federal and State grant programs, and when additional funds are made available through the City. Action items address multi-hazard (MH) and hazard specific issues. To help ensure activity implementation, each action item includes information on the time line and coordinating organizations. Upon implementation, the coordinating organizations may look to partner organizations for resources and technical assistance. A description of the partner organizations is provided in Appendix A, the resource directory of this plan.

Coordinating Organization
The coordinating organization is the organization that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. Coordinating organizations may include local, city, or regional agencies that are capable of or responsible for implementing activities and programs.

Time line
Action items include both short and long-term activities. Each action item includes an estimate of the time line for implementation. Short-term action items are activities that city agencies may' implement with existing resources and authorities within one to two years. Long-term action items may require new or additional resources or authorities, and may take between one and five years (or more) to implement.

Ideas for Implementation
Each action item includes ideas for implementation and potential resources, which may include grant programs or human resources.

Plan Goals Addressed
The plan goals addressed by each action item are included as a way to monitor and evaluate how well the mitigation plan is achieving its goals once implementation begins.

Constraints
Constraints may apply to some of the action items. These constraints may be a lack of city staff, lack of funds, or vested property rights which might expose the City to legal action as a result of adverse impacts on private property.

Cost-Benefit Analysis
Each jurisdiction will have some limitations on the number and cost of mitigation activities that can be completed within a given period of time. There are likely to be multiple ideas to mitigate

the effects of a given hazard. Therefore, it will be necessary for the committee to select the most cost effective mitigation projects and to further prioritize them. Information in Appendix C guides the City on how to conduct and exercise a cost benefit analysis.

Multi-Hazard Action Items

Multi-hazard action items are those activities that pertain to two or more of the five hazards in the mitigation plan: flood, landslide, wildfire, windstorm, and earthquake.

Action Item 6.1: Enhance data and mapping information within the City and identify and map hazard prone areas.
Implementation Initiatives:

> *Implementation Initiative 6.1.1* Develop a complete GIS system and provide training to all pertinent personnel.

Coordinating Organizations: City Administration Department
Time line: Short-term.
Plan Goals Addressed: Protect life and property.

Action Item 6.2: Develop, enhance, and implement education programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses, and schools.
Implementation Initiatives:

> *Implementation Initiative 6.2.1* Educate the public about emergency sheltering and evacuation procedures.
>
> *Implementation Initiative 6.2.2* Collaborate with the Bonita Unified School District on educational natural hazard awareness programs.
>
> *Implementation Initiative 6.2.3* Place public information brochures related to mitigating natural hazards at the Senior Center, Teen Center, Library, and City Hall.

Coordinating Organizations: City Administration Department
Time line: Ongoing.
Plan Goals Addressed: Increase public awareness.

Action Item 6.3: Enhance and expand the City's emergency response capabilities.
Implementation Initiatives:

> *Implementation Initiative 6.3.1* Develop and offer a CERT programs to residents.

Implementation Initiative 6.3.2 Augment training of Emergency Response Teams.

Implementation Initiative 6.3.3 Develop an employee communication response plan.

Implementation Initiative 6.3.4 Consider the feasibility of appointing a dedicated Emergency Preparedness Coordinator.

Coordinating Organizations: City Administration Department, Los Angeles County Sheriff's Department
Time line: Short-term, Ongoing.
Plan Goals Addressed: Strengthen City Emergency Services.

Action Item 6.4: Integrate the goals and action items from the City of San Dimas' Natural Hazard Mitigation Plan into existing regulatory documents and programs where appropriate.
Implementation Initiatives:

Implementation Initiative 6.4.1 Consider incorporating mitigation goals and action items into the Safety Element of the City of San Dimas General Plan when the General Plan is next updated.

Implementation Initiative 6.4.2 Continue to change the City Building Code, where appropriate, to reflect future changes to the California Building Code.

Coordinating Organizations: City Planning Department, City Building and Safety Division
Time line: Long-term, Ongoing.
Plan Goals Addressed: Strengthen partnerships.

Action Item 6.5: Identify and pursue funding opportunities to develop and implement local mitigation activities.
Implementation Initiatives:

Implementation Initiative 6.5.1 Monitor the State Hazard Mitigation Office at the California Office of Emergency Services for information on hazard mitigation funding.

Implementation Initiative 6.5.2 Monitor the Federal Emergency Management Agency for grant programs to implement mitigation goals.

Implementation Initiative 6.5.3 Identify organizations and agencies that may support mitigation activities.

Coordinating Organizations: City Administration Department

Time line: Ongoing.
Plan Goals Addressed: Strengthen partnerships.

Action Item 6.6: Develop a warning system to alert residents of potential hazards as well as provide post-disaster information.
Implementation Initiatives:

> *Implementation Initiative 6.6.1* Evaluate the feasibility of a communication system to send out a blanket call to residents warning them of potential hazards.

Coordinating Organizations: City Administration Department
Time line: Long-term.
Plan Goals Addressed: Increase public awareness.

5 Plan Maintenance

The maintenance section of this document details the formal process that will ensure that the City NHMP remains an active and relevant document. The process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years. This section describes how the City will integrate public participation throughout the plan maintenance process. Finally, it includes an explanation of how San Dimas intends to incorporate the mitigation strategies outlined in this plan into existing planning mechanisms such as the City General Plan, Capital Improvement Plans, and Building and Safety Codes.

Monitoring and Implementing the Plan

Plan Adoption

City Council will be responsible for adopting San Dimas NHMP because they have the authority to promote sound public policy regarding natural hazards. Once the plan has been adopted, the Assistant City Manager will be responsible for submitting it to the State Hazard Mitigation Officer at The Governor's Office of Emergency Services. The Governor's Office of Emergency Services will then submit the plan to the Federal Emergency Management Agency (FEMA) for review. Upon acceptance by FEMA, the City of San Dimas will gain eligibility for Hazard Mitigation Grant Program funds.

Coordinating Body

The City Hazard Mitigation Committees will be responsible for coordinating implementation of plan action items and undertaking the formal review process. The City Council will assign representatives from city agencies, including, but not limited to, the current Hazard Mitigation Advisory Committee members. The City has formed a Hazard Mitigation Advisory Committee that consists of members from local agencies, organizations, and citizens.

- City of San Dimas Administrative Services
- City of San Dimas Building and Safety Division
- City of San Dimas Community Development
- City of San Dimas Planning Commission
- City of San Dimas Public Safety Commission
- City of San Dimas Chamber of Commerce
- City of San Dimas Historical Society
- The Los Angeles County, San Dimas Sheriff's Department
- The Los Angeles County, San Dimas Fire Department

The Hazard Mitigation Technical Committee will meet no less than quarterly. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan.

Convener

City Council will adopt the San Dimas NHMP, and the Hazard Mitigation Advisory Committee will take responsibility for plan implementation. The Assistant City Manager will serve as a convener to facilitate the Hazard Mitigation Advisory Committee meetings, and will assign tasks such as updating and presenting the Plan to the members of the committee. Plan implementation and evaluation will be a shared responsibility among all Committees.

Implementation through Existing Programs

San Dimas addresses statewide planning goals and legislative requirements through its General Plan, Capital Improvement Plans, and City Building and Safety Codes. The Natural Hazard Mitigation Plan provides a series of recommendations - many of which are closely related to the goals and objectives of existing planning programs. The City of San Dimas will have the opportunity to implement recommended mitigation action items through existing programs and procedures.

The City of San Dimas Building & Safety Department is responsible for administering the Building & Safety Codes. In addition, the Hazard Advisory Committee will work with other agencies at the state level to review, develop and ensure Building & Safety Codes that are adequate to mitigate or present damage by natural hazards. This is to ensure that life-safety criteria are met for new construction.

The goals and action items in the mitigation plan may be achieved through activities recommended in the city's Capital Improvement Plans (CIP). Various city departments develop CIP plans, and review them on an annual basis. Upon annual review of the CIP, the Hazard Mitigation Advisory Committee will work with the city departments to identify areas that the hazard mitigation plan action items are consistent with CIP planning goals and integrate them where appropriate.

Within six months of formal adoption of the mitigation plan, the recommendations listed above will be incorporated into the process of existing planning mechanisms at the city level. The meetings of the Hazard Mitigation Advisory Committee will provide an opportunity for committee members to report back on the progress made on the integration of mitigation planning elements into city planning documents and procedures.

Economic Analysis of Mitigation Projects

FEMA's approaches to identify the costs and benefits associated with natural hazard mitigation strategies, measures, or projects fall into two general categories: benefit/cost analysis and cost-effectiveness analysis.

Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later.

Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating natural hazards can provide decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

Given federal funding, the Hazard Mitigation Advisory Committee will use a FEMA-approved benefit/cost analysis approach to identify and prioritize mitigation action items. For other projects and funding sources, the Hazard Mitigation Advisory Committee will use other approaches to understand the costs and benefits of each action item and develop a prioritized list. For more information regarding economic analysis of mitigation action items, please see Appendix C of the Plan.

Evaluating and Updating the Plan

Formal Review Process

The City of San Dimas Natural Hazards Mitigation Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process includes a firm schedule and time line, and identifies the local agencies and organizations participating in plan evaluation. The convener will be responsible for contacting the Hazard Mitigation Advisory Committee members and organizing the annual meeting. Members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan.

The committee will review the goals and action items to determine their relevance to changing situations in the city, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. It will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. The coordinating organizations responsible for the various action items will report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised.

The convener will assign the duty of updating the plan to one or more of the committee members. The designated committee members will have three months to make appropriate changes to the Plan before submitting it to the Hazard Committee members, and presenting it to the City Council (or other authority). The Hazard Mitigation Advisory Committee will also notify all holders of the city plan when changes have been made. Every five years the updated plan will be submitted to the State Hazard Mitigation Officer and the Federal Emergency Management Agency for review.

Continued Public Involvement

The City of San Dimas is dedicated to involving the public directly in review and updates of the Hazard Mitigation Plan. The Hazard Mitigation Committees are responsible for the annual review and update of the plan.

The public will also have the opportunity to provide feedback about the Plan. Copies of the Plan will be catalogued and kept at all of the appropriate agencies in the city. The existence and location of these copies will be publicized in the quarterly city newsletter "The Frontier", which reaches every household in the city. The plan also includes the address and the phone number of the City Administration Department responsible for keeping track of public comments on the Plan. In addition, copies of the plan and any proposed changes will be posted on the city website. This site will also contain an email address and phone number to which people can direct their comments and concerns.

A public meeting will also be held after each annual evaluation or when deemed necessary by the Hazard Mitigation Advisory Committee. The meetings will provide the public a forum for which they can express its concerns, opinions, or ideas about the Plan. The City Public Information Officer will be responsible for using city resources to publicize the annual public meetings and maintain public involvement through the public access channel, web page, and newspapers.

Plan maintenance and monitoring is a vital process in ensuring the success of the NHMP. These components are necessary to incorporate the proper feedback into the Plan and to guarantee compliance and effectiveness.

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[1] *The River Project.* http://theriverproject.org
[2] *The Wetlands Recovery Project – LA County Gaps Report*
[3] <http://www.city-data.com/city/San-Dimas-California.html>
[4] San Dimas Chamber of Commerce
[5] Southern California Earthquake Center. << http://www.scec.org>>
[6] Peggy Stahl, Federal Emergency Management Agency (FEMA) Preparedness, Training, and Exercise Directorate <http://www.fema.gov>
[7] The United States Census Bureau. <http://www.census.gov>
[8] 2000 Census.
[9] Ibid.
[10] Community Development Commission of the County of Los Angeles. *2003 – 2008 Consolidated Plan; One Year Action Plan for 2004-2005.*
[11] United States Census Bureau.
[12] *Risk Management Solutions.*
[13] The United States Census Bureau. <http://www.census.gov>
[14] City of San Dimas. *General Plan.*