BONITA UNIFIED SCHOOL DISTRICT

DMA 2000

NATURAL HAZARD MITIGATION PLAN

NOVEMBER 17, 2004

115 WEST ALLEN AVENUE, SAN DIMAS, CALIFORNIA, 91773

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Special Recognition and Profound Appreciation

The Bonita Unified School District Natural Hazard Mitigation Steering Committee is appreciative of many organizations and individuals who provided resources or professional guidance in the preparation and development of this plan.

Alliance of School for Cooperative Insurance Programs (ASCIP) provided particular support and assistance with each step in the process and is therefore recognized for being a valuable resource as the District pursued accomplishment of this plan document.

The District participated with the Technical and Advisory Committees in support of the Cities of La Verne and San Dimas. The exchange of information within the committees proved to be very valuable for the District's internal committee.

We availed ourselves of data, reports, and planning guidebook materials from a variety of sources, including the California Governor's Office of Emergency Services, the Los Angeles County Office of Education, and the Disaster Management Area Coordinators of Areas D & G to better understand the requirements for the plan, the District reviewed on the internet plans from cities, counties and states across the country as part of the research in preparing this plan. Thank you to all those agencies who are so generous to their colleagues in the emergency management profession.

Special Thanks & Acknowledgments

Bonita Unified School District Steering & Technical Committee Members
Bonita Unified School District Parents and Community
City of La Verne Patrick Prescott, Associate Planner
City of La Verne Hazard Mitigation Technical Committee Members
City of La Verne Hazard Mitigation Advisory Committee Members
City of San Dimas Ken Duran, Assistant City Manager
City of San Dimas Hazard Mitigation Technical Committee Members
City of San Dimas Hazard Mitigation Steering Committee Members
City of San Dimas Historical Society Society, Paul Rippen
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California Division of Forestry
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Bonita Unified School District

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Bonita Unified School District Eileen Mullen, Director of Purchasing

Project Advisory and Technical Committee:
Bonita Unified School District Ann Sparks, Assistant Superintendent Business Services
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City of San Dimas Ken Duran, Assistant City Manager
City of San Dimas Historical Society , Paul Rippen
Los Angeles County, San Dimas Sheriff's Department, Kevin Unland

Project Steering Committee:
Bonita Unified School District, Jim Elliot, Board of Trustees
Deanna Salado, Bonita Unified School District
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Recalde Services Consultant, Fausto Recalde
Dougherty & Dougherty Architects, LLP, Arjan Duyvestein
Rachlin Architects, Richard Ingrassia

EXECUTIVE SUMMARY

Introduction

Historically, the residents of the Bonita Unified School Districts and surrounding cities have experienced the effects of various natural hazards. The most prevalent natural hazards have been earthquakes, flooding, wildfires, and landslides. As the population of Bonita Unified School District and surrounding areas increased, so has the potential for exposure to natural hazards, putting the area's at a greater risk than in the past.

Mission

The mission of the Bonita Unified School District's Natural Hazards Mitigation Plan is to promote sound District policy designed to protect students, faculty, staff, school sites, critical support facilities, and the environment from natural hazards. This can be achieved by increasing awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the District towards building a safer and more sustainable District.

Bonita Unified School District History

The Bonita Unified School District, situated in eastern Los Angeles County services the Cities of La Verne and San Dimas. The District has a rich educational history dating back to 1869 when Palomares School District was officially organized. The District became the Lordsberg City District in 1906 and in 1917 was named the La Verne City District. A community located to the north of La Verne was known as La Verne Heights and its separate district, formed in 1884, originally served the Heights and San Dimas. In 1920 the name was changed to the La Verne Heights School District. The Mud Springs School District was organized in 1890 and became the San Dimas School District in 1901. To serve these small elementary districts, the Bonita Union High School District was formed in 1903. In 1905 the high school moved to its new facilities, now occupied by a parochial high school, at the corner of Bonita Avenue and Damien Avenue.

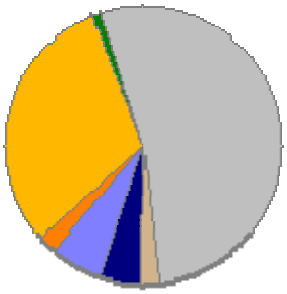
The present Bonita Unified School District was formed by an election held in 1957 to unify the former Districts – La Verne Elementary, La Verne Heights Elementary, San Dimas Elementary, and Bonita Union High School, all of which were within the boundaries of the Bonita Union High School District. Since its beginning the District has experienced continued growth and has adapted its services to meet the changing needs of a diverse community.

At the present time, the District serves approximately 10,000 students and their families at various school sites throughout La Verne and San Dimas. Services provided include K-12 Education, Adult Education, Regional Occupational Preparation (ROP), School Age Care and support services through central Administration. The District's Food Services Program serves 21% of the District's K-12 student population by providing free and reduced meals to contribute toward improvement in student performance and achievement.

The 2004-2005 school year provides us with many new challenges and corresponding goals. The District wants to continue to improve on student progress. In order to do this we are continuing to work with our staff to improve their skills and to provide the best curriculum possible. The District will continue to make adjustments to its program in light of the State budget situation. However, the District continues to strive to make minimum adjustments to student programs for the 10,000 students we serve. The District demographics are as follows:

Student Ethnicity Data

Student Ethnicity 2004-2005



Ethnicity	This District
African American	5%
Asian	6%
Filipino	2%
Hispanic	31%
Native American	1%
Pacific Islander	0%
White	53%
Mixed Race or No Response	2%

Source of Data

Information on this page comes from the California Department of Education. Data is current as of the 2004-2005 school year, unless otherwise noted.

See Appendix D for a description of each District's sites.

Plan Purposes

The plan is intended to serve many purposes. These include the following:

- Provide a Methodical Approach to Mitigation Planning.
- Enhance Public Awareness and Understanding of Natural Hazards.
- Create a Decision- Making Tool for School District Policy and Decision Makers.
- Promote Compliance with State and Federal Program Requirements.
- Assure Inter-Jurisdictional Coordination of Mitigation-Related Programming.
- Create a Natural Hazard Mitigation Plans for Implementation**.**

Planning Partners

A multi-agency planning effort has been guided by the above purposes. The members served as the Steering Committee and the convening body for the plan. The Hazards Mitigation Steering Committee consisted of representatives from the various agencies. The District participated in the committee meetings for the City of La Verne and the City of San Dimas as a stakeholder. The planning partners are from the following jurisdictions and organizations:

Project Manager:
Bonita Unified School District Eileen Mullen, Director of Purchasing

Project Advisory and Technical Committee:
Bonita Unified School District Ann Sparks, Assistant Superintendent Business Services
Bonita Unified School District Mike Phillips, Director of Facilities
Bonita Unified School District Mark Castellano, Supervisor of Building Trades & Gen. Maint.
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Recalde Services Consultant, Fausto Recalde
Dougherty & Dougherty Architects, LLP, Arjan Duyvestein
Rachlin Architects, Richard Ingrassia

Public Participation
A variety of methods were used to encourage public participation in the planning process as well as to educate the public about hazard mitigation efforts in their communities. Documentation of these efforts appears in Appendix C. Formal natural hazard mitigation planning had not previously been undertaken. Our public participation efforts were directed at establishing relationships and awareness. These meetings provided information about the requirements of DMA 2000, the necessity for mitigation planning efforts and public involvement in the process.

The subject focus of the meetings included the cities and school District's preliminary natural hazard mitigation plans, activities and assessment survey. Other means used for distribution of information to involve the public and specifically to include the local communities were distribution of printed material explaining the reason and process behind natural hazard mitigation. This information contributes toward enlightening the public on the purpose and importance of hazard mitigation planning and further adds to understanding about natural hazards in the La Verne and San Dimas areas.

The Board Agenda's were available for review at multiple locations including the District Office at 115 W. Allen Ave.,San Dimas, all 13 school sites, the La Verne Public Library, the San Dimas Public Library, the City of La Verne, the City of San Dimas, two local newspapers as well as on the District website at: www.Bonita.k12.ca.us.

Risk Assessment

An assessment of risks from the hazards of earthquakes, floods, wildfires and landslides was performed to provide the factual basis for the mitigation initiatives proposed in the plan.
The risk assessment included the following elements:

- An identification and description of the type of natural hazard most likely to affect the School District, city and surrounding areas.
- A profile of the hazard events describing the location and extent of the natural hazard, including information on previous occurrences.
- Information on the impact of the hazards on the District in terms of vulnerability to assets and estimating potential losses.
- Data tables in the plan provided a survey of the District buildings at risk within the hazard areas, an estimate of the inventory of assets and their dollar value.

Mitigation Strategy – Goals, Objectives and Actions

One of the steps in preparing the Natural Hazards Mitigation Plan (NHMP) pursuant to the Federal Disaster Mitigation Act of 2000 is consideration of goals and objectives. The goals and objectives, which guided plan development, are intended to be implemented by the District as funding becomes available.

Each goal statement has objectives that provide a more specific framework for actions to be taken by the District and planning partners. The objectives define actions or results that can be placed into measurable terms, and translated into specific assignments for implementation. They also guide the development of proposed mitigation action. Each mitigation action corresponds to a specific goal and objective which that action seeks to implement. The goals and objectives reflect the suggestions of the District's Advisory and Technical Committee and the Steering Committee. Detailed information is found in section Four of the plan. The following table represents the final outcome and ranking of actions by the Steering Committee:

List of Mitigation Actions

ACTION ITEM NO.	GOAL NO.	BRIEF PROJECT DESCRIPTION	COST/BENEFITS	TARGET DATE	PROJECT RANKING
#1: Integrate the goals and actions items from the Bonita U.S.D.. natural hazard mitigation plan into existing regulatory documents and programs when appropriate	**4**	Use District's mitigation plan and the city's mitigation plan as guidelines for sustainable development in all new construction and development projects according to the hazards that impact the District. Beginning modernization with installation of portable classrooms at Bonita High School on existing campus. Providing housing that meets all current requirements for student occupancy and meeting all current seismic requirements.	Budgeted Funds are available for this project	Sept. 2004, and Ongoing	**1**
#2: Identify and pursue funding opportunities to develop and implement District mitigation activities	**4**	Allocate available resources and assistance to mitigation projects when possible: partner with other organization and agencies, the City of La Verne, and San Dimas to identify grant programs and foundations that may support mitigation activities.	Cost benefit to be determined	On-going	**2**
#3: Establish a formal role for the Bonita U.S.D. natural hazard mitigation technical committee to develop a sustainable process for implementing, monitoring and evaluating District mitigation activities.	**6**	Establish clear roles for participants, meeting regularly to pursue and evaluate implementation of mitigation strategies. Establish measurable standards to evaluate mitigation policies and programs and provide a mechanism to update and revise the mitigation plan, etc.	Cost benefit to be determined	Fiscal Yr. 04-05 & On-going	**1**
#4: Develop public and private partnerships to foster natural hazard mitigation program coordination and collaboration in the Bonita U.S.D.	**4 & 6**	Work with the City of La Verne, San Dimas and Los Angeles County to improve our natural hazards mitigation plan. Identify all organizations within Bonita U.S.D. that have programs or interest in natural hazards mitigation.	Cost benefit to be determined	Fiscal Yr. 04-05 & On-going	**1**
#5: Develop inventories of at-risk school buildings and facilities and prioritize mitigation projects.	**1**	Develop strategies to mitigate risk to these facilities, or to utilize alternative facilities should a natural hazards event cause damages to the facilities in question.	Cost benefit to be determined	2-3 Years	**2**
#6: Strengthen emergency services preparedness and response by relating with natural hazard mitigation programs, and enhancing community relations throughout the District	**1**	Encourage individual and family preparedness through programs such as safety preparedness training and hands on exercises. Coordinate the maintenance of emergency transportation routes through communication among the city roads depts. neighboring jurisdictions, and the Calif. Dept. of Transportation. Identify opportunities for partnering with citizens, private contractors, and local agencies to increase availability of equipment and manpower for efficiency of response efforts, etc.	Cost benefit to be determined	Unknown	**2**

List of Mitigation Actions

ACTION ITEM NO.	GOAL NO.	BRIEF PROJECT DESCRIPTION	COST/BENEFITS	TARGET DATE	PROJECT RANKING
#7: Upgrade and modernize existing structures to current codes for safety; and build new facilities under current building codes.	**1**	The Bonita U.S.D. is in the process of developing plans for modernization and some new construction for both high schools this year following with our middle and elementary schools. The intent is to completely modernize all of its operational school sites and facilities to current building standards. This will be accomplished with local general obligation bonds, matching state bond funding, etc.	Budgeted Funds are available for this project and some cost benefits will need to be determined	Unknown	**3**
#8: Continue to develop, enhance, and implement programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses, schools and facilities.	**1, 2, & 6**	Make the Bonita U.S.D.. natural hazard mitigation plan available to the public by publishing the plan electronically on the BUSD web link, and the Cities of La Verne and San Dimas emergency management websites. Establish a web link to facilitate internet information sharing, etc.	Cost benefit to be determined	Unknown	**3**
#9: Continue to hire a structural engineering firm to undertake seismic evaluation of all the District sites throughout our current modernization and future projects.	**1**	Develop and complete a baseline survey to gather status on each site. Repeat survey in five years to monitor successes and failures of natural mitigation programs.	Cost benefit to be determined	Unknown	**3**
#10: Maintain and implement mitigation actions into the District's policies, procedures, and capital facilities improvement plans.	**1, 2, & 6**	Update manuals and District plans to incorporate mitigation actions.	Cost benefit to be determined	Unknown	**3**

Plan Adoption

Each entity that has participated in the planning process and put forward mitigation initiatives must individually adopt their plan. The following table shows the approving body for each entity that participated in the planning process:

Entity	Approving Body
Bonita Unified School District	Board of Education
City of La Verne	Board City Council
City of San Dimas	Board City Council

As the plan is considered for adoption, the District will ensure that proper process is followed according to the laws or rules that governs the Bonita Unified School District including adequate public notice.

Prior to November 17, 2004, the District's Board will submit a letter requesting that the Governor's Office of Emergency Services (OES) review and comment on the District's final draft of the plan. OES feedback will be incorporated into the plan. The District will update and present the final copy of the plan for adoption to the Bonita Unified School District Board. Following the adoption, the plan will be delivered to OES for State Review and subsequent review by the Federal Emergency Management Agency (FEMA) for final approval.

Plan Monitoring and Maintenance

The District will be responsible for its own plan monitoring and maintenance. The District will review the plan on a regular and periodic basis to consider changes in recent programs that may affect mitigation priorities. If a plan update is deemed necessary, the District will be responsible for establishing a work program and time frame for updating their plan. Without any intervening circumstances, the Natural Hazard Mitigation Plan is to be updated at least every five years, or if necessary after a major disaster where the County of Los Angeles is declared a federal disaster area.

Implementation through Existing Programs

The District is responsible for the implementation of their mitigation initiatives based on funding availability and priorities. This implementation may include incorporating mitigation actions and activities into existing planning programs.

The District addresses statewide planning goals and legislative requirements through its Strategic Plan, Long Range Facility Plan, Emergency Preparedness Program , School Safety Plan, Building and Safety Codes and other regulations developed by the State Allocation Board Office of Public Schools Construction and Division of State Architect. The District's plan provides a series of recommendation that are closely related to the goals and objectives of both cities.

The District's Facilities Department is responsible for administering the Building & Safety Codes. In addition, the department will work with other agencies at the State level to review, develop, and insure that life safety criteria are met for new construction. Development trends will be considered in land use planning and future land use decisions.

Within six months of formal adoption of the mitigation plan, the recommendations listed will be incorporated into the process of existing planning mechanisms throughout the District. The District's Committee meetings will provide an opportunity for members to report back on the progress made on the integration of mitigation planning elements, documents and procedures.

Continued Public Involvement

Bonita Unified School District, as well as all of the entities that participated and are stake holder's in the Cities of La Verne and San Dimas plans, are committed to continued public involvement and education. It will be important that Natural Hazards Mitigation Planning becomes integrated into existing programs and becomes part of the District's public involvement process.

In the city and county jurisdictions, comprehensive plan amendment processes and capital facilities planning all have elements of public notification and involvement. These processes will be available to promote public dialogue regarding the importance of hazard mitigation.

Many of the mitigation actions contain elements of public education and should be implemented as soon as funds become available for those actions. Continued public involvement should also be integrated into existing emergency preparedness activities and information in order to continue to educate the students, teachers, administrators and the community on the importance of managing the risk of natural hazards.

Copies of the approved plan will be maintained at the Bonita Unified School District Business Services Office, Purchasing Department and the Facilities Department Office. Information about the plan will also be available on the District web site and local cable channel. Copies of the plan, a public document, may also be maintained at the Cities of La Verne and San Dimas Public Libraries as an addition to their collection.

SECTION I

SECTION I

Introduction

The District's boundaries extend into the City of La Verne and the City of San Dimas. Historically, the residents of the cities of La Verne, San Dimas and surrounding cities have experienced the effects of various natural hazards. The most prevalent natural hazards have been earthquakes, flooding, wildfires, and landslides. As the population of the Cities of La Verne, San Dimas and surrounding areas increase, so has the potential for exposure to natural hazards, putting the area's residents at a greater risk than in the past.

While the frequency of disaster occurrence is low, this region is susceptible to major natural hazards with potential for catastrophic consequences. Each city developed their Natural Hazard Mitigation Plan (NHMP) to established their city's strategy to implement improvements and programs to reduce the impact in the event of a natural disaster.

The Cities of La Verne and San Dimas NHMP builds upon preparedness and hazard reduction programs currently employed by each cities resources and staff. Their NHMP works in conjunction with their General Plan, Development Codes, and the Emergency Response Plan. Each General Plan establishes their city-wide development plan and policies to help achieve each City's vision and goals. The Development Codes establish regulations for development in each city, thereby implementing the General Plan policy framework.

The Emergency Response Plan establishes the emergency organization, task assignments, policies, and general procedures and coordination of the various emergency staff and service elements utilizing the Standard Emergency Management Systems (SEMS). The objective is to incorporate and coordinate the facilities and personnel of each city into an efficient response team capable of responding to any emergency, as an extension of the California Emergency Plan. In the event of a natural disaster, the City of La Verne, City of San Dimas, Bonita Unified School District and other agencies are activated through communication protocols and systems for emergency response. During a disaster, some school sites are utilized as emergency centers to assist the community.

Bonita Unified School District is a public provider of educational services for students from pre-K through grade 12 and adults. Our programs are designed to satisfy the needs of our students for both currently and in the future. Through ethical, responsive, and purposeful actions, the Bonita Unified School District will provide a fulfilling work environment for its employees, comprehensive service for its students, and enhanced value for parents, stakeholders, and partners, as well as a spirit of shared responsibility with the community.

It is the mission of the Bonita Unified School District to ensure that each student, to the degree of his/her highest potential, will demonstrate literacy in reading, writing, speaking, problem solving, and computing and that each student will demonstrate expected standards of citizenship.

In an effort to manage risk, contain costs, and promote sustainable communities, the Federal government outlined new mitigation planning requirements for states, counties, local governments and special districts in the Disaster Mitigation Act of 2000. Although it is difficult to predict when the next disaster will occur, or the extent of an event, collaboration among public entities, private sector organizations and the citizens of the region will help minimize or mitigate the resulting losses.

Planning Effort

Natural hazard mitigation is defined as development and implementation of activities designed to reduce or eliminate losses resulting from natural hazards. The Bonita Unified School District formed a committee to developed a hazard mitigation plan that would properly illustrate the area where District sites are located. Those hazards are identified as earthquake, landslide, flooding and wildfire.

The Bonita Unified School District was invited to participate as a stakeholder in the City of La Verne and City of San Dimas Plans. The following entities participated as Advisory and Technical Committee members in the development of the District's plan. The stakeholders combined resources to properly represent the region in their plans. The participants were:

Bonita Unified School District Steering & Technical Committee Members
Bonita Unified School District Parents and Community
City of La Verne Patrick Prescott, Assistant Planner
City of La Verne Hazard Mitigation Technical Committee Members
City of La Verne Hazard Mitigation Advisory Committee Members
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Los Angeles County, San Dimas Fire Department
Office of Disaster Management, Area D: Brenda Hunemiller, Coordinator
Office of Disaster Management, Area G: Mike Martinet, Executive Director
LA County Office of Emergency Management
Red Cross – Pomona
Governor's Office of Emergency Services
Recalde Services Consultant, Fausto Recalde
Alliance of School for Cooperative Insurance Programs, Robert Marinelli
Dougherty & Dougherty Architects, LLP, Arjan Duyvestein
Rachlin Architects, Richard Ingrassia

This plan marks the beginning step towards a formal process for natural hazard mitigation planning in the area. It establishes a framework of research, information, and public education/involvement that can be expanded in the future to meet the needs of the region.

Plan Criteria

FEMA Region IX set out the following plan criteria as required in 44 CFR, Part 201 of the Federal Register. For a local plan to receive FEMA approval all the plan criteria must receive a satisfactory or outstanding rating as well as the plan must be adopted by the governing bodies of the jurisdictions. The following table outlines the criteria and the chapter or appendix in the plan that addresses that specific requirement.

FEMA Approval Criteria Cross Reference (July 14, 2004)

Prerequisites	FEMA Approval Criteria	Chapter Number
1	Adoption by the Local Governing Body [44 CFR 201.6(c) (5)]	
	A. Has the local governing body adopted the plan?	Appendix A
	B. Is supporting documentation, such as a resolution, included?	Appendix A
2	Multi-jurisdictional Plan Adoption [44 CFR 201.6 (c) (5)]	
	A. Does the plan indicate the specific jurisdictions presented in the plan?	N/A
	B. For each jurisdiction, has the local governing body adopted the plan?	N/A
	C. Is supporting documentation, such as a resolution, included for each participating jurisdiction?	N/A
3	Multi-jurisdictional Planning Participation [44 CFR 201.6 (a) (3)]	
	A. Does the plan describe how each jurisdiction participated in the plan's development?	N/A
4	Planning Process [201.6 (b)]	
	Documentation of the Planning Process [44 CFR 201.6 (b) & 201.6 (c) (1)]	
	A. Does the plan provide a narrative description of the Process followed to prepare the plan?	pp 5,6,15, 22-25, 31
	B. Does the plan indicate who was involved in the planning process?	pp 3,4,7 App. B
	C. Does the plan indicate how the public was involved?	pp7,12,22-29 85, App. B
	D. Was there an opportunity for neighboring communities, agencies businesses, academia, nonprofits, and other interested parties to be involved in the planning process?	pp 3,4,7 App. B
	E. Does the planning describe the review and incorporation, if appropriate, of plans, studies, reports, and technical information?	pp 14,26-28 46-49,54,63 App. H & I

5	Local Capabilities Assessment (State OES Requirement) [44 CFR 201.4 (c) (3) (ii)	
	A. Does the plan provide a description of the human, technical and financial resources available within this jurisdiction to engage in a mitigation planning process and to develop a local hazard mitigation plan? (These resources are described in Section 2.2 of the OES LHMP Development Guide).	pp 14,15, 26-28
	B. Does the plan list local mitigation funding sources (taxes, fees, assessments or fines) which affect or promote mitigation within the reporting jurisdiction?	pp 49,52-57, 60, 63, 66
	C. Does the plan list local ordinances which affect or promote disaster mitigation, preparedness, response or recovery within the reporting jurisdiction?	pp 49,52-57, 60, 63, 66
	D. Does the plan describe the details of ongoing mitigation projects and programs within the reporting jurisdiction?	pp 9-10. 77-81
6	Risk Assessment [44 CFR 201.6 (c) (2) & 201.6 (c) (2) (i)]	
	A. Does the plan include a description of the types of all natural Hazards that affect the jurisdiction?	pp 32-40
7	Profiling Hazards [44 CFR 201.6 (c) (2)(i)]	
	A. Does the risk assessment identify the **location** (i.e., geographic area affected) of each natural hazard addressed in the plan?	App. D & E pp 40-67
	B. Does the risk assessment identify the **extent** (i.e., magnitude or severity) of each hazard addressed in the plan?	App. D & E pp 40-67
	C. Does the plan provide information on **previous occurrences** of each hazard addressed in the plan?	pp 41,50,58,61 64-65
	D. Does the plan include the **probability of future events** (i.e., chance of occurrence) for each hazard addressed in the plan?	pp32,33,40 46-49
8	Assessing Vulnerability: Overview [44 CFR 201.6 (c)(2)(ii)]	
	A. Does the plan include an **overall summary** description of the jurisdiction's **vulnerability** to each hazard?	pp 40-52, 56-62, 68-70
	B. Does the plan address the **impact** of each hazard on the jurisdiction?	pp 40-52
9	Assessing Vulnerability: Identifying Structures [44 CFR 201.6(c)(2)(ii)(A)]	
	A. Does the plan describe vulnerability in terms of the **types and numbers** of **existing** buildings, infrastructure, and critical facilities located in the identified hazard areas?	pp68-70 App. D & F
	B. Does the plan describe vulnerability in terms of the **types and numbers** of **future** buildings, infrastructure, and critical facilities located in the identified hazard areas?	pp48,49,55,61 App. D & F
10	Assessing Vulnerability: Estimating Potential Losses [44 CFR 201.6(c)(2)(ii)(B)]	
	A. Does the plan estimate **potential dollar losses** to vulnerable structures?	Appendix F

	B. Does the plan describe the **methodology** used to prepare the estimate?	pp 68-70
11	Assessing Vulnerability: Analyzing Development Trends [44 CFR 201.6(c)(2)(ii)(C)]	
	A. Does the plan describe land uses and development trends?	pp 22,54,57
12	Multi-Jurisdictional Risk Assessment [44 CFR 201.6(c)(2)(iii)]	
	A. Does the plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?	N/A
13	**Mitigation Strategies:** [44 CFR 201.6(c)(3)]	
	Local Hazard Mitigation Goals [44 CFR **201.6(c)(3)(i)]**	
	A. Does the plan include a description of mitigation **goals** to reduce or avoid long-term vulnerabilities to the identified hazards?	pp 72-74
14	Identification and Analysis of Mitigation Actions [44CFR **201.6(c)(3)(ii)]**	
	A. Does the plan identify and analyze a **comprehensive range** of specific mitigation actions and projects for each hazard?	pp 9-10, 75-81
	B Do the identified actions and projects address reducing the effects of hazards on **new** buildings and infrastructure?	pp 9-10, 75-81
	C. Do the identified actions and projects address reducing the effects of hazards on **existing** buildings and infrastructure?	pp 9-10, 55, 75-81
15	Implementation of Mitigation Actions [44 CFR **201.6(c)(3)(iii)]**	
	A. Does the mitigation strategy include how the actions are **prioritized**? (For example, is there a discussion of the process and criteria used?)	pp 9-10,77-82
	B. Does the mitigation strategy address how the actions will be **implemented and administered**? (For example, does it identify the responsible department, existing and potential resources, and timeframe?)	pp 77-83
	C. Does the prioritization process include an emphasis on the use of a **cost-benefit review** (see page 3-36 of *Multi-Hazard Mitigation Planning Guidance*) to maximize benefits?	pp 75, Appendix H
16	Multi-Jurisdictional Mitigation Actions [44 CFR **201.6(c)(3)(iv)]**	
	A. Does the plan include at least one identifiable **action item** for each jurisdiction requesting FEMA approval of the plan?	N/A

17	Plan Maintenance Process	
	Monitoring, Evaluating, and Updating the Plan [44 CFR **201.6(c)(4)(i)]**	
	A. Does the plan describe the method and schedule for **monitoring** the plan? (For example, does it identify the party responsible for monitoring and include a schedule for reports, site visits, phone calls, and meetings?)	pp 11, 87, 88
	B. Does the plan describe the method and schedule for **evaluating** the plan? (For example, does it identify the party responsible for evaluating the plan and include the criteria used to evaluate the plan?)	pp 87
	C. Does the plan describe the method and schedule for **updating** the plan within the five-year cycle?	pp 87
18	Incorporation into Existing Planning Mechanisms [44 CFR **201.6(c)(4)(ii)]**	
	A. Does the plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan?	pp 87
	B. Does the plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?	pp 88
19	Continued Public Involvement [44 CFR **201.6(c)(4)(iii)]**	
	A. Does the plan explain how **continued public participation** will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)	pp 12, 87

SECTION II

SECTION II

Planning for the Natural Hazard Mitigation Plan in the Region

Development in Southern California from the earliest days 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 sprung up everywhere and within a few decades the central basin of Los Angeles County was nearly built out. This pushed new development further and further away from the urban center.

Natural hazards impact citizens, property, the environment, and the economy of the region. Earthquakes, earth movements, flooding, wildfires and wind storms have exposed the District', residents and businesses to the financial and emotional costs of recovering after natural disasters. The risk associated with natural hazards increases as more people move to areas affected by natural hazards.

The combined areas of the Cities of La Verne and San Dimas are 25.4 square miles with a population of 67,492 according to the 2000 Census. The District services approximately 10,000 students within our boundaries. (See Appendix E - map 5).

Both cities are essentially "built-out" i.e., have little or no vacant land remaining for development, 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 District and region 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 a hazard event can assist in protecting life and property of citizens and communities. The District, local residents and businesses can work together with the Cities of La Verne and San Dimas to create a natural hazards mitigation plan that addresses the potential impacts of hazardous events.

Developing a Mitigation Plan

The Natural Hazard Mitigation Plan is a new requirement from the Federal Emergency Management Agency (FEMA). The Plan is an attempt to develop pre-disaster mitigation strategies in order to prevent human and economic loss in the event of a natural disaster such as an earthquake, flooding, landslide, or wildfire. All cities and jurisdictions are required to prepare this plan in order to qualify for FEMA pre-disaster and post-disaster mitigation funding.

As the costs of damage from natural disasters continue to increase, the District also realizes the importance of identifying effective ways to reduce vulnerability to disasters. Natural hazard mitigation plans will assist the District and the communities it serves in reducing risk from natural hazards by identifying resources, information, and strategies for risk reduction, while helping to guide and coordinate mitigation activities throughout the District.

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.

The resources and information within the Mitigation Plan:

(1) Establish a basis for coordination and collaboration among agencies and the public in the City of La Verne, City of San Dimas and the District;
(2) Identify and prioritize future mitigation projects; and
(3) Assist in meeting the requirements of federal assistance programs.

The mitigation plan works in conjunction with other city plans, including the General Plan and Emergency Operations Plans such as the Multi-Function Hazard Plan.

This plan provides a framework for planning for natural hazards. The resources and background information in the plan is applicable District-wide, and the goals and recommendations can lay groundwork for local mitigation plans and partnerships.

Natural Hazard Land Use Policy in California

Planning for natural hazards should be an integral element of any city's land use planning program. All California cities and counties are required to have General Plans and the implementing ordinances that are required to comply with the statewide planning regulations. The General Plan addresses the use and development of private land, including residential and commercial areas. This plan is one of the City's most important tools in addressing environmental challenges including transportation and air quality, growth management, conservation of natural resources, clean water, and open spaces.

The continuing challenge faced by local officials and state government 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 in the case of planning for natural hazards where communities must balance development pressures with detailed information on the nature and extent of hazards.

Planning for natural hazards, calls for 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, the built environment at risk, the personal property that may be damaged by hazard events, and most of all, the people who may be threatened by these hazards.

Support for Natural Hazard Mitigation

All mitigation is local, and the primary responsibility for development and implementation of risk reduction strategies and policies lies with local jurisdictions. Local jurisdictions, however, are not alone. Partners and resources exist at the regional, state and federal levels. Numerous California state agencies have a role in natural hazards and natural hazard mitigation. Some of the 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, integrates this information on earthquake phenomena, 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 and state land, and administers forest practices regulations, including landslide mitigation, 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, and exceptions (based on science-based refinement of tsunami inundation zone delineation) to state mandated tsunami zone restrictions; and

- The California Division of Water Resources (DWR) plans, designs, constructs, operates, and maintains the State Water Project; regulates dams; provides flood protection and assists in emergency management. It also educates the public and serves local water needs by providing technical assistance.

Plan Purpose

Early in the planning process, the Bonita Unified School District identified several purposes for their plan. These include the following:

- **Provide a Methodical Approach to Mitigation Planning**

  The process used by the planning partners identifies vulnerabilities to future disasters and proposes the mitigation initiatives necessary to avoid or minimize those vulnerabilities. Each step in the planning process builds upon the previous, providing a high level of assurance that the mitigation initiatives proposed by the District and the participants have a valid basis for both their justification and priority for implementation.

- **Enhance Public Awareness and Understanding of Natural Hazards**

  This plan contains data and information that can be used in a variety of ways to enhance public awareness about natural hazards. Section III of the plan identifies the four most prevalent natural hazards threatening the region and provides an assessment of where the region is vulnerable to those hazards. There is also data that estimates what the potential costs would be to the school District should there be a significant event. This information gives a better understanding of what the most prevalent hazards are historically and how those hazards impact or threaten the Bonita Unified School District's capability as a provider of critical services to public education, safety, and the operational capability of the District.

  The mitigation actions identified in this section will also help the public become aware of some important steps that can be taken in the community to manage risk, protect lives and property and promote community sustainability. The planning partners have provided opportunities for public involvement and information.

This effort has reached out to stakeholders from cities, community and the District. The planning partners have also solicited ideas and input during informational sessions as the plan was being drafted.

- **Create a Decision-Making Tool for School District Policy and Decision Makers**

  This document is intended to provide basic information needed to take actions to address vulnerabilities to future natural disasters. It also provides proposals for specific projects and programs that are needed to eliminate or minimize those vulnerabilities.

  These proposals, called "mitigation actions" and identified in Section IV, are related to the needs of District. They have been evaluated as to their economic benefits, and have been prioritized for implementation as funding becomes available. This approach is intended to provide a decision- making tool for District's management.

- **Promote Compliance with State and Federal Program Requirements**

  A number of state and federal grant programs, policies, and regulations encourage or mandate local government to develop and maintain a comprehensive Natural Hazards Mitigation Plan. The Federal Disaster Mitigation Act of 2000 established a requirement that for all disasters declared on or after November 1, 2004, applicants for grants for disaster mitigation funds must have an approved local mitigation plan. This plan is specifically intended to assist the Bonita Unified School District in complying with these requirements, and to enable the District to more fully and quickly respond to state and federal funding opportunities for mitigation-related projects.

  Because the plan defines, justifies and prioritizes mitigation actions that have been formulated through a technically valid hazard review and vulnerability assessment process, the Bonita Unified School District is better prepared to more quickly and easily develop the necessary grant application materials for seeking state and federal funding.

- **Assure Inter-Jurisdictional Coordination of Mitigation-Related Programming**

  A key purpose of the planning process is to ensure that proposals for mitigation actions are coordinated considering participating jurisdictions within the area. In this way, there is a high level of confidence that mitigation actions proposed by one jurisdiction or participating organization, when implemented, will be compatible with the mutual interests of adjacent jurisdictions and unlikely to duplicate or interfere with mitigation actions proposed or implemented by others.

- **Create Jurisdiction Specific Hazard Mitigation Plans for Implementation**

  A key purpose of the plan is to provide the District and stakeholders with a specific plan of action that can be adopted and implemented pursuant to its own authorities and responsibilities. In Section IV, the District ranked and adopted their corresponding mitigation actions. These actions will be implemented as funding becomes available to the District.

Plan Development

The above purposes have guided the plan development. The Technical and Steering Committee's move forward as the convening body for the plan. Documentation of these efforts appears in Appendix C. The Committee met to guide development of the mitigation plan and the following outlines their activities:

Date	Activity	Subject
Jan. 22, 2004	OES Workshop #1 NHMP	To assist participants from Calif. Local Governments to understand content and the development and requirements for Section 1, 2, and 3
Jan. 23, 2004	Bonita USD Technical Committee Meeting	Overview of NHMP, Plan requirements review, discussion for timeline for the plan, Members responsibilities, participation and assignments.
Feb. 24, 2004	San Dimas City Council Meeting	Report to provide Cabinet with requirements to adopt DMA2000 plan and the Natural Hazard Mitigation process. Agenda #6 Other Business
Feb. 25, 2004	Bonita USD Technical Committee Meeting	Update information on NHMP consultant services thru ASCIP, City of San Dimas Board Resolution and review of the five elements of the OES crosswalk, etc.
Mar. 2, 2004	Area D General Meeting	Review of natural mitigation planning guidebook to help communities prepare for mitigation plans and minimize future losses.
Apr. 15, 2004	Area D General Meeting	NHMP roundtable discussion regarding multi-jurisdictional entities. Adding districts as an appendices to City plans.
May 11, 2004	ASCIP DMA2K Seminar	How to create a hazard mitigation plan – A guide for school districts review. There were 12 different districts represented with 22 participants.
May 13, 2004	OES Workshop #2 NHMP	Focus on developing the final half of your district's plan. Provided examples of approved text, and technical assistance sources available to assist school districts.
May 14, 2004	Bonita USD Technical Committee Meeting	Review of updated crosswalk, when to submit for Board Resolution, utilization of OES GIS contacts for maps. Need to submit Letter of Intent to OES.
May 17, 2004	OES Letter of Intent	Letter of Intent faxed the Bonita USD intends to develop and submit a NHMP in accordance with Section 322 of the Stafford Act.

Date	Activity	Subject
May 21, 2004	Area G NHMP Meeting	Supplemental NHMP materials distributed regarding Section 1 materials, required documentation and general Q & A time.
May 24, 2004	Bonita USD and San Dimas City Council AD HOC Meeting	General overview for DMA2000 legal requirements. The purpose of the plan and summary of crosswalk and associated activities. Representation of 12 from the District, city, Sheriff Dept., Board of Education
June 2, 2004	Bonita USD Technical/Steering Committee Meeting	Board of Education Meeting. Natural Hazard Mitigation Plan Development Resolution, Consent Agenda Business Services item #13. Open to public comment. Present 48 attendees, city residence, teachers, principals, Board of Trustees, cabinet members and staff.
June 3, 2004	Bonita USD Technical/Steering Committee Meeting	Update of activity calendar, planning schedule. Set date for 1st Kick-Off Meeting. Review disaster assessment survey.
June 8, 2004	City of La Verne Disaster Preparedness Workshop	Public session to review on-going efforts to be prepared in the event of a disaster. Presentation of their commitment regarding NHMP. There were 25 participants Red Cross, Area D, businesses, city residence, fire fighters, etc.
June 10, 2004	Los Angeles County Office of Education	Facilities Network meeting. Vendor presentation as consultants for district NHMP. Update from Area G Coordinator regarding regulations and ramification of non-compliance. District Participants, Bonita Unified School District and EL Monte City School District overview, "First Steps to Near Completion panel discussion.
June 15, 2004	City of La Verne NHMP Advisory Meeting	Highlights and open discussion regarding their action items including windstorm, wild fires, earthquakes etc. Attendance of 6 from Church of the Brethren, community, business, and residence.
June 24, 2004	Bonita USD NHMP Kickoff Meeting	Introduction to NHMP and requirements. Review of Board Resolution, OES letter of intent, perform and review disaster assessment survey with steering & technical committees comprised of the residents, parents, PTA, city, consultant and district staff. Attendance of 19.
Aug. 11, 2004	Bonita USD Technical/Steering Committee Meeting	Review data that was accumulated for goals and objectives. Brainstorm information and develop a working format to prepare goals and objectives.

Date	Activity	Subject
Sept. 2, 2004	Bonita USD Technical/Steering Committee Meeting	Develop actions items based on our data from the goals and objectives. Modify and review a ranking process.
Sept. 8, 2004	Bonita USD Technical/Steering Committee Meeting	Completion of action items review. Rank the actions items for NHMP.
Sept 28. 2004	OES – EMPG California Specialized Training Institute	Multi-Hazard Emergency Planning Program for Schools. Course topics, identify, evaluate, implement, respond, recover and information on SEMS for schools.
Sept 29, 2004	City of San Dimas NHMP Advisory Meeting	Background of NHMP. Review of historical data and mitigation action items. Brainstorm and evaluation of their treat assessment for each hazard. Committee members of 5 included the Historical Society, Sheriff, Planning Commission and City Manager
Oct. 6, 2004	Area D General Meeting	Review of directions for submitting NHMP to OES, including cover letter, 2 hard copies, electronic CD copy, etc. Updated crosswalk data.
Oct. 18, 2004	City of San Dimas NHMP Advisory Meeting	Provide updated version of actions items. Review of plan maintenance, monitoring and evaluation of NHMP. There were 7 attendees from the Historical Society, Planning Commission, Public Safety Commission and community.
Nov. 17, 2004	Bonita USD Technical/Steering Committee Meeting	Board of Education Meeting. Natural Hazard Mitigation Plan Development Resolution, Consent Agenda Business Services item C-1 Open to public comment. Present 34attendees, city residence, teachers, principals, Board of Trustees, cabinet members and staff.

The Mitigation Steering Committee consisted of representatives from the jurisdictions. The same Committee members:

- Provide information specific to their jurisdiction/entity to exchange ideas for the development of their the plan.
- Develop mitigation plan goals based on local hazards to provide a long-term vision reducing our region's vulnerability to natural hazard events.
- Identify, analyze, and prioritize the mitigation initiatives for the region as well as for their jurisdiction.
- Analyze the cost and benefit of the mitigation initiatives.
- Identify appropriate public involvement opportunities and participate in or host a public meeting.
- Review plan elements in draft and final form.

Public Participation

A variety of methods were used to encourage public participation in the planning process as well as to educate the public about hazard mitigation efforts in their communities. Documentation of these efforts appears in Appendix C. Since formal natural hazards mitigation planning had not previously been undertaken the public participation efforts were directed at education and awareness.

The public scoping meetings were structured to provide information about mitigation planning. Also, the meetings provided attendees the opportunity to ask questions or address concerns or provide input. The Bonita Unified School District hosted meetings at the District or participated in meetings at the City of La Verne or the City of San Dimas; May 24th, June 2sd , June 8th, June 15th, June 24th, and September 29th and October 18th 2004.

The subject focus of the meetings included and overview of DMA2000 and the school District's natural hazard mitigation plan. These meetings provided information about the requirements of DMA 2000, the necessity for mitigation planning efforts and the methods to assess risks and determine goals and objectives were among the discussion items as well as the importance of making an effort to address natural hazards in order to mitigate their effects. The public was invited to participate in the process.

The Board agendas were available for review at multiple locations including the District Office 115 West Allen Avenue in San Dimas, all 13 school sites, the La Verne Public Library, the San Dimas Public Library, the City of La Verne, the City of San Dimas, two local newspapers, as well as on the District website at: www.bonita.k12.ca.us.

Other means used for distribution of information to involve the public and specifically to include the local community, were distribution of printed material explaining the reason and process behind natural hazard mitigation. This information contributes toward educating the public on the purpose and importance of hazard mitigation planning and further adds to understanding about natural hazards in the La Verne and San Dimas area. The District's website proved to be a valuable tool to disseminate information regarding the plan and natural hazard mitigation efforts.

SECTION III

SECTION III
Risk Assessment

Introduction

This section presents an overview of the natural hazards that faces the Bonita Unified School District, and provides a summary of the critical District facilities and vulnerabilities that are most likely to be affected by each of them. The hazards that are profiled are: earthquake, flooding, wildfire and windstorms. Each section presents a description of the hazard in the region, areas of risk in the Cities of La Verne and San Dimas, and a summary of the District vulnerable facilities that are located within identified hazard zones. The hazards and risks are also presented in Appendix E. maps 1 through 10.

Federal Requirements for Risk Assessment

The purpose of the Risk Assessment section is to provide the factual basis for the mitigation actions which are proposed in the next section. 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 to identify and prioritize mitigation activities that will reduce losses from the identified hazards. There are four hazards profiled in the mitigation plan, including earthquakes, flooding, wild fires and wind storms. The Federal criteria for risk assessment and information on how the District Natural Hazard Mitigation Plan meets those criteria are outlined in Table 3-1.

Table 3-1. 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. To the extent GIS data are available, OES and cities developed maps identifying the location of the hazard in the District. The Risk Assessment sections of the plan and the Appendix E included the hazard maps.
Profiling Hazard Events	Each hazard section includes documentation of the history, and causes and characteristics of the hazard in the District.
Assessing Vulnerability: Identifying Assets	Where data is available, the vulnerability assessment for each hazard addressed in the mitigation plan includes an inventory of all District owned land within hazardous areas. Each hazard section provides information on vulnerable areas in the District and the Community -Section III. 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 District 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 Bonita Unified School District Profile Section of this plan provides a description of the development trends in the District, demographics, land use and development.

The section begins with some multi-hazard information, including federal disaster declarations, hazard analysis definitions, and hazard identification. However, the bulk of the section consists of hazard specific information including: Hazard Area Maps which describe the location and extent of the identified hazards, a description of historical occurrences and impacts, which is followed by extensive and detailed vulnerability assessment data tables. These data tables are of three types: 1) Calculation of proportion of assets in the hazard areas, 2) Specific information about the assets such as building size, replacement value, content value, function use or value displacement cost, occupancy or capacity 3) Estimation of losses to the District Critical Facilities within hazard areas.

Source data to arrive at the costs for estimated losses, building and content values and other material cost information was derived by using reports as provided by the District's property and liability insurer adding a factor to cover for items not included such as costs for foundations. Information on building structure types, occupancy, and other matters pertaining to factors were derived from the Facilities Planning Handbook. See Appendix F.

Risk Assessment Methodology

The information in this plan was collected through detailed research, building of data presented in *Existing Conditions, Opportunities, and Challenges Report* for the General Plan Update. Additional sources of data include technical reports from the United States Geological Service (USGS), City of La Verne, City of San Dimas and other government agency reports, FEMA guidebooks, adopted hazard mitigation plans, and materials published by the Disaster Management Area Coordinator for the Los Angeles County Region. When possible, the data was collected in or converted to GIS format. This format allows for overlay of the hazards with sensitive structures, and lays the foundation for more complex spatial analysis in the future.

Hazard Analysis Definitions

To make its analysis of hazards more useful, the District requested the assistance and support of the City of La Verne and City of San Dimas experts. *Hazard Identification and Vulnerability Analysis* (HIVA) established adjective descriptors (High, Moderate, and Low) for each hazard's probability of occurrence and vulnerability, and a risk rating has been assigned based on a subjective estimate of their combination. The risk rating is assigned on the probability of a hazard occurring over the next 25 years. This interval was chosen because it is the long term recurrence interval of a dangerous earthquake, the hazard of the greatest risk to Southern California, Los Angeles County, San Gabriel Valley, City of La Verne, City of San Dimas and the District.

The following terms were used in the District's HIVA, and are referenced in this plan to analyze the hazards considered:

Probability of Occurrence: An adjective description (High, Medium, or Low) of the probability of a hazard impacting the district within the next 25 years.

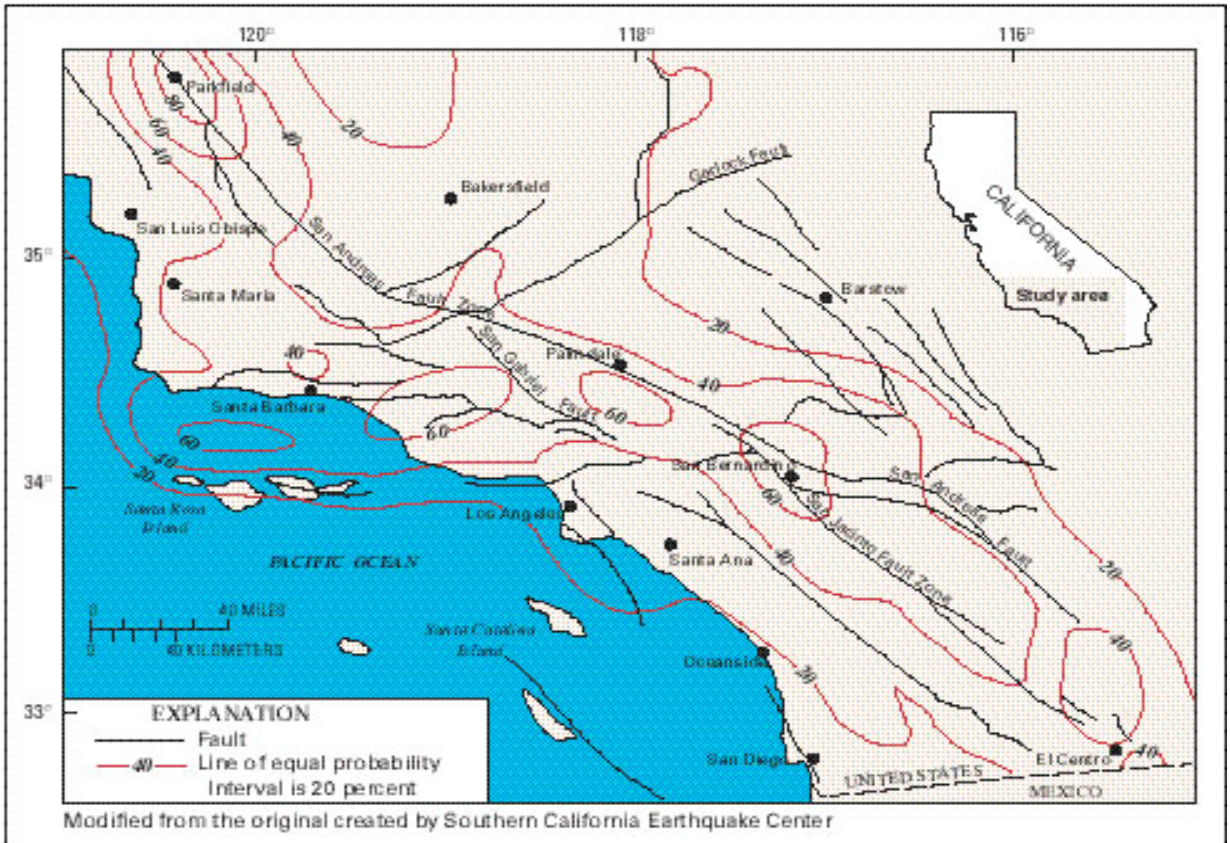
- High: There is great likelihood that a hazardous event will occur within the next 25 years.
- Medium: There is moderate likelihood that a hazardous event will occur within the next 25 years.
- Low: There is little likelihood that a hazardous event will occur within the next 25 years.

Vulnerability: An adjective description (High, Medium, or Low) of the potential impact a hazard could have on the District. It considers the students, teachers, administrators, school facilities, and educational services at risk relative to the entire District.

- High: The entire District is uniformly exposed to the effects of a hazard of potentially great magnitude. In a worse case scenario, there could be a disaster of major to catastrophic proportions.
- Medium: The entire District is exposed to the effects of a hazard of moderate influence; or the entire District is exposed to the effects of a hazard of moderate influence, but not all to the same degree; or an important segment of district is exposed to the effects of a hazard. In a worse case scenario there could be a disaster of moderate to major, though not catastrophic, proportions.
- Low: A limited area or segment of the District is exposed to the effects of a hazard. In a worse case scenario, there could be a disaster of minor to moderate proportions.

Risk Rating: An adjective description (High, Medium, or Low) of the overall threat posed by a hazard over the next 25 years. It is a subjective estimate of the combination of probability of occurrence and vulnerability.

- High: There is strong potential for a disaster of major proportions during the next 25 years; or History suggests the occurrence of multiple disasters of moderate proportions during the next 25 years.
- Medium: There is moderate potential for a disaster of less than major proportions during the next 25 years.
- Low: There is little potential for a disaster during the next 25 years.



Modified from the original created by Southern California Earthquake Center

Figure 1. Lines of equal probability, in percent, of earthquake-caused earth movement capable of significant damage in the next 30 years; these lines represent a measure of risk.

Hazard Identification

Based on the Los Angeles County, Cities of La Verne, San Dimas and other local jurisdictional ***Hazard Identification and Vulnerability Analysis*** (HIVA) reports, the following natural hazards have been identified as those most likely to occur in the District:

Earthquakes

Although most major population centers in California are in seismically active areas, no earthquake in the past few decades has approached the maximum anticipated magnitudes. The principal earthquake hazard is the damage or collapse of buildings or of the infrastructure. The USGS, in cooperation with the California Department of Conservation's Division of Mines and Geology (CDMG), the California Institute of Technology, and the Southern California Earthquake Center is collecting ground-motion data to produce regional risk-assessment maps that provide estimates of the probability of significant ground movement (fig. 1). These maps are used by Federal, State, and local agencies as a basis for building codes and land-use zoning that can reduce loss of life and property.

Ground Shaking and Liquefaction

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter. Buildings on poorly consolidated and thick soils (such as alluvium) will typically see more damage than buildings on consolidated soils and bedrock.

Liquefaction is the phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength. Lateral spreads develop upon gentle slopes and entail the sidelong movement of large masses of soil as an underlying layer liquefies. Loss of bearing strength results when the soil supporting the structures liquefies. This can cause structures to tip and topple.

Floods

Floods are a perennial concern for much of California, and flood forecasting is an essential part of flood management. The ability to predict flood frequency and magnitude depends on long-term, continuous records at many widespread sites. The USGS, in cooperation with Federal, State, and local water agencies, operates or reviews data for about 1,000 surface-water stations throughout California. Data collected are used by those water agencies to design measurable, effective, and economically sound programs and practices for flood protection. Strategically located stream-flow-gauging stations equipped with automatic recording instruments are connected to computerized flood-warning systems. Water levels, precipitation, and other data can be accessed by computer from anywhere.

Landslides and Mudflows

Landslides and mudflows are common in California because of active mountain-building processes, rock characteristics, earthquakes, and periodic intense storms. Landslides vary greatly in size and composition: from a thin mass of soil a few yards wide to deep-seated bedrock slides miles across. The travel rate of a landslide can range from a few inches per month to many feet per second depending on the slope, type of materials, and moisture content.

The identification of areas that are likely to produce landslides in conjunction with earthquakes or severe storms enables the public, urban planners, and the private sector to address these conditions as part of any future development.

By using earthquake information and geologic data bases, USGS scientists, in cooperation with the CDMG and the private sector, have created a computer-generated landslide location map of the Los Angeles area. They are now working on landslide-hazard maps that show the slopes most likely to fail in earthquakes.

Tsunamis

Tsunamis (also known as seismic sea waves (mistakenly called "tidal waves"), are a series of enormous waves created by an underwater disturbance such as an earthquake. A tsunami can move hundreds of miles per hour in the open ocean and smash into land with waves as high as 100 feet or more, although most waves are less than 18 feet high.

From the area where the tsunami originates, waves travel outward in all directions much like the ripples caused by throwing a rock into a pond. In deep water the tsunami wave is not noticeable.

Once the wave approaches the shore it builds in height. All tsunamis are potentially dangerous, even though they may not damage every coastline they strike. A tsunami can strike anywhere along most of the U.S. coastline. The most destructive tsunamis have occurred along the coasts of California, Oregon, Washington, Alaska and Hawaii.

Tsunamis are most often generated by earthquake-induced movement of the ocean floor. Landslides, volcanic eruptions, and even meteorites can also generate tsunamis. If a major earthquake or landslide occurs close to shore, the first wave in a series could reach the beach in a few minutes, even before a warning is issued. Areas are at greater risk if less than 25 feet above sea level and within a mile of the shoreline. Drowning is the most common cause of death associated with a tsunami. Tsunami waves and the receding water are very destructive to structures in the run-up zone. Other hazards include flooding, contamination of drinking water and fires from gas lines or ruptured tanks.

Volcano Hazards

A volcano is a mountain connected to a reservoir of molten rock below the surface of the earth. They are built up by an accumulation of their own eruptive products, lava and ash. USGS scientists are closely monitoring California's active and potentially active volcanos.

Volcanic activity within the State of California has occurred on the scale of " human time" as well as " geologic time". More than 75 volcanic vents in California have been active during the last 10,000 years. Mount Shasta and Lassen Peak (erupted 1914-1917) have been active historically and there are several geologically young volcanic systems, such as Medicine Lake Volcano in northern California and Long Valley Caldera on the eastern Sierra Nevada front. USGS scientists are updating hazards assessments of Lassen Peak, Mount Shasta, and Medicine Lake Volcanoes. Magma intrusion and seismic activity at Long Valley Caldera have been closely monitored by the USGS as part of the Volcano Hazards Program since 1978.

Each episode of volcanic activity in the past 5,000 years from along the Mono-Inyo Craters volcanic chain has erupted less than 1 km^3 of magma. Based on the known aerial extent of the rock deposits formed by these small- to moderate-sized eruptions and experience gained from historical eruptions of similar magnitude, scientists have identified areas that are likely to be affected by similar activity in the future. Since May 1989, USGS scientists have detected and are studying the increased emission of carbon dioxide gas of volcanic origin in the southwestern part of the Caldera.

The nearest volcano to the District is the Amboy Crater. The crater is located in the Mojave Desert Approximately 175 miles from the District, off Interstate 40 just west of the town called Amboy.

Amboy Crater is a large, un-eroded cinder cone. It is found in the northeastern part of the Amboy lava field. It is believed to be approximately 6,000 years old. According to USGS Bulletin 1847, a portion of the western section of Los Angeles County falls within areas subject to potential hazards from future eruptions by this volcano.(See appendix E-map 6)

Wild fires

Wildfires are common in California. They are a natural part of the environment here. The climate in much of California is a Mediterranean type of climate, which is characterized by mild rainy winters and warm (or hot) dry summers. Vegetation grows during the winter and spring, and dries out during the long dry summers. The greater the growth of vegetation in the wet season, the more fuel there is to burn. In the parts of California covered by chaparral vegetation, fire is always a danger, because chaparral plants are often very flammable.

This plant community is in equilibrium with a regime of relatively frequent fires, and fire can actually be beneficial to many of the plant species. Fire releases nutrients from dead plant material back to the soil, allowing new growth the following season. Many chaparral species contain volatile oils that allow them to burn very well, and many of these species are adapted to re-sprout after a fire, or seed in to a burned area.

Even parts of California that are not in the Mediterranean climate zone can be subject to fire exposures because a long drought period can dry out the vegetation sufficiently for it to burn. Fires have always occurred naturally, set by lightning. The lightning-set fires in the past may have been more frequent (because they were not suppressed) but probably covered smaller areas, and were not as hot and devastating as some fires now, because the high frequency meant that there was less chance for a big load of fuel to build up. If we suppress fires for many years, there will be a buildup of fuel as plants grow larger, and dead wood and other plant material accumulate. Eventually, perhaps at the end of a hot, dry summer, something will set off a fire, and, weather conditions permitting, it can potentially cause a very significant fire because of the accumulated fuel load.

Fire weather in California is hot and dry and windy. The right conditions for dangerous fires occur when hot dry winds blow towards the coast from inland areas. The winds are the result of high pressure systems over the Great Basin region, pushing the air outwards. As the warm air flows down from higher elevations, it warms up and dries out still more. Such strong, dry winds can rapidly desiccate the vegetation, and can provide the perfect weather conditions for a devastating fire. Following a fire, the burned areas often experience flooding, excessive soil erosion, and landslides, because the bare slopes cannot hold the soil as well as a vegetated slope would.

Dam Inundation

The grater risk of injury and property damage to the District is the hazard of flooding due to dam inundation, although the likelihood of occurrence is vastly lower. Several dams are located in the hillsides of La Verne and San Dimas.

Hazardous Material

In the event of a natural hazard, hazardous materials could potentially harm students and residents by exposing them to chemicals that may be poisonous, irritating, suffocating, or that can cause burns or other injury. The severity of hazardous materials impacts depends on many factors such as amount of chemical released, location, and rate and direction of dispersion.

Identifying vulnerable toxic sites and preventing hazardous materials spills before they occur is fundamental to mitigating the myriad unpredictable impacts that such spills may have on the District and community. This type of event could expose neighborhoods near railway tracks in La Verne and San Dimas to potential hazards due to rail car derailment and depending on the content of rail cars, a potential for exposure to substances or materials being transported.

The District's eastern section has five soils contamination sites. The water treatment plant on Wheeler Boulevard is located across from Grace Miller Elementary. (See Appendix E map 7)

Utilities

Underground utilities may be subject to rupture during a earthquake, creating the potential for fire and explosion. The potential hazard can affect directly or indirectly the District, its students, teachers, administrators and local community.

Terrorism

Terrorism is the force or violence against persons or property violating the criminal laws of the United States for purposes of intimidation, coercion, or ransom. Terrorists often use threats to create fear among the public; try to convince citizens that their government is powerless to prevent terrorism; and efforts to get publicity for a cause.

A terrorist attack can take several forms depending on the technological means available to the terrorist, the nature of the political issue motivating the attack, the points of weakness of terrorist targets. Bombings are the most frequently used terrorist method in the United States. Other possibilities include attacks upon transportation facilities, utilities, or other public services, or an incident involving chemical or biological agents.

Transportation

There are five major freeways serving La Verne and San Dimas that provide primary regional access to and from the Cities. The San Bernardino Freeway (Interstate 10) and the Pomona Freeway (State Route 60) provide east-west access to La Verne and San Dimas from Santa Monica and Los Angeles to the west, and Ontario, San Bernardino and Riverside to the east. The Foothill Freeway (Interstate 210) provides an additional east-west connection to the east San Bernardino county, extending west to Pasadena and the San Fernando Valley. The Corona Expressway (State Route 71) and Orange Freeway (State Route 57) provide connections with Corona and Orange County.

In addition to the two freeways passing through the Cities, both cities have an extensive street network. Our street network is primarily based on a grid, with several major north-south and east-west roadways interlaced with a system of intersecting minor streets. The major arterial highways are Foothill Boulevard, Bonita Avenue and Arrow Highway which run east to west and Wheeler Boulevard, San Dimas Boulevard Lone Hill Boulevard that run north to south. There are several bridges that are part of the freeway system that can effect both cities north/south traffic movement if damaged.

The Burlington Northern Santa Fe RR and the Southern Pacific RR serves both cities with tracks along Arrow Highway. Passenger transportation is provided by Foothill Transit, and Metrolink commuter rail with a stop in northwest Pomona near the City of La Verne eastern border. A Metro Gold Line station in the southern section of the City of La Verne is proposed along Arrow Highway.

Each of the highways, freeways, and railroads play a critical role and could effect the District's delivery of student services. A hazard that rendered these routes "incapacitated" would pose a significant challenge to the Cities in recovering from the event as well as for the Bonita Unified School District.

Communicable Diseases

Mosquito-borne viruses belong to a group of arthropod-borne viruses referred to as arboviruses. Although 13 mosquito-borne viruses are known to occur in California, only western equine encephalomyelitis (WEE) virus, St. Louis encephalitis (SLE) virus, and West Nile (WN) virus have caused or have the potential to cause significant outbreaks of human disease. Infection by WEE virus tends to be most serious in very young children, whereas infection caused by SLE and WN virus affects elderly people most seriously. Mosquito control is the only practical method of protecting people and animals from SLE, WEE, and WN infections.

There are no known specific treatments, cures, or vaccines for human diseases caused by these viruses. California has a comprehensive mosquito-borne disease surveillance program that has monitored mosquito abundance and mosquito-borne virus activity since 1969. The State of California has an Operational Plan for Emergency Response to Mosquito-Borne Disease Outbreak in place. See Appendix E map 10.

Airports

The Cities of La Verne and San Dimas are surrounded by the following airports:

Brackett Airfield - Small planes field located in the southern boundaries for the City of La Verne that border with the City of Pomona. The landing of the planes are from east to west over the Cities of Claremont and Pomona and the take-off over the Cities of La Verne, San Dimas and Covina.

Ontario International Airport – Major airport located 14 miles east of the District. The District is in the take-off path traffic. The airport is located in the City of Ontario.

Cable Airfield – Small planes field located North –East area in the City of Upland.

Each of these airfields can create a major challenge in the event of an air disaster. There was a recorded fatality at the Cable airfield last year. Budget resources and time constraints did not allow for a full analysis of every potential hazard identified above.

The natural hazards of earthquake, flood, landslides, wild fires and wind storm have been fully analyzed in this plan because they fell into the following criteria:

1) There is a high probability of the natural hazard occurring in the Cities of La Verne, San Dimas and surrounding communities within the next 25 years.
2) There is the potential for significant damage to District buildings.
3) There is the potential for loss of life.

According to the Cities of La Verne and San Dimas Hazard Identification and Vulnerability Analysis the following natural hazards meet the above criteria:

Hazard	City of La Verne & San Dimas HIVA Summary Assessment		
Earthquake	High Probability of Occurrence High Vulnerability High Risk	Flood	Moderate Probability of Occurrence Moderate Vulnerability Low Risk
Landslide	Moderate Probability of Occurrence Moderate Vulnerability Low Risk	Wild Fires	High Probability of Occurrence High Vulnerability Moderate Risk
Wind Storm	Moderate Probability of Occurrence Moderate Vulnerability Low Risk	Dam	Moderate Probability of Occurrence Moderate Vulnerability Low Risk

Overview of Risk Assessment Data

The following pages contain information useful in assessing the risk that the District faces in the region from the hazards identified above. Hazard specific information includes a description of the hazards, their previous occurrences and historical impacts on the area. An explanation of the methodology used to determine the inventory, forecast, and dollar value of vulnerable assets concludes the risk assessment analysis.

The descriptions of natural hazards, previous occurrences, and past impacts to the La Verne and San Dimas area, are drawn primarily from local jurisdictional HIVAs, and state and federal hazard related documents. This information is not, nor is it intended to be, a rigorous or scientific analysis. It does provide a basic level of knowledge through limited analysis of the hazards posing the greatest risk to the City of La Verne, City of San Dimas and the Bonita Unified School District.

Earthquake Hazard Description

The most significant natural hazard facing the Cities of La Verne, San Dimas and the District is the likelihood of a damaging earthquake. La Verne, San Dimas and the District are located in a seismically active region of Southern California, with several damaging earthquakes occurring in the past twenty years, such as Northridge (Magnitude 6.8) and Hector Mine (Magnitude 7.1). Table 3-2 gives details on the major historic earthquakes that have affected Southern California.

The Cities of La Verne and San Dimas and the District has never declared a state of emergency due to an earthquake. However, active fault lines cross the region, may greatly affect the area and neighboring communities.

In a 1998 seismic evaluation of region conducted by USGS, a model of the predominant earthquake expected in the area produced a Magnitude 7.0 event. This model was conducted with the assumption that the entire area has alluvial site conditions, a type of soil that particularly susceptible to movement during an earthquake. Although the District is largely located on an alluvial fan, there are portions of the District and Cities situated on more stable bedrock or firm rock conditions. Therefore, this analysis may overestimate the amount of ground movement that may actually occur, but it provides a scientific basis to assume that such a powerful earthquake could occur in the region and to prepare it to the fullest extent possible.

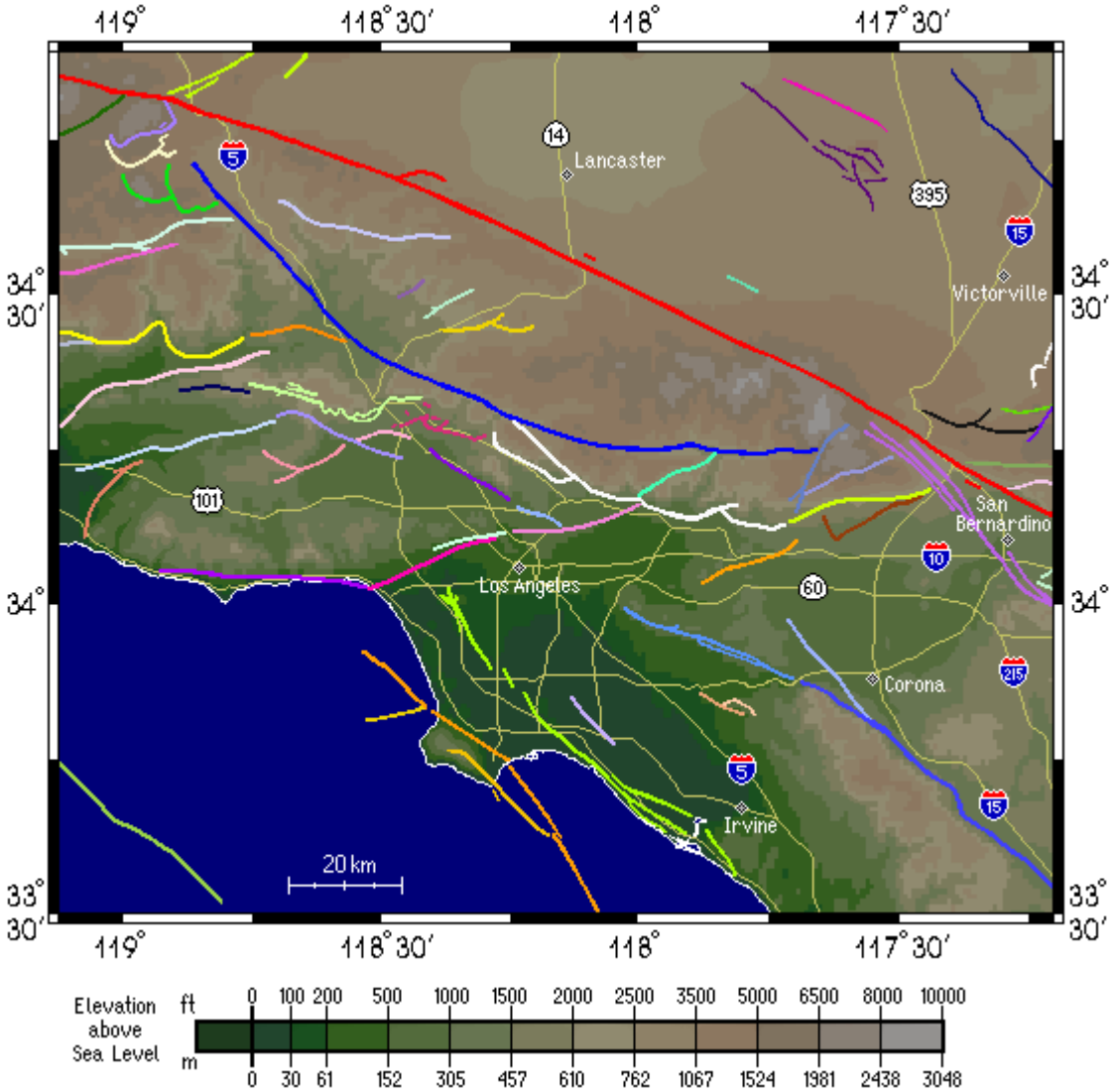
Table 3-2: Southern California Region

Earthquakes with a Magnitude 5.0 or Grater			
1769	Los Angeles Basin	1916	Tejon Pass Region
1800	San Diego Region	1918	San Jacinto
1812	Wrightwood	1923	San Bernardino Regiom
1812	Santa Barbara Channel	1925	Santa Barbara
1827	Los Angeles Region	1933	Long Beach
1855	Los Angeles Region	1941	Carpinteria
1857	Great Fort Tejon Earthquake	1952	Kern County
1858	San BernardinoRegion	1954	W. of Wheeler Ridge
1862	San Diego Region	1971	San Fernando
1892	San Jacinto or Elsinore Fault	1973	Point Mugu
1893	Pico Canyon	1986	North Palm Spring
1894	Lytle Creek Region	1987	Whittier Narrows
1894	East of San Diego	1992	Landers
1899	San Jacinto and Hemet	1992	Big Bear
1907	San Bernardino	1994	Northridge
1910	Glen Ivy Hot Springs	1999	Hector Mine
		2003	San Simeon

Several hazards can be produced by a single earthquake event. Ground shaking, landslides, and liquefaction are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude, and other variables. This section discusses each of the dominant seismic hazards and assesses their relationship to the critical facilities and vulnerabilities in the Cities of La Verne, San Dimas and the District.

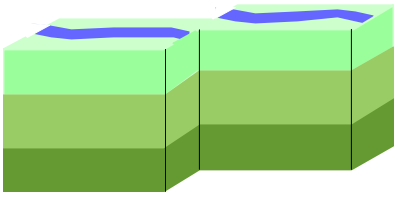
Faults in Southern California

There are numerous faults in Southern California area that are categorized as active, potentially active, and inactive. A fault is classified as active if it has either moved during the Holocene time (during the last 1,000 years) or is included as an Alquist-Priolo Earthquake Fault zone (as established by the California Division of Mines and Geology). A fault is classified as potentially active if it has experienced movement within Quaternary time (during the last 1.8 million years). Faults have not moved in the last 1.8 million years are generally considered inactive. Surface displacement can be recognized by the existence of cliffs in alluvium, terraces, offset stream courses, fault troughs and saddles, the alignment of depressions, sag ponds, and the existence of steep mountain fronts.



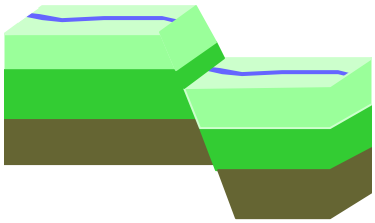
Characteristics of Earthquakes in Southern California

Earthquake Faults



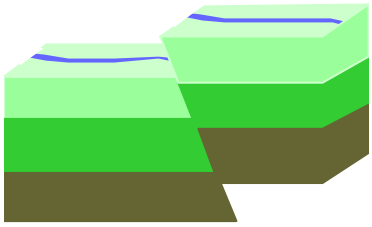
A fault is a fracture along and between blocks of the earth's crust where either side moves relative to the other along a parallel plane to the fracture.

Strike-slip



Strike-slip faults are vertical or almost vertical rifts where the earth's plates move mostly horizontally. From the observers perspective, if the opposite block looking across the fault moves to the right, the slip style is called a right lateral fault ; if the block moves left, the shift is called a left lateral fault.

Dip-slip



Dip-slip faults are slanted fractures where the blocks mostly shift vertically. If the earth above an inclined fault moves down, the fault is called a normal fault, but when the rock above the fault moves up, the fault is called a reverse fault. Thrust faults have a reverse fault with a dip of 45 ° or less.

Regional Faults

Earthquakes from several active and potentially active faults in Southern California region could affect in the future the City of La Verne, City of San Dimas and the District; although no known regional faults directly traverse the cities. A summary of the nearest active faults are presented below.

- *San Andreas Fault Zone*. Located approximately 20 miles to the northeast of the Cities, this fault zone extends from the Gulf of California northward to the Cape Mendocino area where it continues northward along the ocean floor. The length of the fault and its active seismic history indicated that it has a very high potential for large-scale movement in the near future (Magnitude 8.0+ on Richter scale), and should be considered important in land use planning for most cities in California.

- *Sierra Madre Fault System*. Located approximately one mile north of the Cities, at the base of the San Gabriel Mountains. It consists of a complex system of dips and slips and has a left lateral reverse component. The Sierra Madre fault system has been responsible for uplift of San Gabriel Mountains by faulting in response to tectonic compression. In many places, the faults have placed basement bedrock over alluvium where they dip northerly below the steep topographic front of the San Gabriel Mountains.

- *Cucamonga Fault:* This is an easterly extension of the Sierra Madre zone It is considered active and has been mapped from Lytle Creek area to at least the mouth of San Antonio Canyon, a distance of 10 miles. Geologically, recent movement has occurred just east of Glendora where granite basement rocks have been thrust over alluvial formation, and in the vicinity of San Antonio, Deer, and Day Canyons to the east where relative uplift on the northern side has produced scarps approximately 200 feet high in recent alluvium.

- *W*hittier-*Elsinore Fault Zone*. This fault zone is located along the southern base of the Puente Hills, approximately 9 miles to the southwest of the Cities. This northwest-trending fault trends from Whittier Narrows southeast across the Santa Ana River, past Lake Elsinore, into western Imperial County and then into Mexico. This fault zone has the expected maximum capability of a magnitude 6.6 earthquake.

- *San Gabriel Fault*. Labeled as potentially active, this fault is located approximately 20 miles northwest of the Cities. This fault extends from Frazier Park to Mount Baldy Village, a distance approximately 84 miles. Because of its length and its ancestral relationship with the San Andres Fault System, its potential future activity must be realized. Due to the length of its surface trace, the San Gabriel Fault is believed capable of generating a magnitude 7.8 earthquake.

- *Verdugo Fault*. Located approximately 22 miles west of the Cities, this potentially active fault bounds the south flank of the Verdugo Mountains, and appears to merge with the Eagle Rock-San Rafael Fault System in the vicinity of the Verdugo Wash. Low magnitude earthquakes (less than 3.0) which have been attributed to activity along the Verdugo Fault are occasionally recorded in the Burbank-Glendale are. No direct evidence of ground displacement has been observed as associated with these low-magnitude earthquakes. The Verdugo Fault has a high potential for future activity and is capable of generating a Magnitude 6.4 earthquake.

- *Norwalk Fault*. Located approximately 25 miles southwest of the Cities, this fault strikes 65 to 85 degrees to the northwest and dips steeply to the northeast. The fault is approximately 16 miles long and has an accurate trace between Buena Park and Tustin. Micro seismic activity along the Norwalk Fault is high and it may be capable of generating a Magnitude 6.3 earthquake.

- *Santa Monica Fault*. This fault is located approximately 25 miles west of the Cities. No detailed information is available on the exact location of this southwest-northeast trending fault at the ground surface (fault trace), or on its geometric orientation. This fault, the Malibu Coast Fault, and the Raymond Fault belong to one large fault system. Classified as a potentially active fault, this fault could generate a moderate seismic event (Magnitude 6.6).

- *San Fernando Fault Zone*. This fault is located approximately 30 miles northwest of the Cities. Generally, fault segments are east-west trending thrust faults with associated left lateral movement.

- *Newport-Inglewood Fault Zone*. Located approximately 35 miles southwest of the Cities, this fault zone could generate a 7.0+ Magnitude earthquake within the next 50 to 100 years.

Local Faults

In addition to the regional faults, there are several local faults located within the cities that are considered potentially active. No recent seismic activity has been recorded along these faults in the last 10,000 years. However, a major earthquake occurring along any of these faults would be capable of generating seismic hazards and strong ground shaking effects within the cities. These local faults include the Indian Hill, Chino, Central Avenue, and San Jose Faults.

- *Indian Hill Fault*. This fault is located along the northern section of the city and runs in an east/west direction for approximately 9 kilometers. It is believed to be a single strand and is considered potentially active. This fault serves as a barrier to groundwater movement and offsets soils of Late Pleistocene age, which is the reason it is considered potentially active.

- *Chino Fault*. Considered to be a part of the Whittier-Elsinore fault system, this fault borders the Puente Hills to the northeast and is buried along most of its length. It is approximately 28 kilometers long from the Santa Ana Mountains to the City of La Verne and San Dimas in a northwest-southeast direction, as it joins the San Jose Fault, near the I-10. Based on geomorphic evidence, it does not appear to have as great a potential for seismic activity as does the Whittier-Elsinore fault. The fault has an estimated slip rate of 0.2 mm/year. It should be noted that some geologists have questioned whether the Chino fault is in reality an earthquake fault, since recent evidence indicates that it is not a fault but the contact point between bedrock and less consolidated alluvium.

- *Central Avenue Fault*. Considered a potentially active fault and located in the City of Chino, this fault extends into the southern portion of the City of Pomona. This fault is approximately 8 kilometers long and believed to be a single strand that is sub parallel to the Chino fault. The fault exhibits displacement on Quaternary and Holocene age deposits but has no surface expression.

- *San Jose Fault*. This Fault is classified as potentially active and is located in the San Jose Hills, on the western edge of the City. The fault is approximately 13 kilometer long and runs in a northeast/southwest direction, approximately parallel to the I-10 freeway. The fault has an 85 to 85 degree upward dip and has a reverse movement with the north side up. The fault displaces upper Miocene sedimentary and volcanic rocks as much as 2,700 feet vertically, with a 100- meter vertical offset in older subsurface alluvium.

Of the local faults, the probability of earthquake activity is considered the highest along the San Jose Fault, with possible ground rupture. Neither the Chino Fault, Central Avenue Fault, nor the Indian Hills Fault have a high probability of seismic activity, and their precise location is currently not well defined. None of these faults in La Verne and San Dimas has been placed in an Earthquake Fault Zone. Thus, no fault rupture hazard is anticipated along the fault traces that pass through the Cities. (See Appendix E-map 7)

Ground Shaking

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter. Buildings on poorly consolidated and thick soils (such as alluvium) will typically see more damage than buildings on consolidated soils and bedrock.

The entire City of La Verne and San Dimas is vulnerable to strong ground shaking during an earthquake. The shaded contour lines indicate relative intensity of the shaking throughout the City. These contours represent generalized depictions of peak ground acceleration, and were developed by the USGS.

Probabilistic Seismic Hazards Mapping
Ground Motion

Longitude	-117.745
Latitude	34.044

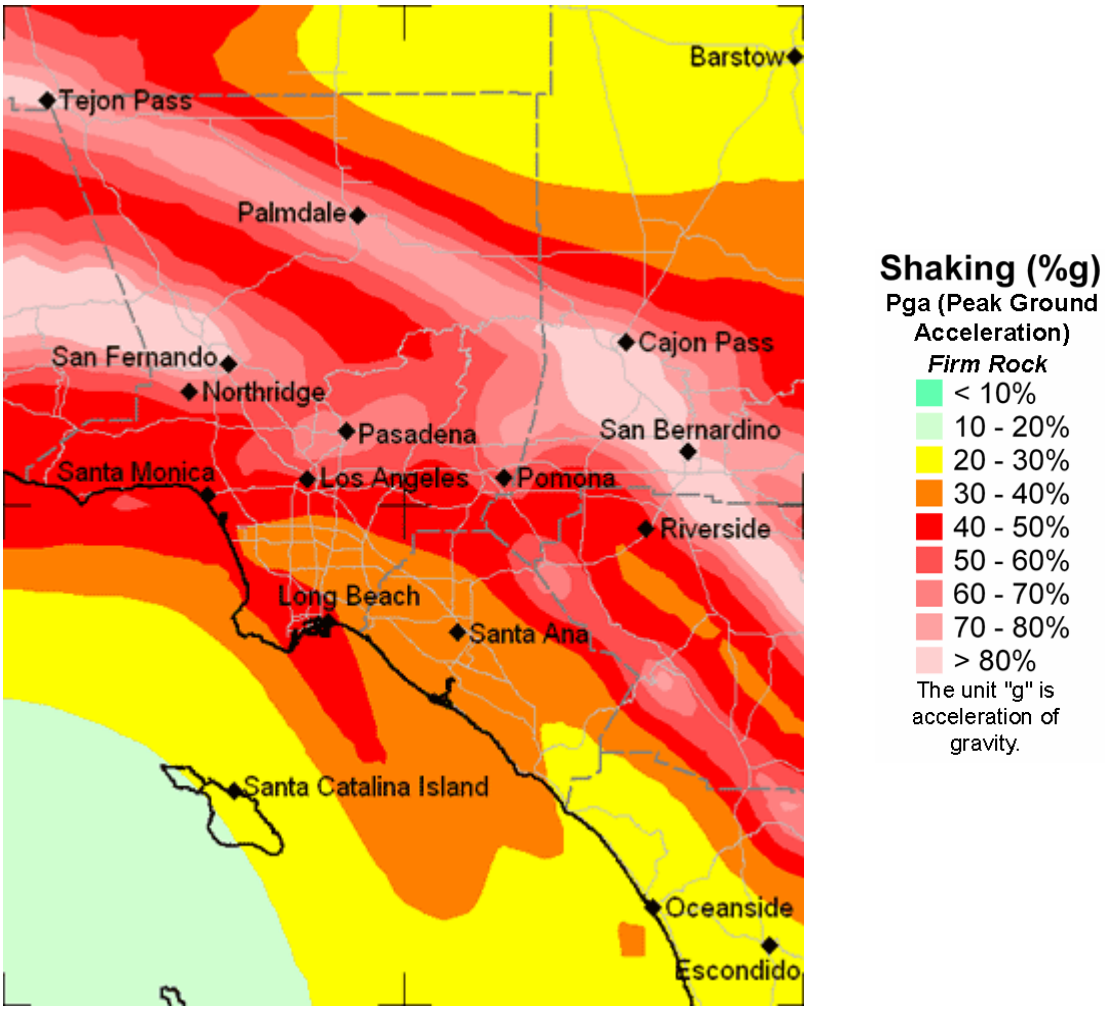
User Selected Site

Ground Motions for User Selected Site

Ground motions (10% probability of being exceeded in 50 years) are expressed as a fraction of the acceleration due to gravity (g). Three values of ground motion are shown, peak ground acceleration (Pga), spectral acceleration(Sa) at short (0.2 second) and moderately long (1.0 second) periods. Ground motion values are also modified by the local site soil conditions. Each ground motion value is shown for 3 different site conditions: firm rock (conditions on the boundary between site categories B and C as defined by the building code), soft rock (site category C) and alluvium (site category D).

Ground Motion	Firm Rock	Soft Rock	Alluvium
Pga	0.542	0.542	0.542
Sa 0.2 sec	1.281	1.281	1.281
Sa 1.0 sec	0.476	0.57	0.648

NEHRP Soil Corrections were used to calculate Soft Rock and Alluvium. Ground Motion values were interpolated from a grid (0.05 degree spacing) of calculated values. Interpolated ground motion may not equal values calculated for a specific site, therefore these values are not intended for design or analysis.



Ground shaking intensity in the District increases from a southwest to northeast direction. This model assumes that the entire District is underlain by alluvial soil, which is less resistant to shaking than other soil types. Although the majority of La Verne and San Dimas is located on alluvial soils, transported from the San Gabriel Mountains the north, portions are located on more stable soil conditions. The San Jose and Puente Hills are situated on bedrock, and consequently would experience less ground movement than is illustrated here.

Although the probability of the District facilities are subject to damage due to ground shaking, the most intense ground shaking is expected to take place in the east portion of the District. Several public and private schools are located here. Bonita High School, Roynon Elementary, Ramona Middle School and Grace Miller Elementary, Allen Elementary, Damien High School and Holy Name of Mary Catholic Elementary are located in this identified area. All District facilities in this area meet compliance requirements for public schools buildings.

Ground Shaking Assessment

Approximately 7,979 residential units in La Verne will be affected by ground shaking in and around the fault zones identified in Appendix E-map 7. The ground shaking potential within the City of La Verne is similar to that expected from areas surrounding the Sierra Madre-Cucamonga Fault Zone. It is an important factor in the design of mid-rise structures, medium to heavy industrial structures, and critical facilities. More typical structures, such as one- and two-story, wood-frame residences typically perform quite well when constructed in accordance with the latest building codes. Considerable ground shaking could occur in proximity to the Sierra Madre-Cucamonga Fault Zone during a maximum probable event. The probability of considerable ground shaking emphasizes the importance of seismic considerations in the design of critical structures.

Ground Surface Rupture Assessment

Ground surface ruptures could damage approximately 3,595 residential units in northern La Verne and total $460 million of estimated improvement value. Faults in the northern portion of the City of La Verne and the Indian Hill Fault are components of the active Sierra Madre-Cucamonga Fault Zone. The City should establish a 1/8 mile wide Geologic Hazard Special Studies Zone along theses faults. The faults with recommended zones for special study are shown on map 7. Study of geologic data within these zones, subsurface trenching across the entire width of such a zone within any property, will serve two purposes. The studies will provide accurate fault locations and they will provide information on the occurrence of movement and/or recurrence interval of movement along them. The information is important to properly determine the hazard of surface rupture for proposed developments.

Where clear evidence of fault activity is absent, or where accurate fault location data is obtained by trenching or other means, such requirements should be left to the discretion of the Registered Geologist (R.G.) or Certified Engineering Geologist (C.E.G.) of record, or to the discretion of a City appointed R.G. or C.E.G.

Risk Assessment – Surface Rupture

There are many clusters of faults zones in north La Verne (north of Baseline Road) and approximately **nineteen** separate faults lines within these clusters in the northern portion of the City (north of Baseline Road). In this portion of the City, there are approximately 3,595 residential units with an estimated improvement value of $460 million. The following District's sites are located in the area: La Verne Heights Elementary and Oak Mesa Elementary.

The southern portion of the City (south of Foothill Boulevard and north of Arrow Highway) contains only one notable fault zone which transects the entire width of the City according to map 7. (See Appendix E). There are approximately 2,848 residential units in this fault zone area with an estimated improvement value of $305,497,048. The following District's sites are located in the area: Bonita High School, Ramona Middle School, Grace Miller Elementary, Allen Elementary and Roynon Elementary.

The estimated improvement values were reached by dividing north La Verne into several different neighborhoods. The number of residential units in each zone was counted. A random sampling of residential units was down using the Los Angeles County Assessor's information from win2data. Then the median estimated improvement value of the sample for each neighborhood was then multiplied by the number of residential units in that neighborhood. The total estimated improvement values of each neighborhood were then added to find the total estimated improvement value of the portions of La Verne that could potentially be affected by surface ruptures.

Earthquake-Induced Landslides

Landslides are secondary earthquake hazards that can occur from ground shaking. They can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake.

The Northridge earthquake of 1994 provides an example of the serious and damaging effects of landslides. As a result of the magnitude 6.7 earthquake more than 11,000 landslides occurred over an area of almost 400 square miles. The landslides destroyed dozens of homes, blocked roads, and damaged oil-filed infrastructure. They indirectly caused deaths from Coccidioidomycosis, (valley fever) the spore of which was released from the soil during landslide activity and blown towards populated coastal areas.

Many communities in Southern California have a high likelihood of encountering such risks, especially in areas with steep slopes. In the District, the risk of damage due to landslides is confined to parts of North San Dimas, North La Verne and around the Puddingstone reservoir and South of Arrow Highway. These areas are delineated by the USGS, and depicted in map 2. Although some of the susceptible areas have residential development, most of them are located in designated open space.

In the landslide-prone areas that are developed, the risk of a damaging earth flow is even greater. Although landslides are natural geological process in the hills around the District and residential developments in these areas exacerbate the risk of landslide hazards. Grading for road construction and development can increase slope steepness and contribute to the speed and severity of landslides. Grading and construction can also decrease the stability of a hill slope by adding weight to it top, removing support at the base of the slope, and increasing water content.

Other human activities effecting landslides include: excavation, drainage and groundwater alterations, and changes in vegetation. The District has no school sites within the risk area represented in map 2.

Landslide Building/Zoning Codes

The City of La Verne Municipal Code addresses development on steep slopes in Chapter 18.68. This chapter outlines standards for steep slope hazard areas on slopes of 25% or more. Generally, the ordinance requires a geotechnical study for developments within an area where slopes in excess of 25% exists and prohibits development, including grading, on slopes of 25% or greater. More detailed surface and subsurface investigations shall be warranted if indicated by preliminary engineering and geologic studies. This may include soils, vegetation, geologic formations, and drainage patterns. Site evaluations may also occur where stability might be lessened by proposed grading/filling or land clearing.

Historic Southern California Landslides

1928 St. Francis Dam failure
Los Angeles County, California. The dam gave way on March 12, and its waters swept through the Santa Clara Valley toward the Pacific Ocean, about 54 miles away. Sixty-five miles of valley was devastated, and over 500 people were killed. Damages were estimated at $672.1 million (year 2000 dollars).

1956 Portuguese Bend, California
Cost, $14.6 million (2000 dollars) California Highway 14, Palos Verdes Hills. Land use on the Palos Verdes Peninsula consists mostly of single-family homes built on large lots, many of which have panoramic ocean views. All of the houses were constructed with individual septic systems, generally consisting of septic tanks and seepage pits. Landslides have been active here for thousands of years, but recent landslide activity has been attributed in part to human activity. The Portuguese Bend landslide began its modern movement in August 1956, when displacement was noticed at its northeast margin. Movement gradually extended downslope so that the entire eastern edge of the slide mass was moving within 6 weeks. By the summer of 1957, the entire slide mass was sliding towards the sea.

1958-1971 Pacific Palisades, California
Cost, $29.1 million (2000 dollars) California Highway 1 and house damaged.

1961 Mulholland Cut, California
Cost, $41.5 million (2000 dollars) On Interstate 405, 11 miles north of Santa Monica, Los Angeles County.

1963 Baldwin Hills Dam Failure.
On December 14, the 650 foot long by 155 foot high earth fill dam gave way and sent 360 million gallons of water in a fifty foot high wall cascading onto the community below, killing five persons, and damaging 50 million (1963 dollars) of dollars in property.

1969 Glendora, California
Cost, $26.9 million (2000 dollars) Los Angeles County, 175 houses damaged, mainly by debris flows.

1969 Seventh Ave., Los Angeles County, California
Cost, $14.6 million (2000 dollars) California Highway 60.

1970 Princess Park, California
Cost, $29.1 million (2000 dollars) California Highway 14, 10 miles north of Newhall, near Saugus, northern Los Angeles County.

1971 Upper and Lower Van Norman Dams, San Fernando, California
Earthquake-induced landslides Cost, $302.4 million (2000 dollars). Damage due to the February 9, 1971, magnitude 7.5 San Fernando, California, earthquake. The earthquake of February 9 severely damaged the Upper and Lower Van Norman Dams.

1971 Juvenile Hall, San Fernando, California
Landslides caused by the February 9, 1971, San Fernando, California, earthquake Cost, $266.6 million (2000 dollars). In addition to damaging the San Fernando Juvenile Hall, this 1.2 km-long slide damaged trunk lines of the Southern Pacific Railroad, San Fernando Boulevard, Interstate Highway 5, the Sylmar, California, electrical converter station, and several pipelines and canals.

1977-1980 Monterey Park, Repetto Hills, Los Angeles County, California
Cost, $14.6 million (2000 dollars) 100 houses damaged in 1980 due to debris flows.

1978 Bluebird Canyon Orange County
California October 2, cost, $52.7 million (2000 dollars) 60 houses destroyed or damaged. Unusually heavy rains in March of 1978 may have contributed to initiation of the landslide. Although the 1978 slide area was approximately 3.5 acres, it is suspected to be a portion of a larger, ancient landslide.

1978-1979, 1980 San Diego County, California
Experienced major damage from storms in 1978, 1979, and 1979-80, as did neighboring areas of Los Angeles and Orange County, California. One hundred and twenty landslides were reported to have occurred in San Diego County during these 2 years. Rainfall for the rainy seasons of 78-79 and 79-80 was 14.82 and 15.61 inches (37.6 and 39.6 cm) respectively, compared to a 125-year average (1850-1975) of 9.71 inches (24.7 cm). Significant landslides occurred in the Friars Formation, a unit that was noted as slide-prone in the Seismic Safety Study for the City of San Diego. Of the nine landslides that caused damage in excess of $1 million, seven occurred in the Friars Formation, and two in the Santiago Formation in the northern part of San Diego County.

1979 Big Rock, California, Los Angeles County
Cost, approximately $1.08 billion (2000 dollars), California Highway 1 rockslide.

1980 Southern California slides
$1.1 billion in damage (2000 dollars) Heavy winter rainfall in 1979-90 caused damage in six Southern California counties. In 1980, the rainstorm started on February 8. A sequence of 5 days of continuous rain and 7 inches of precipitation had occurred by February 14. Slope failures were beginning to develop by February 15 and then very high-intensity rainfall occurred on February 16. As much as 8 inches of rain fell in a 6 hour period in many locations. Records and personal observations in the field on February 16 and 17 showed that the mountains and slopes literally fell apart on those 2 days.

1983 San Clemente, California, Orange County
Cost, $65 million (2000 dollars), California Highway 1. Litigation at that time involved approximately $43.7 million (2000 dollars).

1983 Big Rock Mesa, California
Cost, $706 million (2000 dollars) in legal claims condemnation of 13 houses, and 300 more threatened rockslide caused by rainfall

1994 Northridge, California earthquake landslides
As a result of the magnitude 6.7 Northridge, California, earthquake, more than 11,000 landslides occurred over an area of 10,000 km^2. Most were in the Santa Susana Mountains and in mountains north of the Santa Clara River Valley. Destroyed dozens of homes, blocked roads, and damaged oil-field infrastructure. Caused deaths from Coccidioidomycosis (valley fever) the spore of which was released from the soil and blown toward the coastal populated areas. The spore was released from the soil by the landslide activity.

March 1995 Los Angeles and Ventura Counties, Southern California
Above normal rainfall triggered damaging debris flows, deep-seated landslides, and flooding. Several deep-seated landslides were triggered by the storms, the most notable was the La Conchita landslide, which in combination with a local debris flow, destroyed or badly damaged 11 to 12 homes in the small town of La Conchita, about 20 km west of Ventura. There also was widespread debris-flow and flood damage to homes, commercial buildings, and roads and highways in areas along the Malibu coast that had been devastated by wildfire 2 years before.

Liquefaction

The phenomenon of liquefaction occurs when ground shaking causes wet granular soils to change from a solid state to a liquid state. This results in the loss of soil strength and the soil's ability to support weight. Building and their occupants are at risk when the ground can no longer support these structures. The District is one of many Districts and communities in Southern California that are built on an ancient river bottom and has sandy soil. In some cases this ground may be subject to liquefaction, depending on the depth of the water table.

The California Geological Survey identifies and maps areas susceptible to liquefaction in the District. The District has three sites that fall within a zone that may be susceptible to liquefaction. These areas generally occur at the base of the hills. The District. has three sites: Shull Elementary, Vista School and Gladstone Elementary. (See map 2). Since the settlement of the City of La Verne in the 1800's, there **has not** been any recorded instances of liquefaction associated with seismic activity.

Liquefaction areas/Zoning Codes

In liquefaction areas, no special codes have been developed by the City of La Verne. The City uses the Los Angles County Grading Code, which requires a geologic study and recommendation by a geologist as to foundation design. Secondary earthquake hazards, such as liquefaction, flow land sliding, and seismically induced dynamic settlement are generally associated with relatively high intensities of shaking, shallow ground water conditions, and the presence of loose, sandy soils or alluvial deposits. Because the City is likely to be subject to moderate to strong seismic shaking, the potential for liquefaction will be a function of the presence of shallow ground water in conjunction with loose, sandy deposits. This set of conditions is most likely to occur locally in canyon bottom areas and in the flatter, southerly portion of the District. An earthquake event along the Sierra Madre-Cucamonga Fault Zone might produce localized effects of this type.

California Earthquake Mitigation Legislation

California is painfully aware of the threats it faces from earthquakes. Dating back to the 19th century, Californians have been killed, injured, and lost property as a result of earthquakes. As the State's population continues to grow, and urban areas become even more densely built up, the risk will continue to increase. For decades the Legislature has passed laws to strengthen the built environment and protect the citizens. Table 3-3 provides a sampling of some of the 200 plus laws in the State's codes.

The California Seismic Safety Commission (CSSC) prepared the California Earthquake Loss Reduction Plan to fulfill the requirements of the California Earthquake Hazards Reduction Act of 1986 (Government Code §8870, et seq.). Numerous organizations and individuals participated in the development of the plan, which reflects the state of the art in seismic hazard mitigation techniques and is used as a tool to evaluate potential initiatives to reduce the impact of future earthquakes.

Table 3-3: Partial List of the Over 200 California Laws on Earthquake Safety	
Government Code Section 8870-8870.95	Creates Seismic Safety Commission.
Government Code Section 8876.1-8876.10	Established the California Center for Earthquake Engineering Research.
Public Resources Code Section 2800-2804.6	Authorized a prototype earthquake prediction system along the central San Andreas fault near the City of Parkfield.
Public Resources Code Section 2810-2815	Continued the Southern California Earthquake and Bay Area Regional Earthquake Preparedness Projects.
Health and Safety Code Section 16100-16110	The Seismic Safety Commission and State Architect, will develop a state policy on acceptable levels of earthquake risk for new and existing state-owned buildings.
Government Code Section 8871-8871.5	Established the California Earthquake Hazards Reduction Act of 1986.
Health and Safety Code Section 130000-130025	Defined earthquake performance standards for hospitals.
Public Resources Code Section 2805-2808	Established the California Earthquake Education Project.
Government Code Section 8899.10-8899.16	Established the Earthquake Research Evaluation Conference.
Public Resources Code Section 2621-2630 2621.	Established the Alquist-Priolo Earthquake Fault Zoning Act.
Government Code Section 8878.50-8878.52 8878.50.	Created the Earthquake Safety and Public Buildings Rehabilitation Bond Act of 1990.
Education Code Section 35295-35297 35295.	Established emergency procedure systems in kindergarten through grade 12 in all the public or private schools.
Health and Safety Code Section 19160-19169	Established standards for seismic retrofitting of unreinforced masonry buildings.
Health and Safety Code Section 1596.80-1596.879	Required all child day care facilities to include an Earthquake Preparedness Checklist as an attachment to their disaster plan.
Source: http://www.leginfo.ca.gov/calaw.html	

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides.[i] The State Department of Conservation operates the Seismic Mapping Program for California. Extensive information is available at their website: http://gmw.consrv.ca.gov/shmp/index.htm

Earthquake Education

Earthquake research and education activities are conducted at several major universities in the Southern California region, including Cal Tech, USC, UCLA, UCSB. And UCI. The local clearinghouse for earthquake information is the Southern California Earthquake Center located at the University of Southern California, Los Angeles, CA 90089, Telephone: (213) 740-5843, Fax: (213) 740-0011, Email: SCEinfo@usc.edu, Website: http://www.scec.org. The Southern California Earthquake Center (SCEC) is a community of scientists and specialists who actively coordinate research on earthquake hazards at nine core institutions, and communicate earthquake information to the public. SCEC is a National Science Foundation (NSF) Science and Technology Center and is co-funded by the United States Geological Survey (USGS).

In addition, Los Angeles County along with other Southern California counties, sponsors the Emergency Survival Program (ESP), an educational program for learning how to prepare for earthquakes and other disasters. The District has a very active emergency preparedness program that include earthquake drills and periodic disaster response team exercises and an established evacuation plan with the San Dimas Sheriff's Department

Land and Development

Development in Southern California from the earliest days 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 sprung up everywhere and within a few decades the central basin of Los Angeles County was nearly built out. This pushed new development further and further away from the urban center.

Both cities General Plans addresses the use and development of private land, including residential and commercial areas. The plans are the cities most important tools in addressing environmental challenges including transportation and air quality, growth management, conservation of natural resources, clean water, and open spaces.

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.

Aside from above mentioned codes, both cities Department of Building and Safety enforces codes pertaining to earthquake hazards. These codes included updated seismic safety standards. Both cities control land use and development through regulations to reduce seismic risk in areas known to have natural hazards.

Building Codes

Implementation of earthquake mitigation policy most often takes place at the local government level. The City of La Verne and the City of San Dimas Departments of Building and Safety enforces building codes pertaining to earthquake hazards. Currently, both cities have adopted the Los Angeles County 2002 Building Code (2001 California Building Code.)

Both cities Planning Department enforces the zoning and land use regulations relating to earthquake hazards. Generally, these codes seek to discourage development in areas that could be prone to flooding, landslide, wildfire and/or seismic hazards; and where development is permitted, that the applicable construction standards are met. Developers in hazard-prone areas may be required to retain a qualified professional engineer to evaluate level of risk on the site and recommend appropriate mitigation measures.

The Building Code (2002 Los Angeles County Building Code) sets the minimum design and construction standards for new buildings. Both cities have adopted the most recent seismic standards in their building codes, which requires that new buildings be built at a higher seismic standard. Both cities requires that site-specific seismic hazard investigations be performed for new essential facilities, major structures, hazardous facilities, and special occupancy structures such as schools, hospitals, and emergency response facilities.

The following sections of the CBC address the earthquake hazard:

- 1605.1: Distribution of Horizontal Sheer;
- 1605.2: Stability against Overturning
- 1626: Seismic;
- 1605.3: Anchorage;
- 1610: Earthquake Loads

1632, 1633, 1649, 1650, 1651, 1652 (Volume2) deal with specific earthquake hazards

Every school in the Bonita Unified School District will receive major repairs and upgrades as a result of our general obligation bond that was approved by voters as Measure C on March 2, 2004 in the amount of $56.4 million. The list of improvements is based on a needs study, conducted from input from parents, teachers, support staff, and the principal at each school. District wide, the goal is to bring all campuses up to current building codes for safety and accessibility, as well as to ensure a clean, comfortable and positive learning environment for all students. The District has approved agreements with 2 architectural firms to provide engineering services related to the modernization of our facilities. Architectural services are necessary to develop site-specific drawings and plans and specifications for the Division of State Architect approval.

Modernization projects may include interior infrastructure, technology and code compliance site work. Examples of such modernization projects include emergency lighting, automatic fire alarm systems, program bell systems, disabled access upgrades, electrical, gas or plumbing upgrades, etc.

FLOOD HAZARD DESCRIPTION

The risk of disastrous flooding in the District is relatively small, when compared to the potential for earthquake or wildfire damage to the areas to the north of the District. However, the potential for a major flood event still exists within and is an important hazard to be addressed in the plan. Potential flood events can be categorized by source:storm related and dam inundation.(See Appendix E-map 3)

Storm Related Flooding

As part of its statutory responsibilities to carry out the National Flood Insurance Program, the Federal Emergency Management Agency (FEMA) has mapped most of the flood risk areas with in the United States. Most communities with a one percent chance of a flood occurring in any given year (100-year flood) have a floodway depicted on a Flood Insurance Rate Map (FIRM). FEMA conducted Flood Insurance Studies of the region from 1970s and early 1980s.

FEMA mapped the 100 -year and 500-year floodplains through the Flood Insurance Study (FIS) in conjunction with the United States Army Corps of Engineers (USACE) in August of 1987. There were previous studies done, including a Housing and Urban Development (HUD) study, which mapped the floodplain in March of 1978. The county has updated portions of the USACE and FEMA maps through smaller drainage studies in the county since that time.

According to FEMA documentation, the City of La Verne is designated as Flood Zone D, which is an area consider with no flood hazard and the City of San Dimas has three zone designations, A9, B and C. Flood Zone A9 , which defined as subject to flooding in a 100 year storm, covers a small stretch of the San Dimas Canyon Wash south of Golden Hills Road. Areas included in Flood Zone B, which means they could be affected in a 100-500 year storm, are located along the San Dimas Canyon Wash and just south and west of the Foothill Freeway north of Arrow Highway. The Balance of the City is within a Flood Zone C, designation which is defined as subject to minimal flooding. Both cities have developed several miles of large flood control channels, sufficient in size to provide protection from mayor floods, and an extensive network of local storm drains.

Dam Inundation

The grater risk of injury and property damage to the District and the communities is the hazard of flooding due to dam inundation, although the likelihood of occurrence is vastly lower. Several dams are located in the immediate vicinity with potential to inundate portions of the communities in the event of dam failure.

Both communities and the District are situated in an alluvial fan that gently slopes in a westward direction towards San Dimas. The alluvial fan is bordered on the north by the San Gabriel Mountains and on the south by the San Jose Hills. The alluvial materials were deposited by the many intermittent streams that drain the southern slopes of the San Gabriel Mountains. Four major streams drain from the San Gabriel Mountains and flow into both communities. These include the San Dimas Creek, Marshall Canyon Creek, Live Oak Creek, and Thompson Creek.

There is no history of any significant flooding or damage caused by any of the main creeks in the communities. Creeks flow through the Cities in canyons, then into debris basins, which outlet into concrete channels and from there into reservoir/lake with a controlled outlet structure.

The San Dimas Creek system, most of which is in the City of San Dimas to the west, is the largest in terms of drainage and watershed area. Smaller secondary drainage systems that flow into San Dimas Creek include: Sycamore Canyon, Ham Canyon, Lodi Canyon, West Fork, East Fork, Wildwood Canyon and Wolfskill Canyon, most of which are not located in the City of La Verne. At the base of the mountains, San Dimas Creek flows in a westerly direction in the City of San Dimas.

The Marshall Canyon Creeks and Live Oak Creek drainage system include two separate streams that drain Marshall Canyon. These streams flow in a southwesterly direction as they enter La Verne. Several smaller intermittent streams provide local drainage in the hills between the two larger streams, which eventually empty into Emerald Wash.

Thompson Creek drains the hills north of the City of Claremont, a community adjacent to and east of the City of La Verne, and flows in a southwesterly direction towards urbanized areas of Claremont, Pomona, and La Verne. A channelized section of Thompson Creek forms a portion of La Verne's easternmost border with the City of Pomona. A fifth unconsolidated drainage system is located in the San Jose Hills in the southern portion of the City of La Verne. This runoff flows into the low-lying areas of La Verne where Puddingstone Reservoir and Brackett Airport are now located.

The natural drainage of the cities and the surrounding areas have been significantly altered due to increased urbanization. Natural drainage courses in the area have been altered with construction of dams, retention basins, and channels. Also, as development has occurred, local runoff has increased due to the extensive use of impervious materials.

Although the scope of damage from a possible dam breach could be widespread, the potential for such a breach is minimal. The extent and duration of flooding would vary according to the nature of the dam breach and the storage volume. As dam failure this is an unlikely event, and flooding damage due to precipitation is minimal and localized in both cities, all of the impacts from flooding are rated low and medium. (See Appendix E map 3)

Both cities uses building codes, zoning codes, and various planning strategies to address the goals which aims at restricting development in areas of known hazards, and applying the appropriate safeguards. Also, Both cities have adopted the 1991 Los Angeles County Department policy on levels of flood protection. This policy contains the Federal Flood Insurance Agency (FIA) protection standard that require the finish floor elevation of proposed new dwellings be a minimum of 1 foot above the water surface elevation of a 100-year flood.

Acquisition and Protection of Open Space in the Floodplain

Current efforts to increase public open space in the communities have been paired with the need to restore and preserve natural systems that provide wildlife habitat and help to mitigate flood events. Public parks and publicly owned open spaces can provide a buffer between flood hazards and private property. The La Verne Land Conservancy (LVLC) was formed in 2002 to acquire private land to protect developable properties and open space.

The Flood Loss Statistics from NFIP are:

FLOOD LOSS STATISTICS FROM NFIP FOR THE STATE OF CALIFORNIA
(Reference source: http://www.fema.gov/nfip/10400312.shtm#06)

From January 1, 1978 to December 31, 2003

COMMUNITY NAME	TOTAL LOSSES	CLOSED LOSSES	OPEN LOSSES	CWOP LOSSES	TOTAL PAYMENTS
LA VERNE, CITY OF	6	3	0	3	21,907.55
SAN DIMAS, CITY OF	7	4	0	3	9,920.78

Historic Flooding in Los Angeles County

There are a number of rivers in the Southern California region, but the river with the best recorded history is the Los Angeles River. The flood history of the Los Angeles River is generally indicative of the flood history of much of Southern California.

Records show that since 1811, the Los Angeles River has flooded 30 times, on average once every 6.1 years. But averages are deceiving, for the Los Angeles basin goes through periods of drought and then periods of above average rainfall. Between 1889 and 1891 the river flooded every year, and from 1941 to 1945, the river flooded 5 times. Conversely, from 1896 to 1914, a period of 18 years, and again from 1944 to 1969, a period of 25 years, the river did not have serious floods.

The District is 20 miles east of Los Angeles, which is far enough away as to not be affected by the heavy rains that brought flooding to the Los Angeles River system. While the towering mountains give the Los Angeles region its spectacular views, they also wring a great deal of rain out of the storm clouds that pass through. Because the mountains are so steep, the rainwater moves rapidly down the slopes and across the coastal plains on its way to the ocean. In the District the contributory drainage areas are small enough and the channel systems are adequate enough to reduce the flooding hazards.

Table 3-4 Major Floods of the Los Angeles River

1811	Flooding
1815	Flooding
1825	L.A. River changed its course back from the Ballona wetlands to San Pedro
1832	Heavy flooding
1861-62	Heavy flooding. Fifty inches of rain falls during December and January.
1867	Floods create a large, temporary lake out to Ballona Creek.
1876	The Novician Deluge
1884	Heavy flooding causes the river to change course again, turning east to Vernon and then southward to San Pedro.
1888-1891	Annual floods
1914	Heavy flooding. Great damage to the harbor.

1921	Flooding
1927	Moderate flood
1934	Moderate flood starting January 1. Forty dead in La Canada.
1938	Great County-wide flood with 4 days of rain. Most rain on day 4.
1941-44	L.A. River floods five times.
1952	Moderate flooding
1969	One heavy flood after 9 day storm. One moderate flood.
1978	Two moderate floods
1979	Los Angeles experiences severe flooding and mudslides.
1980	Flood tops banks of river in Long Beach. Sepulveda Basin spillway almost opened.
1983	Flooding kills six people.
1992	15 year flood. Motorists trapped in Sepulveda basin. Six people dead.
1994	Heavy flooding
Sources: http://www.lalc.k12.ca.us/target/units/river/tour/hist.html and (http://www.losangelesalmanac.com/topics/History/hi01i.htm)	

The Santa Monica, Santa Susana and Verdugo mountains, which surround three sides of the Los Angeles valley seldom reach heights above three thousand feet. The western San Gabriel Mountains, in contrast, have elevations of more than seven thousand feet. These higher ridges often trap eastern-moving winter storms. Although downtown Los Angeles averages just fifteen inches of rain a year, some mountain peaks in the San Gabriel receive more than forty inches of precipitation annually.

Naturally, this rainfall moves rapidly down stream, often with severe consequences for anything in its path. In extreme cases, flood-generated debris flows will roar down a canyon at speeds near 40 miles per hour with a wall of mud, debris and water tens of feet high. In Southern California, stories of floods, debris flows, persons buried alive under tons of mud and rock and persons swept away to their death in a river flowing at thirty-five miles an hour are without end. No catalog of chaos could contain all the losses suffered by man and his possessions from the region's rivers and streams.

WILDFIRE HAZARD DESCRIPTION

Large fires have been part of the Southern California landscape for millennia. Written documents reveal that during the 19th century human settlement of southern California altered the fire regime of coastal California by increasing the fire frequency. This was an era of very limited fire suppression, and yet like today, large crown fires covering tens of thousand of acres were not uncommon. One of the largest fires in Los Angeles County (60,000 acres) occurred in 1878, and the largest fire in Orange County's history, in 1889, was over a half million acres.

Even though fires are a natural part of the ecosystem in Southern California, wildfires present a substantial hazard to life and property in communities near a wild land/urban interface. Such a areas built within or adjacent to hillsides and mountainous areas, with residences in close proximity to large swaths of open space. Areas in La Verne and San Dimas that are threatened by wildfire hazards are mapped by OES and FEMA. (See Appendix E map 4).

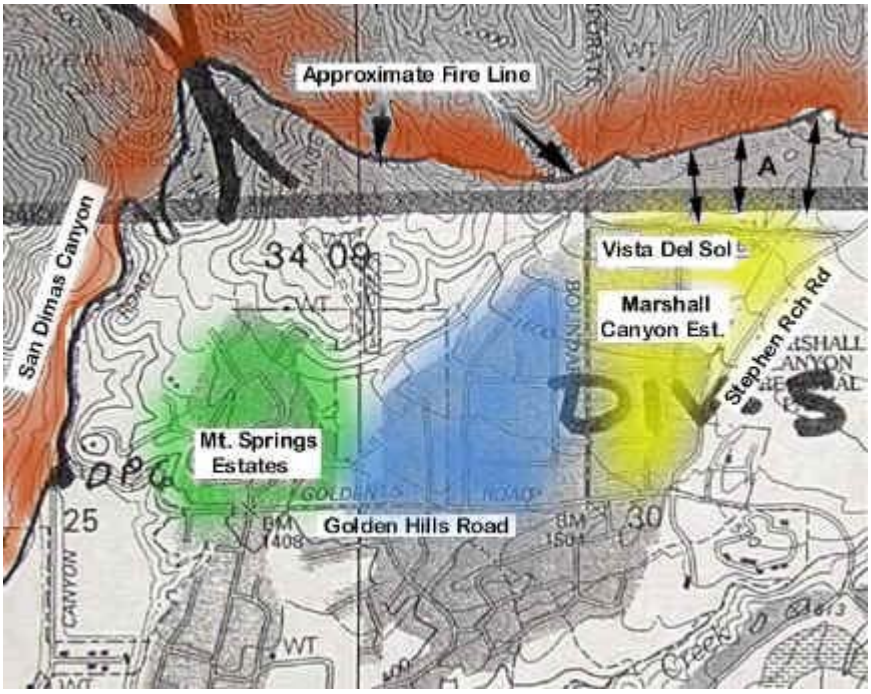
Topography influences the movement of air, thereby directing a fire course. For example, if the percentage of uphill slope doubles, the rate of spread in wildfire will likely double. Gulches and canyons can funnel air and act as chimneys, which intensify fire behavior and cause the fire to spread faster. Solar heating of dry, south-facing slopes produces up slope drafts that can complicate fire behavior. Unfortunately, hillsides with hazardous topographic characteristics are also desirable residential areas in many communities. This underscores the need for wildfire hazard mitigation and increased education and outreach to homeowners living in interface areas.

As population surge and the demand for housing increases, development is pushed further into open space areas. The increase interface between urban/suburban areas and the open spaces has produced a significant increase in threats to life and property from fires and has pushed existing fire protection systems beyond original or current design and capability. Many property owners in the hazard area are not aware of the severity of the problems and threats they face. Therefore, many owners have done very little do manage or offset fire hazards or risks on their own property.

Both cities Fire Prevention Bureau uses the 2000 Urban-Wildland Interface Code as a general guideline. All new construction is required to have fire resistant building materials for structures, boxed-in eaves, fuel modification zones ranging from 100-300 feet from structures, and residential fire sprinklers. In addition, all new construction requires adequate access for fire and other emergency vehicles and approval of the Fire Prevention Bureau. Fuel modification zones are enforced annually by the Fire Prevention Bureau**.** All District sites comply with zoning ordinance, DSA, OPSE, Title 8, Title 24 and other state and city regulations.

In the past 20 years, the District and communities were impacted by three major wildfires. Those fires were all started outside city limits and spread toward La Verne and San Dimas. Those fires include: Le Roy's Fire in 1988, Williams Fire in 2002, and the Padua Fire of 2003. Each of those fires were driven by the hot, dry Santa Ana winds. In each instance, the Cities Emergency Operations Centers (EOC) were activated. Structural damage as a result of these fires was minimal in the City of La Verne.

The City of San Dimas suffered damages cause by the Williams Fire on September 2002. This fire destroyed over 37,000 acres of wild lands and some homes, recreation facilities and local canyons were at risk. Following the Williams fire, citizens of both communities were at risk from landslides and debris flows. Fortunately, the cities were successful in mitigating the effects of post-fire hazards through careful and thorough planning.



This is a section of map shows the approximate fire line (red), San Dimas Canyon is on the left, Mountain Springs Estates (green), a section of housing without a fuel modification zone (blue), Marshall Canyon Estates (yellow) and their fuel modification zone in area "A". Sections of the fuel modification zone "A" were set on fire (firing out) to widen the safety margin between the houses and the on-coming fire. When you look at the area now, it appears the fire was stopped in the fuel modification zone where the "firing out" operation took place. However, if the area hadn't been "fired out" the fire would have burned into that area anyway.

Major impact to the District during the fires: classes were interrupted, physical education, football games and others activities that impacted the health and safety of the students were cancel or curtailed. The majority of the District's sites are located in built out areas with defensible space. There is a small risk that the sites may be susceptible to urban related fires.
(See Appendix E-map 4)

Community Wildfire Issues

Each summer, La Verne and San Dimas are reminded of the likely potential for wildfires when the Santa Ana winds blow through the towns. Like many foothill communities, more than half of houses are located within the Very High Fire Hazard Severity Zone designated by the State of California (See Appendix E maps 4 and 8). Hillside properties north of Baseline Boulevard and north of Foothill Boulevard are especially vulnerable to the threat of wildfires. Located within the City's Hillside Overlay Zone, they are required to undertake additional development precautions to aid in the suppression of and prevention of wildfires. Map 4, 8 and 9 shows the high fire hazard severity zone, for both cities and the location of the District sites.

Several hillside neighborhoods are within the extreme fire hazard severity zones identified by forestry and fire officials. In particular, North La Verne, North La Verne Hillside, North San Dimas, to the south highly urbanized areas around Via Verne and Puddingstone Hills are exposed to considerable wildfire hazard. Terrain, fuel loading, climate, water pressure and limited access combine to make this an extremely difficult area in which to control wildfires.

Those developments that were built after the identification of the Hillside Overlay Zone were required to provide additional precautions as described above to aid in the suppression and prevention of wildfires. However, those developments that were built prior to identification of the Hillside Overlay Zone lack the additional precautions required today. In particular, is the Mountain Springs Estates area, located in the northeast area. The Mountain Springs Estates have many similarities to both Bradbury and Padua.

The Mountain Springs Estates, which began developing in 1957, consist of approximately 80 homes within approximately 135 acres. The development was later annexed to LA Verne in 1959. The value of these homes range from approximately $500,000 to $3M. It was developed under Los Angeles County guidelines. The northern section of this community backs up to the Angeles National Forest. The growth surrounding the development consists of heavy fuels that have not burned for 40-60 years. Several homes have limited access due to slope, topography or inadequate roadways and driveways. Limited access compromises defensible space necessary for fire suppression efforts. Additionally, most of the homes have natural and planned landscaping that is 40-50 years old with dense overgrowth of flammable vegetation. Many of the large pine, juniper and eucalyptus trees are overgrown with tall canopies.

Local Programs

In Southern California there are dozens of independent local fire departments as well as large county wide consolidated **Fire Districts**. Although each district or department is responsible for fire related issues in specific geographic areas, they work together to keep Southern California residents safe from fire. Although fire agencies work together to fight urban/wildland interface fires, each separate agency may have a somewhat different set of codes to enforce for mitigation activities.

The fire departments and fire districts provide essential public services in the communities they serve and their duties far surpass extinguishing fires. Most of the fire districts and departments provide other services to their jurisdictions, including Emergency Medical Services who can begin treatment and stabilize sick and injured patients in emergency situations. All of the fire service providers in the county are dedicated to fire prevention and use their resources to educate the public to reduce the threat of the fire hazard, especially in the wildland/urban interface. Fire prevention professionals throughout the county have taken the lead in providing many useful and educational services to Southern California residents, such as:

Home fire safety inspection;
Assistance developing home fire escape plans;
Business Inspections;
Citizen Emergency Response Team (CERT) training;
Fire cause determination;
Counseling for juvenile fire-setters;
Teaching fire prevention in schools;
Coordinating educational programs with other agencies, hospitals and schools; and
Answering citizens' questions regarding fire hazards.

The Bonita Unified School District is well protected by both cities Emergency Disaster Response Teams. The school District is an active member of the teams and participates in various programs that are offer by both cities to the community.

Historic Fires in Southern California

Large fires have been part of the Southern California landscape for a millennia. Written documents reveal that during the 19th century human settlement of southern California altered the fire regime of coastal California by increasing the fire frequency. This was an era of very limited fire suppression, and yet like today, large crown fires covering tens of thousands of acres were not uncommon. One of the largest fires in Los Angeles County (60,000 acres) occurred in 1878, and the largest fire in Orange County's history, in 1889, was over half a million acres.

Table 3-5. Large Historic Fires in California 1961-2003

20 Largest California Wildland Fires (Structures Destroyed)						
	Fire Name	Date	County	Acres	Structures	Deaths
1	Tunnel	October 1991	Alameda	1,600	2,900	25
2	Cedar	October 2003	San Diego	273,246	2,820	14
3	Old	October 2003	San Bernardino	91,281	1,003	6
4	Jones	October 1999	Shasta	26,200	954	1
5	Paint	June 1990	Santa Barbara	4,900	641	1
6	Fountain	August 1992	Shasta	63,960	636	0
7	City of Berkeley	September 1923	Alameda	130	584	0
8	Bel Air	November 1961	Los Angeles	6,090	484	0
9	Laguna Fire	October 1993	Orange	14,437	441	0
10	Paradise	October 2003	San Diego	56,700	415	2
11	Laguna	September 1970	San Diego	175,425	382	5
12	Panorama	November 1980	San Bernardino	23,600	325	4
13	Topanga	November 1993	Los Angeles	18,000	323	3
14	49er	September 1988	Nevada	33,700	312	0
15	Simi	October 2003	Ventura	108,204	300	0
16	Sycamore	July 1977	Santa Barbara	805	234	0
17	Canyon	September 1999	Shasta	2,580	230	0
18	Kannan	October 1978	Los Angeles	25,385	224	0
19	Kinneloa	October 1993	Los Angeles	5,485	196	1
19	Grand Prix	October 2003	San Bernardino	59,448	196	0
20	Old Gulch	August 1992	Calaveras	17,386	170	0
http://www.fire.ca.gov/FireEmergencyResponse/HistoricalStatistics/PDF/20LSTRUCTURES.pdf						

The 2003 Southern California Fires

The fall of 2003 marked the most destructive wildfire season in California history. In a ten day period, 12 separate fires raged across Southern California in Los Angeles, Riverside, San Bernardino, San Diego and Ventura counties. The massive "Cedar" fire in San Diego County alone consumed of 2,800 homes and burned over a quarter of a million acres.

Table 3-6. October 2003 Firestorm Statistics

County	Fire Name	Date Began	Acres Burned	Homes Lost	Homes Damaged	Lives Lost
Riverside	Pass	10/21/03	2,397	3	7	0
Los Angeles	Padua	10/21/03	10,446	59	0	0
San Bernardino	Grand Prix	10/21/03	69,894	136	71	0
San Diego	Roblar 2	10/21/03	8,592	0	0	0
Ventura	Piru	10/23/03	63,991	8	0	0
Los Angeles	Verdale	10/24/03	8,650	1	0	0
Ventura	Simi	10/25/03	108,204	300	11	0
San Diego	Cedar	10/25/03	273,246	2,820	63	14
San Bernardino	Old	10/25/03	91,281	1,003	7	6
San Diego	Otay / Mine	10/26/03	46,000	6	11	0
Riverside	Mountain	10/26/03	10,000	61	0	0
San Diego	Paradise	10/26/03	56,700	415	15	2
Total Losses			749,401	4,812	185	22

Source: http://www.fire.ca.gov/php/fire_er_content/downloads/2003LargeFires.pdf

The 2004 Southern California Fires

The summer of 2004 marked the early destructive wildfire season in Southern California. Starting in the month of July; the Pine Fire, Foothill Fire and Crown Fire in Los Angeles County destroyed 18,026 acres, one residence, seven outbuildings at an estimated cost of $ 10,250,000. The fires did not have any effect on the District since they were located 70 miles North –West from the District.

WINDSTORMS

Severe windstorms can pose a risk to life and property in the region by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes. The most prevalent windstorm in La Verne and San Dimas is attributed to the Santa Ana winds.

Santa Ana winds are generally defined as warm, dry winds that blow from the east or northeast (offshore). These regional winds typically occur from October to March, and occur below the passes and canyons of the coastal ranges of Southern California and in the Los Angeles basin.

This movement is illustrated in Figure 2. These winds often blow with exceptional speed in the Santa Ana Canyon (the canyon from which it derives its name). Forecasters at the National Weather Service offices in Oxnard and San Diego usually place speed minimums on these winds and reserve the use of "Santa Ana" for winds greater that 25 knots as they move through canyons and passes, with gusts to 50 or 60knots.

Figure2

Although the Santa Ana winds themselves can have destructive impacts to trees, power lines, and utility services, the larger danger is the exacerbation of hazardous fire conditions. Severe windstorms can present a very destabilizing effect on the dry brush that covers local hillsides and urban wild land interface areas. When combined with an existing fire, the Santa Ana winds can drive the speed and reach of the flames to far greater levels than could occur with calm wind conditions.

The Cities of La Verne and San Dimas track damages due to windstorms. Reports of dislodged roofs and fallen trees and power lines are common. These are not considered major widespread threats to population and property, but do involve responses from emergency service personnel.

Fallen power lines have potential for most widespread consequences of power outages and fire. It should be noted that falling trees can occasionally cause fatalities and serious structural damage. These potential hazards are rare in occurrence as well as localized.

The California state law requires utility companies to maintain specific clearance between power lines and all vegetation.

Additional information can be found in:

California Public Resource Code Sections 4171, 4291, 4292, 4293
Title 8, Group 3: Articles 12, 13, 36, 37, 38
Title 14 Sections 1250-1258
California Penal Code Section 385
California Public Utilities Commission General Order 95: Rule 35

Local History of Windstorm Events

While the effects of Santa Ana Winds are often overlooked, it should be noted that in 2003, two deaths in Southern California were directly related to the fierce condition. A falling tree struck one woman in San Diego. The second death occurred when a passenger in a vehicle was hit by a flying pickup truck cover launched by the Santa Ana Winds.

Table 3-7 The following Santa Ana wind events were featured in news resources during 2003:	
January 6, 2003 OC Register	"One of the strongest Santa Ana windstorms in a decade toppled 26 power poles in Orange early today, blew over a mobile derrick in Placentia, crushing two vehicles, and delayed Metrolink rail service." This windstorm also knocked out power to thousands of people in northeastern Orange County.
January 8, 2003 CBSNEWS.com	"Santa Ana's roared into Southern California late Sunday, blowing over trees, trucks and power poles. Thousands of people lost power."
March 16, 2003 dailybulletin.com	Fire Officials Brace for Santa Ana Winds - - "The forest is now so dry and so many trees have died that fires, during relatively calm conditions, are running as fast and as far as they might during Santa Ana Winds. Now the Santa Ana season is here. Combine the literally tinder dry conditions with humidity in the single digits and 60-80 mph winds, and fire officials shudder."

Inventory of Assets

The Bonita Unified School District identified four natural hazards - earthquakes, floods, wild fires and wind storms. These hazards were identified through an extensive process that utilized input from the Hazard Mitigation Committees, Community input, City of La Verne, City of San Dimas and the Office of Emergency Services and other governmental jurisdictions The natural hazard that will affect the District directly will be earthquakes.

Earthquake Hazard Assessing Vulnerability

Summary Assessment

History suggest a high probability of occurrence of another damaging earthquake sometime in the next 25 years. With the 1994 Northridge earthquake and the 2003 San Simeon earthquake fresh in the region's memory, it is important to note that they were not the largest earthquakes events possible in the both areas. Damage from other earthquakes indicate that a larger earthquake could have a catastrophic impact on Los Angeles County suggesting high vulnerability. Accordingly, earthquakes are assigned a high risk rating.

Although Appendix E map 1 shows the District in a high vulnerability area, all school sites comply with Division of the State Architect (DSA), Office of Public School Construction (OPSC), California Department of Education (CDE), City of La Verne and City of San Dimas Building Codes with high emphasis on Earthquake Codes and Fire Codes.

Inventory of Assets and Dollar value in Hazard Area

School District Risk Analysis

Comparing the location of District's facilities to the California Geological Survey Map prepared by the Office of Emergency Services in Appendix E – map 1 for the District and Probabilistic Earthquake Shaking Intensity provides a 61% to 70% gravity indicator. That result can then be cross-referenced to the HAZUS software charts to determine a building damage ratio. The District used tables from FEMA documentation 386 series to generated the information for school District facilities, the chart for Single Family Residence Loss Estimation Tables for Reinforced Masonry was used as shown:

Table 3-8 HAZUS Loss Estimation Table

Earthquake Single Family Residence Loss Estimation Tables

PGA (g)	Building Damage Ratio (%)**									
	Wood Frame Construction				Reinforced Masonry				Unreinforced Masonry	
	High*	Moderate*	Low*	Precode*	High*	Moderate*	Low*	Precode*	Low*	Precode*
0.55	11.6	16.1	30.6	36.8	11.5	27.7	43.9	53.1	45.0	55.6
0.50	10.2	14.0	26.0	31.7	9.6	22.8	36.6	46.1	38.5	46.8
0.45	8.7	11.6	21.1	27.1	8.3	19.7	31.7	40.8	34.0	41.2
0.40	6.1	7.6	13.1	16.7	6.1	12.1	18.6	25.1	22.8	28.1
0.35	4.4	6.3	10.1	12.8	4.9	8.8	15.2	20.8	18.9	23.8
0.30	2.9	3.9	7.2	9.4	3.5	6.1	11.4	16.3	15.4	19.7
0.25	2.3	3.2	4.6	6.1	2.4	3.9	8.7	12.4	10.2	14.9
0.20	1.3	1.7	2.8	3.3	1.3	2.5	6.1	9.0	6.5	9.4
0.15	0.7	1.0	1.3	1.8	0.4	1.5	2.4	4.1	3.0	4.3
0.10	0.3	0.4	0.6	0.7	0.3	0.5	0.8	1.1	1.3	2.0
0.07	0.1	0.2	0.3	0.4	0.1	0.2	0.4	0.5	0.6	1.0
0.05	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.5
0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2

PGA (g)	Loss of Function (# of Days)									
	Wood Frame Construction				Reinforced Masonry				Unreinforced Masonry	
	High*	Moderate*	Low*	Precode*	High*	Moderate*	Low*	Precode*	Low*	Precode*
0.55	40	79	195	283	61	246	430	542	459	549
0.50	31	69	159	241	51	198	365	484	399	500
0.45	23	51	119	201	44	169	318	439	356	457
0.40	14	27	68	111	24	95	184	276	238	326
0.35	9	23	47	80	18	67	153	236	201	281
0.30	4	10	30	55	14	46	117	189	161	239
0.25	3	8	17	34	9	26	91	150	104	185
0.20	2	3	9	15	4	16	58	106	64	114
0.15	1	2	3	8	1	8	24	51	26	49
0.10	0	1	1	3	1	2	7	14	10	27
0.07	0	0	1	1	0	1	2	7	6	12
0.05	0	0	0	1	0	0	1	1	1	7
0.03	0	0	0	0	0	0	0	1	1	1

* High, Moderate, Low and Precode refer to the general seismic design level

**Building Damage Ratio = Repair Cost / Replacement Value

Source: HAZUS

Cross-referencing the map to the building damage ratio chart shows a resultant value of 43.9% percent damage estimate to structures in the event of earthquake, and a corresponding estimated loss of function (or occupancy) of approximately 365 days or one year. To provide a more conservative estimate, the loss of functions estimates were further reduced to 183 days, based upon the traditional school calendar.

These values were applied to the total inventory of school District structures, and then to the appraised value of building contents. Finally, cost estimates were derived from loss of function days, determined from the chart against a school District operational budget of $ 72,287,556 based upon students served, since the majority of school District funding is student attendance driven.

The final result, of these complex financial calculations, is a potential damage estimate of
$ 125,397,797 for damages to structures, contents, and functional loss of those facilities for approximately one operational year.

The following spreadsheets, A, B, and C, contain the detailed calculations that support the potential exposure and risk of loss for the District. The detail information can be reviewed in Appendix F.

Worksheet A:
reflects the number of buildings, the appraised value of those structures, and the number of people at risk.

Worksheet B:
continues the analysis by calculating the value of contents and building replacement values for each school site and the district office to determine a daily displacement cost using the FEMA allowed value of $91 per square foot for schools.

Worksheet C:
incorporates all of the prior calculations and combines loss to structures and contents with functional loss to provide both a total cost by site and aggregate potential loss estimate of
$ 125,397,797

SECTION IV

SECTION IV

Mitigation Goals, Objectives and Action Items

Mitigation Goals and Objectives

The goals and objectives which guided the development of the natural hazard mitigation plan are intended to be implemented by the District as funding becomes available. Each goal statement has objectives that provide a more specific outline for actions to be taken by the District and planning committee's. The objectives define actions or results that can be placed into measurable terms, and translated into specific assignments for implementation. Each mitigation corresponds to a specific goal and objective which that action seeks to implement.

The action items are a listing of activities in which the District can be engaged to reduce risk. Each action item includes an estimate of the time line for implementation. Short-term action items are activities that the District 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 Goals and Objectives Framework

The goals and objectives listed here help to guide direction of future activities aimed at reducing risk and preventing loss from natural or man made hazards. Also, they serve as checkpoints as our District begins implementing mitigation action items.

I. PROTECT LIFE AND PROPERTY

***Goal* 1.1: Reduce the potential for life loss, injury, and economic damage to the District's students, staff, and residents of La Verne and San Dimas:**

Objective 1.1.1: Reduce the potential for life loss, injury, and economic damage to the District's students, staff and residents of the Cities of La Verne and San Dimas.
Objective 1.1.2: Increase the ability of the District administration to serve the students and community during and after hazard events through response, recovery and rebuilding, evacuation, monitoring and housing.
Objective 1.1.3: Acknowledge the potential for greater impacts to vulnerable populations and in emergency response and mitigation planning.
Objective 1.1.4: Recognize the emergency disaster preparedness plan to respond to early warning of and response to all life-threatening hazards, such as earthquakes, floods, landslides, wind storms, wildfires, and hazardous materials incidents.

***Goal* 1.2: Protect District's unique character and values from being compromised by hazardous activity or events:**

Objective 1.2.1: Protect the District from being compromised by hazardous activity or events.
Objective 1.2.2: Adopt a plan and identify resources for how the District will be reestablished after a disaster.
*Objective*1.2.3: Designate and modify evacuation routes before, during and after a disaster event.

***Goal* 1.3: Minimize losses to existing property and reduce potential for damage to future development:**

Objective 1.3.1: Coordinate land use plans and regulations to direct development away, or buffer development from, area and site-specific natural hazards.
Objective 1.3.2: Continue facilities maintenance programs, to increase the potential to withstand the impacts of disasters.
Objective 1.3.3: Minimize losses to existing school sites and reduce potential for damage to future development.
Objective 1.3.4: Ensure that new buildings and substantial improvements to existing buildings are governed by and incorporate all appropriate building codes and construction measures to protect them against failure of damage.
Objective 1.3.5: Ensure that structures for vehicles and equipment needed for emergency services operation can withstand impacts. Retrofit or relocate these facilities as, needed.
Objective 1.3.6: Identify critical facilities at risk from natural hazard events.
Objective 1.3.7: Evaluate the District sites for seismic status on all buildings.

2. PUBLIC AWARENESS

***Goal* 2.1: Develop and implement mitigation programs to increase the District and public awareness of the risks associated with natural hazards:**

Objective 2.1.1; Prioritize mitigation programs to increase awareness associated with natural hazard planning.
Objective 2.1.2: Develop and implement mitigation programs to increase students and public awareness of the risks associated with natural hazards.
Objective 2.1.3: Encourage the distribution of information to parents, residents, businesses, and public employees on safety and health precautions to take in advance of and during a disaster.
Objective 2.1.4: Utilize local organizations and community partners in preparedness training and post-disaster assistance.

3. NATURAL SYSTEMS

***Goal* 3.1: Balance natural resource management, and land use planning with natural hazard mitigation to protect life, property, and the environment.**

Objective 3.1.1: Preserve, rehabilitate and enhance natural systems to serve natural hazard mitigation functions where possible, recognizing the characteristics of the District and the Cities of La Verne and San Dimas.
Objective 3.1.2: Minimize potential negative environmental impacts from mitigation efforts.

4. PARTNERSHIPS AND IMPLEMENTATION

***GoaI4.1:* Encourage and support leadership between the District and the Cities of La Verne and San Dimas to promote and implement local hazard mitigation activities.**

Objective 4.1.1: Strengthen communication and coordination with public agencies, citizens, non-profit organizations, business, and industry to ensure support for implementation.
Objective 4.1.2: Provide applicable information, partnership opportunities, and funding resources to assist in implementing mitigation activities.

Objective 4.1.3: Coordinate and integrate natural hazard mitigation activities with local land development planning activities and emergency operations planning.
Objective 4.1.4: Continue developing and strengthening inter-jurisdictional coordination and cooperation in the area of emergency services and post-disaster response programs.
Objective 4.1.5: Maintain partnerships with facilities and institutions with populations that are particularly vulnerable to risks associated with natural hazards, including emergency planning and post-disaster contingency plans.
Objective 4.1.6: Coordinate with utility and transportation providers to establish and maintain early warning systems.
Objective 4.1.7: Periodically review and update the Natural Hazards Mitigation Plan, taking into consideration new hazard information, changes in vulnerabilities and District facilities, and advancements in emergency response and post-disaster services.
Objective 4.1.8: Establish and oversee implementation of the natural hazard mitigation plan.

5. EMERGENCY SERVICES

***Goal* 5.1: Establish mitigation projects for emergency services in the District, to ensure continued operations when the District and the Cities of La Verne and San Dimas are impacted by natural hazard events:**

Objective 5.1.1:Prioritize funding and implementation schedules for improvements needed to ensure continuous and extensive emergency response capabilities.
Objective 5.1.2: Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.
Objective 5.1.3: Coordinate and integrate natural hazard mitigation activities where appropriate, with emergency operations plans and procedures.
Objective 5.1.4: Distribute resources for emergency response around the District sites to ensure accessibility.
Objective 5.1.5: Conduct periodic emergency preparedness drills involving the District and the Cities of La Verne and San Dimas emergency services, other emergency service providers, utility operators, community partners, and institutions with vulnerable populations.

6. PUBLIC PARTICIPATION

***Goal* 6.1: Establish continuous line of communication with the District and the Cities of La Verne and San Dimas, parents, and community:**

Objective 6.1.2: Public input during development of the mitigation plan.
Objective 6.1.3: Public participation to provide additional inputs during meetings and workshops and accessible web link.
Objective 6.1.4: Public meeting for review and comments for final draft of the mitigation plan.
Objective 6.1.5: Continue public involvements and meetings for future plan updates with the District.

Economic Analysis of Mitigation Actions

Benefit/cost analysis and cost-effectiveness analysis are two key tools in evaluating whether or not to implement a mitigation action/project. FEMA uses a benefit/cost analysis to determine if an action/project net benefits exceed net costs. If the ratio is greater than 1, then the mitigation is worth pursuing. FEMA B/C were not perform on these selected actions/projects at this time.

The cost-effectiveness analysis evaluates how best to spend a given amount of funds to achieve a specific goal. This type of analysis, does not necessarily measure costs and benefits in terms of dollars. Determining the economic feasibility of mitigating natural hazards can provide the District's decision – makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative actions/projects. (See Appendix H)

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 other funds are made available through the cities. Action items address multi-hazard (MH) and hazard specific issues.

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. For the Bonita Unified School District, Asst. Superintendent Business Services, Purchasing Director and Facilities Director and Supervisor of Building Trades & General Maintenance will provide the main coordination on behalf of the institution. Additional coordinating organizations may include local, cities, or regional agencies that are capable of or responsible for implementing further activities and programs.

Timeline

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 may be implemented using existing resources and that are within the local jurisdictional agency authority. These items may be implemented 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 federal, state and local 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 District's action items. These constraints unfortunately result from decreased or lack of state and federal funds, increased insurance costs, and a general conditions of the current California economy.

Project Evaluation Worksheets

The District has 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 was necessary for the committee to select the most cost-effective mitigation projects and to further prioritize them.

Hazard Action Items

Hazard action items are those activities that pertain to the hazards in the mitigation plan: earthquakes, flood, fire and wind storms. There are ten hazard action items described below.
Some of these actions may be multi hazard.

SHORT TERM ACTIVITY - MULTI HAZARD # l: Integrate the goals and action items from the Bonita Unified School District Natural Hazard Mitigation Plan into existing regulatory documents and programs, where appropriate.

Ideas for Implementation:

Use the District's mitigation plan and the city's mitigation plan as guidelines for sustainable development in all new construction and development projects according to the hazards that impact the District. Beginning modernization with installation of portable classrooms at Bonita High School on the existing campus. Providing housing that meets all current requirements for student occupancy and meeting all current seismic requirements.

Partner with other organizations and agencies with similar goals to promote Building & Safety Codes that are more disaster resistant.

Coordinating Organization:	BUSD Hazard Mitigation Technical Committee
Time Line:	Ongoing
Plan Goals Addressed:	Partnerships and Implementation: Objective 4.1.1, 4.1.4, 4.1.5, 4.1.7
Constraints:	Limited to time available from District staff.

SHORT TERM ACTIVITY - MULTI HAZARD *# 2*: Identify and pursue funding opportunities to develop and implement District mitigation activities.

Ideas for Implementation:

Allocate available resources and assistance to mitigation projects when possible: and partner with other organizations and agencies, the Cities of La Verne and San Dimas to identify grant programs and foundations that may support mitigation activities.

Coordinating Organization:	BUSD Administration/Business Svs. and Grant Writer
Time line:	Ongoing
Plan Goals Addressed:	Partnerships and Implementation: Objective 4.1.2
Constraints:	Limited to time available from District staff.

SHORT TERM ACTIVITY - MULTI HAZARD # 3: Establish a formal role for the Bonita Unified School District Natural Hazards Mitigation Technical Committee to develop a sustainable process for implementing, monitoring, and evaluating District mitigation activities.

Ideas for Implementation:

Establish clear roles for participants, meeting regularly to pursue and evaluate implementation of mitigation strategies.

Establish measurable standards to evaluate mitigation policies and programs and provide a mechanism to update and revise the mitigation plan.

Monitor hazard mitigation implementation by school site through surveys and other reporting methods.

Develop updates for the Natural Hazards Mitigation Action Plan when presented with new information.

Conduct a full review of the Natural Hazards Mitigation Action Plan every 5 years by evaluating mitigation successes, failures, and areas that were not addressed.

Provide training for the Technical and Steering committee members to remain current on developing issues in the natural hazard.

Coordinating Organization:	BUSD Hazard Mitigation Technical Committee
Time Line:	Ongoing
Plan Goals Addressed:	Partnerships and Implementation: Objective 4.1.8 Public Participation: Objective 6.1.2, 6.1.4, 6.1.5
Constraints:	Limited to time available from District staff.

SHORT TERM ACTIVITY - MULTI HAZARD # 4: Develop public and private partnerships to foster natural hazard mitigation program coordination and collaboration in the Bonita Unified School District.

Ideas for Implementation:

Work with the Cities of La Verne, San Dimas and Los Angeles County to improve our Natural Hazards Mitigation Plan.

Identify all organizations within Bonita Unified School District that have programs or interests in natural hazards mitigation.

Involve private businesses throughout the city in mitigation planning.

Improve communication between Cal Trans, city road departments and applicable agencies to work together to prioritize and identify strategies to deal with road problems.

Coordinating Organization:	BUSD Facilities Department & Technical Committee
Time Line:	Ongoing
Plan Goals Addressed:	Protect Life and Property: Objective 1.2.2 Public Awareness: Objective 2.1.2, 2.1.3, 2.1.4 Public Participation 6.1.5
Constraints:	Limited to time available from District staff.

SHORT TERM ACTIVITY - MULTI HAZARD *# 5:* Develop inventories of at-risk school buildings and facilities and prioritize mitigation projects.

Ideas for Implementation:

Develop strategies to mitigate risk to these facilities, or to utilize alternative facilities should natural hazards events cause damages to the facilities in question.

Coordinating Organization:	BUSD Facilities Department & Technical Committee
Time Line:	1-2 Years
Plan Goals Addressed:	Protect Life and Property: Objective 1.3.3, 1.3.4
Constraints:	May be budgetary limits that can prolong the length of the project.

SHORT TERM ACTIVITY - MULTI HAZARD # 6: Strengthen emergency services preparedness and response by relating with natural hazard mitigation programs, and enhancing community awareness throughout the District.

Ideas for Implementation:

Encourage individual and family preparedness through programs such as safety preparedness training and hands on exercises.

Coordinate the maintenance of emergency transportation routes through communication among the City Roads Department, neighboring jurisdictions, and the California Department of Transportation.

Identify opportunities for partnering with citizens, private contractors, and other jurisdictions and local agencies to increase availability of equipment and manpower for efficiency of response efforts.

Work with Community Planning Organizations (CPO's) and other neighborhood groups to establish community response teams.

Familiarize public officials of requirements regarding public assistance for disaster response.

Coordinating Organization:	BUSD Administration/Business Services BUSD Facilities Department & Technical Committee
Time Line:	Ongoing
Plan Goals Addressed:	Emergency Services: Objective 5.1.2, 5.1.3, 5.1.4, 5.1.5
Constraints:	Limited to time available from District staff.

LONG TERM ACTIVITY - MULTI HAZARD *# 7:* To upgrade and modernize existing structures to current codes for safety; and build new facilities under current building codes.

Ideas for Implementation:

The Bonita Unified School District is in the process of developing plans for modernization and some new construction for both high schools this year following with our middle schools and elementary schools. The intent is to completely modernize all of its operational school sites and facilities to current building standards. This will be accomplished with local general obligation bonds, matching State Bond funding.

Existing structures will be completely modernized under the review and approval of the Office of Public School Construction and Division of State Architect to assure compliance with current building and safety codes to reduce loss to structures and injury. These projects will include the safety requirements such as emergency lighting, fire alarms and other applicable items required for classrooms needed to protect against the elements.

Coordinating Organization:	BUSD Administrative/Business Services and Facilities Department
Time Line:	Ongoing
Plan Goals Addressed:	Protect Life and Property: Objective 1.1.1, 1.3.1, 1.3.3, 1.3.4, 1.3.5
Constraints:	Limited to time available from District staff.

LONG TERM ACTIVITY - MULTI HAZARD *# 8:* Continue to develop, enhance, and implement programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses, schools and facilities.

Ideas for Implementation:

Multi hazard Action Items

Make the Bonita Unified School District Natural Hazards Mitigation Plan available to the public by publishing the plan electronically on BUSD Web, and the Cities of La Verne and San Dimas emergency management websites.

Establish a web link to facilitate Internet information sharing.

Develop and complete a baseline survey to gather perceptions of private citizens and the business community regarding natural hazard risks and identify mitigation needs. Repeat the survey in five years to monitor successes and failures of our natural hazard mitigation programs.

Use local cable stations as a conduit for advertising public forums.

Conduct natural hazards awareness programs in the District.

Conduct workshops for public and private sector organizations to raise awareness of mitigation activities and programs. Invite OES to participate.

Develop outreach materials for mitigation, preparedness, response and recovery. Interface with OES and other agencies to deliver the same message.

Coordinating Organization:	BUSD Hazard Mitigation Technical Committee
Time Line:	Ongoing
Plan Goals Addressed:	Protect Life and Property: Objective 1.1.1 Public Awareness: Objective 2.1.2, 2.1.3 Public Participation: Objective: 6.1.5
Constraints:	Limited to time available from District staff.

LONG TERM ACTIVITY - MULTI HAZARD *# 9:* Continue to hire a structural engineering firm to undertake seismic evaluation of all the District sites throughout our current modernization and future projects.

Ideas for Implementation:

Develop and complete a baseline survey to gather status on each site. Repeat the survey in five years to monitor successes and failures of natural hazard mitigation programs.

Coordinating Organization:	BUSD Administrative/Business Services and Facilities Department
Time Line:	Ongoing
Plan Goals Addressed:	Protect Life and Property: Objective 1.3.4, 1.3.6, 1.3.7
Constraints:	Limited to time available from District staff

LONG TERM ACTIVITY - MULTI HAZARD *# 10:* Maintain and implement mitigation actions into the District's policies, procedures, and capital facilities improvement plans.

Ideas for Implementation:

Update manuals and District plans to incorporate mitigation actions

Coordinating Organization:	BUSD Hazard Mitigation Technical Committee and Facilities Department
Time Line:	Ongoing
Plan Goals Addressed:	Public Awareness: Objective 2.1.2 Protect Life and Property: Objective 1.1.2, 1.2.2, 1.3.2 Partnership and Implementation: Objective 4.1.7 Public Participation: Objective 6.1.5
Constraints:	Limited to time available from District staff.

Prioritization Process

The goal of this plan is to map a set of strategies supported by objectives and measurable actions that will advance the District's mitigation program. There are not resources for all activities to be completed at one time. Some projects have a better chance to be implemented than others due to funding issues, time constraints, etc. Timing among activities or with outside events and situations may be critical and thought needs to be given to planning and prioritizing all activities supported by this plan.

For this reason the input of the Hazard Mitigation Technical and Steering Committee, as well as that of the public, was key to discerning the kinds of things that are most important first. After the formulation of the proposed Goals, Objectives, and Actions, committee members voted, using a 1-2-3 scale, on the relative importance of each action. Those ranked highest received the lowest numerical scores. Point totals were tallied, and the results of the average raw vote score are as follows:

Actions	Average Score
1, 3, 4, 7	1
2, 5, 6	2
7, 8, 9, 10	3

Analysis Utilization

For every proposed action, funding availability is an important aspect to consider. Many of the actions above require little in the way of direct funding, and their costs can be absorbed into operating budgets. The anchoring of bookcases and computers properly has a relatively small supply cost per unit and labor expense associated with the installation. Even so, it is a minor cost overall when compared to replacing structures, or time out of operation due to clean-up after a seismic event.

State capital budget request cycles run every 12 months, and these present opportunities to access funding for structures into the tens of millions of dollars. Federal grants are periodically offered for mitigation projects, as well as disaster recovery, and both these mechanisms can be employed for the actions that relate to specific, and more expensive, capital activities that require long-term improvements to existing facilities.

A key theme running through many of the proposed actions is deepening involvement with other agencies and institutions, and success in completing these actions relies partly on the willingness of those other organizations to commit the resources that will allow the cooperative improvements to be realized by each partner. With such organizations, careful groundwork must be laid that shows the commitment expected from all, but also identifies the mutual benefits to be realized. If the investment needed from those organizations can be seen in this light, achievement of these objectives becomes more easily realized.

There are a total of 10 actions recommended for the District to pursue, and the maximum length of time until the next Hazard Mitigation Plan is due for review by FEMA is five years. These facts make a strong case for dividing these projects as evenly as possible into three groups, one group to be accomplished each 12-16 months the current plan is in effect. The ranking of the average scores of the projects, is an essential tool in determining how the groups are divided. Most actions identified in the process had a low estimate cost. Starting with Actions 1, 3 & 4 the highest rated action, every three actions are taken to form a group. Actions with lower points are ranked in the lower groups. This formula results in the following three groups being formed.

Group One:	Actions 1, 3, 4,
Group Two	Actions 2, 5, 6
Group Three	Actions 7, 8, 9, 10

Implementation Process

Once the mitigation actions are ranked on the basis of economic criteria, District's decision makers can consider other factors, such as risk; project effectiveness; and economic, environmental, and social returns in choosing the appropriate action/project for implementation.

The Facilities Department is responsible for the implementation of this plan and all mitigation actions related to building, modernization and public involvement related to such projects. The Director of Facilities oversees this process of incorporating training and education of mitigation strategies into current disaster preparedness activities. The purpose for this assignment of duties is that the great majority of the mitigation actions are tied so closely to the facilities themselves, or to health and safety, and these positions are directly responsible for those areas at the District. When implementation occurs is a function of the priority of that action as defined by the Hazard Mitigation Plan Committee, with modifications as relevant from public opinion.

Administration Process

The Director of Facilities is responsible for the administration of the implementation of this plan. Regular reports will be made to monitor the progress of implementation and the Committee will decide the best method to assure continuous quality improvement in the plan as may be necessary over the period of its five-year term. These methods may consist of simple fixes for typographical errors to calling for reconvening the Hazard Mitigation Plan Committee to address large oversights in development or amendments in projects or in the plan documentation.

List of Mitigation Actions

ACTION ITEM NO.	GOAL NO.	BRIEF PROJECT DESCRIPTION	COST/BENEFITS	TARGET DATE	PROJECT RANKING
#1: Integrate the goals and actions items from the Bonita U.S.D.. natural hazard mitigation plan into existing regulatory documents and programs when appropriate	**4**	Use District's mitigation plan and the city's mitigation plan as guidelines for sustainable development in all new construction and development projects according to the hazards that impact the District. Beginning modernization with installation of portable classrooms at Bonita High School on existing campus. Providing housing that meets all current requirements for student occupancy and meeting all current seismic requirements.	Budgeted Funds are available for this project	Sept. 2004, and Ongoing	**1**
#2: Identify and pursue funding opportunities to develop and implement District mitigation activities	**4**	Allocate available resources and assistance to mitigation projects when possible: partner with other organization and agencies, the City of La Verne, and San Dimas to identify grant programs and foundations that may support mitigation activities.	Cost benefit to be determined	On-going	**2**
#3: Establish a formal role for the Bonita U.S.D. natural hazard mitigation technical committee to develop a sustainable process for implementing, monitoring and evaluating District mitigation activities.	**6**	Establish clear roles for participants, meeting regularly to pursue and evaluate implementation of mitigation strategies. Establish measurable standards to evaluate mitigation policies and programs and provide a mechanism to update and revise the mitigation plan, etc.	Cost benefit to be determined	Fiscal Yr. 04-05 & On-going	**1**
#4: Develop public and private partnerships to foster natural hazard mitigation program coordination and collaboration in the Bonita U.S.D.	**4 & 6**	Work with the City of La Verne, San Dimas and Los Angeles County to improve our natural hazards mitigation plan. Identify all organizations within Bonita U.S.D. that have programs or interest in natural hazards mitigation.	Cost benefit to be determined	Fiscal Yr. 04-05 & On-going	**1**
#5: Develop inventories of at-risk school buildings and facilities and prioritize mitigation projects.	**1**	Develop strategies to mitigate risk to these facilities, or to utilize alternative facilities should a natural hazards event cause damages to the facilities in question.	Cost benefit to be determined	2-3 Years	**2**
#6: Strengthen emergency services preparedness and response by relating with natural hazard mitigation programs, and enhancing community relations throughout the District	**1**	Encourage individual and family preparedness through programs such as safety preparedness training and hands on exercises. Coordinate the maintenance of emergency transportation routes through communication among the city roads depts. neighboring jurisdictions, and the Calif. Dept. of Transportation. Identify opportunities for partnering with citizens, private contractors, and local agencies to increase availability of equipment and manpower for efficiency of response efforts, etc.	Cost benefit to be determined	Unknown	**2**

List of Mitigation Actions

ACTION ITEM NO.	GOAL NO.	BRIEF PROJECT DESCRIPTION	COST/BENEFITS	TARGET DATE	PROJECT RANKING
#7: Upgrade and modernize existing structures to current codes for safety; and build new facilities under current building codes.	**1**	The Bonita U.S.D. is in the process of developing plans for modernization and some new construction for both high schools this year following with our middle and elementary schools. The intent is to completely modernize all of its operational school sites and facilities to current building standards. This will be accomplished with local general obligation bonds, matching state bond funding, etc.	Budgeted Funds are available for this project and some cost benefits will need to be determined	Unknown	**3**
#8: Continue to develop, enhance, and implement programs aimed at mitigating natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses, schools and facilities.	**1, 2, & 6**	Make the Bonita U.S.D.. natural hazard mitigation plan available to the public by publishing the plan electronically on the BUSD web link, and the Cities of La Verne and San Dimas emergency management websites. Establish a web link to facilitate internet information sharing, etc.	Cost benefit to be determined	Unknown	**3**
#9: Continue to hire a structural engineering firm to undertake seismic evaluation of all the District sites throughout our current modernization and future projects.	**1**	Develop and complete a baseline survey to gather status on each site. Repeat survey in five years to monitor successes and failures of natural mitigation programs.	Cost benefit to be determined	Unknown	**3**
#10: Maintain and implement mitigation actions into the District's policies, procedures, and capital facilities improvement plans.	**1, 2, & 6**	Update manuals and District plans to incorporate mitigation actions.	Cost benefit to be determined	Unknown	**3**

SECTION V

Section V

Plan Maintenance

The plan maintenance section of this document details the formal process that will ensure that the Bonita Unified School District Natural Hazards Mitigation Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the plan on a regular and periodic basis and producing a plan revision every five years. This section describes how the school district will integrate public participation throughout the plan maintenance process. Finally, this section includes an explanation of how Bonita Unified School District intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms such as, Capital Improvement Plans, and Building and Safety Codes.

Monitoring, Evaluating, and Updating Process

Without any intervening disaster events, and until the establishment of an independent, on-going Natural Hazard Mitigation Plan Committee, the monitoring of this process will be a function of the Director of Facilities for building, modernization and facilities, and the Assistant Superintendent of Business Services, Director of Purchasing, Director of Facilities and Supervisor of Building Trades & General Maintenance for implementation of training and instruction within the exiting disaster preparedness program. Upon the establishment of a separate committee to deal with mitigation, in facilities planning, reports will be generated as to monitor progress of the plan and of the districts mitigation efforts to assure safety in the event of hazard exposures to district facilities. Within the next five years this NHMP will also be required to address potential threats related to terrorist activities against the District.

Assessment after a Significant Disaster Event

Within 60 days following a significant disaster or an emergency event impacting a portion of, or the entire District, the Director of Facilities in collaboration with the Assistant Superintendent of Business Services, Director of Purchasing, and Supervisor of Building Trades & General Maintenance may begin an analysis of the event to capture data for the purpose of continuing development of the plan. The Director of Facilities will assess direct damage to facilities and the Assistant Superintendent of Business Services will establish indirect damage as well as obtain from facilities or other staff and resources recovery costs. The Director of Facilities will also assess the type and extent of the damages to determine any new mitigation initiatives that should be incorporated into the plan to avoid similar losses due to future hazard events. The results of the assessment will be provided to the Steering Committee for review when considering new mitigation initiatives during the next plan update process.

Continued Public Involvement

The Bonita Unified School District Natural Hazard Mitigation Plan will remain a living document with revisions and updates occurring as needed and approved as appropriate. Public comment will continue to be sought on a regular basis, including through at least biannual public notice in the City of La Verne and San Dimas Public Libraries, cable television, and on the District's web link.

Many of the mitigation initiatives contain elements of public education and should be implemented as soon as funds become available for those initiatives. Continued public involvement should also be integrated into existing emergency preparedness activities and information in order to continue to educate the students, teachers, administrators and the community on the importance of managing the risk from natural hazards.

The plan will also be available for review at the District Administrative Office and web link. A public meeting will also be held when substantive plan amendments are made and when such a meeting is deemed necessary by the Hazard Mitigation Technical Committee.

Implementation through Existing Programs

Bonita Unified School District addresses statewide planning goals and legislative requirements through the State Office of Public Schools, Cities of La Verne and San Dimas General Plans, and referencing local 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 Bonita Unified School District will have the opportunity to implement recommended mitigation action items through existing programs and procedures.

The Bonita Unified School District Facilities Department is responsible for administering appropriate Building & Safety Codes. The Facilities Department will work with other agencies at the city, county and state levels to review, develop and ensure Building & Safety Codes are implemented. This is to ensure that life-safety criteria are met for new construction.

Within twelve months of formal adoption of the mitigation plan, the recommendations included in the NHMP will be incorporated into the process of existing planning mechanisms throughout the District. The meetings of the Hazard Mitigation Technical Committee will provide an opportunity for committee members to report back on the progress made on the integration of mitigation planning elements, documents and procedures. The District will incorporate natural hazard mitigation planning and considerations into the planning process for Measure C projects as well as in its normal planning process. Measure C projects are subject to review by the Oversight Committee made up of community members.

Plan Adoption

This plan will be approved by the Bonita Unified School District Board as written on November 17, 2004. Each revision to this plan will be presented to and approved by the Board, since this plan is a living document subject to change as and when needed. Simple corrections of typographical errors will not be subject to this condition. The adoption of this plan will be signified by a formal resolution from the Board with the corresponding signatures.

APPENDIX

A

Plan Adoption Resolution

Letter of Intent
(to develop a Local Hazard Mitigation Plan)

Name of City/Special District/Jurisdiction: Bonita Unified School District **,**
County of Los Angeles **in the State of California.**

[ ] The above named **City/Special District Jurisdiction,** does not intend to develop a Local Hazard Mitigation Plan (LHMP) at this time. [The jurisdiction understands that it will not be eligible to receive mitigation project funding after November 1, 2004.]

[X] The above named **City/Special District Jurisdiction,** intends to develop and submit for State review and FEMA approval, a LHMP, written in accordance with Section 322 of the Stafford Act, as indicated below. (**Check One**) (Please provide the name of the jurisdiction's LHMP contact person below.)

[X] Single Jurisdiction LHMP or a [ ] Multi-Jurisdictional LHMP. If Multi-Jurisdictional, name of LEAD Jurisdiction: _____

CONCERNING THE LHMP:

[X] The above named City/Special District/Jurisdiction has begun development of a LHMP.

[ ] The above named City/Special District/Jurisdiction will begin development of a LHMP by **Date:** _____.

[ ] The above named City/Special District/Jurisdiction does not have enough information to complete this Letter of Intent. Please contact the person listed below to provide clarification or additional information to the jurisdiction.

Signed: Ann Sparks . Date: May 17, 2004
(Council/Board Chair or Designated Representative)

(Print name & title of signing official)
_____

Name LHMP Contact Person: Eileen Mullen .

Title: Director of Purchasing

Telephone: (909) 971 – 8320 ext. 5250 .

E-mail address: mullen@bonita,k12.ca.us .

Please complete the enclosed *Letter of Intent* ASAP and FAX to the OES Hazard Mitigation Section at (916) 845-8385 or 845-8386.

BONITA UNIFIED SCHOOL DISTRICT

RESOLUTION NO. 2004-43

RESOLUTION OF THE BOARD OF EDUCATION OF THE
BONITA UNIFIED SCHOOL DISTRICT IN SUPPORT OF
DISTRICT IMPLEMENTATION OF A
DISASTER PREPAREDNESS PLAN IN COMPLIANCE WITH
THE FEDERAL DISASTER MITIGATION ACT OF 2000

WHEREAS, on October 30, 2000, the Disaster Mitigation Act of 2000 (the "DMA") was signed into law, amending provisions of the Robert T. Stafford Disaster Relief Act of 1988; and

WHEREAS, the DMA reinforces the importance of pre-disaster infrastructure mitigation planning to reduce disaster losses nationwide; and

WHEREAS, the DMA focuses specifically on planning, and recognizes the significance of hazard mitigation planning at the local level, and the necessity for effective coordination between State and local entities to promote an integrated, comprehensive approach to mitigation planning; and

WHEREAS, the DMA requires local agencies like the Bonita Unified School District (the "District") to develop a mitigation plan that includes a detailed District profile; identifies specific threats and vulnerabilities within the District; and sets forth specific mitigating measures to address such threats and vulnerabilities; and

WHEREAS, the District's DMA plan is to be reviewed annually by the District and every five years by federal authorities; and

WHEREAS, the DMA further requires detailed documentation of all actions, meetings, studies and directives undertaken in the furtherance of the District's DMA plan; and

WHEREAS, the DMA includes new criteria for local mitigation planning, including the development and submittal of mitigation plans as a condition to receiving Hazard Mitigation Grant Program funds; and

WHEREAS, the safety of the District's students, faculty and staff is of paramount importance to the Board of Education.

NOW, THEREFORE, THE BOARD OF EDUCATION OF BONITA UNIFIED SCHOOL DISTRICT, SAN DIMAS, CALIFORNIA, DO HEREBY FIND, DETERMINE AND RESOLVE AS FOLLOWS:

SECTION 1. The Board expresses its full support for, and willingness to devote appropriate resources to, the DMA program and the adoption of a DMA plan for the District.

SECTION 2. The Board supports the active participation of all interested agencies, departments, community groups and the public with respect to the DMA program.

SECTION 3. The Board shall hold public hearings, as necessary, to further hearings for final review and adoption of such a plan.

SECTION 4. The Secretary shall certify to the passage and adoption of this resolution and thereupon the same shall take effect and be in full force.

PASSED, APPROVED and ADOPTED this 2nd day of June 2004 by the following vote:

AYES:	5 .
NOES:	0 .
ABSENT:	0 .
ABSTAIN:	0 .

Pattie Latrourelle .
President of the Board of Education

June 2, 2004 .
Date

Robert C. Otto .
Secretary to the Board of Education

June 2, 2004 .
Date

Bonita Unified School District

Business Services **MEMORANDUM**

DATE: November 17, 2004

TO: Dr. Robert C. Otto, Superintendent

FROM: Ann Sparks, Assistant Superintendent, Business Services

ITEM: **Approve the District Natural Hazard Mitigation Plan for Submission to the Office of Emergency Services in Compliance with the Federal Disaster Mitigation Act of 2000**

Background: On June 2, 2004 the Board of Education adopted Resolution 2004-43 supporting the implementation of a District Natural Hazard Mitigation Plan in compliance with the Federal Disaster Mitigation Act of 2000.

District staff participated in meetings with the cities of La Verne and San Dimas and other technical and advisory committees in developing the plan. The District plan identifies hazards and makes specific recommendations on how the District will minimize the effects in the event of a disaster. This plan is a requirement of the Disaster Mitigation Act of 2000 to retain District eligibility for disaster mitigation grant funding opportunities.

Rationale: This plan will be submitted to the Office of Emergency Services for approval and to the Federal Emergency Management Agency for final approval. The District's Natural Hazard Mitigation Plan is to be reviewed by staff annually and by Federal authorities every five years.

Funding: Not Applicable

Recommendation: Approve the District Natural Hazard Mitigation Plan for submission to the Office of Emergency Services in compliance with the Federal Disaster Mitigation Act of 2000.

APPENDIX

B

Planning Partners

Bonita Unified School District

Project Manager:
Bonita Unified School District Eileen Mullen, Director of Purchasing

Project Advisory and Technical Committee:
Bonita Unified School District, Jim Elliot, Board of Trustees
Bonita Unified School District Ann Sparks, Assistant Superintendent Business Services
Bonita Unified School District Mike Phillips, Director of Facilities
Bonita Unified School District Mark Castellano, Supervisor of Building Trades & Gen. Maint.
Bonita Unified School District Jack Hipp, Director of Computer Information Services
City of La Verne Hazard Mitigation Technical Committee Members
City of La Verne Hazard Mitigation Technical Committee Members
City of La Verne Patrick Prescott, Assistant Planner
City of San Dimas Hazard Mitigation Steering Committee Members
City of San Dimas Ken Duran, Assistant City Manager
City of San Dimas Historical Society , Paul Rippen
Los Angeles County, San Dimas Sheriff's Department

Project Steering Committee:
Deanna Salado, Bonita Unified School District
Diane Warner, Bonita Unified School District
Kathleen Thurman, City of San Dimas resident , parent and San Dimas PTA
Linda Ciauri, City of La Verne resident
Fred Clarke, City of La Verne resident
Barbara Litwin, City of La Verne resident
Wayne Litwin, City of La Verne resident
Patsy Chism, City of San Dimas resident
Carol Berdrow, City of San Dimas resident
Alice Murphy, City of San Dimas resident
Recalde Services Consultant, Fausto Recalde
Dougherty & Dougherty Architects, LLP, Arjan Duyvestein
Rachlin Architects, Richard Grassia
Atkinson, Andelson, Lloyd, Romo & Rudd Associates, Terry Towel

The Hazards Mitigation Steering Committee consisted of representatives from the several entities. The same Committee members:

- Provide technical input and information specific to their jurisdiction/entity to exchange ideas for the development of their plan.
- Develop mitigation plan goals based on local hazards to provide a long-term vision reducing our region's vulnerability to natural hazard events.
- Identify, analyze, and prioritize the mitigation initiatives for the region as well as for their jurisdiction.
- Analyze the cost and benefit of the mitigation initiatives.
- Identify appropriate public involvement opportunities and participate in or host

a public meeting.

- Review plan elements in draft and final form.

APPENDIX

C

Public Participation Process

Public Participation Process

Public participation is a key component to strategic planning processes. Citizen participation offers citizens the chance to voice their ideas, interests, and opinions. The Federal Emergency Management Agency also requires public input during the development of mitigation plans.

Bonita Unified School District Natural Hazard Mitigation Plan integrates a cross-section of citizen input throughout the planning process. To accomplish this goal, the Bonita Unified School District Hazard Mitigation Technical Committee developed a public participation process through these components: (1) developing a steering committee comprised of knowledgeable individuals representative of the District & the community; (2) soliciting community input through meetings, community surveys, District's wed link and public cable channel; and (3) conducting a public workshop to identify common concerns and ideas regarding hazard mitigation and to discuss specific goals and actions of the mitigation plan.

Integrating public participation during the development of Bonita Unified School District Natural Hazard Mitigation Plan has ultimately resulted in increased public awareness. Through citizen involvement, the mitigation plan reflects community issues, concerns, and new ideas and perspectives on mitigation opportunities and plan action items.

Steering Committee

Hazard mitigation at the Bonita Unified School District is overseen by the Bonita Unified School District Hazard Mitigation Technical and Steering Committee, which consists of representatives from various city agencies, representatives from local business and community organizations and the public. Steering committee members have an understanding of how the community is structured and how residents, businesses, and the environment may be affected by natural hazard events. The steering committee guided the development of the plan, and assisted in developing plan goals and action items, and sharing local expertise to create a more comprehensive plan.

Table C.1 lists the various people and organizations that participated on the Bonita Unified School District Hazard Mitigation Steering Committee.

Table C.1. Bonita Unified School District Hazard Mitigation Technical Committee
Bonita Unified School District Assistant Superintendent, Business Services
Bonita Unified School District Director of Purchasing
Bonita Unified School District Director of Facilities
Bonita Unified School District Supervisor ???????????????????????????
Bonita Unified School District Director of Computer Technical Services
City of La Verne, Assistant Planner
City of San Dimas, Assistant City Manager
ASCIP, Risk Management Support Division
Consultant, Fausto Recalde

Meetings

In addition to letters inviting coordination between local agencies, specifically the City of La Verne, City of San Dimas and Los Angeles County Office of Disaster Management, Area D, and several meetings were held to communicate the objectives of the plan, gather information and resources, and to solicit community input in the planning process.

Copies of letters to other public agencies, as well as meeting agendas, meeting minutes and sign-in sheets follow.

The committee met to guide development of the mitigation plan and the following outlines their activities:

Date	Activity	Subject
Jan. 22, 2004	OES Workshop #1 NHMP	To assist participants from Calif. Local Governments to understand content and the development and requirements for Section 1, 2, and 3
Jan. 23, 2004	Bonita USD Technical Committee Meeting	Overview of NHMP, Plan requirements review, discussion for timeline for the plan, Members responsibilities, participation and assignments.
Feb. 24, 2004	San Dimas City Council Meeting	Report to provide Cabinet with requirements to adopt DMA2000 plan and the Natural Hazard Mitigation process. Agenda #6 Other Business
Feb. 25, 2004	Bonita USD Technical Committee Meeting	Update information on NHMP consultant services thru ASCIP, City of San Dimas Board Resolution and review of the five elements of the OES crosswalk, etc.
Mar. 2, 2004	Area D General Meeting	Review of natural mitigation planning guidebook to help communities prepare for mitigation plans and minimize future losses.
Apr. 15, 2004	Area D General Meeting	NHMP roundtable discussion regarding multi-jurisdictional entities. Adding districts as an appendices to City plans.
May 11, 2004	ASCIP DMA2K Seminar	How to create a hazard mitigation plan – A guide for school districts review. There were 12 different districts represented with 22 participants.
May 13, 2004	OES Workshop #2 NHMP	Focus on developing the final half of your district's plan. Provided examples of approved text, and technical assistance sources available to assist school districts.
May 14, 2004	Bonita USD Technical Committee Meeting	Review of updated crosswalk, when to submit for Board Resolution, utilization of OES GIS contacts for maps. Need to submit Letter of Intent to OES.
May 17, 2004	OES Letter of Intent	Letter of Intent faxed the Bonita USD intends to develop and submit a NHMP in accordance with Section 322 of the Stafford Act.
May 20, 2004	Area D General Meeting	Review of other city and district's NHMP's and templates available for guidelines in plan preparation. Roundtable discussion regarding current crosswalk and FEMA deadlines.

Date	Activity	Subject
May 21, 2004	Area G NHMP Meeting	Supplemental NHMP materials distributed regarding Section 1 materials, required documentation and general Q & A time.
May 24, 2004	Bonita USD and San Dimas City Council AD HOC Meeting	General overview for DMA2000 legal requirements. The purpose of the plan and summary of crosswalk and associated activities. Representation of 12 from the District, city, Sheriff Dept., Board of Education
June 2, 2004	Bonita USD Technical Committee Meeting	Board of Education Meeting. Natural Hazard Mitigation Plan Development Resolution, Consent Agenda Business Services item #13. Open to public comment. Present 48 attendees, city residence, teachers, principals, Board of Trustees, cabinet members and staff.
June 3, 2004	Bonita USD Technical Committee Meeting	Update of activity calendar, planning schedule. Set date for 1st Kick-Off Meeting. Review disaster assessment survey.
June 8, 2004	City of La Verne Disaster Preparedness Workshop	Public session to review on-going efforts to be prepared in the event of a disaster. Presentation of their commitment regarding NHMP. There were 25 participants Red Cross, Area D, businesses, city residences, fire fighters, etc.
June 10, 2004	Los Angeles County Office of Education	Facilities Network meeting. Vendor presentation as consultants for district NHMP. Update from Area G Coordinator regarding regulations and ramification of non-compliance. District Participants, Bonita Unified School District and EL Monte City School District overview, "First Steps to Near Completion panel discussion.
June 15, 2004	City of La Verne NHMP Advisory Meeting	Highlights and open discussion regarding their action items including windstorm, wild fires, earthquakes etc. Attendance 6 from Church of the Brethren, community, business, and residence.
June 24, 2004	Bonita USD NHMP Kickoff Meeting	Introduction to NHMP and requirements. Review of Board Resolution, OES letter of intent, perform and review disaster assessment survey with steering & technical committees comprised of the residents, parents, PTA, city, consultant and district staff. Attendance of 19.
Aug. 11, 2004	Bonita USD Technical Committee Meeting	Review data that was accumulated for goals and objectives. Brainstorm information and develop a working format to prepare goals and objectives.

Date	Activity	Subject
Sept. 2, 2004	Bonita USD Technical Committee Meeting	Develop actions items based on our data from the goals and objectives. Modify and review a ranking process.
Sept. 8, 2004	Bonita USD Technical Committee Meeting	Completion of action items review. Rank the actions items for NHMP.
Sept 28. 2004	OES – EMPG California Specialized Training Institute	Multi-Hazard Emergency Planning Program for Schools. Course topics, identify, evaluate, implement, respond, recover and information on SEMS for schools.
Sept 29, 2004	City of San Dimas NHMP Advisory Meeting	Background of NHMP. Review of historical data and mitigation action items. Brainstorm and evaluation of their treat assessment for each hazard. Committee members of 5 included the Historical Society, Sheriff, Planning Commission and City Manager
Oct. 6, 2004	Area D General Meeting	Review of directions for submitting NHMP to OES, including cover letter, 2 hard copies, electronic CD copy, etc. Updated crosswalk data.
Oct. 18, 2004	City of San Dimas NHMP Advisory Meeting	Provide updated version of actions items. Review of plan maintenance, monitoring and evaluation of NHMP. There were 7 attendees from the Historical Society, Planning Commission, Public Safety Commission and community.
Nov. 17, 2004	Bonita USD Technical/Steering Committee Meeting	Board of Education Meeting. Natural Hazard Mitigation Plan Development Resolution, Consent Agenda Business Services item #C-1 Open to public comment. Present 34 attendees, city residence, teachers, principals, Board of Trustees, cabinet members and staff.

APPENDIX

D

DISTRICT'S SITES DESCRIPTION AND MAPS

BONITA UNIFIED SCHOOL DISTRICT
SITE AND FACILITY BUILDINGS

SITE	AGE	BUILT	SQ. FT.
Allen Avenue Elementary	**40 Years**	**1964**	**33,635**
740 Allen Avenue			
San Dimas, CA 91773			
909/971-8202			
Bonita High School	**45 Years**	**1959**	**126,931**
3102 "D" Street			
La Verne, CA 91750			
909/392-6500			
Chaparral High School	**32 Years**	**1972**	**14,350**
Vista School			
121 W. Allen Avenue			
San Dimas, CA 91773			
909/971-8240			
Ekstrand Elementary	**50 Years**	**1954**	**37,291**
400 Walnut Avenue			
San Dimas, CA 91773			
909/971-8203			
Gladstone Elementary	**41 Years**	**1963**	**37,066**
1314 W. Gladstone			
San Dimas, CA 91773			
909/971-8204			
Grace Miller Elementary	**49 Years**	**1955**	**34,457**
16929 Holly Oak Street			
La Verne, CA 91750			
909/971-8206			

SITE	AGE	BUILT	SQ. FT.
La Verne Heights Elementary	67 Years	1937	28,015
1550 Baseline			
La Verne, CA 91750			
909/971-8205			
Lone Hill Middle School	31 Years	1973	77,519
700 S. Lone Hill			
San Dimas, CA 91773			
909/971-8270			
Oak Mesa Elementary	15 Years	1989	37,872
5200 Wheeler Avenue			
La Verne, CA 91750			
909/971-8209			
Ramona Middle School	38 Years	1966	76,112
3490 Ramona Avenue			
La Verne, CA 91750			
909/971-8260			
J. Marian Roynon Elementary	53 Years	1951	53,405
2715 “E” Street			
La Verne, CA 91750			
909/971-8207			
San Dimas High School	34 Years	1970	120,109
800 W. Covina Blvd.			
San Dimas, CA 91773			
909/971-8230			
Shull Elementary	41 Years	1963	33,883
825 N. Amelia			
San Dimas, CA 91773			
909/971-8208			
Bonita District Office	34 Years	1970	40,448
Maintenance, Transportation			
Central Kitchen & Warehouse			
115 W. Allen Avenue			
San Dimas, CA 91773			
909/971-8320			

HISTORICAL INFORMATION DISTRICT SCHOOL SITES AND FACILITIES:

ALLEN AVENUE ELEMENTARY SCHOOL

Constructed in 1964, Allen Elementary School consists mostly of brick masonry units, not unlike many of the elementary schools in the Bonita Unified School District. While little has changed inside the classrooms since their construction nearly forty years ago, the student-body population has grown to five hundred students.

To accommodate this growth, eight relocatable classrooms have been added to the campus since the late 1960's. In 1988, the District enclosed an outdoor lunch shelter to serve as a multipurpose building for the campus.

EKSTRAND ELEMENTARY SCHOOL

Constructed over an eight-year period beginning in 1954, the original buildings of Ekstrand Elementary School are approaching a half-century in age. Having added twelve portable buildings to the campus since the late 1960's. The growing student body that has exceeded five hundred in number.

The original buildings were built around a large polygon-shaped grass field and are constructed of traditional balloon framing, with corrugated asbestos siding along the perimeter walls, and one wall of sliding glass overlooking the courtyard.

GLADSTONE ELEMENTARY SCHOOL

Constructed in 1963, Gladstone Elementary School consists mostly of brick-like masonry units, not unlike many of the elementary schools in the Bonita Unified School Districts While little has changed inside the classrooms since their construction nearly forty years ago, the student-body population has grown to five hundred students.

To accommodate this growth, ten relocatable classrooms have been added to the campus since the late 1980's. campus. In 1988, the District enclosed an outdoor lunch shelter to serve as a multipurpose building for the campus.

GRACE MILLER ELEMENTARY SCHOOL

Grace Miller Elementary School was established in 1955 with the intent that "Each student will experience learning and success in some way everyday." Classroom space is adequate. Currently the enrollment at Grace Miller is 470 students.

LA VERNE HEIGHTS ELEMENTARY SCHOOL

First built in 1932, La Verne Heights Elementary School consisted of an Auditorium, Administration and a few classrooms, all placed within a W-shaped building cluster. A Kindergarten Building was added to the campus in 1950. Since then, the campus has accumulated 10 portable buildings to keep up with the growing student body. Enrollment at La Verne Heights is currently 408 students strong.

OAK MESA ELEMENTARY SCHOOL

The newest school in the Bonita Unified School District, Oak Mesa was added to the Bonita Family in 1989. Although only 14 years old, the campus contains a student body of 524 students. The campus was originally constructed with 20 permanent classrooms. Since its opening year four additional portable classrooms have been added.

ROYNON ELEMENTARY SCHOOL

The site on which Roynon Elementary School now sits has a long history of being a place of education for the surrounding community. Originally built in 1906 and named Lordsberg Grammar School, the buildings burned down. In that building's place Lincoln and Palomares Schools were built between the years of 1949 and 1951. In the early SOs Lincoln School and Palomares School were combined into one school keeping Lincoln as the name. In 1951 the Faculty and Staff decided to rename the school after their recently retired Superintendent J. Marion Roynon. Since it was at one time two schools, Roynon Elementary School, as it is now known, is situated on a site that is separated by a street. Larger than a typical elementary school the current enrollment at Roynon Elementary consists of 712 kindergarten through 5th graders.

SHULL ELEMENTARY SCHOOL

Renamed in honor of a long-serving faculty member, Arma J. Shull Elementary School was constructed over a four-year period beginning in 1960. Composed of brick-like masonry units, the majority of the classroom buildings are part of a prototypical-building plan that is predominant throughout the Bonita Unified School District.

While little has changed inside the classrooms since their construction more than forty years ago, the student body population has grown to just over five hundred students. To accommodate this growth, ten relocatable classrooms have been added to the campus since the late 1980's, including one relocatable classroom being used for kindergarten.
In 1988 the District enclosed an outdoor lunch shelter to serve as a Multi-Purpose Building for the campus.

LONE HILL MIDDLE SCHOOL

Constructed in two parts between 1970 and 1973, Lone Hill Middle School is composed primarily of brick and concrete. The original flexible open-plan design concept of the single-building campus, with a large auditorium space in the center of the building.

RAMONA MIDDLE SCHOOL

Established in 1966, Ramona Middle School opened its doors with the mission of "creating a safe, nurturing and motivating environment where students will gain the skills necessary to be successful in a rapidly changing world." Originally constructed to house a student body of 1,000, Ramona Middle School's current enrollment is at an all time

high of over 1,400 students. Original facilities included thirty-three classrooms, administration, library, cafeteria and locker rooms. Seventeen portable classrooms have been added over the years.

BONITA HIGH SCHOOL

Originally established in 1903 at an alternate site, the Bonita High School faculty, staff and student body moved to its current location at 3102 “D” Street in the 1950s. Recently recognized by the State of California as a Distinguished School for its excellence in academics, athletics and the arts, Bonita High School is a place where the faculty and staff are dedicated to teaching and mentoring the leaders of the future.

The campus was originally home to 51 permanent classrooms and over the years has added 13 portable buildings in order to serve the surrounding communities growing population. The student body is 1,771 persons strong.

CHAPARRAL / VISTA HIGH SCHOOL

Chaparral High School is comprised of students who have difficulty adapting to the more traditional structure of high school; Chaparral also includes enrollment of pregnant students and child-rearing students. On the other hand, Vista High School serves the home-schooled students and those enrolled in independent studies within the Bonita Unified School District.

Together on the same site, Chaparral and Vista High Schools share a campus that is entirely made up of relocatable classroom units that have been gradually added to the site over a thirty-year period.

SAN DIMAS HIGH SCHOOL

The earliest buildings at San Dimas High School were constructed between 1968 and 1971, consequently exceeding thirty years in age. The composition of the original buildings consists of concrete masonry block units, with asphalt shingle roofing. The buildings themselves are solid and in fair condition.

The District added five relocatable classrooms to accommodate the expanding population, which has grown to almost fourteen hundred students.

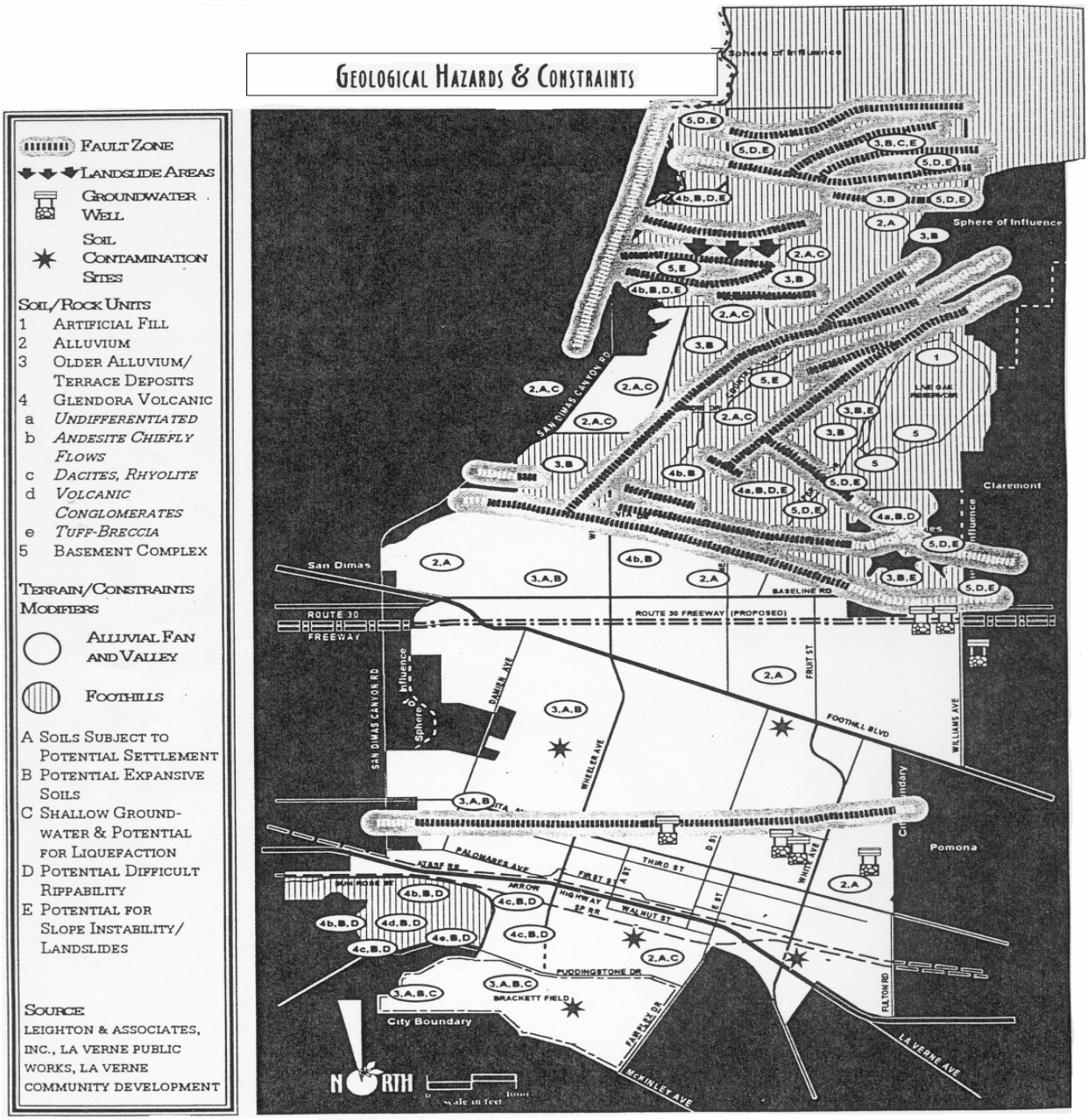
DISTRICT FACILITIES

District Administration Offices, Maintenance & Operations, Transportation Yard and the Central Kitchen play a vital role in support of the District’s educational program. The condition of the existing facilities is a testimonial to ongoing maintenance.

APPENDIX

E

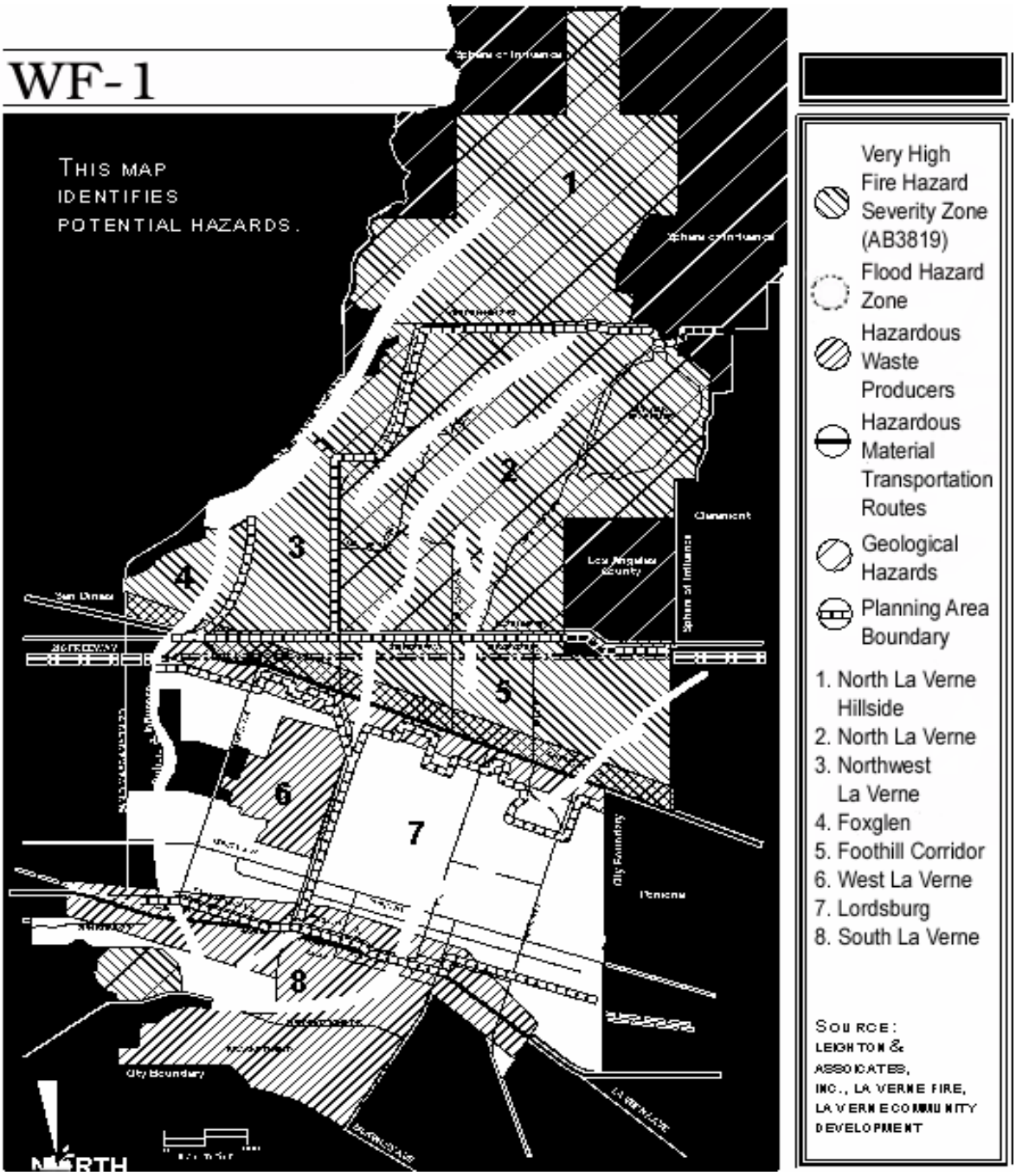
HAZARD MAPS
BONITA UNIFIED SCHOOL DISTRICT
CITY OF LA VERNE
AND
CITY OF SAN DIMAS



Source: City of La Verne 1998 General Plan

MAP 7

MAP 8



Source: City of La Verne 1998 General Plan

MAP 9

MAP10

BONITA UNIFIED SCHOOL DISTRICT

				School District:	Bonita Unified School District				
January 4, 2007				Hazard:	Earthquake				Worksheet A
Type of Structure (Occupancy Class)	Number of Structures			Value of Structures			Number of People		
	# in Community	# in Hazard Area	% in Hazard Area	$ in Community	$ in Hazard Area	% in Hazard Area	# in Community	# in Hazard Area	% in Hazard Area
School District:	14	14	100%	$ 124,475,395	$ 124,475,395	100%	11001	11001	100%
Total	14	14	100%	$ 124,475,395	$ 124,475,395	100%	11001	11001	100%
	all assets were not included in the ASCIP REPORT								

BONITA UNIFIED SCHOOL DISTRICT

School District: Bonita Unified School District

January 4, 2007 — Hazard: Earthquake — Worksheet B

	Name or Description of Asset	Sources of Information	Critical Facility	Vulnerable Population	Economic Assets	Special Considerations	Historic/Other Considerations	Building Size (sq.ft.) (thousands)	Replacement Value ($) (thousands)	Contents Value ($) (thousands)	Function, Use or Value ($ 91.00) (thousands) A	Displacement Cost ($ per day) (thousands) B	Occupancy or Capacity (#) C	Other Hazard Specific Information
			X	X	X	X	X							
1	Allen Avenue Elem.	American Appraisal & Associates	X	X	X	X		33,635	$ 4,160,543	$ 894,406	$ 3,060,785	$ 5,308	540	Various
2	Fred Ekstrand Elem.	" "	X	X	X	X		37,291	$ 4,555,345	$ 980,838	$ 3,393,481	$ 5,885	557	Various
3	Gladstone Elem.	" "	X	X	X	X		37,066	$ 4,549,450	$ 971,522	$ 3,373,006	$ 5,850	538	Various
4	La Verne Hts. Elem.	" "	X	X	X	X	X	28,015	$ 2,970,389	$ 1,001,314	$ 2,549,365	$ 4,421	451	Various
5	Grace Miller Elem.	" "	X	X	X	X		34,457	$ 4,329,516	$ 917,748	$ 3,135,587	$ 5,438	518	Various
6	Oak Mesa Elem.	" "	X	X	X	X		37,872	$ 5,375,886	$ 1,118,073	$ 3,446,352	$ 5,977	777	Various
7	J.Marion Roynon Elem.	" "	X	X	X	X		53,405	$ 6,781,938	$ 1,676,743	$ 4,859,855	$ 8,428	617	Various
8	Arma J. Shull Elem.	" "	X	X	X	X		33,883	$ 4,202,849	$ 897,710	$ 3,083,353	$ 5,347	586	Various
9	Lone Hill Middle Sch.	" "	X	X	X	X		79,439	$ 10,957,505	$ 2,252,697	$ 7,228,949	$ 12,537	1176	Various
10	Ramona Middle Sch.	" "	X	X	X	X		77,072	$ 9,496,901	$ 2,136,312	$ 7,013,552	$ 12,163	1482	Various

BONITA UNIFIED SCHOOL DISTRICT

School District: Bonita Unified School District

January 4, 2007 — Hazard: Earthquake — Worksheet B

	Name or Description of Asset	Sources of Information	Critical Facility X	Vulnerable Populatio X	Economic Assets X	Special Considerations X	Historic/Other Considera X	Building Size (sq.ft.) (thousands)	Replacement Value ($) (thousands)	Contents Value ($) (thousands)	Function, Use or Value ($ 91.00) (thousands) A	Displacement Cost ($ per day) (thousands) B	Occupancy or Capacity (#) C	Other Hazard Specific Information
11	Bonita High School	American Appraisal & Associates	X	X	X	X		126,931	$ 17,583,016	$ 4,834,546	$ 11,550,721	$ 20,032	1825	Various
12	San Dimas High Sch.	" "	X	X	X	X		120,109	$ 17,727,470	$ 6,056,507	$ 10,929,919	$ 18,955	1439	Various
13	Chaparral High Sch.	" "	X	X	X	X		16,270	$ 903,353	$ 349,972	$ 1,480,570	$ 2,568	308	Various
14	District Office M/A,C/K	" "	X	X	X	X		40,448	$ 5,211,426	$ 2,362,129	$ 3,680,768	$ 6,383	187	Various

A. Function value for school is define by FEMA as $91.00 p/sqf

B. Displacement cost calculated by the District

C. Occupancy per school site including teachers, administrators and students

BONITA UNIFIED SCHOOL DISTRICT

School District: Bonita Unified School District

January 4, 2007 | Hazard: Earthquake | Worksheet C

Name or Description of Structure	Structure Replace-ment Value	Percent Damage	Loss to Structure	Replacement Value of Contents	Percent Damage	Loss to Contents	Average Daily Operating Budget	Functional Downtime in days	Displace-ment Cost Per Day	Displace-ment Time in Days	Structure Use & Function Loss	Structure + Content + Function Losses (in Dollars)
	Loss to Structures			**Loss to Contents**			**Losses to Functions**					
Allen Avenue Elem.	$ 4,160,543	43.9%	$ 1,826,478	$ 894,406	100%	$ 894,406	$ 1,413	183	$ 5,308	30	$ 417,773	$3,138,658
Fred Ekstrand Elem.	$ 4,555,345	43.9%	$ 1,999,796	$ 980,838	100%	$ 980,838	$ 1,889	183	$ 5,885	30	$ 522,288	$3,502,923
Gladstone Elem.	$ 4,549,450	43.9%	$ 1,997,209	$ 971,522	100%	$ 971,522	$ 1,281	183	$ 5,850	30	$ 409,923	$3,378,654
La Verne Hts. Elem.	$ 2,970,389	43.9%	$ 1,304,001	$ 1,001,314	100%	$ 1,001,314	$ 1,102	183	$ 4,421	30	$ 334,296	$2,639,611
Grace Miller Elem.	$ 4,329,516	43.9%	$ 1,900,658	$ 917,748	100%	$ 917,748	$ 1,555	183	$ 5,438	30	$ 447,705	$3,266,111
Oak Mesa Elem.	$ 5,375,886	43.9%	$ 2,360,014	$ 1,118,073	100%	$ 1,118,073	$ 1,346	183	$ 5,977	30	$ 425,628	$3,903,715
J.Marion Roynon Elem.	$ 6,781,938	43.9%	$ 2,977,271	$ 1,676,743	100%	$ 1,676,743	$ 1,968	183	$ 8,428	30	$ 612,984	$5,266,998
Arma J. Shull Elem.	$ 4,202,849	43.9%	$ 1,845,051	$ 897,710	100%	$ 897,710	$ 1,352	183	$ 5,347	30	$ 407,826	$3,150,587
Lone Hill Middle Sch.	$ 10,957,505	43.9%	$ 4,810,345	$ 2,252,697	100%	$ 2,252,697	$ 2,040	183	$ 12,537	30	$ 749,430	$7,812,472
Ramona Middle Sch.	$ 9,496,901	43.9%	$ 4,169,140	$ 2,136,312	100%	$ 2,136,312	$ 2,428	183	$ 12,163	30	$ 809,214	$7,114,666
Bonita High School	$ 17,583,016	43.9%	$ 7,718,944	$ 4,834,546	100%	$ 4,834,546	$ 3,025	183	$ 20,032	30	$ 1,154,535	$13,708,025
San Dimas High Sch.	$ 17,727,470	43.9%	$ 7,782,359	$ 6,056,507	100%	$ 6,056,507	$ 2,464	183	$ 18,955	30	$ 1,019,562	$14,858,428
Chaparral High Sch.	$ 903,353	43.9%	$ 396,572	$ 349,972	100%	$ 349,972	$ 1,045	183	$ 2,568	30	$ 268,275	$1,014,819
District Office M/A,C/K	$ 5,211,426	43.9%	$ 2,287,816	$ 2,362,129	100%	$ 2,362,129	$ 261,206	183	$ 6,383	30	$ 47,992,188	$52,642,133
												$125,397,797

The Bonita Unified School District data does not include all assets in the ASCIP REPORT.

The District has two types of structures - Masonry Bearing Walls and Wood or Steel Frame Exterior Walls

The % damage was selected from single recidence loss estimation table PGA 0.55 Low* - 43.9%

reinforced masonry

APPENDIX

F

WORKSHEETS CACULATION AND SUPPORTING DOCUMENTATION

Jurisdiction:

- 1 Instructions for Using the Plan Review Crosswalk for Review of Local Mitigation Plans

Attached is a Plan Review Crosswalk based on the ***Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000***, published by FEMA, dated March 2004. This Plan Review Crosswalk is consistent with the *Disaster Mitigation Act of 2000* (P.L. 106-390), enacted October 30, 2000 and *44 CFR Part 201 – Mitigation Planning, Interim Final Rule* (the Rule), published February 26, 2002.

SCORING SYSTEM

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Each requirement includes separate elements. All elements of a requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a summary score of "Satisfactory." A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing.

When reviewing single jurisdiction plans, reviewers may want to put an N/A in the boxes for multi-jurisdictional plan requirements. When reviewing multi-jurisdictional plans, reviewers may want to put an N/A in the prerequisite box for single jurisdiction plans.

States that have additional requirements can add them in the appropriate sections of the *Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements.

Optional matrices for assisting in the review of sections on profiling hazards, assessing vulnerability, and identifying and analyzing mitigation actions are found at the end of the Plan Review Crosswalk.

The example below illustrates how to fill in the Plan Review Crosswalk.

Example

Assessing Vulnerability: Overview

Requirement §201.6(c)(2)(ii): *[The risk assessment **shall** include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description **shall** include an overall summary of each hazard and its impact on the community.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan include an **overall summary** description of the jurisdiction's **vulnerability** to each hazard?	Section II, pp. 4-10	The plan describes the types of assets that are located within geographically defined hazard areas as well as those that would be affected by winter storms.		✓
B. Does the plan address the **impact** of each hazard on the jurisdiction?	Section II, pp. 10-20	The plan does not address the impact of two of the five hazards addressed in the plan. **Required Revisions:** • Include a description of the impact of floods and earthquakes on the assets. **Recommended Revisions:** • This information can be presented in terms of dollar value or percentages of damage.	✓	
		SUMMARY SCORE	✓	

Jurisdiction:

Local Mitigation Plan Review and Approval Status

Jurisdiction: **Bonita Unified School District**	**Title of Plan:** **Natural Hazard Mitigation Plan**	**Date of Plan:** **November 05, 2004**
Local Point of Contact: **Eileen Mullen**	**Address:** **Bonita Unified School District** **115 W. Allen Avenue** **San Dimas, CA 91750**	
Title: **Director of Purchasing**		
Agency: **Bonita Unified School District**		
Phone Number: **909- 971-8320 ext. 5250**	**E-Mail:** **mullen@bonita.k12.ca.us**	

State Reviewer:	**Title:**	**Date:**

FEMA Reviewer:	**Title:**	**Date:**
Date Received in FEMA Region [IX]		
Plan Not Approved		
Plan Approved		
Date Approved		

Jurisdiction:	**NFIP Status***			
	Y	**N**	**N/A**	**CRS Class**
1. **Bonita Unified School District (In the Cities of San Dimas and La Verne)**	**X**			
2.				
3.				
4.				
5. [ATTACH PAGE(S) WITH ADDITIONAL JURISDICTIONS]				

* Notes: Y = Participating N = Not Participating N/A = Not Mapped

Jurisdiction:

LOCAL MITIGATION PLAN REVIEW SUMMARY

The plan cannot be approved if the plan has not been formally adopted.

Each requirement includes separate elements. All elements of the requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a score of "Satisfactory." Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer's comments must be provided for requirements receiving a **"Needs Improvement"** score.

SCORING SYSTEM

Please check one of the following for each requirement.

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Prerequisite(s) (Check Applicable Box)	**NOT MET**	**MET**
Adoption by the Local Governing Body: §201.6(c)(5) **OR**		
Multi-Jurisdictional Plan Adoption: §201.6(c)(5) **AND**		
Multi-Jurisdictional Planning Participation: §201.6(a)(3)		

Planning Process	**N**	**S**
Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)		

Risk Assessment	**N**	**S**
Identifying Hazards: §201.6(c)(2)(i)		
Profiling Hazards: §201.6(c)(2)(i)		
Assessing Vulnerability: Overview: §201.6(c)(2)(ii)		
Assessing Vulnerability: Identifying Structures: §201.6(c)(2)(ii)(A)		
Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)		
Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)		
Multi-Jurisdictional Risk Assessment: §201.6(c)(2)(iii)		

Mitigation Strategy	**N**	**S**
Local Hazard Mitigation Goals: §201.6(c)(3)(i)		
Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)		
Implementation of Mitigation Actions: §201.6(c)(3)(iii)		
Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)		

Plan Maintenance Process	**N**	**S**
Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(i)		
Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)		
Continued Public Involvement: §201.6(c)(4)(iii)		

Additional State Requirements*	**N**	**S**
Insert State Requirement		
Insert State Requirement		
Insert State Requirement		

LOCAL MITIGATION PLAN APPROVAL STATUS

PLAN NOT APPROVED ☐

PLAN APPROVED ☐

*States that have additional requirements can add them in the appropriate sections of the *Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements.

See Reviewer's Comments

Jurisdiction:

PREREQUISITE(S)

Adoption by the Local Governing Body

***Requirement §201.6(c)(5)*:** *[The local hazard mitigation plan **shall** include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Has the local governing body adopted the plan?	N/A			
B. Is supporting documentation, such as a resolution, included?	Appendix A			
		SUMMARY SCORE		

Multi-Jurisdictional Plan Adoption

***Requirement §201.6(c)(5)*:** *For multi-jurisdictional plans, each jurisdiction requesting approval of the plan **must** document that it has been formally adopted.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Does the plan indicate the specific jurisdictions represented in the plan?	N/A			
B. For each jurisdiction, has the local governing body adopted the plan?	N/A			
C. Is supporting documentation, such as a resolution, included for each participating jurisdiction?	N/A			
		SUMMARY SCORE		

Multi-Jurisdictional Planning Participation

***Requirement §201.6(a)(3)*:** *Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process … Statewide plans will not be accepted as multi-jurisdictional plans.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Does the plan describe **how** each jurisdiction participated in the plan's development?	N/A			
		SUMMARY SCORE		

Jurisdiction:

PLANNING PROCESS: *§201.6(b): An open public involvement process is essential to the development of an effective plan.*

Documentation of the Planning Process

Requirement §201.6(b): *In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process* ***shall*** *include:*

(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;

(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Requirement §201.6(c)(1): *[The plan* ***shall*** *document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan provide a narrative description of the process followed to prepare the plan?	pp 5, 6,15, 22-25, 31			
B. Does the plan indicate who was involved in the planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, etc.?)	pp 3, 4, 7, Appendix B			
C. Does the plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)	pp 7, 12, 22-29 85, Appendix B			
D. Was there an opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?	pp 3, 4, 7, Appendix B			
E. Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?	pp 14, 26-28,46-49, 54, 63, Appendices H & I			
		SUMMARY SCORE		

Jurisdiction:

Local Capabilities Assessment (Optional, Additional State OES Requested Information)

Requirement §201.4(c)(3)(ii): - *Of the Federal Register Interim Final Rule 44 CFR Parts 201 and 206 states, "[The State mitigation strategy shall include} a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan provide a description of the human, technical and financial resources available within this jurisdiction to engage in a mitigation planning process and to develop a local hazard mitigation plan? (these resources are described in Section 2.2 of the OES LHMP Development Guide)	pp 14, 15, 26-28	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
B. Does the plan list local mitigation funding sources (taxes, fess, assessments of fines) which affect or promote mitigation within reporting jurisdiction?	pp 49, 52-57, 60, 63, 66	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
C. Does the plan list local ordinances which affect or promote disaster mitigation, preparedness, response of recovery within the reporting jurisdiction?	pp 49, 52-57, 60, 63, 66	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
D. Does the plan describe the details of ongoing mitigation projects and programs within the reporting jurisdiction?	pp 9-10, 77-81	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
		SUMMARY SCORE		

Jurisdiction:

RISK ASSESSMENT: *§201.6(c)(2): The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.*

Identifying Hazards

Requirement §201.6(c)(2)(i): *[The risk assessment **shall** include a] description of the type … of all natural hazards that can affect the jurisdiction.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan include **a description** of the types of **all natural hazards** that affect the jurisdiction? If the hazard identification omits (without explanation) any hazards commonly recognized as threats to the jurisdiction, this part of the plan cannot receive a Satisfactory score. Consult with the State Hazard Mitigation Officer to identify applicable hazards that may occur in the planning area.	pp 32-40			
		SUMMARY SCORE		

Profiling Hazards

Requirement §201.6(c)(2)(i): *[The risk assessment **shall** include a] description of the … location and extent of all natural hazards that can affect the jurisdiction. The plan **shall** include information on previous occurrences of hazard events and on the probability of future hazard events.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the risk assessment identify the **location** (i.e., geographic area affected) of each natural hazard addressed in the plan?	Appendices D&E pp 40-67			
B. Does the risk assessment identify the **extent** (i.e., magnitude or severity) of each hazard addressed in the plan?	Appendices D&E pp 40-67			

Jurisdiction:

C. Does the plan provide information on **previous occurrences** of each hazard addressed in the plan?	pp41,50,58,61, 64-65			
D. Does the plan include the **probability of future events** (i.e., chance of occurrence) for each hazard addressed in the plan?	pp 32,33,40, 46-49			
		SUMMARY SCORE		

Assessing Vulnerability: Overview

Requirement §201.6(c)(2)(ii): *[The risk assessment **shall** include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description **shall** include an overall summary of each hazard and its impact on the community.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan include an **overall summary** description of the jurisdiction's **vulnerability** to each hazard?	pp 40-52, 56-62, 68-70			
B. Does the plan address the **impact** of each hazard on the jurisdiction?	pp 40-52			
		SUMMARY SCORE		

Assessing Vulnerability: Identifying Structures

Requirement §201.6(c)(2)(ii)(A): *The plan **should** describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area … .*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan describe vulnerability in terms of the **types and numbers** of **existing** buildings, infrastructure, and critical facilities located in the identified hazard areas?	pp 68-70 Appendices D & F	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
B. Does the plan describe vulnerability in terms of the **types and numbers** of **future** buildings, infrastructure, and critical facilities located in the identified hazard areas?	pp 48,49,55,61 Appendices D & F	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
		SUMMARY SCORE		

Jurisdiction:

Assessing Vulnerability: Estimating Potential Losses

Requirement §201.6(c)(2)(ii)(B): *[The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate … .*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan estimate **potential dollar losses** to vulnerable structures?	Appendix F	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
B. Does the plan describe the **methodology** used to prepare the estimate?	pp 68-70	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
		SUMMARY SCORE		

Assessing Vulnerability: Analyzing Development Trends

Requirement §201.6(c)(2)(ii)(C): *[The plan **should** describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan describe land uses and development trends?	pp 22, 54, 57	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
		SUMMARY SCORE		

Multi-Jurisdictional Risk Assessment

Requirement §201.6(c)(2)(iii): *For multi-jurisdictional plans, the risk assessment **must** assess each jurisdiction's risks where they vary from the risks facing the entire planning area.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?	N/A			
		SUMMARY SCORE		

Jurisdiction:

MITIGATION STRATEGY: *§201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.*

Local Hazard Mitigation Goals

Requirement §201.6(c)(3)(i): *[The hazard mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A Does the plan include a description of mitigation **goals** to reduce or avoid long-term vulnerabilities to the identified hazards? (**GOALS** are long-term; represent what the community wants to achieve, such as "eliminate flood damage"; and are based on the risk assessment findings.)	pp 72-74			
		SUMMARY SCORE		

Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): *[The mitigation strategy **shall** include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan identify and analyze a **comprehensive range** of specific mitigation actions and projects for each hazard?	pp 9-10, 75-81			
B Do the identified actions and projects address reducing the effects of hazards on **new** buildings and infrastructure?	pp 9-10, 75-81			
C. Do the identified actions and projects address reducing the effects of hazards on **existing** buildings and infrastructure?	pp 9-10, 55, 75-81			
		SUMMARY SCORE		

Jurisdiction:

Implementation of Mitigation Actions

Requirement: §201.6(c)(3)(iii): *[The mitigation strategy section **shall** include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization **shall** include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the mitigation strategy include how the actions are **prioritized**? (For example, is there a discussion of the process and criteria used?)	pp 9-10, 77-82			
B. Does the mitigation strategy address how the actions will be **implemented and administered**? (For example, does it identify the responsible department, existing and potential resources, and timeframe?)	pp 77-83			
C. Does the prioritization process include an emphasis on the use of a **cost-benefit review** (see page 3-36 of *Multi-Hazard Mitigation Planning Guidance*) to maximize benefits?	pp 75, Appendix H			
		SUMMARY SCORE		

Multi-Jurisdictional Mitigation Actions

Requirement §201.6(c)(3)(iv): *For multi-jurisdictional plans, there **must** be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A Does the plan include at least one identifiable **action item** for each jurisdiction requesting FEMA approval of the plan?	N/A			
		SUMMARY SCORE		

Jurisdiction:

PLAN MAINTENANCE PROCESS

Monitoring, Evaluating, and Updating the Plan

Requirement §201.6(c)(4)(i): *[The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan describe the method and schedule for **monitoring** the plan? (For example, does it identify the party responsible for monitoring and include a schedule for reports, site visits, phone calls, and meetings?)	pp 11, 87,88			
B. Does the plan describe the method and schedule for **evaluating** the plan? (For example, does it identify the party responsible for evaluating the plan and include the criteria used to evaluate the plan?)	pp 87			
C. Does the plan describe the method and schedule for **updating** the plan within the five-year cycle?	pp 87			
		SUMMARY SCORE		

Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii): *[The plan **shall** include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan?	pp 87			
B. Does the plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?	pp 88			
		SUMMARY SCORE		

Jurisdiction:

Continued Public Involvement

Requirement §201.6(c)(4)(iii): *[The plan maintenance process **shall** include a] discussion on how the community will continue public participation in the plan maintenance process.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan explain how **continued public participation** will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)	pp 12, 87			
		SUMMARY SCORE		

Jurisdiction:

Matrix A: Profiling Hazards

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that their plan addresses each natural hazard that can affect the jurisdiction. **Completing the matrix is not required**.

Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each ***applicable*** *hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Location		B. Extent		C. Previous Occurrences		D. Probability of Future Events	
	Yes	N	S	N	S	N	S	N	S
Avalanche	☐	☐	☐	☐	☐	☐	☐	☐	☐
Coastal Erosion	☐	☐	☐	☐	☐	☐	☐	☐	☐
Coastal Storm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Dam Failure	☐	☐	☐	☐	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐	☐	☐	☐	☐
Expansive Soils	☐	☐	☐	☐	☐	☐	☐	☐	☐
Extreme Heat	☐	☐	☐	☐	☐	☐	☐	☐	☐
Flood	☐	☐	☐	☐	☐	☐	☐	☐	☐
Hailstorm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Hurricane	☐	☐	☐	☐	☐	☐	☐	☐	☐
Land Subsidence	☐	☐	☐	☐	☐	☐	☐	☐	☐
Landslide	☐	☐	☐	☐	☐	☐	☐	☐	☐
Severe Winter Storm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Tornado	☐	☐	☐	☐	☐	☐	☐	☐	☐
Tsunami	☐	☐	☐	☐	☐	☐	☐	☐	☐
Volcano	☐	☐	☐	☐	☐	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐	☐	☐	☐	☐
Windstorm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐	☐	☐	☐

To check boxes, double click on the box and change the default value to "checked."

Legend:
§201.6(c)(2)(i) Profiling Hazards
A. Does the risk assessment identify the location (i.e., geographic area affected) of each hazard addressed in the plan?
B. Does the risk assessment identify the extent (i.e., magnitude or severity) of each hazard addressed in the plan?
C. Does the plan provide information on previous occurrences of each natural hazard addressed in the plan?
D. Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the plan?

Jurisdiction:

Matrix B: Assessing Vulnerability

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that their plan addresses each requirement. **Completing the matrix is not required**.

Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each ***applicable*** *hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

Note: Receiving an N in the shaded columns will not preclude the plan from passing.

To check boxes, double click on the box and change the default value to "checked."

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	§201.6(c)(2)(ii) Assessing Vulnerability: Overview					§201.6(c)(2)(ii) Assessing Vulnerability: Identifying Structures					§201.6(c)(2)(ii) Assessing Vulnerability: Estimating Potential Losses			
		A. Overall Summary Description of Vulnerability		B. Hazard Impact			A. Types and Number of Existing Structures in Hazard Area (Estimate)		B. Types and Number of Future Structures in Hazard Area (Estimate)			A. Loss Estimate		B. Methodology	
	Yes	N	S	N	S		N	S	N	S		N	S	N	S
Avalanche	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Coastal Erosion	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Coastal Storm	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Dam Failure	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Expansive Soils	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Extreme Heat	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Flood	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Hailstorm	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Hurricane	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Land Subsidence	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Landslide	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Severe Winter Storm	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Tornado	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Tsunami	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Volcano	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Windstorm	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐		☐	☐	☐	☐		☐	☐	☐	☐

Legend:

§201.6(c)(2)(ii) Assessing Vulnerability: Overview

A. Does the plan include an overall summary description of the jurisdiction's vulnerability to each hazard?

B. Does the plan address the impact of each hazard on the jurisdiction?

B. Does the plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

§201.6(c)(2)(ii)(B) Assessing Vulnerability: Estimating Potential Losses

Jurisdiction:

§201.6(c)(2)(ii)(A) Assessing Vulnerability: Identifying Structures
A. Does the plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?

A. Does the plan estimate potential dollar losses to vulnerable structures?
B. Does the plan describe the methodology used to prepare the estimate?

Matrix C: Identification and Analysis of Mitigation Actions

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure consideration of a range of actions for each hazard. **Completing the matrix is not required.**

Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each ***applicable*** *hazard. An "N" for any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Comprehensive Range of Actions and Projects	
	Yes	N	S
Avalanche	☐	☐	☐
Coastal Erosion	☐	☐	☐
Coastal Storm	☐	☐	☐
Dam Failure	☐	☐	☐
Drought	☐	☐	☐
Earthquake	☐	☐	☐
Expansive Soils	☐	☐	☐
Extreme Heat	☐	☐	☐
Flood	☐	☐	☐
Hailstorm	☐	☐	☐
Hurricane	☐	☐	☐
Land Subsidence	☐	☐	☐
Landslide	☐	☐	☐
Severe Winter Storm	☐	☐	☐
Tornado	☐	☐	☐
Tsunami	☐	☐	☐
Volcano	☐	☐	☐
Wildfire	☐	☐	☐
Windstorm	☐	☐	☐
Other _____	☐	☐	☐
Other _____	☐	☐	☐
Other _____	☐	☐	☐

To check boxes, double click on the box and change the default value to "checked."

Legend:
§201.6(c)(3)(ii) Identification and Analysis of Mitigation Actions
A. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?

APPENDIX

G

FEMA CROSSWALK

APPENDIX

H

COST ANALYSIS

Cost Analysis

Economic Analysis of Natural Hazard Mitigation Actions/Projects
Benefit/cost analysis is a key mechanism used by the state Office of Emergency Services (OES), the Federal Emergency Management Agency (FEMA), and other state and federal agencies in evaluating hazard mitigation actions/projects, and is required by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended.

This appendix outlines several approaches for conducting economic analysis of natural hazard mitigation projects. It describes the importance of implementing mitigation activities, different approaches to economic analysis of mitigation strategies, and methods to calculate costs and benefits associated with mitigation strategies. Information in this section is derived in part from: The Interagency Hazards Mitigation Team, State Hazard Mitigation Plan, (Oregon State Police – Office of Emergency Management, 2000), and Federal Emergency Management Agency Publication 331, Report on Costs and Benefits of Natural Hazard Mitigation.

This section is not intended to provide a comprehensive description of benefit/cost analysis, nor is it intended to provide the details of economic analysis methods that can be used to evaluate local projects. It is intended to (1) raise benefit/cost analysis as an important issue, and (2) provide some background on how economic analysis can be used to evaluate mitigation projects.

Why Evaluate Mitigation Strategies?
Mitigation activities reduce the cost of disasters by minimizing property damage, injuries, and the potential for loss of life, and by reducing emergency response costs, which would otherwise be incurred.

Evaluating natural hazard mitigation provides 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. Evaluating mitigation projects is a complex and difficult undertaking, which is influenced by many variables. First, natural disasters affect all segments of the communities they strike, including individuals, businesses, and public services such as fire, police, utilities, and schools.

Second, while some of the direct and indirect costs of disaster damages are measurable, some of the costs are non-financial and difficult to quantify in dollars. Third, many of the impacts of such events produce “ripple-effects” throughout the community, greatly increasing the disaster’s social and economic consequences.

While not easily accomplished, there is value, from a public policy perspective, in assessing the positive and negative impacts from mitigation activities, and obtaining an instructive benefit/cost comparison. Otherwise, the decision to pursue or not pursue various mitigation options would not be based on an objective understanding of the net benefit or loss associated with these actions.

What are Some Economic Analysis Approaches for Mitigation Strategies?
The approaches used 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. The distinction between the two methods is the way in which the relative costs and benefits are measured. Additionally, there are varying approaches to assessing the value of mitigation for public sector and private sector activities.

Benefit/Cost Analysis
Benefit/cost analysis is used in natural hazards mitigation to show if the benefits to life and property protected through mitigation efforts exceed the cost of the mitigation activity. 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. Benefit/cost analysis is based on calculating the frequency and severity of a hazard, avoided future damages, and risk.

In benefit/cost analysis, all costs and benefits are evaluated in terms of dollars, and a net benefit/cost ratio is computed to determine whether a project should be implemented (i.e., if net benefits exceed net costs, the project is worth pursuing). A project must have a benefit/cost ratio greater than 1 in order to be funded.

Cost-Effectiveness Analysis
Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. This type of analysis, however, does not necessarily measure costs and benefits in terms of dollars. Determining the economic feasibility of mitigating natural hazards can also be organized according to the perspective of those with an economic interest in the outcome. Hence, economic analysis approaches are covered for both public and private sectors as follows.

Investing in public sector mitigation activities
Evaluating mitigation strategies in the public sector is complicated because it involves estimating all of the economic benefits and costs regardless of who realizes them, and potentially to a large number of people and economic entities. Some benefits cannot be evaluated monetarily, but still affect the public in profound ways. Economists have developed methods to evaluate the economic feasibility of public decisions that involve a diverse set of beneficiaries and non-market benefits.

Investing in private sector mitigation activities
Private sector mitigation projects may occur on the basis of one of two approaches: it may be mandated by a regulation or standard, or it may be economically justified on its own merits. A building or landowner, whether a private entity or a public agency, required to conform to a mandated standard may consider the following options:

1. Request cost sharing from public agencies;
2. Dispose of the building or land either by sale or demolition;
3. Change the designated use of the building or land and change the hazard mitigation compliance requirement; or
4. Evaluate the most feasible alternatives and initiate the most cost

effective hazard mitigation alternative.

The sale of a building or land triggers another set of concerns. For example, real estate disclosure laws can be developed which require sellers of real property to disclose known defects and deficiencies in the property, including earthquake weaknesses and hazards to

Estimating the costs and benefits of a hazard mitigation strategy can be a complex process. Employing the services of a specialist can assist in this process.

prospective purchasers. Correcting deficiencies can be expensive and time consuming, but their existence can prevent the sale of the building. Conditions of a sale regarding the deficiencies and the price of the building can be negotiated between a buyer and seller.

How can an Economic Analysis be Conducted?

Benefit/cost analysis and cost-effectiveness analysis are important tools in evaluating whether or not to implement a mitigation activity. A framework for evaluating alternative mitigation activities is outlined below:

1. Identify the Alternatives: Alternatives for reducing risk from natural hazards can include structural projects to enhance disaster resistance, education and outreach, and acquisition or demolition of exposed properties, among others. Different mitigation project can assist in minimizing risk to natural hazards, but do so at varying economic costs.

2. Calculate the Costs and Benefits: Choosing economic criteria is essential to systematically calculating costs and benefits of mitigation projects and selecting the most appropriate alternative. Potential economic criteria to evaluate alternatives include:

- Determine the project cost. This may include initial project development costs, and repair and operating costs of maintaining projects over time.

- Estimate the benefits. Projecting the benefits, or cash flow resulting from a project can be difficult. Expected future returns from the mitigation effort depend on the correct specification of the risk and the effectiveness of the project, which may not be well known. Expected future costs depend on the physical durability and potential economic obsolescence of the investment. This is difficult to project. These considerations will also provide guidance in selecting an appropriate salvage value. Future tax structures and rates must be projected. Financing alternatives must be researched, and they may include retained earnings, bond and stock issues, and commercial loans.

- Consider costs and benefits to society and the environment. These are not easily measured, but can be assessed through a variety of economic tools including existence value or contingent value theories. These theories provide quantitative data on the value people attribute to physical or social environments. Even without hard data, however, impacts of structural projects to the physical

environment or to society should be considered when implementing mitigation projects.

- Determine the correct discount rate. Determination of the discount rate can just be the risk-free cost of capital, but it may include the decision maker's time preference and also a risk premium. Including inflation should also be considered.

3. Analyze and Rank the Alternatives: Once costs and benefits have been quantified, economic analysis tools can rank the alternatives. Two methods for determining the best alternative given varying costs and benefits include net present value and internal rate of return.

- Net present value. Net present value is the value of the expected future returns of an investment minus the value of expected future cost expressed in today's dollars. If the net present value is greater than the project costs, the project may be determined feasible for implementation. Selecting the discount rate, and identifying the present and future costs and benefits of the project calculates the net present value of projects.

- Internal Rate of Return. Using the internal rate of return method to evaluate mitigation projects provides the interest rate equivalent to the dollar returns expected from the project. Once the rate has been calculated, it can be compared to rates earned by investing in alternative projects. Projects may be feasible to implement when the internal rate of return is greater than the total costs of the project.

Once the mitigation projects are ranked on the basis of economic criteria, decision-makers can consider other factors, such as risk; project effectiveness; and economic, environmental, and social returns in choosing the appropriate project for implementation.

How are Benefits of Mitigation Calculated?

Economic Returns of Natural Hazard Mitigation

The estimation of economic returns, which accrue to building or land owner as a result of natural hazard mitigation, is difficult. Owners evaluating the economic feasibility of mitigation should consider reductions in physical damages and financial losses. A partial list follows:

- Building damages avoided
- Content damages avoided
- Inventory damages avoided
- Rental income losses avoided
- Relocation and disruption expenses avoided
- Proprietor's income losses avoided

These parameters can be estimated using observed prices, costs, and engineering data. The difficult part is to correctly determine the effectiveness of the hazard mitigation project and the resulting reduction in damages and losses. Equally as difficult is assessing the probability that an event will occur. The damages and losses should only include those that will be borne by the owner. The salvage value of the investment can be important in determining economic

feasibility. Salvage value becomes more important as the time horizon of the owner declines. This is important because most businesses depreciate assets over a period of time.

Additional Costs from Natural Hazards

Property owners should also assess changes in a broader set of factors that can change as a result of a large natural disaster. These are usually termed "indirect" effects, but they can have a very direct effect on the economic value of the owner's building or land. They can be positive or negative, and include changes in the following:

- Commodity and resource prices
- Availability of resource supplies
- Commodity and resource demand changes
- Building and land values
- Capital availability and interest rates
- Availability of labor
- Economic structure
- Infrastructure
- Regional exports and imports
- Local, state, and national regulations and policies
- Insurance availability and rates

Changes in the resources and industries listed above are more difficult to estimate and require models that are structured to estimate total economic impacts. Total economic impacts are the sum of direct and indirect economic impacts. Total economic impact models are usually not combined with economic feasibility models. Many models exist to estimate total economic impacts of changes in an economy. Decision makers should understand the total economic impacts of natural disasters in order to calculate the benefits of a mitigation activity. This suggests that understanding the local economy is an important first step in being able to understand the potential impacts of a disaster, and the benefits of mitigation activities.

Additional Considerations

Conducting an economic analysis for potential mitigation activities can assist decision-makers in choosing the most appropriate strategy for their District or community to reduce risk and prevent loss from natural hazards. Economic analysis can also save time and resources from being spent on inappropriate or unfeasible projects. Several resources and models are listed on the following page that can assist in conducting an economic analysis for natural hazard mitigation activities.

Benefit/cost analysis is complicated, and the numbers may divert attention from other important issues. It is important to consider the qualitative factors of a project associated with mitigation that cannot be evaluated economically. There are alternative approaches to implementing mitigation projects. Many communities are looking towards developing multi-objective projects. With this in mind, opportunity rises to develop strategies that integrate natural hazard mitigation with projects related to watersheds, environmental planning, community economic development, and small business development, among others. Incorporating natural hazard mitigation with other community projects can increase the viability of project implementation.

Resources

CUREe Kajima Project, Methodologies For Evaluating The Socio-Economic Consequences Of Large Earthquakes, Task 7.2 Economic Impact Analysis, Prepared by University of California, Berkeley Team, Robert A. Olson, VSP Associates, Team Leader; John M. Eidinger, G&E Engineering Systems; Kenneth A. Goettel, Goettel and Associates Inc.; and Gerald L. Horner, Hazard Mitigation Economics Inc., 1997.

Federal Emergency Management Agency, Benefit/Cost Analysis of Hazard Mitigation Projects, Riverine Flood, Version 1.05, Hazard Mitigation Economics Inc., 1996.

Federal Emergency Management Agency Report on Costs and Benefits of Natural Hazard Mitigation. Publication 331, 1996.

Goettel & Horner Inc., Earthquake Risk Analysis Volume III: The Economic Feasibility of Seismic Rehabilitation of Buildings in The City of Portland, Submitted to the Bureau of Buildings, City of Portland, August 30, 1995.

Goettel & Horner Inc., Benefit/Cost Analysis of Hazard Mitigation Projects Volume V, Earthquakes, Prepared for FEMA's Hazard Mitigation Branch, October 25, 1995.

Horner, Gerald, Benefit/Cost Methodologies for Use in Evaluating the Cost Effectiveness of Proposed Hazard Mitigation Measures, Robert Olson Associates, Prepared for Oregon State Police, Office of Emergency Management, July 1999.

Interagency Hazards Mitigation Team, State Hazard Mitigation Plan, (Oregon State Police – Office of Emergency Management, 2000).

Risk Management Solutions, Inc., Development of a Standardized Earthquake Loss Estimation Methodology, National Institute of Building Sciences, Volume I and II, 1994.

VSP Associates, Inc., A Benefit/Cost Model for the Seismic Rehabilitation of Buildings, Volumes 1 & 2, Federal Emergency Management Agency, FEMA, Publication Numbers 227 and 228, 1991.

VSP Associates, Inc., Benefit/Cost Analysis of Hazard Mitigation Projects: Section 404 Hazard Mitigation Program and Section 406 Public Assistance Program, Volume 3: Seismic Hazard Mitigation Projects, 1993.

VSP Associates, Inc., Seismic Rehabilitation of Federal Buildings: A Benefit/Cost Model, Volume 1, Federal Emergency Management Agency, FEMA, Publication Number 255, 1994.

APPENDIX

I

REFERENCE/RESEARCH/CONTACTS

REFERENCES/RESEARCH/ CONTACTS

Association of State Flood Managers www.floods.org
California Department of Forestry and Fire Protection, website:
http://www.fire.ca.gov/php/fire_er_content/downloads/2003LargeFires.pdf
California Department of Forestry and Fire Protection, website:
http://www.fire.ca.gov/php/2003fireseasonstats_v2.asp.
California State Polytechnic University, Pomona, website:
http://www.csupomona.edu/
California Department of Transportation (Cal Trans) www.dot.ca.gov
City of La Verne, website: http://www.ci.laverne.ca.us/.
California Department of Conservation, Division of Mines and Geology, 1998.
California Geological. Survey
http://www.consrv.ca.gov/CGS/rghm/pshamap/psha11834.html
Cal. Dept. of Conservation http://gmw.consrv.ca.gov/shmp/html/pdf_maps_so.html
Federal Emergency Management Agency Region IX, website: www.fema.gov
Federal Emergency Management Agency; Guide to Citizen Preparedness
FEMA, personal communication with DMA 2000 Specialist, June, July, 2004.
Keys to Safer Schools www.keystosaferschools.com
Landslide Hazard Program http://landslides.usgs.gov
National Association of School Psychologists www.nasponline.org
National Fire Protection Association http://nfpa.org/catalog/home/index.asp
National Floodplain Insurance Program www.fema.org
National interagency Fire Center www.nifc.gov
National Atmospheric/ Oceanic Administration, http://nimbo.wrh.noaa.gov
National Wildlife/Urban Interface Fire Program www.firewise.org
Los Angeles County Fire Authority www.lafa.org
Southern California Earthquake Center, website:
htto://www.data.sec.org/chrono_index/quakedex.html.
Southern California Edison www.sce.org
Southern California Earthquake Center www.scec.org
State Fire Marshal http://osfm.ca.gov
Significant Landslides Events in the United States.
http://landslides.usgs.gov.html_files/pubs/report1/Landslides_pass_508.pdf
United States Corps of Engineers www.usace.army.mil
United States Department of Education, Emergency Planning www.ed.gov
U.S. census Bureau: United States Population and Housing Counts, 1980 and 2000
United States Department of Homeland Security www.dhs.org
United States Seismic Policy Council www.wsspc.org

State Resources

California Department of Transportation (CalTrans)
120 S. Spring Street
Los Angeles, CA 90012
Ph: 213-897-3656
http://www.dot.ca.gov/
Notes: CalTrans is responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as that portion of the Interstate Highway System within the state's boundaries. Alone and in partnership with Amtrak, CalTrans is also involved in the support of intercity passenger rail service in California

California Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814
Ph: 916-653-5656
http://resources.ca.gov/
Notes: The California Resources Agency restores, protects and manages the state's natural, historical and cultural resources for current and future generations using solutions based on science, collaboration and respect for all the communities and interests involved.

California Division of Mines and Geology (DMG)
801 K Street, MS 12-30
Sacramento, CA 95814
Ph: 916-445-1825 - Fx: 916-445-5718
Notes: The California Geological Survey develops and disseminates technical information and advice on California's geology, geologic hazards, and mineral resources.

California Department of Conservation: Southern California Regional Office
655 S. Hope Street, #700
Los Angeles, CA 90017-2321
Ph: 213-239-0878 - Fx: 213-239-0984
Notes: The Department of Conservation provides services and information that promote environmental health, economic vitality, informed land-use decisions and sound management of our state's natural resources.

Governor's Office of Emergency Services (OES)
P.O. Box 419047
Rancho Cordova, CA 95741-9047
Ph: 916 845- 8911 - Fx: 916 845- 8910
Notes: The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, manmade, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.

Federal and National Resources

Building Seismic Safety Council (BSSC)
1090 Vermont Ave., NW, Suite 700
Washington, DC 20005
Ph: 202-289-7800 - Fx: 202-289-109
www.bssconline.org
Notes: The Building Seismic Safety Council (BSSC) develops and promotes building earthquake risk mitigation regulatory provisions for the nation.

Federal Emergency Management Agency, Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607
Ph: 510-627-7100 - Fx: 510-627-7112
www.fema.gov
Notes: The Federal Emergency Management Agency is tasked with responding to, planning for, recovering from and mitigating against disasters.

Federal Emergency Management Agency, Mitigation Division
500 C Street, S.W.
Washington, D.C. 20472
Ph: 202-566-1600
www.fema.gov/fima/planhowto.shtm
Notes: The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has a number of programs and activities which provide citizens Protection, with flood insurance; Prevention, with mitigation measures and Partnerships, with communities throughout the country.

United States Geological Survey
345 Middlefield Road
Menlo Park, CA 94025
Ph: 650-853-8300
http://www.usgs.gov/
Notes: The USGS provides reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

Western States Seismic Policy Council (WSSPC)
125 California Avenue, Suite D201, #1
Palo Alto, CA 94306
Ph: 650-330-1101 - Fx: 650-326-1769
Notes: WSSPC is a regional earthquake consortium funded mainly by FEMA. Its website is a great resource, with information clearly categorized - from policy to engineering to education.

Institute for Business & Home Safety
4775 E. Fowler Avenue
Tampa, FL 33617
Ph: 813-286-3400 - Fx: 813-286-9960

http://www.ibhs.org/
The Institute for Business & Home Safety (IBHS) is a nonprofit association that engages in communication, education, engineering and research. The Institute works to reduce deaths, injuries, property damage, economic losses and human suffering caused by natural disasters.

Publications

"Land Use Planning for Earthquake Hazard Mitigation: Handbook for Planners"
Wolfe, Myer R. et. aI., (1986) University of Colorado, Institute of Behavioral Science, National Science Foundation. - This handbook provides techniques that planners and others can utilize to help mitigate for seismic hazards, It provides information on the effects of earthquakes, sources on risk assessment, and effects of earthquakes on the built environment. The handbook also gives examples on application and implementation of planning techniques to be used by local communities.
Contact: Natural Hazards Research and Applications Information Center
Address: University of Colorado, 482 UCB,
Boulder, CO 80309-0482
Phone: (303) 492-6818
Fax: (303) 492-2151
Website: http://www,colorado.edu/UCB/Research/IBS/hazards

"Public Assistance Debris Management Guide", FEMA (July 2000).
The Debris Management Guide was developed to assist local officials in planning, mobilizing, organizing. and controlling large-scale debris clearance, removal, and disposal operations, Debris management is generally associated with post-disaster recovery. While it should be compliant with local and county emergency operations plans, developing strategies to ensure strong debris management is a way to integrate debris management within mitigation activities. The "Public Assistance Debris Management Guide" is available in hard copy or on the FEMA website.

Federal Resources and Programs

Federal Emergency Management Agency (FEMA)
FEMA provides maps of flood hazard areas, various publications related to flood mitigation, funding for flood mitigation projects, and technical assistance, FEMA also operates the National Flood Insurance Program. FEMA' s mission is to reduce loss of life and property and protect the nation's critical infrastructure from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response and recovery.

Federal Emergency Management Agency, Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607
Ph: 510-627-7100
Fx: 510-627-7112

Federal Emergency Management Agency, Mitigation Division
500 C Street, S.W.
Washington, D.C. 20472
Ph: 202-566-1600

FEMA' s List of Flood Related Websites -This site contains a long list of flood related Internet sites from "American Heritage Rivers" to "The Weather Channel" and is a good starting point for flood information on the Internet.
Contact: Federal Emergency Management Agency, Phone: (800) 480-2520
Website: http://www.fema.gov/nfip/related.htm

National Flood Insurance Program (NFIP)- In Southern California many cities lie within flood zones as defined in FEMA Flood Maps. The City of La Verne is (or is not) a community within a designated flood zone. Flood insurance is available to citizens in communities that adopt and implement NFIP building standards. The standards are applied to development that occurs within a delineated floodplain, a drainage hazard area, and properties' within 250 feet of a floodplain boundary. These areas are depicted on federal Flood Insurance Rate Maps available through the county.

National Floodplain Insurance Program (NFIP)
500 C Street, S.W.
Washington, D.C. 20472
Ph: 202-566-1600

The Floodplain Management Association - The Floodplain Management website was established by the Floodplain Management Association (FMA) to serve the entire floodplain management community. It includes full-text articles, a calendar of upcoming events, a list of positions available, an index of publications available free or at nominal cost, a list of associations, a list of firms and consultants in floodplain management, an index of newsletters dealing with flood issues (with hypertext links if available), a section on the basics of floodplain management, a list of frequently asked questions (FAQs) about the Website, and a catalog of Web links.

Floodplain Management Association
P.O. Box 50891
Sparks, NV 89435-0891
Ph: 775-626-6389
Fx: 775-626-6389

The Association of State Floodplain Managers - The Association of State Floodplain Managers is an organization of professionals involved in floodplain management, flood hazard mitigation, the National Flood Insurance Program, and flood preparedness, warning, and recovery. ASFPM fosters communication among those responsible for flood hazard activities, provides technical advice to governments and other entities about proposed actions or policies that will affect flood hazards, and encourages flood hazard research, education, and training. The ASFPM Web site includes information on how to become a member, the organization's constitution and bylaws, directories of officers and committees, a publications list, information on upcoming conferences, a history of the association, and other useful information and Internet links.
Contact: The Association of State Floodplain Managers
Address: 2809 Fish Hatchery Road, Madison, WI 53713 Phone: (608) 274-0123
Website: http://www.floods,org

National Weather Service - The National Weather Service provides flood watches, warnings, and informational statements for rivers in the City of La Verne.
National Weather Service
520 North Elevar Street
Oxnard, CA 93030
Ph: 805-988- 6615

Office of Hydrology, National Weather Service - The National Weather Service s Office of Hydrology (OH) and its Hydrological Information Center offer information on floods and other aquatic disasters, This site offers current and historical data including an archive of past flood summaries, information on current hydrologic conditions, water supply outlooks, an Automated Local Flood Warning Systems Handbook, Natural Disaster Survey Reports, and other scientific publications on hydrology and flooding.

National Weather Service, Office of Hydrologic Development
1325 East West Highway, SSMC2
Silver Spring, MD 20910
Ph: 301-713-1658
Fx: 301-713-0963

National Resources Conservation Service (NRCS), US Department of Agriculture - NRCS provides a suite of federal programs designed to assist state and local governments and landowners in mitigating the impacts of flood events. The Watershed Surveys and Planning Program and the Small Watershed Program provide technical and financial assistance to help participants solve natural resource and related economic problems on a watershed basis. The Wetlands Reserve Program and the Flood Risk Reduction Program provide financial incentives to landowners to put aside land that is either a wetland resource, or that experiences frequent flooding. The Emergency Watershed Protection Program (EWP) provides technical and financial assistance to clear debris from clogged waterways, restore vegetation, and stabilizing riverbanks.

The measures taken under EWP must be environmentally and economically sound and generally benefit more that one property.

National Resources Conservation Service
14th and Independence Ave., SW, Room 5105-A
Washington, DC 20250
Ph: 202-720-7246
Fx: 202-720-7690

USGS Water Resources - This web page offers current US water news; extensive current (including real-time) and historical water data; numerous fact sheets and other publications; various technical resources; descriptions of ongoing water survey programs; local water information; and connections to other sources of water information.

USGS Water Resources
6000 J Street Placer Hall
Sacramento, CA 95819-6129
Ph: 916-278-3000
Fx: 916-278-3070

Bureau of Reclamation - The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. The Bureau provides leadership and technical expertise in water resources development and in the efficient use of water through initiatives including conservation, reuse, and research. It protects the public and the environment through the adequate maintenance and appropriate operation of Reclamation's facilities and manages Reclamation's facilities to fulfill water user contracts and protect and/or enhance conditions for fish, wildlife, land, and cultural resources.

Mid Pacific Regional Office
Federal Office Building
2800 Cottage Way
Sacramento CA 95825-1898
Ph: 916- 978-5000
Fax 916- 978-5599
http://www.usbr.gov/

Army Corps of Engineers - The Corps of Engineers administers a permit program to ensure that the nation's waterways are used in the public interest. Any person, firm, or agency planning to work in waters of the United States must first obtain a permit from the Army Corps of Engineers. The Corps is responsible for the protection and development of the nation's water resources, including navigation, flood control, energy production through hydropower management, water supply storage and recreation.

US Army Corps of Engineers
P.O. Box 532711
Los Angeles CA 90053- 2325
Ph: 213-452- 3921

Other National Resources

American Public Works Association
2345 Grand Boulevard, Suite 500
Kansas City, MO 64108-2641
Ph: 816-472-6100
Fx: 816-472-1610

Publications

NFlP Community Rating System Coordinator's Manual
Indianapolis, IN. - This informative brochure explains how the Community Rating System works and what the benefits are to communities. It explains in detail the CRS point system, and what activities communities can pursue to earn points. These points then add up to the "rating" for the community, and flood insurance premium discounts are calculated based upon that "rating " The brochure also provides a table on the percent discount realized for each rating (1-10). Instructions on how to apply to be a CRS community are also included.
Contact: NFIP Community Rating System
Phone: (800) 480-2520 or (317) 848-2898
Website: http://www.fema.gov/nfip/crs

Floodplain Management: A Local Floodplain Administrator's Guide to the NFlP - This document discusses floodplain processes and terminology. It contains floodplain management and mitigation strategies, as well as information on the NFIP, CRS, Community Assistance Visits, and floodplain development standards.
Contact: National Flood Insurance Program Phone: (800) 480-2520
Website: http://www.fema,gov/nfip/

Flood Hazard Mitigation Planning: A Community Guide, (June 1997). Massachusetts Department of Environmental Management. - This informative guide offers a 10-step process for successful flood hazard mitigation. Steps include: map hazards, determine potential damage areas, take an inventory of facilities in the flood zone, determine what is or is not being done about flooding, identify gaps in protection, brainstorm alternatives and actions, determine feasible actions, coordinate with others, prioritize actions, develop strategies for implementation, and adopt and monitor the plan.
Contact: Massachusetts Flood Hazard Management Program Phone: (617) 626-1250
Website: http://www.magnetstate.ma.us/dem/programs/mitigate

Reducing Losses in High Risk Flood Hazard Areas: A Guidebook for Local Officials, (February 1987), FEMA-116. - This guidebook offers a table on actions that communities can take to reduce flood losses. It also offers a table with sources for floodplain mapping assistance for the various types of flooding hazards, There is information on various types of flood hazards with regard to existing mitigation efforts and options for action (policy and programs, mapping, regulatory, non-regulatory). Types of flooding which are covered include alluvial fan, areas behind levees, areas below unsafe dams, coastal flooding, flash floods, fluctuating lake level floods, ground failure triggered by earthquakes, ice jam flooding, and mudslides.
Contact: FEMA Phone: (800) 480-2520 Website: http://www.fema,gov

Wildfire Resource Directory

Local Resources
La Verne Fire Department
2061 Third Street
La Verne, CA 91750
(909) 596-5991

Los Angeles County Resources

Los Angeles County Fire Department
1320 N. Eastern Ave.
Los Angeles, CA., 90063
Telephone: 323.881.2411
http://www.lacofd.org/default.htm

State Resources

California Division of Forestry & Fire Protection
1416 9th Street
PO Box 944246
Sacramento California 94244-2460
(916)653-5123
http://www.fire.ca.gov/php/index.php

Office of the State Fire Marshal (OSFM)
1131 "S" Street
Sacramento, CA 95814
PO Box 944246
Sacramento, CA 94244-2460
Tel. (916) 445-8200
Fax. (916) 445-8509

Federal Resources and Programs
US Forest Service (Department of Agriculture)

110 N. Wabash Ave.
Glendora, CA 91741
(626) 335-1251

Federal Wildland Fire Policy, Wildland/Urban Interface Protection - This is a report describing federal policy and interface fire. Areas of needed improvement are identified and addressed through recommended goals and actions. http://www.fs.fed.us/land/wdfire7c.htm

National Fire Protection Association (NFPA) - This is the principal federal agency involved in the National Wildland/Urban Interface Fire Protection Initiative. NFPA has information on the Initiatives programs and documents.

Public Fire Protection Division
1 Battery March Park.
P.O. Box 9101
Quincy, MA 02269-9101
Phone: (617) 770-3000

National Interagency Fire Center (NIFC) - The NIFC in Boise, Idaho is the nation's support center for wildland firefighting. Seven federal agencies work together to coordinate and support wildland fire and disaster operations. These agencies include the Bureau of Indian Affairs, Bureau of Land Management, Forest Service, Fish and Wildlife Service, National Park Service, National Weather Service and Office of Aircraft

National Interagency Fire Center
3833 S. Development Ave.
Boise, Idaho 83705
208-387-5512
http://www.nifc,gov/

United States Fire Administration (USFA) of the Federal Emergency Management Agency

(FEMA) - As an entity of the Federal Emergency Management Agency, the mission of the USFA

is to reduce life and economic losses due to fire and related emergencies through leadership,

advocacy, coordination and support.

USFA, Planning Branch, Mitigation Directorate

16825 S. Seton Ave.

Emmitsburg, MD 21727
(301) 447-1000
http://www.fema.gov/hazards/fires/wildfires.shtm - Wildfire Mitigation
http://www.usfa.fema.gov/index.htm - U.S. Fire Administration

Additional Resources

Firewise - The National Wildland/Urban Interface Fire program - Firewise maintains a Website designed for people who live in wildfire prone areas, but it also can be of use to local planners and decision makers. The site offers online wildfire protection information and checklists, as well as listings of other publications, videos and conferences.
Firewise
1 Battery March Park.
P.O. Box 9101
Quincy, MA 02269-9101
Phone: (617) 770-3000
http://www.firewise.org/

Publications

National Fire Protection Association Standard 299: Protection of Life and Property from Wildfire, National Wildland/Urban Interface Fire Protection Program, (1991), National Fire Protection Association, Washington, D. - This document, developed by the NFPA Forest and Rural Fire Protection Committee, provides criteria for fire agencies, land use planners, architects, developers and local governments to use in the development of areas that may be threatened by wildfire. To obtain this resource:
National Fire Protection Association Publications
(800) 344-3555
http://www.nfpa.org or http://www.firewise.org

An International Collection of Wildland- Urban Interface Resource Materials (Information Report NOR- 344). Hirsch, K., Pinedo, M., & Greenlee, J. (1996). Edmonton, Alberta: Canadian Forest Service. - This is a comprehensive bibliography of interface wildfire materials. Over 2,000 resources are included, grouped under the categories of general and technical reports, newspaper articles and public education materials. The citation format allows the reader to obtain most items through a library or directly from the publisher. The bibliography is available in hard copy or diskette at no cost. It is also available in downloadable PDF form.
Canadian Forest Service, Northern Forestry Centre, I-Zone Series
Phone: (780) 435-7210
http://www.prefire.ucfpl.ucop.edu/uwibib.htm

Wildland/Urban Interface Fire Hazard Assessment Methodology.
National Wildland/Urban Interface Fire Protection Program, (1998).
NFPA, Washington, D.C.
Firewise (NFPA Public Fire Protection Division)
Phone: (617) 984-7486
http://www.firewise.org

Fire Protection in the Wildland/Urban Interface: Everyone's Responsibility.

National Wildland/Urban Interface Fire Protection Program, (1998). Washington, D.
Firewise (NFPA Public Fire Protection Division)
Phone: (617) 984-7486
http://www.firewise, org

Windstorm Resource Directory

State Resources
California Division of Forestry & Fire Protection
1416 9th Street
PO Box 944246
Sacramento California 94244-2460
916-653-5123
http://www.fire.ca.gov/php/index.php

Federal Resources and Programs
National Weather Service
Los Angeles/Oxnard Weather Forecast Office
520 North Elevar Street
Oxnard, CA 93030
Forecast and weather info: 805-988-6610
Administrative issues: 805-988-6615
E-mail: Webmaster.LOX@noaa.gov
http://weather.noaa.gov/

Additional Resources

International Society of Arboriculture.
P.O. Box 3129
Champaign, IL 61826-3129
Phone: 217.355.9411
Fax: 217.355.9516
Web: www.isa-arbor.com
E-mail: isa@isa-arbor.com

Publications
WINDSTORMS: Protect Your Family and Property from the Hazards of Violent Windstorms
http://emd.wa.gov/5-prep/trng/pubed/Windstrm.pdf

Preparing Your Home for Severe Windstorms is available from
http://www.chubb.com/personal/html/helpful_tips_home_windstorm.html

Resource Directory

ITEM	RESOURCES
1	**Area "D" County of Los Angeles** **Brenda Hunemiller, Aread D Coordinator**
2	**San Dimas Police Departments** **122 North San Dimas Avenue** **San Dimas, CA 91773** **(909) 599-1261**
3	**San Dimas Historical Society** **246 East Bonita Avenue** **San Dimas, CA 91773** **(909) 592-1190**
4	**San Dimas Historical Society Museum** **210 West Bonita Avenue** **San Dimas, CA 91773** **(909) 305-9466**
5	**San Dimas Chamber of Commerce** **246 East Bonita Avenue, San Dimas, CA 91773** **(909) 592-3818**
6	**La Verne - Chamber of Commerce** **2078 Bonita Avenue, La Verne, CA 91750** **(909) 593-5265**
7	**La Verne Historical Society** **909/593-5014**
8	**Dougherty and Dougherty Architects** **3194 D Airport Loop** **Costa Mesa, CA 92626** **714/427-0277**
9	**Rachlin Architects** **3635 Hayden Avenue** **Culver City, CA 90232** **310/204-3400**

APPENDIX

J

MASTER RESOURCE DIRECTORY

Master Resource Directory

The Resource Directory provides contact information for local, regional, state, and federal programs that are currently involved in hazard mitigation activities. The Hazard Mitigation Advisory Committee may look to the organizations on the following pages for resources and technical assistance. The Resource Directory provides a foundation for potential partners in action item implementation.

The Hazard Mitigation Advisory Committee will continue to add contact information for organizations currently engaged in hazard mitigation activities. This section may also be used by various community members interested in hazard mitigation information and projects.

American Public Works Association			
Level: National	Hazard: Multi	http://www.apwa.net	
2345 Grand Boulevard		Suite 500	
Kansas City, MO 64108-2641		Ph: 816-472-6100	Fx: 816-472-1610
Notes: The American Public Works Association is an international educational and professional association of public agencies, private sector companies, and individuals dedicated to providing high quality public works goods and services.			
Association of State Floodplain Managers			
Level: Federal	Hazard: Flood	www.floods.org	
2809 Fish Hatchery Road			
Madison, WI 53713		Ph: 608-274-0123	Fx:
Notes: The Association of State Floodplain Managers is an organization of professionals involved in floodplain management, flood hazard mitigation, the National Flood Insurance Program, and flood preparedness, warning and recovery			
Building Seismic Safety Council (BSSC)			
Level: National	Hazard: Earthquake	www.bssconline.org	
1090 Vermont Ave., NW		Suite 700	
Washington, DC 20005		Ph: 202-289-7800	Fx: 202-289-109
Notes: The Building Seismic Safety Council (BSSC) develops and promotes building earthquake risk mitigation regulatory provisions for the nation.			

California Department of Transportation (CalTrans)			
Level: State	Hazard: Multi	http://www.dot.ca.gov/	
120 S. Spring Street			
Los Angeles, CA 90012		Ph: 213-897-3656	Fx:
Notes: CalTrans is responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as that portion of the Interstate Highway System within the state's boundaries. Alone and in partnership with Amtrak, Caltrans is also involved in the support of intercity passenger rail service in California.			

California Resources Agency			
Level: State	Hazard: Multi	http://resources.ca.gov/	
1416 Ninth Street		Suite 1311	
Sacramento, CA 95814		Ph: 916-653-5656	Fx:
Notes: The California Resources Agency restores, protects and manages the state's natural, historical and cultural resources for current and future generations using solutions based on science, collaboration and respect for all the communities and interests involved.			

California Division of Forestry (CDF)			
Level: State	Hazard: Multi	http://www.fire.ca.gov/php/index.php	
210 W. San Jacinto			
Perris CA 92570		Ph: 909-940-6900	Fx:
Notes: The California Department of Forestry and Fire Protection protects over 31 million acres of California's privately-owned wildlands. CDF emphasizes the management and protection of California's natural resources.			

California Division of Mines and Geology (DMG)			
Level: State	Hazard: Multi	www.consrv.ca.gov/cgs/index.htm	
801 K Street		MS 12-30	
Sacramento, CA 95814		Ph: 916-445-1825	Fx: 916-445-5718
Notes: The California Geological Survey develops and disseminates technical information and advice on California’’s geology, geologic hazards, and mineral resources.			

California Environmental Resources Evaluation System (CERES)			
Level: State	Hazard: Multi	http://ceres.ca.gov/	
900 N St.		Suite 250	
Sacramento, Ca. 95814		Ph: 916-653-2238	Fx:
Notes: CERES is an excellent website for access to environmental information and websites.			

California Department of Water Resources (DWR)			
Level: State	Hazard: Flood	http://wwwdwr.water.ca.gov	
1416 9th Street			
Sacramento, CA 95814		Ph: 916-653-6192	Fx:
Notes: The Department of Water Resources manages the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments.			

California Department of Conservation: Southern California Regional Office			
Level: State	Hazard: Multi	www.consrv.ca.gov	
655 S. Hope Street		#700	
Los Angeles, CA 90017-2321		Ph: 213-239-0878	Fx: 213-239-0984
Notes: The Department of Conservation provides services and information that promote environmental health, economic vitality, informed land-use decisions and sound management of our state's natural resources.			

California Planing Information Network			
Level: State	Hazard: Multi	www.calpin.ca.gov	
		Ph:	Fx:
Notes: The Governor's Office of Planning and Research (OPR) publishes basic information on local planning agencies, known as the California Planners' Book of Lists. This local planning information is available on-line with new search capabilities and up-to-the- minute updates.			

EPA, Region 9			
Level: Regional	Hazard: Multi	http://www.epa.gov/region09	
75 Hawthorne Street			
San Francisco, CA 94105		Ph: 415-947-8000	Fx: 415-947-3553
Notes: The mission of the U.S. Environmental Protection Agency is to protect human health and to safeguard the natural environment through the themes of air and global climate change, water, land, communities and ecosystems, and compliance and environmental stewardship.			
Federal Emergency Management Agency, Region IX			
Level: Federal	Hazard: Multi	www.fema.gov	
1111 Broadway		Suite 1200	
Oakland, CA 94607		Ph: 510-627-7100	Fx: 510-627-7112
Notes: The Federal Emergency Management Agency is tasked with responding to, planning for, recovering from and mitigating against disasters.			
Federal Emergency Management Agency, Mitigation Division			
Level: Federal	Hazard: Multi	www.fema.gov/fima/planhowto.shtm	
500 C Street, S.W.			
Washington, D.C. 20472		Ph: 202-566-1600	Fx:
Notes: The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has of a number of programs and activities of which provide citizens Protection, with flood insurance; Prevention, with mitigation measures and Partnerships, with communities throughout the country.			
Floodplain Management Association			
Level: Federal	Hazard: Flood	www.floodplain.org	
P.O. Box 50891			
Sparks, NV 89435-0891		Ph: 775-626-6389	Fx: 775-626-6389
Notes: The Floodplain Management Association is a nonprofit educational association. It was established in 1990 to promote the reduction of flood losses and to encourage the protection and enhancement of natural floodplain values. Members include representatives of federal, state and local government agencies as well as private firms.			

Gateway Cities Partnership			
Level: Regional	Hazard: Multi	www.gatewaycities.org	
7300 Alondra Boulevard		Suite 202	
Paramount, CA 90723		Ph: 562-817-0820	Fx:
Notes: Gateway Cities Partnership is a 501 C 3 non-profit Community Development Corporation for the Gateway Cities region of southeast LA County. The region comprises 27 cities that roughly speaking extends from Montebello on the north to Long Beach on the South, the Alameda Corridor on the west to the Orange County line on the east.			

Governor's Office of Emergency Services (OES)			
Level: State	Hazard: Multi	www.oes.ca.gov	
P.O. Box 419047			
Rancho Cordova, CA 95741-9047		Ph: 916 845- 8911	Fx: 916 845- 8910
Notes: The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, manmade, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.			

Greater Antelope Valley Economic Alliance			
Level: Regional	Hazard: Multi		
42060 N. Tenth Street West			
Lancaster, CA 93534		Ph: 661-945-2741	Fx: 661-945-7711
Notes: The Greater Antelope Valley Economic Alliance, (GA VEA) is a 501 (c)(6) nonprofit organization with a 501(c)(3) affiliated organization the Antelope Valley Economic Research and Education Foundation. GA VEA is a public-private partnership of business, local governments, education, non-profit organizations and health care organizations that was founded in 1999 with the goal of attracting good paying jobs to the Antelope Valley in order to build a sustainable economy.			

Landslide Hazards Program, USGS			
Level: Federal	Hazard: Landslide	http://landslides.usgs.gov/index.html	
12201 Sunrise Valley Drive		MS 906	
Reston, VA 20192		Ph: 703-648- 4000	Fx:
Notes: The NLIC website provides good information on the programs and resources regarding landslides. The page includes information on the National Landslide Hazards Program Information Center, a bibliography, publications, and current projects. USGS scientists are working to reduce long-term losses and casualties from landslide hazards through better understanding of the causes and mechanisms of ground failure both nationally and worldwide.			

Los Angeles County Economic Development Corporation			
Level: Regional	Hazard: Multi	www.laedc.org	
444 S. Flower Street		34th Floor	
Los Angeles, CA 90071		Ph: 213-236-4813	Fx: 213- 623-0281
Notes: The LAEDC is a private, non-profit 501 (c) 3 organization established in 1981 with the mission to attract, retain and grow businesses and jobs in the Los Angeles region. The LAEDC is widely relied upon for its Southern California Economic Forecasts and Industry Trend Reports. Lead by the renowned Jack Kyser (Sr. Vice President, Chief Economist) his team of researchers produces numerous publications to help business, media and government navigate the LA region's diverse economy.			

Los Angeles County Public Works Department			
Level: County	Hazard: Multi	http://ladpw.org	
900 S. Fremont Ave.			
Alhambra, CA 91803		Ph: 626-458-5100	Fx:
Notes: The Los Angeles County Department of Public Works protects property and promotes public safety through Flood Control, Water Conservation, Road Maintenance, Bridges, Buses and Bicycle Trails, Building and Safety, Land Development, Waterworks, Sewers, Engineering, Capital Projects and Airports			

National Wildland/Urban Interface Fire Program			
Level: Federal	Hazard: Wildfire	www.firewise.org/	
1 Batterymarch Park			
Quincy, MA 02169-7471		Ph: 617-770-3000	Fx: 617 770-0700
Notes: Firewise maintains a Website designed for people who live in wildfire- prone areas, but it also can be of use to local planners and decision makers. The site offers online wildfire protection information and checklists, as well as listings of other publications, videos, and conferences.			

National Resources Conservation Service			
Level: Federal	Hazard: Multi	http://www.nrcs.usda.gov/	
14th and Independence Ave., SW		Room 5105-A	
Washington, DC 20250		Ph: 202-720-7246	Fx: 202-720-7690
Notes: NRCS assists owners of America's private land with conserving their soil, water, and other natural resources, by delivering technical assistance based on sound science and suited to a customer's specific needs. Cost shares and financial incentives are available in some cases.			

National Interagency Fire Center (NIFC)			
Level: Federal	Hazard: Wildfire	www.nifc.gov	
3833 S. Development Ave.			
Boise, Idaho 83705-5354		Ph: 208-387- 5512	Fx:
Notes: The NIFC in Boise, Idaho is the nation’s support center for wildland firefighting. Seven federal agencies work together to coordinate and support wildland fire and disaster operations.			

National Fire Protection Association (NFPA)			
Level: National	Hazard: Wildfire	http://www.nfpa.org/catalog/home/index.asp	
1 Batterymarch Park			
Quincy, MA 02169-7471		Ph: 617-770-3000	Fx: 617 770-0700
Notes: The mission of the international nonprofit NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating scientifically-based consensus codes and standards, research, training and education			

National Floodplain Insurance Program (NFIP)			
Level: Federal	Hazard: Flood	www.fema.gov/nfip/	
500 C Street, S.W.			
Washington, D.C. 20472		Ph: 202-566-1600	Fx:
Notes: The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has of a number of programs and activities of which provide citizens Protection, with flood insurance; Prevention, with mitigation measures and Partnerships, with communities throughout the country.			

National Oceanic /Atmospheric Administration			
Level: Federal	Hazard: Multi	www.noaa.gov	
14th Street & Constitution Ave NW		Rm 6013	
Washington, DC 20230		Ph: 202-482-6090	Fx: 202-482-3154
Notes: NOAA's historical role has been to predict environmental changes, protect life and property, provide decision makers with reliable scientific information, and foster global environmental stewardship.			

National Weather Service, Office of Hydrologic Development			
Level: Federal	Hazard: Flood	http://www.nws.noaa.gov/	
1325 East West Highway		SSMC2	
Silver Spring, MD 20910		Ph: 301-713-1658	Fx: 301-713-0963
Notes: The Office of Hydrologic Development (OHD) enhances National Weather Service products by: infusing new hydrologic science, developing hydrologic techniques for operational use, managing hydrologic development by NWS field office, providing advanced hydrologic products to meet needs identified by NWS customers			

National Weather Service			
Level: Federal	Hazard: Multi	http://www.nws.noaa.gov/	
520 North Elevar Street			
Oxnard, CA 93030		Ph: 805-988- 6615	Fx:
Notes: The National Weather Service is responsible for providing weather service to the nation. It is charged with the responsibility of observing and reporting the weather and with issuing forecasts and warnings of weather and floods in the interest of national safety and economy. Briefly, the priorities for service to the nation are: 1. protection of life, 2. protection of property, and 3. promotion of the nation's welfare and economy.			

San Gabriel Valley Economic Partnership			
Level: Regional	Hazard: Multi	www.valleynet.org	
4900 Rivergrade Road		Suite A310	
Irwindale, CA 91706		Ph: 626-856-3400	Fx: 626-856-5115
Notes: The San Gabriel Valley Economic Partnership is a non-profit corporation representing both public and private sectors. The Partnership is the exclusive source for San Gabriel Valley-specific information, expertise, consulting, products, services, and events. It is the single organization in the Valley with the mission to sustain and build the regional economy for the mutual benefit of all thirty cities, chambers of commerce, academic institutions, businesses and residents.			

Sanitation Districts of Los Angeles County			
Level: County	Hazard: Flood	http://www.lacsd.ora/	
1955 Workman Mill Road			
Whittier, CA 90607		Ph:562-699-7411 x2301	Fx:
Notes: The Sanitation Districts provide wastewater and solid waste management for over half the population of Los Angeles County and turn waste products into resources such as reclaimed water, energy, and recyclable materials.			

Santa Monica Mountains Conservancy			
Level: Regional	Hazard: Multi	http://smmc.ca.gov/	
570 West Avenue Twenty-Six		Suite 100	
Los Angeles, CA 90065		Ph: 323-221-8900	Fx:
Notes: The Santa Monica Mountains Conservancy helps to preserve over 55,000 acres of parkland in both wilderness and urban settings, and has improved more than 114 public recreational facilities throughout Southern California.			

South Bay Economic Development Partnership			
Level: Regional	Hazard: Multi	www.southbaypartnership.com	
3858 Carson Street		Suite 110	
Torrance, CA 90503		Ph: 310-792-0323	Fx: 310-543-9886
Notes: The South Bay Economic Development Partnership is a collaboration of business, labor, education and government. Its primary goal is to plan an implement an economic development and marketing strategy designed to retain and create jobs and stimulate economic growth in the South Bay of Los Angeles County.			

South Coast Air Quality Management District (AQMD)			
Level: Regional	Hazard: Multi	www.aqmd.gov	
21865 E. Copley Drive			
Diamond Bar, CA 91765		Ph: 800-CUT-SMOG	Fx:
Notes: AQMD is a regional government agency that seeks to achieve and maintain healthful air quality through a comprehensive program of research, regulations, enforcement, and communication. The AQMD covers Los Angeles and Orange Counties and parts of Riverside and San Bernardino Counties.			

Southern California Earthquake Center (SCEC)			
Level: Regional	Hazard: Earthquake	www.scec.org	
3651 Trousdale Parkway		Suite 169	
Los Angeles, CA 90089-0742		Ph: 213-740-5843	Fx: 213/740-0011
Notes: The Southern California Earthquake Center (SCEC) gathers new information about earthquakes in Southern California, integrates this information into a comprehensive and predictive understanding of earthquake phenomena, and communicates this understanding to end-users and the general public in order to increase earthquake awareness, reduce economic losses, and save lives.			

Southern California Association of Governments (SCAG)			
Level: Regional	Hazard: Multi	www.scag.ca.gov	
818 W. Seventh Street		12th Floor	
Los Angeles, CA 90017		Ph: 213-236-1800	Fx: 213-236-1825
Notes: The Southern California Association of Governments functions as the Metropolitan Planning Organization for six counties: Los Angeles, Orange, San Bernardino, Riverside, Ventura and Imperial. As the designated Metropolitan Planning Organization, the Association of Governments is mandated by the federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality.			

State Fire Marshal (SFM)			
Level: State	Hazard: Wildfire	http://osfm.fire.ca.gov	
1131 "S" Street			
Sacramento, CA 95814		Ph: 916-445-8200	Fx: 916-445-8509
Notes: The Office of the State Fire Marshal (SFM) supports the mission of the California Department of Forestry and Fire Protection (CDF) by focusing on fire prevention. SFM regulates buildings in which people live, controls substances which may, cause injuries, death and destruction by fire; provides statewide direction for fire prevention within wildland areas; regulates hazardous liquid pipelines; reviews regulations and building standards; and trains and educates in fire protection methods and responsibilities.			

The Community Rating System (CRS)			
Level: Federal	Hazard: Flood	http://www.fema.gov/nfip/crs.shtm	
500 C Street, S.W.			
Washington, D.C. 20472		Ph: 202-566-1600	Fx:
Notes: The Community Rating System (CRS) recognizes community floodplain management efforts that go beyond the minimum requirements of the NFIP. Property owners within the County would receive reduced NFIP flood insurance premiums if the County implements floodplain management practices that qualify it for a CRS rating. For further information on the CRS, visit FEMA's website.			

United States Geological Survey			
Level: Federal	Hazard: Multi	http://www.usgs.gov/	
345 Middlefield Road			
Menlo Park, CA 94025		Ph: 650-853-8300	Fx:
Notes: The USGS provides reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.			

US Army Corps of Engineers			
Level: Federal	Hazard: Multi	http://www.usace.army.mil	
P.O. Box 532711			
Los Angeles CA 90053- 2325		Ph: 213-452- 3921	Fx:
Notes: The United States Army Corps of Engineers work in engineering and environmental matters. A workforce of biologists, engineers, geologists, hydrologists, natural resource managers and other professionals provide engineering services to the nation including planning, designing, building and operating water resources and other civil works projects.			

USDA Forest Service			
Level: Federal	Hazard: Wildfire	http://www.fs.fed.us	
1400 Independence Ave. SW			
Washington, D.C. 20250-0002		Ph: 202-205-8333	Fx:
Notes: The Forest Service is an agency of the U.S. Department of Agriculture. The Forest Service manages public lands in national forests and grasslands.			

USGS Water Resources			
Level: Federal	Hazard: Multi	www.water.usgs.gov	
6000 J Street		Placer Hall	
Sacramento, CA 95819-6129		Ph: 916-278-3000	Fx: 916-278-3070
Notes: The USGS Water Resources mission is to provide water information that benefits the Nation's citizens: publications, data, maps, and applications software.			

Western States Seismic Policy Council (WSSPC)			
Level: Regional	Hazard: Earthquake	www.wsspc.org/home.html	
125 California Avenue		Suite D201, #1	
Palo Alto, CA 94306		Ph: 650-330-1101	Fx: 650-326-1769
Notes: WSSPC is a regional earthquake consortium funded mainly by FEMA. Its website is a great resource, with information clearly categorized - from policy to engineering to education.			

Westside Economic Collaborative C/O Pacific Western Bank			
Level: Regional	Hazard: Multi	http://www.westside-Ia.or	
120 Wilshire Boulevard			
Santa Monica, CA 90401		Ph: 310-458-1521	Fx: 310-458-6479
Notes: The Westside Economic Development Collaborative is the first Westside regional economic development corporation. The Westside EDC functions as an information gatherer and resource center, as well as a forum, through bringing business, government, and residents together to address issues affecting the region: Economic Diversity, Transportation, Housing, Workforce Training and Retraining, Lifelong Learning, Tourism, and Embracing Diversity.			

APPENDIX

K

GLOSSARY

Glossary

Acceleration	The rate of change of velocity with respect to time. Acceleration due to gravity at the earth's surface is 9.8 meters per second squared. That means that every second that something falls toward the surface of earth its velocity increases by 9.8 meters per second.
Asset	Any manmade or natural feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.
Base Flood	Flood that has a 1 percent probability of being equaled or exceeded in any given year. Also known as the 100-year flood.
Base Flood Elevation (BFE)	Elevation of the base flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929. The Base Flood Elevation is used as the standard for the National Flood Insurance Program.
Bedrock	The solid rock that underlies loose material, such as soil, sand, clay, or gravel.
Building	A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.
Coastal High Hazard Area	Area, usually along an open coast, bay, or inlet, that is subject to inundation by storm surge and, in some instances, wave action caused by storms or seismic sources.
Coastal Zones	The area along the shore where the ocean meets the land as the surface of the land rises above the ocean. This land/water interface includes barrier islands, estuaries, beaches, coastal wetlands, and land areas having direct drainage to the ocean.
Community Rating System (CRS)	An NFIP program that provides incentives for NFIP communities to complete activities that reduce flood hazard risk. When the community completes specified activities, the insurance premiums of policyholders in these communities are reduced.
Computer-Aided Design And Drafting (CADD)	A computerized system enabling quick and accurate electronic 2-D and 3-D drawings, topographic mapping, site plans, and profile/cross-section drawings.
Contour	A line of equal ground elevation on a topographic (contour) map.

Critical Facility	Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals.
Debris	The scattered remains of assets broken or destroyed in a hazard event. Debris caused by a wind or water hazard event can cause additional damage to other assets.
Digitize	To convert electronically points, lines, and area boundaries shown on maps into x, y coordinates (e.g., latitude and longitude, universal transverse mercator (UTM), or table coordinates) for use in computer applications.
Displacement Time	The average time (in days) which the building's occupants typically must operate from a temporary location while repairs are made to the original building due to damages resulting from a hazard event.
Duration	How long a hazard event lasts.
Earthquake	A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates.
Erosion	Wearing away of the land surface by detachment and movement of soil and rock fragments, during a flood or storm or over a period of years, through the action of wind, water, or other geologic processes.
Erosion Hazard Area	Area anticipated to be lost to shoreline retreat over a given period of time. The projected inland extent of the area is measured by multiplying the average annual long-term recession rate by the number of years desired.
Essential Facility	Elements that are important to ensure a full recovery of a community or state following a hazard event. These would include: government functions, major employers, banks, schools, and certain commercial establishments, such as grocery stores, hardware stores, and gas stations.
Extent	The size of an area affected by a hazard or hazard event.
Extratropical Cyclone	Cyclonic storm events like Nor'easters and severe winter low-pressure systems. Both West and East coasts can experience these non-tropical storms that produce gale-force winds and precipitation in the form of heavy rain or snow. These cyclonic storms, commonly called Nor'easters on the East Coast because of the direction of the storm winds, can last for several days and can be very large – 1,000-mile wide storms are not uncommon.

Fault	A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent surfaces are differentially displaced parallel to the plane of fracture.
Federal Emergency Management Agency (FEMA)	Independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery.
Fire Potential Index (FPI)	Developed by USGS and USFS to assess and map fire hazard potential over broad areas. Based on such geographic information, national policy makers and on-the-ground fire managers established priorities for prevention activities in the defined area to reduce the risk of managed and wildfire ignition and spread. Prediction of fire hazard shortens the time between fire ignition and initial attack by enabling fire managers to pre-allocate and stage suppression forces to high fire risk areas.
Flash Flood	A flood event occurring with little or no warning where water levels rise at an extremely fast rate.
Flood	A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.
Flood Depth	Height of the flood water surface above the ground surface.
Flood Elevation	Elevation of the water surface above an established datum, e.g. National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988, or Mean Sea Level.
Flood Hazard Area	The area shown to be inundated by a flood of a given magnitude on a map.
Flood Insurance Rate Map (FIRM)	Map of a community, prepared by the Federal Emergency Management Agency, that shows both the special flood hazard areas and the risk premium zones applicable to the community.
Flood Insurance Study (FIS)	A study that provides an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations in a community or communities.
Floodplain	Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.

Frequency	A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1 percent chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.
Fujita Scale of Tornado Intensity	Rates tornadoes with numeric values from F0 to F5 based on tornado windspeed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while and F5 indicated severe damage sustained.
Functional Downtime	The average time (in days) during which a function (business or service) is unable to provide its services due to a hazard event.
Geographic Area Impacted	The physical area in which the effects of the hazard are experienced.
Geographic Information Systems (GIS)	A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.
Ground Motion	The vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter, but soft soils can further amplify ground motions
Hazard	A source of potential danger or adverse condition. Hazards in this how to series will include naturally occurring events such as floods, earthquakes, tornadoes, tsunami, coastal storms, landslides, and wildfires that strike populated areas. A natural event is a hazard when it has the potential to harm people or property.
Hazard Event	A specific occurrence of a particular type of hazard.
Hazard Identification	The process of identifying hazards that threaten an area.
Hazard Mitigation	Sustained actions taken to reduce or eliminate long-term risk from hazards and their effects.
Hazard Profile	A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.

HAZUS (Hazards U.S.)	A GIS-based nationally standardized earthquake loss estimation tool developed by FEMA.
Hurricane	An intense tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74-miles-per-hour or more and blow in a large spiral around a relatively calm center or "eye." Hurricanes develop over the north Atlantic Ocean, northeast Pacific Ocean, or the south Pacific Ocean east of 160°E longitude. Hurricane circulation is counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
Hydrology	The science of dealing with the waters of the earth. A flood discharge is developed by a hydrologic study.
Infrastructure	Refers to the public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines or Internet access, vital services such as public water supplies and sewer treatment facilities, and includes an area's transportation system such as airports, heliports; highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots; and waterways, canals, locks, seaports, ferries, harbors, drydocks, piers and regional dams.
Intensity	A measure of the effects of a hazard event at a particular place.
Landslide	Downward movement of a slope and materials under the force of gravity.
Lateral Spreads	Develop on gentle slopes and entail the sidelong movement of large masses of soil as an underlying layer liquefies in a seismic event. The phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength.
Liquefaction	Results when the soil supporting structures liquefies. This can cause structures to tip and topple.
Lowest Floor	Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure.
Magnitude	A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.

Mitigation Plan	A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the state and includes a description of actions to minimize future vulnerability to hazards.
National Flood Insurance Program (NFIP)	Federal program created by Congress in 1968 that makes flood insurance available in communities that enact minimum floodplain management regulations in 44 CFR §60.3.
National Geodetic Vertical Datum of 1929 (NGVD)	Datum established in 1929 and used in the NFIP as a basis for measuring flood, ground, and structural elevations, previously referred to as Sea Level Datum or Mean Sea Level. The Base Flood Elevations shown on most of the Flood Insurance Rate Maps issued by the Federal Emergency Management Agency are referenced to NGVD.
National Weather Service (NWS)	Prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to Federal and state entities in preparing weather and flood warning plans.
Nor'easter	An extra-tropical cyclone producing gale-force winds and precipitation in the form of heavy snow or rain.
Outflow	Follows water inundation creating strong currents that rip at structures and pound them with debris, and erode beaches and coastal structures.
Planimetric	Describes maps that indicate only man-made features like buildings.
Planning	The act or process of making or carrying out plans; the establishment of goals, policies and procedures for a social or economic unit.
Probability	A statistical measure of the likelihood that a hazard event will occur.
Recurrence Interval	The time between hazard events of similar size in a given location. It is based on the probability that the given event will be equaled or exceeded in any given year.
Repetitive Loss Property	A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least $1000 each have been paid within any 10-year period since 1978.
Replacement Value	The cost of rebuilding a structure. This is usually expressed in terms of cost per square foot, and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality.
Richter Scale	A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935.

Risk	The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.
Riverine	Of or produced by a river.
Scale	A proportion used in determining a dimensional relationship; the ratio of the distance between two points on a map and the actual distance between the two points on the earth's surface.
Scarp	A steep slope.
Scour	Removal of soil or fill material by the flow of flood waters. The term is frequently used to describe storm-induced, localized conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence.
Seismicity	Describes the likelihood of an area being subject to earthquakes.
Special Flood Hazard Area (SFHA)	An area within a floodplain having a 1 percent or greater chance of flood occurrence in any given year (100-year floodplain); represented on Flood Insurance Rate Maps by darkly shaded areas with zone designations that include the letter A or V.
Stafford Act	The Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-107 was signed into law November 23, 1988 and amended the Disaster Relief Act of 1974, PL 93-288. The Stafford Act is the statutory authority for most Federal disaster response activities, especially as they pertain to FEMA and its programs.
State Hazard Mitigation Officer (SHMO)	The representative of state government who is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and postdisaster mitigation activities.
Storm Surge	Rise in the water surface above normal water level on the open coast due to the action of wind stress and atmospheric pressure on the water surface.
Structure	Something constructed. (See also Building)

Substantial Damage	Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage.
Super Typhoon	A typhoon with maximum sustained winds of 150 mph or more.
Surface Faulting	The differential movement of two sides of a fracture – in other words, the location where the ground breaks apart. The length, width, and displacement of the ground characterize surface faults.
Tectonic Plate	Torsionally rigid, thin segments of the earth's lithosphere that may be assumed to move horizontally and adjoin other plates. It is the friction between plate boundaries that cause seismic activity.
Topographic	Characterizes maps that show natural features and indicate the physical shape of the land using contour lines. These maps may also include manmade features.
Tornado	A violently rotating column of air extending from a thunderstorm to the ground.
Tropical Cyclone	A generic term for a cyclonic, low-pressure system over tropical or subtropical waters.
Tropical Depression	A tropical cyclone with maximum sustained winds of less than 39 mph.
Tropical Storm	A tropical cyclone with maximum sustained winds greater than 39 mph and less than 74 mph.
Tsunami	Great sea wave produced by submarine earth movement or volcanic eruption.
Typhoon	A special category of tropical cyclone peculiar to the western North Pacific Basin, frequently affecting areas in the vicinity of Guam and the North Mariana Islands. Typhoons whose maximum sustained winds attain or exceed 150 mph are called super typhoons.
Vulnerability	Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct ones.

Vulnerability Assessment	The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment.
Water Displacement	When a large mass of earth on the ocean bottom sinks or uplifts, the column of water directly above it is displaced, forming the tsunami wave. The rate of displacement, motion of the ocean floor at the epicenter, the amount of displacement of the rupture zone, and the depth of water above the rupture zone all contribute to the intensity of the tsunami.
Watershed	A watershed or water basin is the region of land that drains into a specified body of water, such as a river, lake, sea, or ocean. Rain that falls anywhere within a given body of water's watershed will eventually drain into that body of water. The term "watershed" can also mean the topographical dividing line between water basins: watersheds usually run along mountain ridges.
Wave Runup	The height that the wave extends up to on steep shorelines, measured above a reference level (the normal height of the sea, corrected to the state of the tide at the time of wave arrival).
Wildfire	An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.
Zone	A geographical area shown on a Flood Insurance Rate Map (FIRM) that reflects the severity or type of flooding in the area.

APPENDIX

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ACRONYMS

Acronyms

Federal Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ATC	Applied Technology Council
b/ca	benefit/cost analysis
BFE	Base Flood Elevation
BLM	Bureau of Land Management
BSSC	Building Seismic Safety Council
CDBG	Community Development Block Grant
CFR	Code of Federal Regulations
CRS	Community Rating System
EDA	Economic Development Administration
EPA	Environmental Protection Agency
ER	Emergency Relief
EWP	Emergency Watershed Protection (NRCS Program)
FAS	Federal Aid System
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance (FEMA Program)
FTE	Full Time Equivalent
GIS	Geographic Information System
GNS	Institute of Geological and Nuclear Sciences (International)
GSA	General Services Administration
HAZUS	Hazards U.S.
HMGP	Hazard Mitigation Grant Program
HMST	Hazard Mitigation Survey Team
HUD	Housing and Urban Development (United States, Department of)
IBHS	Institute for Business and Home Safety
ICC	Increased Cost of Compliance
IHMT	Interagency Hazard Mitigation Team
NCDC	National Climate Data Center
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NHMP	Natural Hazard Mitigation Plan (also known as "409 Plan")
NIBS	National Institute of Building Sciences
NIFC	National Interagency Fire Center
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
SBA	Small Business Administration

SEAO	Structural Engineers Association of Oregon
SHMO	State Hazard Mitigation Officer
TOR	Transfer of Development Rights
UGB	Urban Growth Boundary
URM	Unreinforced Masonry
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USFA	United States Fire Administration
USFS	United States Forest Service
USGS	United States Geological Survey
WSSPC	Western States Seismic Policy Council

California Acronyms

A&W	Alert and Warning
AA	Administering Areas
AAR	After Action Report
ARC	American Red Cross
ARP	Accidental Risk Prevention
ATC20	Applied Technology Council20
ATC21	Applied Technology Council21
BCP	Budget Change Proposal
BSA	California Bureau of State Audits
CAER	Community Awareness & Emergency Response
CalARP	California Accidental Release Prevention
CalBO	California Building Officials
CalEPA	California Environmental Protection Agency
CalREP	California Radiological Emergency Plan
CALSTARS	California State Accounting Reporting System
CalTRANS	California Department of Transportation
CBO	Community Based Organization
CD	Civil Defense
CDF	California Department of Forestry and Fire Protection
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEPEC	California Earthquake Prediction Evaluation Council
CESRS	California Emergency Services Radio System
CHIP	California Hazardous Identification Program
CHMIRS	California Hazardous Materials Incident Reporting System
CHP	California Highway Patrol
CLETS	California Law Enforcement Telecommunications System
CSTI	California Specialized Training Institute
CUEA	California Utilities Emergency Association

CUPA	Certified Unified Program Agency
DAD	Disaster Assistance Division (of the state Office of Emergency Svcs)
DFO	Disaster Field Office
DGS	California Department of General Services
DHSRHB	California Department of Health Services, Radiological Health Branch
DO	Duty Officer
DOC	Department Operations Center
DOE	Department of Energy (U.S.)
DOF	California Department of Finance
DOJ	California Department of Justice
DPA	California Department of Personnel Administration
DPIG	Disaster Preparedness Improvement Grant
DR	Disaster Response
DSA	Division of the State Architect
DSR	Damage Survey Report
DSW	Disaster Service Worker
DWR	California Department of Water Resources
EAS	Emergency Alerting System
EDIS	Emergency Digital Information System
EERI	Earthquake Engineering Research Institute
EMA	Emergency Management Assistance
EMI	Emergency Management Institute
EMMA	Emergency Managers Mutual Aid
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency (U.S.)
EPEDAT	Early Post Earthquake Damage Assessment Tool
EPI	Emergency Public Information
EPIC	Emergency Public Information Council
ESC	Emergency Services Coordinator
FAY	Federal Award Year
FDAA	Federal Disaster Assistance Administration
FEAT	Governor's Flood Emergency Action Team
FEMA	Federal Emergency Management Agency
FFY	Federal Fiscal Year
FIR	Final Inspection Reports
FIRESCOPE	Firefighting Resources of So. Calif Organized for Potential Emergencies
FMA	Flood Management Assistance
FSR	Feasibility Study Report
FY	Fiscal Year
GIS	Geographical Information System
HAZMAT	Hazardous Materials
HAZMIT	Hazardous Mitigation

HAZUS	Hazards United States (an earthquake damage assessment prediction tool)
HAD	Housing and Community Development
HEICS	Hospital Emergency Incident Command System
HEPG	Hospital Emergency Planning Guidance
HIA	Hazard Identification and Analysis Unit
HMEP	Hazardous Materials Emergency Preparedness
HMGP	Hazard Mitigation Grant Program
IDE	Initial Damage Estimate
IA	Individual Assistance
IFG	Individual & Family Grant (program)
IRG	Incident Response Geographic Information System
IPA	Information and Public Affairs (of state Office of Emergency Services)
LAN	Local Area Network
LEMMA	Law Enforcement Master Mutual Aid
LEPC	Local Emergency Planning Committee
MARAC	Mutual Aid Regional Advisory Council
MHID	Multihazard Identification
MOU	Memorandum of Understanding
NBC	Nuclear, Biological, Chemical
NEMA	National Emergency Management Agency
NEMIS	National Emergency Management Information System
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Association
NPP	Nuclear Power Plant
NSF	National Science Foundation
NWS	National Weather Service
OA	Operational Area
OASIS	Operational Area Satellite Information System
OCC	Operations Coordination Center
OCD	Office of Civil Defense
OEP	Office of Emergency Planning
OES	California Governor's Office of Emergency Services
OSHPD	Office of Statewide Health Planning and Development
OSPR	Oil Spill Prevention and Response
PA	Public Assistance
PC	Personal Computer
PDA	Preliminary Damage Assessment
PIO	Public Information Office
POST	Police Officer Standards and Training
PPA/CA	Performance Partnership Agreement/Cooperative Agreement (FEMA)
PSA	Public Service Announcement
PTAB	Planning and Technological Assistance Branch
PTR	Project Time Report
RA	Regional Administrator (OES)

RADEF	Radiological Defense (program)
RAMP	Regional Assessment of Mitigation Priorities
RAPID	Railroad Accident Prevention & Immediate Deployment
RDO	Radiological Defense Officer
RDMHC	Regional Disaster Medical Health Coordinator
REOC	Regional Emergency Operations Center
REPI	Reserve Emergency Public Information
RES	Regional Emergency Staff
RIMS	Response Information Management System
RMP	Risk Management Plan
RPU	Radiological Preparedness Unit (OES)
RRT	Regional Response Team
SAM	State Administrative Manual
SARA	Superfund Amendments & Reauthorization Act
SAVP	Safety Assessment Volunteer Program
SBA	Small Business Administration
SCO	California State Controller's Office
SEMS	Standardized Emergency Management System
SEPIC	State Emergency Public Information Committee
SLA	State and Local Assistance
SONGS	San Onofre Nuclear Generating Station
SOP	Standard Operating Procedure
SWEPC	Statewide Emergency Planning Committee
TEC	Travel Expense Claim
TRU	Transuranic
TTT	Train the Trainer
UPA	Unified Program Account
UPS	Uninterrupted Power Source
USAR	Urban Search and Rescue
USGS	United States Geological Survey
WC	California State Warning Center
WAN	Wide Area Network
WIPP	Waste Isolation Pilot Project