Recognition

Special Thanks

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Acknowledgements

San Bernardino Community College District Board of Trustees

- Carleton W. Lockwood, Jr., President
- Dr. Donald L. Singer, Vice President
- John M. Futch, Clerk
- Donna Ferracone
- John Longville
- James C. Ramos
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Note: The maps in this plan were provided by the San Bernardino Community College District, the County of San Bernardino, the Federal Emergency Management Agency (FEMA), or were acquired from public internet sources. Care was taken in the creation of the maps contained in this Plan, however they are provided "as is". The San Bernardino Community College District does not accept any responsibility for any errors, omissions or positional accuracy, and therefore, there are no warranties that accompany these (the maps). Although information from land surveys may have been used in the creation of these products, in no way does this product represent or constitute a land survey. Users are cautioned to field verify information on this product before making any decisions.
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Executive Summary

The Mitigation Plan was prepared in response to the Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 (also known as Public Law 106-390) requires state and local governments to prepare Mitigation Plans to document their Mitigation Planning process, and to identify hazards, potential losses, mitigation needs, goals, and strategies. This type of planning supplements the District’s comprehensive emergency management program.

Under DMA 2000, each state and local government must have a federally approved Mitigation Plan to be eligible for hazard mitigation grant funding. To comply with that obligation, the San Bernardino Community College District (SBCCD or District) developed its first Mitigation Plan in 2005. This Plan represents an update to that version.

The Disaster Mitigation Act of 2000 (DMA 2000) is intended to facilitate cooperation between state and local governments, prompting them to work together. Through collaboration, mitigation needs can be identified before disasters strike, resulting in faster allocation of resources and more effective risk reduction projects.

The following FEMA definitions are used throughout this plan:

Hazard Mitigation – “Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards”.

Planning – “The act or process of making or carrying out plans; specifically, the establishment of goals, policies, and procedures for a social or economic unit.”

(Source: FEMA, 2002, Getting Started, Building Support for Mitigation Planning, FEMA 386-1)

Mitigation Planning Benefits

Planning ahead helps residents, businesses, and government agencies effectively respond when disasters strike, and keeps public agencies eligible for Hazard Mitigation Grant Program funding. The long-term benefits of mitigation planning include:

- Greater understanding of hazards faced by a community
- Use of limited resources on hazards with the greatest effect on a community
- Financial savings through partnerships for planning and mitigation
- Reduced long-term impacts and damages to human health and structures, and lower repair costs
- More sustainable, disaster-resistant communities.

Hazard Land Use Policy in California

Planning for hazards should be an integral element of any District’s land use planning program. All California cities and counties have General Plans and the implementing ordinances that are required to comply with the statewide land use planning regulations.

The continuing challenge faced by local and state government officials is to keep the network of local plans effective in responding to the changing conditions and needs of California’s diverse
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communities, particularly in light of the very active seismic region in which we live. Planning for hazards requires a thorough understanding of the various hazards facing the District and the region as a whole.

Additionally, it is important to take an inventory of the structures and contents of various District holdings. These inventories should include the compendium of hazards facing the district, the built environment at risk, the personal property that may be damaged by hazard events and most of all, the risks to the people who live in the shadow of such hazards.

Support for Hazard Mitigation

All mitigation is local. The primary responsibility for development and implementation of risk reduction strategies and policies lies with each local jurisdiction. 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 hazards and hazard mitigation.

Some of the key agencies include:

- The California Emergency Management Agency (Cal EMA) 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 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 Department of Forestry and Fire Protection (CalFIRE) is responsible for all aspects of wildland fire protection on private and state properties, 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, and the development of partnerships aimed at reducing risk.
- 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.
- Federal Emergency Management Agency (FEMA) provides hazard mitigation guidance, resource materials, and educational materials to support implementation of the capitalized DMA 2000.
- The United States Census Bureau (USCB) provides demographic data on the populations affected by natural disasters.
- The United States Department of Agriculture (USDA) provides data on matters pertaining to land management.

A Hazard Mitigation Planning Team (Planning Team) consisting of SBCCD staff from various departments used the following approach to update the mitigation plan:

- Develop a Planning Team
- Identify hazards posing a significant threat
- Profile these hazards
- Estimate inventory at risk and potential losses associated with these hazards
- Develop mitigation strategies and goals that address these hazards
- Develop Plan maintenance procedures for implementation after the California Emergency Management Agency (Cal EMA) and the Federal Emergency Management Agency (FEMA) approve the Mitigation Plan

Although the requirements of DMA 2000 only apply to natural hazards, which are the primary focus of this Plan, the Planning Team felt it was important to also identify profile, assess, and mitigate technological and human-caused hazards.

As required by DMA 2000, the SBCCD informed the public about the planning process and provided opportunities for public input. In addition, key agencies and stakeholders shared their expertise during the planning process. This Mitigation Plan documents the process, outcome, and future of the District’s mitigation planning efforts.

How is the Plan Organized?

The structure of the Plan enables people to use a section of interest to them and allows the District to review and update sections when new data is available. The ease of incorporating new data into the plan will result in a Mitigation Plan that remains current and relevant to the District.

Part I of the SBCCD’s Mitigation Plan consists of three sections: Executive Summary, Introduction, and District Profile.

Part II of the Mitigation Plan consists of Mitigation Strategies, Planning Process, Plan Maintenance, and Risk Assessment.

Part III of the SBCCD’s Mitigation Plan consists of Earthquake, Flood, and Wildfire hazard-specific analyses.

Part IV is a collection of Appendices supporting the Plan.

Following is a description of each of the sections:

**Part I: Background**

**Executive Summary**
The executive summary provides an overview of the planning process.

**Section 1: Introduction**
The Introduction describes the background and purpose of developing the Mitigation Plan for the San Bernardino Community College District service area.

**Section 2: District Profile**
The section presents the history, geography, demographics, and socioeconomics of the San Bernardino Community College District service area. It provides relevant information on the demographics and history of the region.
Part II: Mitigation Planning

Section 3: Mitigation Strategies
This section highlights
1) Mitigation Actions Matrix,
2) the planning approach taken,
3) how the action items are organized, and
4) the goals and objectives of the Plan.

Section 4: Planning Process
This section describes the mitigation planning process, including
1) Planning Team involvement,
2) public and other stakeholder involvement; and
3) integration of existing data and plans.

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

Section 6: Risk Assessment
This section provides information on hazard identification, vulnerability and risk associated with hazards in the San Bernardino Community College District service area.

Part III: Hazard Analysis
Hazard-specific analysis on three persistent hazards is addressed in this Plan. Persistent hazards occur with some regularity and may be predicted through historic evidence and scientific methods. The persistent hazards addressed in the Plan include:

- Section 7: Earthquake
- Section 8: Flood
- Section 9: Wildfire/Urban Fire

Part IV: Appendix
The Plan Appendix is designed to provide users of the Mitigation Plan with additional information to assist them in understanding the contents of the Mitigation Plan, and includes potential resources to assist them with implementation.

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

Mitigation Measure Categories
The following is FEMA’s list of mitigation categories. The activities identified by the Planning Team are consistent with the six broad categories of mitigation actions outlined in FEMA.
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Publication 386-3, Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies.

- **Prevention**: These include government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.

- **Property Protection**: This refers to actions that involve modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.

- **Public Education and Awareness**: These include actions to inform and educate citizens, property owners, and elected officials about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

- **Natural Resource Protection**: These are defined as actions that, in addition to minimizing hazard losses, preserve or restore the functions of natural systems. Examples include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

- **Emergency Services**: Included in this list are actions that protect people and property during and immediately following a disaster or hazard event. Such services include warning systems, emergency response services, and protection of critical facilities.

- **Structural Projects**: This includes actions that involve the construction of structures to reduce the impact of a hazard, such as dams, levees, floodwalls, retaining walls, and safe rooms.

**Plan Mission**

The mission of the Mitigation Plan is to promote sound public policy designed to protect people, critical facilities, infrastructure, private property, and the environment from natural hazards. This is achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the District in creating a more sustainable community.

**Mitigation Planning Process**

The process for updating the 2005 Mitigation Plan started with identifying members for the Planning Team. Each team member represented different District departments and specific divisions within those departments that have a role in mitigation efforts. The Planning Team met over a period of six months, and identified characteristics and consequences of those natural hazards that have a significant potential to affect the District.

The Team developed the hazard mitigation strategy and goals by utilizing an understanding of the various risks posed by the identified hazards. The group also determined hazard mitigation activities and priorities that included scenarios for both present and future conditions. The final Mitigation Plan will be implemented through various projects, changes in day-to-day District operations, and through continued hazard mitigation development.
Public Input
The Plan will be made available to the public through different venues and will engage the public, involve them in ongoing planning and evaluation, and facilitate communication. The Planning Team recognizes that community involvement increases the likelihood that hazard mitigation will become a standard consideration for the District.

The Planning Team posted a public notice in October 2011. The resources and information cited in the Mitigation Plan provide a strong local perspective and help identify strategies and activities to make the San Bernardino Community College District more disaster-resistant.

Participating Organizations
Successful mitigation planning, like all community planning, requires collaboration with, and support from, federal, state, local, and regional governments, citizens, the private sector, universities, and non-profit organizations. The Planning Team consulted with a variety of sources to ensure that the planning process resulted in practicable actions tailored to local needs and circumstances.

Planning Approach
The four-step planning approach outlined in the FEMA publication, Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies (FEMA 386-3) was used to develop this plan:

- **Develop mitigation goals and objectives** - The risk assessment (hazard characteristics, inventory, and findings), along with municipal policy documents, were utilized to develop mitigation goals and objectives.
- **Identify and prioritize mitigation actions** – Mitigation activities were identified for each hazard based on the risk assessment, goals and objectives, existing literature/resources, and input from participating entities. Activities were 1) qualitatively evaluated against the goals and objectives, and other criteria; 2) identified as high, medium, or low priority; and 3) presented in a series of hazard-specific tables.
- **Prepare implementation strategy** - Generally, high priority activities are recommended for implementation first. However, based on community needs and goals, project costs, and available funding, some medium or low priority activities may be implemented before some high priority items.
- **Document mitigation planning process** - The mitigation planning process is documented throughout this Plan.

Mitigation Planning
As the cost of damage from disasters continues to increase nationwide, the San Bernardino Community College District recognizes the importance of identifying effective ways to reduce vulnerability to disasters. Mitigation Plans assist communities in reducing risk from hazards by identifying resources, information, and strategies for risk reduction, while helping guide and coordinate mitigation activities throughout the District.
The Plan provides a set of action items designed to reduce risk from hazards, such as education and outreach programs and the development of partnerships. The Plan also provides for the implementation of preventative activities, including programs that restrict and control development in areas subject to damage from hazards.

The Mitigation Plan is integrated with other plans, including the San Bernardino Community College District Emergency Operations Plan, the Five Year Construction Plan, and the Sewer System Maintenance Plan.

Scope
The Mitigation Plan addresses the needs of the District-owned facilities within the District’s boundaries.

Risk Assessment
Risk assessment is the identification of risks posed by a hazard and the corresponding impacts to the community. This process involves five steps: identify hazards, profile hazards, inventory critical assets, assess risks, and assess vulnerability of future development. The potential impact of hazards associated with the District’s location and varying terrain make the environment and population vulnerable to a wide spectrum of natural disaster situations. Any disaster scenario can only be assessed through careful planning and collaboration between public agencies, private sector organizations, and the District community, to make it possible to minimize loss.

Mitigation Strategy Goals
The Planning Team confirmed the five mitigation goals from the 2005 Plan:

- Protect Life and Property
- Enhance Public Awareness
- Preserve Natural Systems
- Encourage Partnerships and Implementation
- Strengthen Emergency Services

These goals guided the development and implementation of specific mitigation activities. Many of the mitigation objectives and action items come from current programs. Emphasis was placed on the effectiveness of the activities with respect to their estimated cost.

Plan Adoption
The Mitigation Plan was reviewed and adopted by the Board of Trustees after approval by Cal EMA and FEMA. A copy of the Resolution appears in Section 3: Planning Process.
Plan Maintenance

Mitigation Planning is an ongoing process involving changes as new hazards occur, as the area develops, and as more is learned about hazards and their impacts. The Planning Team will monitor changing conditions, help implement mitigation activities, annually review the plan to determine if District goals are being met, and provide an update to Cal EMA and FEMA every five years. In addition, the Planning Team will review After-Action Reports generated after any disaster that impacts the District, and revise the mitigation plan if needed.

Summary of Updates

The Planning Team reviewed each section of the 2005 Plan and decided to extensively reformat the original Plan. It was agreed that the “template” approach used in the original plan lacked details and descriptions critical to preparing an effective mitigation plan.

Following is a summary of the changes made to the 2005 Plan:

1. The 2005 Plan included a broad range of natural, technological, and human-caused hazards. The Planning Team agreed to eliminate the hazards with low-risk and/or low-impact.
2. Extensive changes were made to the hazard sections.
3. The 2005 plan was updated to incorporate FEMA’s regulatory changes dated July 1, 2008.
4. In the 2005 planning process, the District’s plan was part of a multi-jurisdictional plan. During the 2011 update, the Plan was designed as a stand-alone document.
5. Due to changes in staffing and new assignments, it was necessary to update the composition of the Planning Team.
6. References to California Governor’s Office of Emergency Services (OES) have been revised to reflect the new name of California Emergency Management Agency (Cal EMA).
7. Revisions to the document format, including graphic enhancements were made (e.g. District logos, text boxes, graphics, reorganization of electronic format, and web references)
8. The Planning Team discussed the plan’s organizational structure and decided to supplement the Executive Summary in order to provide the reader with additional clarification.
9. The Planning Team eliminated redundant or unnecessary data and content not required by DMA 2000 regulations.
Section 1: Introduction

Why Develop a Mitigation Plan?

As the costs of damage from disasters continue to increase, the District realizes the importance of identifying effective ways to reduce vulnerability to disasters. Mitigation plans assist communities in reducing risk from 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 designed to reduce risks from hazards through education and outreach programs and to foster the development of partnerships, and to encourage implementation of preventative activities such as land use programs that restrict and control development in areas subject to damage from hazards.

The resources and information within the Mitigation Plan:

✓ Establish a basis for coordination and collaboration among agencies and the shareholders of the San Bernardino Community College District;
✓ Identify and prioritize future mitigation projects; and
✓ Assist in meeting the requirements of federal assistance programs.

The Plan works in conjunction with other District plans, including the Emergency Operations Plan, the Five Year Construction Plan, and the Sewer System Management Plan.

A thorough review of existing documents revealed that the District has previously experienced or could be vulnerable to the following natural hazards: earthquake, flood, wildfire, landslide, dam failure, windstorm, terrorism, and drought. The planning team utilized the FEMA recommended Calculated Priority Risk Index to identify the most significant threats facing the District: earthquake; flood; and wildfire.

It is impossible to predict exactly when these disasters will occur, or the extent to which they will affect the District. However, with careful planning and collaboration among public agencies, private sector organizations, and those within the District, it is possible to minimize the losses that might result from these natural disasters. As the population of the region continues to increase, the exposure to hazards creates an even higher possible risk than previously experienced.

Hazard Mitigation Legislation

Relevant hazard mitigation legislation and grants are highlighted below.

Hazard Mitigation Grant Program

In 1974, Congress enacted the Robert T. Stafford Disaster Relief and Emergency Act, commonly referred to as the Stafford Act. In 1988, Congress established the Hazard Mitigation Grant Program (HMGP) via Section 404 of the Stafford Act. Regulations regarding
Hazard Mitigation Plan
San Bernardino Community College District

HMGP implementation based on the DMA 2000 were initially changed by an Interim Final Rule (44 CFR Part 206, Subpart N) published in the Federal Register on February 26, 2002. A second Interim Final Rule was issued on October 1, 2002.

The HMGP helps states and local governments implement long-term hazard mitigation measures for natural hazards by providing federal funding following a federal disaster declaration. Eligible applicants include state and local agencies, Indian tribes or other tribal organizations, and certain nonprofit organizations.

In California, the HMGP is administered by Cal EMA. Examples of typical HMGP projects include:

- Property acquisition and relocation projects
- Structural retrofitting to minimize damages from earthquake, flood, high wind, wildfire, or other natural hazards
- Elevation of flood-prone structures
- Vegetative management programs, such as:
  - Brush control and maintenance
  - Fuel break lines in shrubbery
  - Fire-resistant vegetation in potential wildland fire areas

Pre-Disaster Mitigation Program

The Pre-Disaster Mitigation Program (PDM) was authorized by §203 of the Stafford Act, 42 United States Code (USC), as amended by §102 of the DMA 2000. Funding is provided through the National Pre-Disaster Mitigation Fund to help state and local governments (including Indian tribal governments) implement cost-effective hazard mitigation activities that complement a comprehensive mitigation program.

In Fiscal Year 2012, two types of grants (planning and competitive) are offered under the PDM Program. Planning grants allocate funds to each state for Mitigation Plan development. Competitive grants distribute funds to states, local governments, and federally recognized Indian tribal governments via a competitive application process. FEMA reviews and ranks the submittals based on pre-determined criteria. The minimum eligibility requirements for competitive grants include participation in good standing in the National Flood Insurance Program (NFIP) and a FEMA-approved Mitigation Plan. (Source: http://www.fema.gov/government/grant/pdm/)

Flood Mitigation Assistance Program

The Flood Mitigation Assistance (FMA) Program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101). Financial support is provided through the National Flood Insurance Fund to help states and communities implement measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP.

Three types of grants are available under FMA: planning; project; and technical assistance. Planning grants are available to states and communities to prepare Flood Mitigation Plans.
NFIP-participating communities with approved Flood Mitigation Plans can apply for project grants to implement measures to reduce flood losses. Technical assistance grants in the amount of 10 percent of the project grant are available to the state for program administration. Communities that receive planning and/or project grants must participate in the NFIP. Examples of eligible projects include elevation, acquisition, and relocation of NFIP-insured structures. (Source: http://www.fema.gov/fima/fma.shtm)

Disaster Mitigation Act of 2000

DMA 2000 (DMA 2000) was signed by President Clinton on October 30, 2000 (Public Law 106-390). Section 322 primarily deals with the development of Mitigation Plans. The Interim Final Rule for planning provisions (44 CFR Part 201) was published in the Federal Register twice: February 26, 2002 and October 1, 2002. The Mitigation Planning requirements are implemented via 44 CFR Part 201.6.

Under DMA 2000, state and local governments (each city, county, and special district), and tribal governments must each develop a Mitigation Plan to be eligible to receive HMGP funds. Every mitigation plan, which must be reviewed by the state and approved by FEMA, should include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction.

DMA 2000 was designed to establish a national program for pre-disaster mitigation, streamline disaster relief at the federal and state levels, and control federal disaster assistance costs. Congress believed that meeting these requirements would produce the following benefits:

- Reduce loss of life and property, human suffering, economic disruption, and disaster costs
- Prioritize hazard mitigation at the local level with increased emphasis on
  - planning and public involvement,
  - assessing risks,
  - implementing loss reduction measures, and
  - ensuring critical facilities/services survive a disaster
- Promote education and economic incentives to form community-based partnerships and leverage non-federal resources to commit to and implement long-term hazard mitigation activities

State and Federal Support

While local jurisdictions have primary responsibility for developing and implementing hazard mitigation strategies, they are not operating in a vacuum. Various state and federal partners and resources can help local agencies with mitigation planning.

Cal EMA is the lead agency for mitigation planning support to local governments. In addition, FEMA offers grants, tools, and training.

This Mitigation Plan was prepared in accordance with the following regulations and guidance:

- DMA 2000 (Public Law 106-390, October 10, 2000)
Hazards U.S. – Multi-Hazard

In 1997, FEMA developed a standardized model for estimating losses caused by an earthquake. Hazards U.S. (HAZUS) addressed the need for more effective national, state, and local planning and the need to identify areas that face the highest risk and potential for loss.

Hazards U.S. Multi-Hazard (HAZUS-MH) provides models to estimate potential losses from floods (coastal and riverine) and winds (hail, hurricane, tornado, tropical cyclone, and thunderstorm). HAZUS-MH applies engineering and scientific risk calculations developed by hazard and information technology experts to provide defensible damage and loss estimates. This methodology provides a consistent framework for assessing risk across a variety of hazards.

HAZUS-MH uses Geographic Information System technology to produce detailed maps and analytical reports on physical damage to building stock, critical facilities, transportation systems, and utilities. The damage reports cover induced damage (debris, fire, hazardous material, and
inundation) and direct economic and social losses (casualties, shelter requirements, and economic impacts) promoting standardization.

Who Does the Mitigation Plan Affect?

The Mitigation Plan affects the areas within the San Bernardino Community College District boundaries and District-owned facilities and land. This plan provides a framework for planning for natural hazards. The following maps depict the layouts of the two college campuses.
Map 1-1: Map of San Bernardino Valley College
(Source: San Bernardino Community College District)

San Bernardino Valley College
701 South Mount Vernon Avenue
San Bernardino, CA 92410
(909) 384-4800

INDICATES CONSTRUCTION AREAS
ARROWS DESIGNATE STUDENT PARKING LOT ENTRANCES
AUTOMATED EXTERNAL DEFIBRILLATOR
INDICATES PARKING PERMIT DISPENSER
INDICATES APPROVED SMOKING AREAS (16)
This is a smoke-free campus - smoking in non-designated areas or buildings may result in the issuance of a citation. The penalty for violation is $100.00 (Government Code 44430).

DISTRICT POLICE
Campus Center Rs, 100
(909) 384-4801
Parking permits are required to park in all parking lots and on all college streets.

Purchasing a disabled placard requires a valid California disabled placard and a valid SBCCD parking permit.

Building Symbols
AEDS = Administration/Student Services
(NOTE: AEDs are located in AEDS)
ART = Art Center
AUD = Auditorium
B = Business Building
CC = Chemistry Building
CHE = Child Development Center
HLS = Health & Life Science Building
LA = Liberal Arts Building
LIB = Library
MC = Media/Communications
MCHS = Middle College High School
NHR = North Hall
NHR = North Hall Replacement
PL = Planetarium
PL/PORT = Portable
PB = Physical Science Building
PS = Student Health Services
T = Technical Building
WC = Women’s Center

FALL 2010
Revised 4-20-10

Check our website area.college.edu for more updates.
Section 2: District Profile

Setting
The San Bernardino Community College District (SBCCD) was formed in 1926, originally as the San Bernardino Valley Union Junior College District and the first union district formed in the state.

A union district was defined as one made up of two or more contiguous high school districts. The San Bernardino district was formed from the San Bernardino and Colton high school districts, which then joined forces to create the junior college district, elect trustees, establish curriculum and provide facilities and instructors for San Bernardino Valley College (SBVC).

In 1967, the district office began the development of a new campus in Yucaipa. Crafton Hills College (CHC) opened in 1972, serving the East Valley.

Currently, the SBCCD oversees San Bernardino Valley College, Crafton Hills College, the Professional Development Center (PDC), and its own public television and radio station (KVCR TV-FM).

The District estimates that there are approximately 13,000 students attending San Bernardino Valley College campus and approximately 5,500 students attending Crafton Hills College campus as of Fall 2011.

Map 2-1: Aerial Map of District Service Area
(Source: Google Maps)
Topography
The San Bernardino Community College District service area is located in the southwestern quadrant of San Bernardino County at the base of the San Bernardino mountains, approximately 59 miles east of downtown Los Angeles, approximately 58 miles west of Palm Springs, and approximately 11 miles north of the City of Riverside. A regional map is located in Section 6: Risk Assessment. The District encompasses 500 square miles. The District’s service area includes a variety of cities and communities, as outlined below.

Climate
The District’s service area has a very temperate climate. The average annual rainfall is 15.9 inches per year. The temperatures in the service area range from 17 ºF to 117 ºF.

Major River/Watersheds
The major waterway with the greatest potential to impact the service area is the Santa Ana River.

Flooding in this area occurs during summer and winter storms. Isolated flooding can also occur in areas ravaged by wildfire that have burned away absorbent landscape.

Future Development
San Bernardino Valley College is currently undergoing extensive construction. SBVC is unusual in its extraordinary vulnerability to fault rupture and related ground deformation. The campus straddles the San Jacinto fault zone, the most active fault in Southern California this century in terms of moderate to major earthquakes. Within the boundaries of the SBVC Campus, seven school buildings set in the main fault zone or within a 50 foot setback zone. Five of these were constructed prior to 1973 and severely lacking in their lateral force resisting systems. The other two were built or added onto in 1976, but given the standards in affect then and the current seismic data, these were also severely lacking. The District was given a grant through FEMA and the California Community Colleges Chancellor’s Office and the five non-compliant buildings have since been replaced and the older buildings demolished as new facilities have come online. The last three non-compliant buildings were demolished in summer 2011. New facilities are currently in design to replace the Physical Education and Athletic facilities. Renovation projects are also being planned for the older Business Building and the Auditorium, both of which received voluntary seismic upgrades within the past eight years.

At Crafton Hills College, the District is anticipating new buildings and some remodeling. To date, Crafton Hills College has completed an Aquatic Center and a 53,000 square foot Learning Resource Center (Library), a Math/Science Annex and a solar farm. A new Science complex, Occupational Educational building and other buildings are also planned.
PART II: MITIGATION PLANNING

Section 3: Mitigation Strategies

Goals

The Planning Team reviewed the goals from the 2005 Mitigation Plan and decided to realign the goals from hazard-specific to be more general. The new mitigation goals focus on avoiding or reducing long-term vulnerabilities to hazards. The goals are based on the updated risk assessment, and represent a long-term vision for hazard reduction or enhanced mitigation capabilities. They are compatible with the needs and goals expressed in other planning documents prepared by the District.

Each mitigation action item is associated with one of the identified goals (see Mitigation Actions Matrix). The Planning Team developed these action items through its knowledge of the local area, risk assessment, review of past efforts, identification of mitigation activities, and qualitative analysis.

The five mitigation goals and descriptions are listed below.

**Protect Life and Property**

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

Improve hazard assessment information to make recommendations for avoiding new development in high hazard areas and encouraging preventative measures for existing development in areas vulnerable to natural, human-caused, and technological hazards.

**Enhance Public Awareness**

Develop and implement education and outreach programs to increase public awareness of the risks associated with natural, human-caused, and technological hazards.

Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

**Preserve Natural Systems**

Support management and land use planning practices with hazard mitigation to protect life.

Preserve, rehabilitate, and enhance natural systems to serve hazard mitigation functions.

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FEMA defines **Goals** as general guidelines that explain what you want to achieve. They are usually broad policy-type statements, long-term, and represent global visions.

FEMA defines **Mitigation Activities** as specific actions that help you achieve your goals and objectives.
Encourage Partnerships and Implementation

Strengthen communication and coordinate participation with public agencies, students, faculty/staff, non-profit organizations, business, and industry to support implementation.

Encourage leadership within the District and public organizations to prioritize and implement local and regional hazard mitigation activities.

Strengthen Emergency Services

Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.

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

Coordinate and integrate hazard mitigation activities where appropriate, with Emergency Operations Plans and Standard Operating Procedures.

How are the Mitigation Action Items Organized?

The action items are a list of activities in which District agencies, students, and staff can be engaged to reduce risk. Each action item includes an estimated implementation timeline.

The action items are organized within the following Mitigation Actions Matrix, which lists all of the multi-hazard (actions that reduce risks for more than one specific hazard) and hazard-specific action items included in the Mitigation Plan. Data collection, research, and the public participation process resulted in the development of these action items (Section 3: Planning Process). The Matrix includes the following information for each action item:

Funding Source

The action items can be funded through a variety of sources, possibly including operating budget/general fund, development fees, Community Development Block Grant (CDBG), Hazard Mitigation Grant Program (HMGP), other grants, private funding, and other funding opportunities.

Coordinating Organization

The Mitigation Actions Matrix (Table 3-1) assigns primary responsibility for each of the action items. The hierarchies of the assignments vary – some are positions, others departments, and include other committees. The primary responsibility for implementing an action item falls to the entity shown as the “Coordinating Organization”. The coordinating organization is the agency with regulatory responsibility to address hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. Coordinating organizations may include local, county, or regional agencies that are capable of or responsible for implementing activities and programs.

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.
Comments
Department representatives provided status updates on each of the mitigation action items identified in the 2005 plan. The status was indicated in the comments column using the following categories: New, Revised, Completed, Deleted, and Deferred.

Prioritizing Mitigation Action Items
The Planning Team used the following tool to rank the various mitigation action items.

<table>
<thead>
<tr>
<th>Mitigation Action Item Number _____</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructions: If the answer is yes, check the box.</td>
</tr>
</tbody>
</table>

Does the Action:
- solve the problem?
- address Vulnerability Assessment?
- reduce the exposure or vulnerability to the highest priority hazard?
- address multiple hazards?
- benefits equal or exceed costs?
- implement a goal, policy, or project identified in the General Plan or Capital Improvement Plan?

Can the Action:
- be implemented with existing funds?
- be implemented by existing state or federal grant programs?
- be completed within the 5-year life cycle of the Local Hazard Mitigation Plan?
- be implemented with currently available technologies?

Will the Action:
- be accepted by the community?
- be supported by community leaders?
- adversely impact segments of the population or neighborhoods?
- require a change in local ordinances or zoning laws?
- positive or neutral impact on the environment?
- comply with all local, state and federal environmental laws and regulations?

Is there:
- sufficient staffing to undertake the project?
- existing authority to undertake the project?

Now tally the total number of "checks".

Number of checks: _____

Now using the following scale determine the priority level:
- 1-6 = Low priority
- 7-12 = Medium priority
- 13-18 = High priority
Table 3-1: Mitigation Actions Matrix (identifies the existing and future mitigation activities developed by the Planning Team. Also note the 2005 Mitigation Plan did not include any mitigation action items. That’s why all the 2012 items are identified as “new”)

<table>
<thead>
<tr>
<th>Action Item Identifier</th>
<th>Action Item</th>
<th>Coordinating Organization</th>
<th>Timeline</th>
<th>Plan Goals Addressed</th>
<th>Cost and Funding Source (*=not yet identified)</th>
<th>Ranking future actions (L=Low, M=Med, H=High, n/a=not applicable)</th>
<th>Comments (New, Completed, Deleted, Revised, Deferred)</th>
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</thead>
<tbody>
<tr>
<td>MH #1</td>
<td>Identify and pursue funding opportunities to develop and implement district mitigation activities.</td>
<td>Vice Chancellor – Fiscal Services</td>
<td>Ongoing</td>
<td>X</td>
<td>*</td>
<td>M</td>
<td>New</td>
</tr>
<tr>
<td>MH #2</td>
<td>Develop inventories of at-risk buildings and infrastructure and prioritize mitigation projects.</td>
<td>Administrative Services</td>
<td>1-2 Years</td>
<td>X</td>
<td>X</td>
<td>*</td>
<td>M New, Completed in 1999</td>
</tr>
<tr>
<td>MH #3</td>
<td>Develop, enhance, and implement education programs aimed at mitigating natural hazards, and reducing the risk to students, faculty, and staff.</td>
<td>Public Information</td>
<td>Ongoing</td>
<td>X</td>
<td>X</td>
<td>*</td>
<td>M New</td>
</tr>
<tr>
<td>MH #4</td>
<td>Retrofit or relocate utility and communications systems supporting emergency services operations to withstand the impacts of disasters.</td>
<td>Hazard Mitigation Planning Team</td>
<td>1 year</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>M New</td>
</tr>
<tr>
<td>MH #5</td>
<td>Familiarize district officials with requirements regarding public assistance for disaster response.</td>
<td>Hazard Mitigation Planning Team</td>
<td>1-2 years</td>
<td>X</td>
<td>*</td>
<td>M</td>
<td>New</td>
</tr>
</tbody>
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## Mitigation Actions Matrix

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<tr>
<td>MH #6</td>
<td>Assess availability of backup power resources (generators) of facilities and upgrade resources as necessary.</td>
<td>Hazard Mitigation Planning Team</td>
<td>Ongoing</td>
<td>Protect Life and Property</td>
<td>X</td>
<td>*</td>
<td>M New</td>
</tr>
<tr>
<td>MH #7</td>
<td>Monitor trees and branches at district facilities in risk of breaking or falling in stormy or high wind conditions. Prune or thin trees or branches when they would pose an immediate threat to property, utility lines or other significant structures or critical facilities in the district.</td>
<td>Maintenance and Operations</td>
<td>Ongoing</td>
<td>Protect Life and Property</td>
<td>X</td>
<td>X</td>
<td>General Fund M New</td>
</tr>
<tr>
<td>MH #8</td>
<td>Purchase and deliver a NOAA Weather Radio in District Police Dispatch and each campus and administrative facility.</td>
<td>District Police</td>
<td>1 year</td>
<td>Protect Life and Property</td>
<td>X</td>
<td>X</td>
<td>General Fund M New</td>
</tr>
<tr>
<td>MH #9</td>
<td>Ensure communications capability between the agencies in the EOC and all district campuses and administrative facilities.</td>
<td>District Police</td>
<td>Ongoing</td>
<td>Protect Life and Property</td>
<td>X</td>
<td>X</td>
<td>General Fund M New</td>
</tr>
<tr>
<td>MH #10</td>
<td>Establish EOC redundant backups in voice and data communications.</td>
<td>District Police</td>
<td>Ongoing</td>
<td>Protect Life and Property</td>
<td>X</td>
<td>X</td>
<td>General Fund M New</td>
</tr>
<tr>
<td>MH #11</td>
<td>Prepare a Recovery Plan. The Plan will include guidelines and authorities to make determination on the future of damaged buildings (i.e. which</td>
<td>Hazard Mitigation Planning Team</td>
<td>5 years</td>
<td>Protect Life and Property</td>
<td>X</td>
<td>*</td>
<td>M New</td>
</tr>
<tr>
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</tr>
<tr>
<td>MH #12</td>
<td>Post the District’s Hazard Mitigation Plan on the website</td>
<td>Public Information</td>
<td>1 year</td>
<td>X X X X X</td>
<td>General Fund</td>
<td>M</td>
<td>New</td>
</tr>
<tr>
<td>MH #13</td>
<td>In the event of damage, conduct a study of vital district facilities and</td>
<td>Administrative Services</td>
<td>As needed</td>
<td>X</td>
<td></td>
<td>*</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>utilities and determine if they should be redesigned or relocated to avoid</td>
<td></td>
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<td></td>
<td>future disruptions.</td>
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</tr>
<tr>
<td>MH #14</td>
<td>Develop proactive strategies for debris management following major disasters</td>
<td>Maintenance and Operations</td>
<td>1 year</td>
<td>X X X</td>
<td>*</td>
<td>M</td>
<td>New</td>
</tr>
<tr>
<td>MH #15</td>
<td>Provide training to Facilities Management inspectors, engineers, and</td>
<td>Maintenance and Operations</td>
<td>Ongoing</td>
<td>X X X</td>
<td>*</td>
<td>M</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td>architects regarding identification of potential of structural failures to</td>
<td></td>
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<td>buildings following a disaster. This training is critical because the</td>
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<tr>
<td></td>
<td>District’s inspectors, engineers, and architects are expected to determine</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>safety of occupancy following a disaster.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>MH #16</td>
<td>Encourage the water providers to maintain water systems that will</td>
<td>Maintenance and</td>
<td>Ongoing</td>
<td>X X X</td>
<td>General Fund</td>
<td>M</td>
<td>New</td>
</tr>
<tr>
<td></td>
<td>structures and/or facilities will not be allowed to be repaired/reconstructed).</td>
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<td></td>
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</tr>
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<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>MH #17</td>
<td>Maintain familiarity with the ongoing research efforts of the Department of the State Architect (DSA).</td>
<td>Fiscal Services</td>
<td>Ongoing</td>
<td>X</td>
<td>General Fund</td>
<td>M</td>
<td>New</td>
</tr>
<tr>
<td>MH #18</td>
<td>Encourage the development of mutual aid or other assistance agreements with local governments and other educational institutions in the region.</td>
<td>Administrative Services</td>
<td>Ongoing</td>
<td>X</td>
<td>General Fund</td>
<td>M</td>
<td>New</td>
</tr>
<tr>
<td>MH #19</td>
<td>Monitor opportunities for pre-disaster and post-disaster hazard mitigation grant funding.</td>
<td>Hazard Mitigation Planning Team</td>
<td>Ongoing</td>
<td>X</td>
<td>General Fund</td>
<td>M</td>
<td>New</td>
</tr>
<tr>
<td>MH #20</td>
<td>Maintain defensible space around Crafton Hills College</td>
<td>Maintenance and Operations</td>
<td>Ongoing</td>
<td>X</td>
<td>General Fund</td>
<td>M</td>
<td>New</td>
</tr>
<tr>
<td>MH #21</td>
<td>Purchase Blackboard emergency notification system.</td>
<td>Hazard Mitigation Planning Team</td>
<td>1 year</td>
<td>X</td>
<td>*</td>
<td>M</td>
<td>New, Completed</td>
</tr>
<tr>
<td>MH #22</td>
<td>Inspect, test and maintain existing fire hydrants per applicable Fire Codes.</td>
<td>Maintenance and Operations</td>
<td>1 year</td>
<td>X</td>
<td>General Fund</td>
<td>M</td>
<td>New</td>
</tr>
<tr>
<td>MH</td>
<td>Maintain existing fire protection</td>
<td>Maintenance</td>
<td>Ongoing</td>
<td>X</td>
<td>General Fund</td>
<td>M</td>
<td>New</td>
</tr>
</tbody>
</table>
## Mitigation Actions Matrix

<table>
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</thead>
<tbody>
<tr>
<td>#23</td>
<td>systems such as building fire sprinklers, extinguishing systems, hood suppression systems, extinguishers in accordance with applicable fire codes.</td>
<td>and Operations</td>
<td></td>
<td></td>
<td>Fund</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Earthquake Hazard Action Items

<p>| EQ #1 | Encourage reduction of nonstructural and structural earthquake hazards on campuses and administrative facilities. | Maintenance &amp; Operations | Ongoing | X | X | * | M | New |
| EQ #2 | Retrofit buildings to highest earthquake standard (Uniform Building Code/Field Act). | Administrative Services | 5 years | X |   | * | M | New |
| EQ #3 | Retrofit San Bernardino Valley College (Campus Center, Arts Center, Business Building, Auditorium, Technical Building, Learning Resource) for earthquakes. Business is undergoing renovation within the next year, as is the Auditorium. Both the Business Building and Auditorium received voluntary seismic upgrades within the past 8 years. New PE and Athletic facilities are currently in planning and will replace existing. | Maintenance and Operations | Completed | X |   | * | M | New, Completed |</p>
<table>
<thead>
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<th>Comments (New, Completed, Deleted, Revised, Deferred)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLD #1</td>
<td>Identify and maintain temporary protection measures for at risk structures: install plastic sheeting on roofs; cover exterior openings such as windows or doors; drain trapped water in ceilings or drain accumulated flood waters; temporary shoring to avoid imminent building collapse or damage; and install barricades.</td>
<td>Maintenance &amp; Operations</td>
<td>Ongoing</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>M</td>
</tr>
<tr>
<td>FLD #2</td>
<td>Assess the effectiveness of the storm drain systems at all facilities.</td>
<td>Maintenance and Operations</td>
<td>1 year</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>*</td>
</tr>
<tr>
<td>WF #1</td>
<td>Develop education programs aimed at mitigating wildfire hazards and reduce or prevent the exposure of students, faculty, and staff to dangers associated with wildfires.</td>
<td>Public Information/ Government Relations</td>
<td>Ongoing</td>
<td>X</td>
<td>X</td>
<td>General Fund</td>
<td>M</td>
</tr>
<tr>
<td>WF #2</td>
<td>Create a defensible space around the maintenance shed at the San Bernardino Valley College campus.</td>
<td>Maintenance and Operations</td>
<td>1 year</td>
<td>X</td>
<td>X</td>
<td>General Fund</td>
<td>M</td>
</tr>
</tbody>
</table>
Section 4: Planning Process

Plan Methodology

DMA 2000 emphasizes the importance of participatory planning in the development of Mitigation Plans. This Mitigation Plan was written using the best available information from a wide variety of sources.

Throughout the planning process, the District made a concerted effort to gather information from District and County of San Bernardino resources, as well as state and federal agencies, the local business community, and other stakeholders.

Disaster Mitigation Act of 2000
Requirement §201.6(c) (1)
[The plan shall include...]:
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.

The Planning Team solicited information from agencies and people with specific knowledge of natural hazards and past historical events, as well as planning and zoning codes, ordinances, and recent planning decisions. The hazard mitigation strategies contained in this Plan were developed through a planning process involving local public agencies and the public.

The rest of this section describes the mitigation planning process including 1) Planning Team involvement, 2) extended Planning Team support, 3) public and other stakeholder involvement; and 4) integration of existing data and plans.

Planning Team Involvement

The Executive Summary included a detailed chronological list of planning process tasks. Following is an accounting of specific participation. (Sign in sheets are attached to this section).
Table 4-1: Planning Team Timeline

<table>
<thead>
<tr>
<th>Event</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>July</td>
<td>August</td>
<td>September</td>
</tr>
<tr>
<td>Planning Team meeting with Consultant</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultant prepared the draft plan update</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Planning Team reviewed draft plan</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit draft plan to San Bernardino County Operational Area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submittal of the Final plan to San Bernardino County Operational Area</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>County submits Multi-Jurisdictional Hazard Mitigation Plan to Cal EMA and FEMA for approval</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cal EMA and FEMA review</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Event</td>
<td>2010</td>
<td>2011</td>
<td>2012</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Consultant revises plan as necessary</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Plan approved by FEMA</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Planning Team prepares for Board Meeting</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Submit approved plan to Board of Trustees for adoption</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Table 4-2: Planning Team Level of Participation

<table>
<thead>
<tr>
<th>Task</th>
<th>Patrick McCurry (Police Chief)</th>
<th>Whitney Fields (Environmental Health and Safety Administrator)</th>
<th>Charlie Ng (Vice Chancellor)</th>
<th>Mike Strong (Vice President)</th>
<th>Steve Sutorus (Business Manager)</th>
<th>James Hansen (Vice President)</th>
<th>Rosalind Lee (Administrative Secretary)</th>
<th>Krysten Newbury (Police Officer)</th>
<th>Russ Sutter (Consultant)</th>
<th>Carolyn Harshman (Consultant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning Team meeting with Consultant</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Consultant prepared the draft plan update</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Planning Team reviewed draft plan</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Draft Plan submitted to San Bernardino County Operational Area</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Submitted Final Plan to San Bernardino County Operational Area</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>CalEMA and FEMA review</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Consultant revises Plan as necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Planning Team prepares for Board Meeting</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>FEMA Approved Plan submitted to Board of Trustees for adoption</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

The Planning Team was responsible for the following tasks:

- Establish plan development goals
- Prepare timetable for plan completion
- Ensure plan meets DMA 2000 requirements, and federal and state guidelines
- Organize and oversee public involvement
- Solicit participation of government agencies, businesses, residents, and other stakeholders
- Gather information (such as existing data and reports)
- Develop, revise, adopt, and maintain Plan
The Planning Team, with support from other staff and local organizations, identified and profiled hazards, determined hazard rankings, estimated potential exposure or losses, evaluated development trends and specific risks, and developed mitigation goals, objectives, and activities.

During its meetings the Planning Team gathered and shared information, assessed risks, identified critical facilities, developed mitigation strategies, and provided continuity throughout the Plan development process to ensure the Plan addresses jurisdiction-specific hazard vulnerabilities and mitigation strategies. Members communicated regularly by phone and email between group meetings.

The Planning Team will meet annually after the plan is adopted. Members will provide project direction and oversight, assist with Plan evaluation, and convene supplementary meetings as-needed.

**Outside Agency Involvement**

A variety of agencies and individuals provided data and expertise during Plan development. The agencies were informed of the availability of the draft Mitigation Plan. Any comments received have been incorporated into the final document. A list of external reviewers is included at the end of this section. Following is a summary of input gathered from the review process.

**Table 4-3: Existing Processes and Programs**

<table>
<thead>
<tr>
<th>Process</th>
<th>Action</th>
<th>Implementation of Plan</th>
</tr>
</thead>
</table>
| Administrative | Departmental or organizational work plans, policies, and procedural changes | ✓ Chancellor’s Office  
✓ Planning Department  
✓ Maintenance & Operations Department  
✓ Other departments as appropriate |
| Administrative | Other plans                                                           | ✓ Reference Plan in Emergency Operations Plan |
| Budgetary   | Capital and operational budgets                                      | ✓ Include line item mitigation measures in budget as appropriate |
| Regulatory  | Executive orders, ordinances, and other directives                    | ✓ Building Code  
✓ Five-Year Construction Plan (Require hazard mitigation in design of new construction)  
✓ Comprehensive Planning (Institutionalize hazard mitigation in land use and new construction)  
✓ National Flood Insurance Program |
| Funding     | Traditional and nontraditional sources                               | ✓ Once plan is approved, seek authority to use bonds, fees, loans, and taxes to finance projects  
✓ Seek assistance from federal and state government, foundation, nonprofit, and private sources, such as Hazard Mitigation Grant Program  
✓ Research grant opportunities through U.S. Department of Housing and Urban Development, Community Development Block Grant |
### Use of Existing Documents

The Planning Team gathered and reviewed existing data and plans during Plan development:

- San Bernardino Community College District Five-Year Construction Plan (2010-2015)
- County of San Bernardino Multi-Jurisdictional Mitigation Plan (2010)
- HAZUS reports
- Historic GIS maps and local inventory data
- Local Flood Insurance Rate Maps
- Census data
- FEMA “How To” Mitigation Series (386-1 to 386-9)
- National Oceanic and Atmospheric Administration statistics

### Plan Adoption

Adoption of the Plan by the local governing body demonstrates the SBCCD’s commitment to meeting mitigation goals and objectives. Governing body approval legitimizes the Plan and authorizes responsible departments to execute their responsibilities.

The Board of Trustees must adopt the Mitigation Plan following review by Cal EMA and approval by FEMA. The resolution of adoption by the Board of Trustees is in Section 3: Planning Process.

### Board of Trustees Public Meeting

The Mitigation Plan was presented to the San Bernardino Community College Board of Trustees on 02/09/12 as an informational item and on 07/12/12 for adoption.

### Invitation Process

The San Bernardino Community College District Hazard Mitigation Plan was posted on the District website on October 2011. The Board meeting agenda was posted at the District offices and on the District’s website in July 2012.
Results

The Board was supportive of the overall goal established by the Planning Team to become a more disaster-resistant community. The Board of Trustees was presented with the San Bernardino Community College District Hazard Mitigation Plan as an informational item on the 02/09/12 Board agenda and adopted the plan on July 12, 2012.
B. Summary of Bond Measure P Capital Improvement Program Change Orders and Amendments for Construction Projects

C. Budget Report

D. Purchase Order Report

E. Multi-Jurisdictional Hazardous Mitigation Plan Manual

F. AP 2225 Collegial Consultation and AP 2260 Naming of Buildings and Other Properties

G. Applause Cards

14. **STAFF REPORTS**

A. **CVC President**
   - A written report was submitted to the Board.

B. **CVC Academic Senate**
   - Absent.

C. **CVC Classified Senate**
   - Absent.

D. **CVC ASB**
   - The student senate held a retreat to plan for the year. Everyone was invited to attend the production of Operation Glitter on January 28. Proceeds will benefit the Foothill AIDS Foundation.

E. **SBVC President**
   - A written report was submitted to the Board.

F. **SBVC Academic Senate**
   - Absent.

G. **SBVC Classified Senate**
   - Cassandra Thomas thanked Dr. Daniels for her work at SBVC, and welcomed Dr. Buckley. She emphasized collegiality in the decision to select the next college president.

H. **SBVC ASB**
   - Joyce Green and Kevin White said the changes in the student services area have been good and the AS is optimistic for this spring semester. They thanked Trustee Futch for speaking to the students on the student bus pass proposal. Students are planning a trip to Washington DC to lobby for education. Joyce and Kevin thanked Dr.
9/10/10 - Hazard Mitigation Plan Meeting
1. PAT McCurry
2. CHARLIE NG
3. MIKE STRONG
4. STEVE SUTORUS
5. GREG FIFE
6. ROSALIND LEE
7. RUSS SUTTER
8. CAROLYN HARSHMAN
Attachment 4-3: Planning Team Sign-In Sheets

SIGN IN
11-22-10 / 15:00 HRS

Kristen Newbury - District Police
Jermaine Carter (Rep. Dr. Matthew Isaac)
Aimee McGarvey
Russ Sutter - Wildan
Larry R. Ciccoloni - RVCR
Steve Satorus - Dist of C
Charlie Ng
SAN BERNARDINO COMMUNITY COLLEGE DISTRICT

TO: Board of Trustees
FROM: Bruce Baron, Chancellor
REVIEWED BY: Charlie Ng, Vice Chancellor, Fiscal Services
PREPARED BY: Whitney Fields, Environmental Health & Safety Administrator
DATE: July 12, 2012
SUBJECT: Consideration of Approval of the District’s Multi-Jurisdictional Hazard Mitigation Plan

RECOMMENDATION

It is recommended that the Board of Trustees approve the District’s Multi-Jurisdictional Hazard Mitigation Plan.

OVERVIEW

The Multi-Jurisdictional Hazard Mitigation Plan identifies risks and ways to minimize damage by natural and manmade disasters. It is a comprehensive resource document that serves many purposes such as enhancing public awareness, creating a decision tool for management, promoting compliance with State and Federal requirements, enhancing local policies for hazard mitigation capability, and providing inter-jurisdictional coordination.

The Federal Disaster Mitigation Act of 2000 requires all local governments to create a disaster plan in order to qualify for funding in the future.

ANALYSIS

Board approval of the Multi-Jurisdictional Hazard Mitigation Plan is required to attain final approval of the plan from the California Office of Emergency Management Services.

BOARD IMPERATIVE

III. Resource Management for Efficiency, Effectiveness, and Excellence

FINANCIAL IMPLICATIONS

The Multi-Jurisdictional Hazard Mitigation Plan will provide SBCCD with a tool that can be utilized to apply for emergency preparedness grants to assist in preparing for a natural disaster.
Section 5: Plan Maintenance

The Plan Maintenance section of this document details the formal process that will ensure that the Mitigation Plan remains an active and relevant document. The Plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a Plan revision every five years. This section describes how the District will integrate public participation throughout the Plan maintenance process.

Monitoring the Plan

Convener

The Board of Trustees will adopt the Mitigation Plan and the Chancellor will take responsibility for Plan maintenance and implementation. The Planning Team Chair will serve as a Chief of Police to facilitate the Planning Team meetings, and will assign tasks such as updating and presenting the Plan to the members of the Planning Team. Plan implementation and evaluation will be a shared responsibility among all of the Planning Team members.

Planning Team

The Planning Team will be responsible for coordinating implementation of Plan action items and undertaking the formal review process. The Chief of Police will assign representatives from District departments, divisions, and agencies, including but not limited to, the current Planning Team.

In order to make the Planning Team as broad and useful as possible, the Chancellor may choose to involve other relevant organizations and agencies in hazard mitigation. These additional appointments could include:

- A representative from the American Red Cross
- A representative from a county government emergency response agency

The Planning Team will meet at least once a year. Meeting dates will be scheduled once the final Planning Team has been established. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the Mitigation Plan.

Implementation through Existing Programs

San Bernardino Community College District addresses statewide planning goals and legislative requirements through its Five Year Construction Plan. The San Bernardino Community College District will have the opportunity to implement recommended mitigation action items through existing programs and procedures during annual updates to the Five Year Construction Plan. That plan guides all major budgeted infrastructure and facility development projects.

The San Bernardino Community College District Fiscal Services is responsible for adhering to the State of California’s Building and Safety Codes. In addition, the Planning Team will work with other agencies at the state level to review, develop and ensure building and safety codes
are adequate to mitigate or prevent damage by hazards. This is to ensure that life-safety criteria are met for new construction.

Some of the goals and action items in the Mitigation Plan may be achieved through activities recommended in the Five Year Construction Plan. Various district departments develop the Five Year Construction Plan and review it on an annual basis. Upon annual review of the Five Year Construction Plan, the Planning Team will work with the various departments to identify areas where the Mitigation Plan action items are consistent with the goals set out in the Five Year Construction Plan, and to integrate them where appropriate.

Within a year of formal adoption of the Mitigation Plan, the recommendations listed above will be incorporated into the process of existing planning mechanisms at the District level. The meetings of the Planning Team will provide an opportunity for Planning Team members to report back on the progress made on the integration of mitigation planning elements into District planning documents and procedures.

**Economic Analysis of Mitigation Projects**

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

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

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

Given federal funding, the Planning Team will use a FEMA-approved benefit/cost analysis approach to identify and prioritize mitigation action items. For other projects and funding sources, the Planning Team will use other approaches to understand the costs and benefits of each action item and to develop a prioritized list.

**Evaluating and Updating the Plan**

**Formal Review Process**

The Mitigation Plan will be evaluated on an annual basis to determine the effectiveness of its programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process includes a firm schedule and timeline, and identifies the agencies and organizations participating in Plan evaluation. The Chief of Police or designee will be responsible for contacting the Planning Team members and organizing the annual meeting. Planning Team members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan.

The Planning Team will review the goals and action items to determine their relevance to changing situations in the District, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. The Planning Team will also review Section 3: Risk Assessment to determine if this information should be updated or modified,
given any new available data. Individuals assigned the responsibility for the various action items will report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised.

The Chief of Police will assign the duty of updating the Plan to one or more of the Planning Team members. The designated Planning Team members will have three months to make appropriate changes to the Plan before submitting them to the Planning Team members. The Planning Team will also notify all holders of the District plan when changes have been made. Every five years the updated plan will be submitted to the State Hazard Mitigation Officer at the California Emergency Management Agency and the Federal Emergency Management Agency for review. The Chancellor is authorized to approve future updates and amendments to the Mitigation Plan.

Continued Public Involvement

The San Bernardino Community College District is dedicated to involving the public directly in the continual review and updates to the Mitigation Plan. Copies of the Plan will be available at the San Bernardino Community College District Office of the Vice Chancellor of Fiscal Services, San Bernardino Valley College Library, and Crafton Hills College Library. Each year, after the Planning Team evaluates the mitigation activities, a notice regarding the location of copies of the Plan will be publicized via the District's website (www.sbccd.org). This site will also contain an email address and telephone number where people can direct their comments and concerns. A public meeting will be held after each evaluation or when deemed necessary by the Planning Team. The meetings will provide the public a forum in which they may express their concerns, opinions, or ideas about the Plan.

The Chief of Police will be responsible for using District resources to publicize the annual public meetings and maintain public involvement through the public access channel, web page, and newspapers.
Section 6: Risk Assessment

What is a Risk Assessment?

Conducting a risk assessment can provide information regarding: the location of hazards; the value of existing land and property in hazard locations; and an analysis of risk to life, property, and the environment that may result from natural hazard events. Specifically, the five levels of a risk assessment are:

1. Hazard Identification
2. Profiling Hazard Events
3. Vulnerability Assessment/Inventory of Existing Assets
4. Risk Analysis
5. Assessing Vulnerability/Analyzing Development Trends

1) Hazard Identification

This section is the description of the geographic extent, potential intensity, and the probability of occurrence of a given hazard. Maps are used in this Plan to display hazard identification data. The San Bernardino Community College District identified three major hazards that affect this geographic area. These hazards - earthquake, flood, and wildfire - were identified through an extensive process involving research of existing documents and input from the Planning Team. The geographic extent of each of the identified hazards has been identified by the San Bernardino Community College District utilizing the maps and data contained in the County’s General Plan and Multi-Jurisdictional Hazard Mitigation Plan. Utilizing FEMA’s Calculated Priority Risk Index (CPRI), the Planning Team concluded that all of the identified hazards posed a significant threat against the District. The hazard ranking system is described in Table 6-1: Calculated Priority Risk Index, while the actual ranking is shown in Table 6-2: Calculated Priority Risk Index Ranking.

<table>
<thead>
<tr>
<th>CPRI Category</th>
<th>Degree of Risk Chart</th>
<th>Assigned Weight Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level ID</td>
<td>Description</td>
<td>Index Value</td>
</tr>
<tr>
<td>Unlikely</td>
<td>• Extremely rare with no documented history of occurrences or events.</td>
<td>45%</td>
</tr>
<tr>
<td>Probability</td>
<td>• Annual probability of less than 1 in 1,000 years.</td>
<td>1</td>
</tr>
<tr>
<td>Possible</td>
<td>• Extremely rare with no documented history of occurrences or events.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>• Annual probability of between 1 in 100 years and 1 in 1,000 years.</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>• Occasional occurrence with at least two or more documented historic events.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>• Annual probability of between 1 in 10 years and 1 in 100 years.</td>
<td></td>
</tr>
<tr>
<td>Highly Likely</td>
<td>• Frequent events with a well-documented</td>
<td>4</td>
</tr>
<tr>
<td>Hazard Mitigation Plan</td>
<td>San Bernardino Community College District</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>

### Magnitude / Severity

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Probability</th>
</tr>
</thead>
</table>
| Negligible       | • Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure).  
                   • Injuries or illnesses are treatable with first aid and there are no deaths.  
                   • Negligible quality of life lost.  
                   • Shut down of critical facilities for less than 24 hours. | 1           |
| Limited          | • Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructures)  
                   • Injuries and illnesses do not result in permanent disability and there are no deaths.  
                   • Moderate quality of life lost.  
                   • Shut down of critical facilities for more than 1 day and less than 1 week. | 2, 30%      |
| Critical         | • Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructures)  
                   • Injuries or illnesses result in permanent disability and at least one death.  
                   • Shut down of critical facilities for more than 1 week and less than 1 month. | 3           |
| Catastrophic     | • Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure).  
                   • Injuries or illnesses result in permanent disability and multiple deaths.  
                   • Shut down of critical facilities for more than 1 month. | 4           |

<table>
<thead>
<tr>
<th>Warning Time</th>
<th>Description</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 24 hours</td>
<td>• Population will receive more than 24 hours of warning.</td>
<td>1</td>
</tr>
<tr>
<td>12 to 24 hours</td>
<td>• Population will receive between 12-24 hours of warning.</td>
<td>2, 15%</td>
</tr>
<tr>
<td>6 to 12 hours</td>
<td>• Population will receive between 6-12 hours of warning.</td>
<td>3</td>
</tr>
<tr>
<td>Less than 6 hours</td>
<td>• Population will receive less than 6 hours of warning.</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration</th>
<th>Description</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 6 hours</td>
<td>• Disaster event will last less than 6 hours.</td>
<td>1</td>
</tr>
<tr>
<td>Less than 24 hours</td>
<td>• Disaster event will last between 6-24 hours.</td>
<td>2, 10%</td>
</tr>
<tr>
<td>Less than one week</td>
<td>• Disaster event will last between 24 hours and 1 week.</td>
<td>3</td>
</tr>
<tr>
<td>More than one week</td>
<td>• Disaster event will last more than 1 week.</td>
<td>4</td>
</tr>
</tbody>
</table>
### Table 6-2: Calculated Priority Risk Index Ranking for San Bernardino Valley College

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Probability</th>
<th>Weighted 45%</th>
<th>Weighted 30%</th>
<th>Weighted 15%</th>
<th>Duration</th>
<th>Weighted 10%</th>
<th>CPRI Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthquake - South San Andreas Fault</td>
<td>4</td>
<td>1.8</td>
<td>2</td>
<td>4</td>
<td>2.2</td>
<td>.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Wildland Fire</td>
<td>1</td>
<td>.45</td>
<td>1</td>
<td>.6</td>
<td>1</td>
<td>.1</td>
<td>1.45</td>
</tr>
<tr>
<td>Flood</td>
<td>1</td>
<td>.45</td>
<td>1</td>
<td>.6</td>
<td>1</td>
<td>.1</td>
<td>1.45</td>
</tr>
</tbody>
</table>

### Table 6-3: Calculated Priority Risk Index Ranking for Crafton Hills College

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Probability</th>
<th>Weighted 45%</th>
<th>Weighted 30%</th>
<th>Weighted 15%</th>
<th>Duration</th>
<th>Weighted 10%</th>
<th>CPRI Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wildland Fire</td>
<td>4</td>
<td>1.8</td>
<td>3</td>
<td>.9</td>
<td>4</td>
<td>1.1</td>
<td>3.4</td>
</tr>
<tr>
<td>Earthquake - South San Andreas Fault</td>
<td>4</td>
<td>1.8</td>
<td>2</td>
<td>.6</td>
<td>2</td>
<td>.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Flood</td>
<td>2</td>
<td>.9</td>
<td>1</td>
<td>.3</td>
<td>4</td>
<td>1.1</td>
<td>1.45</td>
</tr>
</tbody>
</table>

### Table 6-4: Calculated Priority Risk Index Ranking for San Bernardino Community College District Offices

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Probability</th>
<th>Weighted 45%</th>
<th>Weighted 30%</th>
<th>Weighted 15%</th>
<th>Duration</th>
<th>Weighted 10%</th>
<th>CPRI Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthquake - South San Andreas Fault</td>
<td>4</td>
<td>1.8</td>
<td>2</td>
<td>.6</td>
<td>2.2</td>
<td>.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Wildland Fire</td>
<td>1</td>
<td>.45</td>
<td>1</td>
<td>.3</td>
<td>4</td>
<td>.1</td>
<td>1.45</td>
</tr>
<tr>
<td>Flood</td>
<td>1</td>
<td>.45</td>
<td>1</td>
<td>.3</td>
<td>4</td>
<td>.1</td>
<td>1.45</td>
</tr>
</tbody>
</table>
2) Profiling Hazard Events

This process describes the causes and characteristics of each hazard and what part of the District's facilities, infrastructure, and environment may be vulnerable to each specific hazard. A profile of each identified hazard discussed in this Plan is provided in the Risk Assessment. Table 6-5 indicates a generalized perspective of the District’s vulnerability of the various hazards according to extent (or degree), location, and probability.

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Location (Where)</th>
<th>Extent (How Big an Event)</th>
<th>Probability (Unlikely, Possible, Likely, Highly Likely)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthquake</td>
<td>Entire Project Area</td>
<td>The Southern California Earthquake Center (SCEC) in 2007 concluded that there is a 99.7% probability that an earthquake of M6.7 or greater will hit California within 30 years.¹</td>
<td>Moderate</td>
</tr>
<tr>
<td>Flood</td>
<td>Throughout Project Area</td>
<td>Urban Flooding from Severe Weather</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wildfire</td>
<td>Throughout Project Area</td>
<td>Severe FRAP Ratings</td>
<td>High</td>
</tr>
</tbody>
</table>

¹ Uniform California Earthquake Rupture Forecast

3) Vulnerability Assessment/Inventory of Existing Assets

This is a combination of hazard identification with an inventory of the existing (or planned) property development(s) and population(s) exposed to a hazard. Critical facilities are of particular concern because these locations provide essential equipment or services to the general public that are necessary to preserve important public safety, emergency response, and/or disaster recovery functions. The critical facilities have been identified and are illustrated in Table 6-5: San Bernardino Community College District Critical Facilities Vulnerable to Hazards.

4) Risk Analysis

Estimating potential losses involves assessing the damage, injuries, and financial costs likely to be sustained in a geographic area over a given period of time. This level of analysis involves using mathematical models. The two measurable components of risk analysis are the magnitude of the harm that may result and the likelihood of the harm occurring. Describing vulnerability in terms of dollar losses provides the District and the State with a common framework with which to measure the effects of hazards on assets. For each hazard where data was available, quantitative estimates for potential losses have been included in the hazard assessment. Data was not available to make vulnerability determinations in terms of dollar...
losses for all of the identified hazards. The Mitigation Actions Matrix (Section 3: Mitigation Strategies) includes an action item to conduct such an assessment in the future.

5) Assessing Vulnerability/Analyzing Development Trends

This step provides a general description of District facilities and contents in relation to the identified hazards so that mitigation options can be considered in land use planning and future land use decisions. This Mitigation Plan provides a comprehensive description of the character of the San Bernardino Community College District in Section 2: District Profile. This description includes the geography and environment, population and demographics, land use and development, housing and community development, employment and industry, and transportation and commuting patterns. Analyzing these components of the San Bernardino Community College District can help in identifying potential problem areas and can serve as a guide for incorporating the goals and ideas contained in this mitigation plan into other community development plans.

Critical and Essential Facilities

Facilities critical to government response activities (i.e., life safety and property and environmental protection) include: local government 9-1-1 dispatch centers; local government emergency operations centers; local police and fire stations, local public works facilities, local communications centers, schools (shelters); and hospitals. Facilities that, if damaged, could cause serious secondary impacts are also considered “critical”. A hazardous materials facility is an example of this type of critical facility.

Essential facilities are those facilities that are vital to the continued delivery of key District services or that may significantly impact the District’s ability to recover from the disaster.

Table 6-6: San Bernardino Community College District Critical Facilities Vulnerable to Hazards illustrates the critical facilities and the vulnerability of those facilities to the identified hazards.

<table>
<thead>
<tr>
<th>Name of Facility</th>
<th>Earthquake</th>
<th>Flood</th>
<th>Wildfire</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Bernardino Community College District Offices</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crafton Hills College</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Economic Development and Corporate Training Center</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(EDCT)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Bernardino Valley College</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KVCR Public Broadcast System</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary

Hazard mitigation strategies can reduce the impacts concentrated at large employment and industrial centers, public infrastructure, and critical facilities. Hazard mitigation for industries and employers may include developing relationships with emergency management services and their employees before disaster strikes, and establishing mitigation strategies together. Collaboration among the public and private sectors to create mitigation plans and actions can reduce the impacts of hazards.
Section 7: Earthquake Hazards

Why Are Earthquakes a Threat to the San Bernardino Community College District?

The San Bernardino Community College District was most recently impacted by the Big Bear/Landers Earthquake in 1992, resulting in minor damage at Crafton Hills College.

Local Conditions

Earthquakes are considered a major threat to the San Bernardino Community College District due to the proximity of several fault zones, notably including the Southern San Andreas Fault. A recent Southern California Earthquake Center (SCEC) report (SCEC, 1995) indicated that the probability of an earthquake of Magnitude 7 or larger in southern California before the year 2024 is 80 to 90%. A significant earthquake along one of the major faults could cause substantial casualties, extensive damage to buildings, roads and bridges, fires, and other threats to life and property. The effects could be aggravated by aftershocks and by secondary effects such as fire, landslides and dam failure. A major earthquake could be catastrophic in its effect on the population, and could exceed the response capability of the local communities and even the State.

Impact of Earthquakes in the San Bernardino Community College District

Based on the risk assessment, it is evident that earthquakes will continue to have potentially devastating economic impacts to certain areas of the District. Impacts that are not quantified, but can be anticipated in future events, include:

- Injury and loss of life;
- Commercial and residential structural damage;
- Disruption of and damage to public infrastructure;
- Secondary health hazards, e.g. mold and mildew;
- Damage to roads and bridges resulting in loss of mobility;
- Significant economic impact (jobs, sales, tax revenue) upon the District;
- Negative impact on commercial and residential property values; and
- Significant disruption to students and teachers as temporary facilities and relocations would likely be needed

Historic Events in the Region

Refer to Section 3: Risk Assessment of the 2010 San Bernardino County Operational Area Multi-Jurisdictional Hazard Mitigation Plan (separate document). The update process information is currently linked at https://tmsprojects.icfi.com/sbhmpupdate/default.aspx and the current plan is located at http://hazardmitigation.calema.ca.gov/docs/lhmp/San_Bernardino_County_LHMP.pdf

Regulatory Background

The State regulates development within California to reduce or mitigate potential hazards from earthquakes or other geologic hazards. Development in potentially seismically active areas is
also governed by the Alquist-Priolo Earthquake Fault Zoning Act and the Seismic Hazards Mapping Act.

Chapter 16A, Division IV of the California Building Code (CBC), titled “Earthquake Design.” states that “The purpose of the earthquake provisions herein is primarily to safeguard against major structural failures or loss of life.” The CBC and the Uniform Building Code (UBC) regulate the design and construction of excavations, foundations, building frames, retaining walls, and other building elements to mitigate the effects of seismic shaking and adverse soil conditions. The procedures and limitations for the design of structures are based on site characteristics, occupancy type, configuration, structural system, height, and seismic zonation. Seismic zones are mapped areas (Figure 16A-2 of the CBC and Figure 16-2 of the UBC) that are based on proximity to known active faults and the potential for future earthquakes and intensity of seismic shaking. Seismic zones range from 0 to 4, with areas mapped as Zone 4 being potentially subject to the highest accelerations due to seismic shaking and the shortest recurrence intervals.

The 1933 Long Beach Earthquake resulted in the Field Act, affecting school construction. The 1971 Sylmar Earthquake brought another set of increased structural standards. Similar re-evaluations occurred after the 1989 Loma Prieta Earthquake and 1994 Northridge Earthquake. These code changes have resulted in stronger and more earthquake resistant structures.

The purpose of the Alquist-Priolo Earthquake Fault Zoning Act of 1972 (renamed in 1994) is “to regulate development near active faults so as to mitigate the hazard of surface fault rupture.” The State Geologist (chief of the Division of Mines and Geology) is required to delineate Earthquake Fault Zones (formerly known as “Special Studies Zones”) along known active faults. As defined by the California Division of Mines and Geology (DMG), an active fault is one which has had surface displacement within Holocene time (roughly the last 11,000 years) and/or has an instrumental record of seismic activity. Potentially active faults are those which show evidence of surface displacement during Quaternary time (roughly the last 2 million years), but for which evidence of Holocene movement has not been established. The DMG evaluates faults on an individual basis to determine whether a fault will be classified as an Alquist-Priolo Earthquake Fault Zone. In general, faults must meet certain DMG criteria, including seismic activity, historic rupture, and geologic evidence to be zoned as an Earthquake Fault Zone. Cities and counties affected by the zones must regulate certain development within the zones. They must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting. Typically, structures for human occupancy are not allowed within 50 feet of the trace of an active fault.

The Seismic Hazard Mapping Act was adopted in 1990 for the purpose of protecting public safety from the effects of strong ground shaking, liquefaction, landslides, or other ground failure caused by earthquakes. The Seismic Hazard Mapping Act requires that the State Geologist delineate the various seismic hazard zones. Cities, counties, or other permitting authorities are required to regulate certain development projects within the zones. They must withhold development permits for a site within a zone until the geologic conditions are investigated and appropriate mitigation measures, if any, are incorporated into the development plans. In addition, sellers (and their agents) of real property within a mapped hazard zone must disclose that the property lies within such a zone at the time of sale.
Earthquake Characteristics

Measuring and Describing Earthquakes

An earthquake is a sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the Earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. They usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. Ground motion is 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. Soft soils can further amplify ground motions. The severity of these effects is dependent on the amount of energy released from the fault or epicenter. One way to express an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. The acceleration due to gravity is often called "g". A ground motion with a peak ground acceleration of 100%g is very severe. Peak Ground Acceleration (PGA) is a measure of the strength of ground motion. PGA is used to project the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (10%, 5%, or 2%) of being exceeded in 50 years. These ground motion values are used for reference in construction design for earthquake resistance. The ground motion values can also be used to assess relative hazard between sites when making economic and safety decisions.

Another tool used to describe earthquake intensity is the Magnitude Scale. The Magnitude Scale is sometimes referred to as the Richter Scale. The two are similar but not exactly the same. The Magnitude Scale was devised as a means of rating earthquake strength and is an indirect measure of seismic energy released. The Scale is logarithmic with each one-point increase corresponding to a 10-fold increase in the amplitude of the seismic shock waves generated by the earthquake. In terms of actual energy released however, each one-point increase on the Richter scale corresponds to about a 32-fold increase in energy released. Therefore, a Magnitude 7 (M7) earthquake is 100 times (10 X 10) more powerful than a M5 earthquake and releases 1,024 times (32 X 32) the energy.

An earthquake generates different types of seismic shock waves that travel outward from the focus or point of rupture on a fault. Seismic waves that travel through the Earth's crust are called body waves and are divided into primary (P) and secondary (S) waves. Because P waves move 1.7 times faster than S waves, they arrive at the seismograph first. By measuring the time delay between arrival of the P and S waves and knowing the distance to the epicenter, seismologists can compute the magnitude for the earthquake.

The Modified Mercalli Scale (MMI) is another means for rating earthquakes, but one that attempts to quantify intensity of ground shaking. Intensity under this scale is a function of distance from the epicenter (the closer to the epicenter, the greater the intensity), ground acceleration, duration of ground shaking, and degree of structural damage. This rates the level
of severity of an earthquake by the amount of damage and perceived shaking (Table 4-3: Modified Mercalli Intensity Scale).

<table>
<thead>
<tr>
<th>MMI Value</th>
<th>Description of Shaking Severity</th>
<th>Summary Damage Description Used on 1995 Maps</th>
<th>Full Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Not Felt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>Felt by persons at rest, on upper floors, or favorably placed.</td>
<td>Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.</td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>Moderate Objects Fall</td>
<td>Nonstructural Damage</td>
<td>Difficult to stand. Noticed by drivers of motorcars. Hanging objects quiver. Furniture broken. Damage to masonry, including cracks. Weak chimneys broken at roofline. Fall of plaster, loose bricks, stones, tiles, cornices. Some cracks in masonry C. Small slides and caving in along sand or gravel banks. Concrete irrigation ditches damaged.</td>
</tr>
<tr>
<td>VII</td>
<td>Strong Nonstructural Damage</td>
<td>Moderate Damage</td>
<td>Steering of motorcars affected. Damage to masonry C, partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, and elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Cracks in wet ground and on steep slopes.</td>
</tr>
<tr>
<td>VIII</td>
<td>Very Strong Extreme Damage</td>
<td>Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shift horizontally on beaches and flat land.</td>
<td></td>
</tr>
<tr>
<td>IX</td>
<td>Very Violent Extreme Damage</td>
<td>Rails bent greatly. Underground pipelines completely out of</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 7-1: Modified Mercalli Intensity Scale

<table>
<thead>
<tr>
<th>MMI Value</th>
<th>Description of Shaking Severity</th>
<th>Summary Damage Description Used on 1995 Maps</th>
<th>Full Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>service.</td>
</tr>
<tr>
<td>XII</td>
<td></td>
<td>Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.</td>
<td></td>
</tr>
</tbody>
</table>

### Severity

A major earthquake occurring in or near the San Bernardino Community College District could cause many deaths and injuries, extensive property damage, fires, hazardous material spills, and other dangers. Aftershocks and the secondary effects of fire, hazardous material/chemical accidents, and possible failure of dams and waterways could aggravate the situation.

The time of day and season of the year would have a profound impact on the number of dead and injured and the amount of property damage. Such an earthquake could exceed the response capabilities of the individual cities, San Bernardino County Operational Area, and the State of California Emergency Management Agency. Support of damage control and disaster relief could be required from other local governments and private organizations, as well as the state and federal governments.

Extensive search and rescue operations could be required to assist trapped persons. Mass evacuation could be essential to save lives, particularly in areas downwind from hazardous material releases. Emergency medical care, food, and temporary shelter could be required by injured or displaced persons.

Many families could be separated, particularly if the earthquake occurs during working hours. A personal inquiry or locator system could be essential to maintain morale. Emergency operations could be seriously hampered by a loss of communications, damage to transportation routes, and/or disruption of public utilities and services.

The economic impact on the District could be considerable in terms of lost employment and lost tax base. A major earthquake could disrupt, damage, or destroy computer facilities, which could curtail the operations of banks, insurance companies, and other elements of the financial community for several days or weeks. This could affect the ability of local government, business, and residents to make payments and purchases. (Source: California Division of Mines and Geology, Special Publication 60, *Earthquake Planning Scenario for a Magnitude 8.3 Earthquake on the San Andreas Fault in Southern California, 1982*)
Causes of Earthquakes in the Region

*Earthquake Faults*

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

**Strike-slip Faults**

Strike-slip faults are vertical or almost vertical rifts where the Earth’s plates move mostly horizontally. From the observer’s 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 Faults**

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**

Thrust faults have a reverse fault with a dip of 45 ° or less.
Earthquake Related Hazards
Ground shaking, landslides, liquefaction, and amplification 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 the type of earthquake.

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 (where the earthquake originates). Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

Seismic activity along nearby or more distant fault zones are likely to cause ground shaking within the District. Based on a Probabilistic Seismic Hazard Assessment for the Western United States, issued by the United States Geological Survey (1999), the horizontal peak ground acceleration having a 10 percent probability of being exceeded in 50 years ranges from approximately (0.35g to 0.56g within the limits of the mapped area).

Fault Rupture
The potential for ground rupture due to fault movement is related to the seismic activity of known fault zones. Recognized active fault zones are generally located outside the San Bernardino Community College District. Faults such as the El Modeno Fault or the Peralta Hills Fault could conceivably cause ground rupture within the District. Compared with the more active recognized fault zones, the potential for ground rupture due to seismic activity in the District is considered low.

Earthquake-Induced Landslides
Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy the roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake. Many communities in Southern California have a high likelihood of encountering such risks, especially in areas with steep slopes.

Liquefaction
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. Buildings and their occupants are at risk when the ground can no longer support these structures. Liquefaction generally occurs during significant earthquake activity, and structures located on soils such as silt or sand may experience significant damage during an earthquake due to the instability of structural foundations and the moving earth. Many communities in Southern California are built on ancient river bottoms and have sandy soil. In some cases this ground may be subject to liquefaction, depending on the depth of the water table.
Soil liquefaction is a seismically-induced form of ground failure, which has been a major cause of earthquake damage in southern California. During the 1971 San Fernando and 1994 Northridge earthquakes, significant damage to roads, utility pipelines, buildings, and other structures in the Los Angeles area were caused by liquefaction. Research and historical data indicate that loose, granular materials situated at depths of less than 50 feet with fines (silt and clay) contents of less than 30 percent, which are saturated by a relatively shallow groundwater table are most susceptible to liquefaction. These geological and groundwater conditions exist in parts of southern California and the San Bernardino Community College District, typically in valley regions and alluviated floodplains. See Maps 7.2 and 7.3 for specifics areas in the District subject to this concern.

For liquefaction to occur, three general conditions must be met. The first condition – strong ground shaking of relatively long duration – can be expected to occur in the San Bernardino Community College District area as a result of an earthquake on any of the several active faults in the region. The second condition – loose, or unconsolidated, recently deposited sediments consisting primarily of silt and sand – occurs in a large portion of the valley floors, and in the larger canyon bottoms prevalent throughout San Bernardino County. The third condition is water saturated sediments within about 50 feet of the surface.

The California Geological Survey has identified areas most vulnerable to liquefaction. 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. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures. Liquefaction and Earthquake Landslide-Induced Areas in the San Bernardino Community College District are identified areas in the vicinity subject to liquefaction and landslides associated with earthquake activities.

**Amplification**

Soils and soft sedimentary rocks near the Earth's surface can modify ground shaking caused by earthquakes. One of these modifications is amplification. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and structures built on soft and unconsolidated soils can face greater risk. Amplification can also occur in areas with deep sediment filled basins and on ridge tops.
Map 7-2: Liquefaction and Earthquake Landslide-Induced Areas (Yucaipa)
(Source: 2010 San Bernardino County Operational Area Multi-Jurisdictional Hazard Mitigation Plan)
Map 7-3: Liquefaction and Earthquake Landslide-Induced Areas (San Bernardino)
(Source: 2010 San Bernardino County Operational Area Multi-Jurisdictional Hazard Mitigation Plan)
Map 7-4: Seismic Shaking Intensities for the Southern San Andreas Fault
Section 8: Flood Hazards

Why are Floods a Threat to the San Bernardino Community College District?

The San Bernardino Community College District has been impacted on several occasions with flooding over the past 20 years. The District was impacted by the August 25th, 1993 rains. Three to four inches of rain fell in two hours resulting in flash flooding in Yucaipa. In January 1995, when the Inland Empire received eight to nine inches of rain, there was extensive flooding in Yucaipa. In September 1997, the El Nino rain and winds brought flooding damage at Oak Glen, outside Yucaipa and in October to San Bernardino and Highland. Late February, 1998 brought similar heavy rainfall (two to five inches) over all of Southern California. July 1999 brought flooding and mud slides to Big Bear City, Oak Glen and Apple Valley. September and October 2001 rains brought flooding to Beaumont, served by Crafton Hills College and in December, deadly mudslides in the Canyons north of San Bernardino. Mud slides closed Hwy. 138 and Hwy. 18 in the San Bernardino Mountains in December 2004. Five days of heavy rains in January 2005 brought more than 30 inches of precipitation to the mountains caused deaths, flooding, mudslides, evacuations and highway closures.

Urban flooding could pose a threat to life and safety, and possibly can cause damage to public and private property. There is the potential for localized flooding in natural depressions within the District’s service area; however none of the District-owned facilities are located within an identified 100-year floodplain.

Local Conditions

The size and frequency of a flood in a particular area, depends on a complex combination of conditions, including the amount, intensity, and distribution of rainfall, previous moisture conditions and drainage patterns.

The magnitude of a flood is measured in terms of its peak discharge, which is the maximum volume of water passing a point along a channel in a given amount of time, usually expressed in cubic feet per second (cfs). Floods are usually referred to in terms of their chance of occurrence. For example, a 100-year flood has a 1% chance of occurring in any given year.

The Federal Emergency Management Agency (FEMA) establishes base flood heights and inundation areas for 100-year and 500-year flood zones. The 100-year flood zone is defined as the area that could be inundated by the flood which has a one percent probability of occurring in any given year. The 500-year flood is defined as the flood which has a 0.2 percent probability of occurring in any given year.

The City of San Bernardino and City of Yucaipa both participate in the National Flood Insurance Program (NFIP). Created by Congress in 1968, the NFIP makes flood insurance available in communities that enact minimum floodplain management rules consistent with the Code of Federal Regulations §60.3.

Local Mapping

FEMA flood maps are not entirely accurate. These studies and maps represent flood risk at the point in time when FEMA completed the studies, and do not incorporate planning for floodplain
changes in the future due to new development. Although FEMA is considering changing that policy, it is optional for local communities. The FEMA FIRM maps for the District were last updated August 28, 2008.

Repetitive Loss Properties

According to FEMA records there are no repetitive loss properties located within the boundaries of the district. A definition for repetitive loss properties is available from FEMA at http://www.fema.gov/government/grant/srl/.

Impact of Flooding in the San Bernardino Community College District

Floods and their impacts vary by the location and severity of any given flood event, and likely only affect certain areas of the county during specific times. Based on the risk assessment, it is evident that floods will continue to have devastating economic impact to certain portions of the District’s service area.

Impact that is not quantified, but anticipated in future events includes:

- Injury and loss of life;
- Commercial and residential structural damage;
- Disruption of and damage to public infrastructure;
- Secondary health hazards, e.g. mold and mildew
- Damage to roads/bridges resulting in loss of mobility
- Significant economic impact (jobs, sales, tax revenue) upon the community
- Negative impact on commercial and residential property values and
- Significant disruption to students and teachers as temporary facilities and relocations would likely be needed.

Historic Flooding in the Region

Refer to Section 3: Risk Assessment of the 2010 San Bernardino County Operational Area Multi-Jurisdictional Hazard Mitigation Plan (separate document):
http://hazardmitigation.calema.ca.gov/docs/lhmp/San_Bernardino_County_LHMP.pdf

Flood Risk Factors

El Niño

El Niño is a disruption of the ocean-atmosphere system in the tropical Pacific having important consequences. Among these consequences is increased rainfall across the southern tier of the US and in Peru, which has caused destructive flooding, and drought in the West Pacific, sometimes associated with devastating brush fires in Australia. Observations of conditions in the tropical Pacific are considered essential for the prediction of short term (a few months to 1 year) climate variations.
El Niño (Spanish name for the male child), initially referred to a weak, warm current appearing annually around Christmas time along the coast of Ecuador and Peru, and lasting only a few weeks, to a month or more. Every three to seven years, an El Niño event can last for many months, having significant economic and atmospheric consequences worldwide. During the past forty years, ten of these major El Niño events have been recorded, the worst of which occurred in 1997-1998. Previous to this, the El Niño event in 1982-1983 was the strongest. Some of the El Niño events have persisted more than one year.

Table 8-1: El Niño Storm Event Years  
(Source: Stormfax.com)

|---------------|-----------|-----------|-----------|-----------|-----------|-----------|

**Severity**

Floods threaten life and property. People and animals can drown; structures and their contents destroyed; roads, bridges, and railroad tracks can be washed out; and crops ruined. Floods can create health hazards due to the discharge of raw sewage from damaged septic tank leach fields, sewer lines, and sewage treatment plants; or due to hazardous materials carried off by raging waters. Vital public services are disrupted.

**Geography and Geology**

The region is the product of rainstorms and erosion occurring over millennia. Most of the mountains surrounding the valleys and coastal plain are deeply fractured faults. As the mountains grew taller, their brittle slopes eroded. Rivers and streams carried boulders, rocks, gravel, sand, and silt down these slopes to the valleys and coastal plain. Today, much of the coastal plain rests on the ancient rock debris and sediment washed down from the mountains.

This sediment can act like a sponge, absorbing vast quantities of rain in years when heavy rains follow a dry period. Like a sponge near saturation, the same soil fills up rapidly when heavy rain follows a period of relatively wet weather. Even so, in some years of heavy rain, flooding is minimal because the ground is relatively dry, yet the same amount of rain following a wet period causes extensive flooding.

The built out portions of the communities within the District’s service area leave little open land to absorb rainfall. The lack of open land forces water to remain on the surface rapidly accumulating. If it were not for the massive flood control system with its concrete lined river and streambeds, flooding would occur more frequently.
Another potential source of flooding is “asphalt creep”. The street space between the curbs of a street is a part of the flood control system. When water leaves property and accumulates in the street, it is directed toward the underground portion of the flood control system. The carrying capacity of the street is determined by the width of the street and the height of the curbs along the street. Often, when resurfacing streets, a one to two inch layer of asphalt is laid over the existing asphalt. This added layer of asphalt subtracts from the rated capacity of the street to carry water. Thus, the original engineered capacity of the entire storm drain system is marginally reduced over time. Subsequent re-paving of the street will further reduce the engineered capacity even more.

Flood Terminology

**Floodplain**

A floodplain is a land area adjacent to a river, stream, lake, estuary, or other water body that is subject to flooding. This area, if left undisturbed, acts to store excess flood water. The floodplain is made up of two sections: the floodway and the flood fringe.

**100-Year Flood**

The 100-year flooding event is the flood having a one percent chance of being equaled or exceeded in magnitude in any given year. Contrary to popular belief, it is not a flood occurring once every 100 years. The 100-year floodplain is the area adjoining a river, stream, or watercourse covered by water in the event of a 100-year flood. Schematic 8-1: Floodplain and Floodway shows the relationship of the floodplain and the floodway.

Schematic 8-1: Floodplain and Floodway
(Source: FEMA How-To-Guide Assessing Hazards)
Map 8-1: Flood Hazard Areas (San Bernardino)  
(Source: 2010 San Bernardino Operational Area Multi-Jurisdictional Hazard Mitigation Plan)

Special Flood Hazard Areas
Subject to Inundation by the 1% Annual Chance Flood
- Zone A (No Base Flood Elevations Determined)
- Zone AE (Base Flood Elevations Determined)
- Zone AH (Flood Depths of 1 to 3 feet, usually areas of ponding; Base Flood Elevations Determined)
- Zone AO (Flood Depths of 1 to 3 feet, usually sheet flow on sloping terrain; Average depths determined)

Other Flood Areas
- Zone X (Shaded) - 0.2% Annual chance (500yr) Flood
- Zone X Protected by Levee - areas protected from the 1% annual chance flood

Other Areas
- Zone D - areas in which flood hazards are undetermined, but possible
- Zone X (unshaded) - areas determined to be outside the 0.2% annual chance (500-year) floodplain
Map 8-2: Flood Hazard Areas (Yucaipa)
(Source: 2010 San Bernardino Operational Area Multi-Jurisdictional Hazard Mitigation Plan)

Rivers and Streams
- Major Highways

Special Flood Hazard Areas
- Subject to Inundation by the 1% Annual Chance Flood
  - Zone A (No Base Flood Elevations Determined)
  - Zone AE (Base Flood Elevations Determined)
  - Zone AH (Flood Depths of 1 to 3 feet, usually areas of ponding; Base Flood Elevations Determined)
  - Zone AO (Flood Depths of 1 to 3 feet, usually sheet flow on sloping terrain; Average depths determined)

Other Flood Areas
- Zone X (Shaded) - 0.2% Annual chance (500yr) Flood
- Zone X Protected by Levee - areas protected from the 1% annual chance flood

Other Areas
- Zone D - areas in which flood hazards are undetermined, but possible
- Zone X (unshaded) - areas determined to be outside the 0.2% annual chance (500-year) floodplain
Floodway

The floodway is one of two main sections that make up the floodplain. Floodways are defined for regulatory purposes. Unlike floodplains, floodways do not reflect a recognizable geologic feature. For NFIP purposes, floodways are defined as the channel of a river or stream, and the overbank areas adjacent to the channel. The floodway carries the bulk of the flood water downstream and is usually the area where water velocities and forces are the greatest. NFIP regulations require that the floodway be kept open and free from development or other structures that would obstruct or divert flood flows onto other properties.

The San Bernardino Community College District regulations prohibit all development in the floodway. The NFIP floodway definition is "the channel of a river or other watercourse and adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot. Floodways are not mapped for all rivers and streams but are generally mapped in developed areas.

Base Flood Elevation (BFE)

The term "Base Flood Elevation" refers to the elevation (normally measured in feet above sea level) that the base flood is expected to reach. Base flood elevations can be set at levels other than the 100-year flood. Some communities use higher frequency flood events as their base flood elevation for certain activities, while using lower frequency events for others. For example, for the purpose of storm water management, a 25-year flood event might serve as the base flood elevation; while the 500-year flood event serves as base flood elevation for the tie down of mobile homes. The regulations of the NFIP focus on development in the 100-year floodplain.

Types of Flooding

Urban Flooding

As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization of a watershed changes the hydrologic systems of the basin. Heavy rainfall collects and flows faster on impervious concrete and asphalt surfaces. The water moves from the clouds to the ground and into streams at a much faster rate in urban areas. Adding these elements to the hydrological systems can result in flood waters that rise very rapidly and peak with violent force.

The San Bernardino Community College District has a high concentration of impermeable surfaces that either collect water, or concentrate the flow of water in unnatural channels. During periods of urban flooding, streets can become swift moving rivers and basements can fill with water. Storm drains often back up with vegetative debris causing additional, localized flooding.

Riverine Flooding

Riverine flooding is the overbank flooding of rivers and streams. The natural processes of riverine flooding add sediment and nutrients to fertile floodplain areas. Flooding in large river systems typically results from large-scale weather systems that generate prolonged rainfall over a wide geographic area. This causes flooding in hundreds of smaller streams, which then drain into the major rivers.
Shallow area flooding is a special type of riverine flooding. FEMA defines shallow flood hazards as areas that are inundated by the 100-year flood with flood depths of only one to three feet. These areas are generally flooded by low velocity sheet flows of water.

**Dam Failure Flooding**

Loss of life and damage to structures, roads, and utilities may result from a dam failure. Economic losses can also result from a lowered tax base and lack of utility profits. These effects would certainly accompany the failure of one of the major dams in the San Bernardino Community College District (See Map 8-3 below). Because dam failure can have severe consequences, FEMA requires that all dam owners develop Emergency Action Plans (EAP) for warning, evacuation, and post-flood actions. Although there may be coordination with county officials in the development of the EAP, the responsibility for developing potential flood inundation maps and facilitation of emergency response is the responsibility of the dam owner.

Dam failure results from a number of natural or human causes, including earthquakes, erosion of the face or foundation, rapidly rising flood waters, improper sitting, and structural/design flaws. The Planning Team categorized dam failure as a natural hazard for purposes of this plan. Should a dam failure occur, it will likely be the result of natural causes, such as an earthquake.

**Flood Insurance Rate Maps (FIRM) and Flood Insurance Studies (FIS)**

Floodplain maps are the basis for implementing floodplain regulations and for delineating flood insurance purchase requirements. Since 1929, the State of California is responsible for overseeing dams to safeguard life and property (California Department of Resources, 1995). This legislation was prompted by the 1928 failure of St. Francis Dam. In 1965, the law was amended to include off stream storage reservoirs, due to the 1963 failure of Baldwin Hill Reservoir. In 1973, Senate Bill 896 was enacted to require dam owners, under the direction of Cal EMA, to show the possible inundation path in the event of a dam failure.

Governmental assistance could be required and continued for an extended period in the event of dam failure flooding. These efforts would be required to remove debris and clear roadways, demolish unsafe structures, assist in reestablishing public services and utilities, and provide continuing care and welfare for the affected population including, as required, temporary housing for displaced persons.

The dams in San Bernardino County hold billions of gallons of water in reservoirs. Releases of water from the major reservoirs are designed to protect Southern California from flood waters and to store domestic water. Seismic activity can compromise the dam structures, and the resultant flooding could cause catastrophic flooding. Following the 1971 Sylmar Earthquake, the Lower Van Norman Dam showed signs of structural compromise, and tens of thousands of persons had to be evacuated until the dam could be drained. The dam has never been refilled.
What is the Effect of Development on Floods?

When structures or fill are placed in the floodway or floodplain, water is displaced. Development raises the river levels by forcing the river to compensate for the flow space obstructed by the inserted structures and/or fill. When structures or materials are added to the floodway or floodplain and no fill is removed to compensate, serious problems can arise. Flood waters may be forced away from historic floodplain areas. As a result, other existing floodplain areas may experience flood waters that rise above historic levels. Displacement of only a few inches of water can mean the difference between no structural damage occurring in a given flood event, and the inundation of many homes, businesses, and other facilities. Careful attention should be given to development that occurs within the floodway to ensure that structures are prepared to withstand base flood events. In highly urbanized areas, increased paving can lead to an increase in volume and velocity of runoff after a rainfall event, exacerbating the potential flood
hazards. Care should be taken in the development and implementation of storm water management systems to ensure that these runoff waters are dealt with effectively.

**How are Flood-Prone Areas Identified?**

Flood maps and Flood Insurance Studies (FIS) are often used to identify flood-prone areas. The NFIP was established in 1968 as a means of providing low-cost flood insurance to the nation’s flood-prone communities. The NFIP also reduces flood losses through regulations that focus on building codes and sound floodplain management. NFIP regulations (44 Code of Federal Regulations Chapter 1, Section 60, 3) require that all new construction in floodplains must be elevated at or above base flood level.

FIRM and FIS Floodplain maps are the basis for implementing floodplain regulations and for delineating flood insurance purchase requirements. A FIRM is the official map produced by FEMA which delineates Special Flood Hazard Area (SFHA) in communities where NFIP regulations apply.

Water surface elevations are combined with topographic data to develop FIRM. FIRM illustrate areas that would be inundated during a 100-year flood, floodway areas, and elevations marking the 100-year-flood level. In some cases, they also include BFEs and areas located within the 500-year floodplain.

Flood Insurance Studies and FIRMs produced for the NFIP provide assessments of the probability of flooding at a given location. FEMA conducted many Flood Insurance Studies in the late 1970s and early 1980s. These studies and maps represent flood risk at the point in time when FEMA completed the studies. However, it is important to note that not all 100-year or 500-year floodplains have been mapped by FEMA.

**Map 8-5: Crafton Hills College FIRM Map**
Section 9: Wildland Fire Hazards

Why are Wildfires a Threat to the San Bernardino Community College District?

On September 24, 2006 a 52-acre fire that burned on a Yucaipa hillside could have been worse - Santa Ana winds threatened to spread flames across the dry grass - but firefighters managed to control the blaze in about one hour.

Fires can occur in urban environments and can also impact unpopulated areas that may contain brush or grasslands. The central and western portions of San Bernardino Community College District are highly urbanized and relatively built out. As a result, the District must continue to address the growing need to defend both persons and property from urban and wildland fires.

In urban areas, the effectiveness of fire protection efforts is based upon several factors, including the age of structures, efficiency of circulation routes that ultimately affect response times and availability of water resources to combat fires. In wildland areas, taking the proper precautions, such as the use of fire resistant building materials, a pro-active Fire Prevention inspection program, and the development of defensible space around structures where combustible vegetation is controlled, can protect developed lands from fires and, therefore, reduce the potential loss of life and property.

Other factors including weather and winds contribute to the severity of fires. Specifically, winds commonly referred to as Santa Ana winds, which occur during fire season (typically from June to the first significant rain in November) are particularly significant. Such “fire weather” is characterized by several days of hot dry weather and high winds, resulting in low fuel moisture in vegetation.

California experiences large, destructive wildland fires almost every year, and San Bernardino County is no exception. Wildland fires occur within the county, particularly in the fall of the year, and range from small, localized fires to disastrous fires covering thousands of acres. The most severe fire protection problem in the area is wildland fire during Santa Ana wind conditions.

A wildfire is an uncontrolled fire spreading through vegetative fuels and exposing or possibly consuming structures. They often begin unnoticed and spread quickly. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires. A Wildland Fire is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities. A Wildland/Urban Interface Fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels. Significant development in Yucaipa is located along canyon ridges at the wildland/urban interface. Areas that have experienced prolonged droughts or are excessively dry are at risk of wildfires.

People start more than 80 percent of wildfires, usually by debris burns, arson, or carelessness. Lightning strikes are the next leading cause of wildfires. Wildfire behavior is based on three primary factors: fuel, topography, and weather. The type, and amount of fuel, as well as its burning qualities and level of moisture affect wildfire potential and behavior. The continuity of fuels, expressed in both horizontal and vertical components, is also a determinant of wildfire potential and behavior. Topography is important because it affects the movement of air (and thus the fire) over the ground surface. The slope and shape of terrain can change the speed at
which the fire travels, and the ability of firefighters to reach and extinguish the fire. Weather affects the probability of wildfire and has a significant effect on its behavior. Temperature, humidity and wind (both short and long term) affect the severity and duration of wildfires. San Bernardino County’s topography, consisting of semi-arid coastal plain and rolling highlands, combined with shrub overgrowth, occasional Santa Ana winds and high temperatures, creates an ever-present threat of wildland fire. Extreme weather conditions such as high temperature, low humidity, and/or winds of extraordinary force may cause an ordinary fire to expand into one of massive proportions.

Local Conditions

Fire hazards threaten lives, property, and natural resources, and impact vegetation and wildlife habitats.

Weather

Weather conditions have many complex and important effects on fire intensity and behavior. Wind is of prime importance; as wind increases in velocity, the rate of fire spread also increases. Relative humidity (i.e., relative dryness of the air) also has a direct effect, the drier the air, and the drier the vegetation, the more likely the vegetation will ignite and burn. Precipitation (annual total, seasonal distribution and storm intensity) further affects the moisture content of dead and living vegetation, which influences fire ignition and behavior.

In addition to winds, structural development within or adjacent to wildland exposures represents an extreme fire protection problem due to flying embers and the predominance of combustible roof coverings.

Topography

Topography affects wildland fire behavior, and the ability of firefighters and their equipment to take action to suppress those fires. An example is a fire that starts in the bottom of a canyon that expands to the ridge top before initial attack forces can arrive. Rough topography greatly limits road construction, road standards, and accessibility by ground equipment. Steep topography also channels airflow, creating extremely erratic winds on lee slopes and in canyons. Water supply for fire protection to structures at higher elevations is frequently dependent on pumping units. The source of power for such units is usually from overhead distribution lines, which are subject to destruction by wildland fires.

Vegetation

A key to effective fire control and the successful accommodation of fire in wildland management is the understanding of fire and its environment. Fire environment is the complex of fuel, topographic, and air mass factors, that influence the fire’s inception, growth, and behavior. The topography and weather components are, for all practical purposes, beyond man’s control, but it is a different story with fuels, which can be controlled before the outbreak of fires. In terms of future urban expansion, finding new ways to control and understand these fuels can lead to possible fire reduction.
Of these different vegetation types, coastal sage scrub, chaparral, and grasslands reach some degree of flammability during the dry summer months and, under certain conditions, during the winter months. For example, as chaparral gets older, twigs and branches within the plants die and are held in place. A stand of brush 10- to 20-years of age usually has enough dead material to produce rates of spread about the same as in grass fires when the fuels have dried out. In severe drought years, additional plant material may die, contributing to the fuel load. There will normally be enough dead fuel accumulated in 20- to 30-year old brush to give rates of spread about twice as fast as in a grass fire. Under moderate weather conditions that produce a spread rate of one-half foot per second in grass, a 20- to 30-year old stand of chaparral may have a rate of fire spread of about one foot per second. Fire spread in old brush (40 years or older) has been measured at eight times as fast as in grass, about four feet per second. Under extreme weather conditions, the fastest fire spread in grass is 12 feet per second or about eight miles per hour.

Impact of Wildfire in the San Bernardino Community College District

Wildfires and their impacts vary by location and severity of the wildfire event, and will likely only affect certain areas of the county during specific times. Based on the risk assessment, it is evident that wildfires will have potentially devastating economic impact to certain portions of the District’s service area. Impact that is not quantified, but can be anticipated in future events, includes:

- Injury and loss of life
- Commercial and residential structural damage
- Disruption of and damage to public infrastructure
- Secondary health hazards, e.g. mold and mildew
- Damage to roads/bridges resulting in loss of mobility
- Significant economic impact (jobs, sales, tax revenue) upon the community
- Negative impact on commercial and residential property values
- Significant disruption to students and teachers as temporary facilities and relocations would likely be needed

Historic Events in the Region

Refer to Section 3: Risk Assessment of the 2010 San Bernardino County Operational Area Multi-Jurisdictional Hazard Mitigation Plan (separate document http://hazardmitigation.calema.ca.gov/docs/lhmp/San_Bernardino_County_LHMP.pdf
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Wildfire Characteristics

There are three categories of wildland/urban interface fire:

- The classic wildland/urban interface exists where well-defined urban and suburban development presses up against open expanses of wildland areas.
- The mixed wildland/urban interface is characterized by isolated homes, subdivisions, and small communities situated predominantly in wildland settings.
- The occluded wildland/urban interface exists where islands of wildland vegetation occur inside a largely urbanized area.

Certain conditions must be present for significant interface fires to occur. The most common conditions include: hot, dry and windy weather; the inability of fire protection forces to contain or suppress the fire; the occurrence of multiple fires that overwhelm committed resources; and a large fuel load (dense vegetation). Once a fire has started, several conditions influence its behavior, including fuel topography, weather, drought, and development.

Southern California has two distinct areas of risk for wildland fire:

- The foothills and lower mountain areas are most often covered with scrub brush or chaparral.
- The higher elevations of Southern California’s mountains are typically heavily forested.

The magnitude of the 2003 fires is the result of three primary factors: (1) severe drought, accompanied by a series of storms that produce thousands of lightning strikes and windy conditions; (2) an infestation of bark beetles that has killed thousands of mature trees; and (3) the effects of wildfire suppression over the past century that led to buildup of brush and small diameter trees in the forests.

The Interface

Southern California faces a major challenge regarding the wildfire hazard from the increasing number of houses being built on the urban/wildland interface. Every year the growing population expands further into the hills and mountains, including forest lands. The increased "interface" between urban/suburban areas, and the open spaces created by this expansion, produces a significant increase in threats to life and property from fires. This pushes existing
fire protection systems beyond their original or current design and capability. Property owners in the interface are not aware of the problems and fire hazards or risks on their own property. Furthermore, human activities increase the incidence of fire ignition and potential damage.

Fuel

Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is classified by volume and by type. Volume is described in terms of "fuel loading," or the amount of available vegetative fuel.

The type of fuel also influences wildfire. Chaparral is a primary fuel of Southern California wildfires. Chaparral habitat ranges in elevation from near sea level to over 5,000' in Southern California. Chaparral communities experience long, dry summers and receive most of their annual precipitation from winter rains. Although chaparral is often considered as a single species, there are two distinct types, hard chaparral and soft chaparral. Within these two types are dozens of different plants, each with its own particular characteristics.

Topography

Topography influences the movement of air, thereby directing a fire’s 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 people who work, live and play in interface areas.

Weather

Weather patterns combined with certain geographic locations can create a favorable climate for wildfire activity. Areas where annual precipitation is less than 30 inches per year are extremely fire susceptible. High-risk areas in Southern California share a hot, dry season in late summer and early fall when high temperatures and low humidity favor fire activity. The so-called Santa Ana winds, which are heated by compression as winds flow down to Southern California from Utah, create a particularly high risk, as they can rapidly spread what might otherwise be a small fire.

Drought

Recent concerns about the effects of climate change, particularly drought, are contributing to concerns about wildfire vulnerability. The term ‘drought’ is applied to a period in which an unusual scarcity of rain causes a serious hydrological imbalance. Unusually dry winters or significantly less rainfall than normal can lead to relatively drier conditions and leave reservoirs and water tables lower. Drought leads to problems with irrigation which contributes to additional fires, or can increase difficulty in fighting fires.
Development

Growth and development in scrubland and forested areas is increasing the number of human-caused structures in Southern California interface areas. Wildfire affects development, yet development can also influence wildfire. Owners often prefer homes that are private with scenic views, are nestled in vegetation, and that use natural materials. A private setting is one usually far from public roads or hidden behind a narrow, curving driveway. These conditions, however, make evacuation and firefighting difficult. The scenic views found along mountain ridges can also mean areas of dangerous topography. Natural vegetation contributes to scenic beauty, but it may also provide a ready trail of fuel leading a fire directly to the combustible fuels of the home itself.

Map 9-1: Fire Hazard Severity Zone Map (Yucaipa)
(Source: To enlarge the map for better viewing, go to the following weblink: http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_maps.php)
Severity

The primary effects of fire, such as loss of life, injury, and the destruction of buildings and wildlife, are generally well known. Fire also has a number of secondary effects, such as strained public utilities, depleted water supplies, downed power lines, disrupted telephone systems, and closed roads. In addition, flood control facilities are overtaxed by the increased flow from bare hillsides, and the resulting debris that washes down. Affected recreation areas may have to close or restrict operations. Moreover, buildings destroyed by fire are usually eligible for property tax reassessment, which reduces revenue to local government.

A fire is usually extinguished within a few days, but its effects last much longer. Grassland re-sprouts the following spring, a chaparral community regenerates in three to five years, and oak woodland with most of its seedlings and saplings destroyed will start a new crop within five to ten years. Coniferous timber stands are most susceptible to long-term damage, taking as much as 50 to 100 years to reestablish a forest.

Fire destroys surface vegetation, leaving the soil bare and subject to erosion, when the rains begin in the fall and winter. Raindrops hit the surface with undiminished impact, splashing
particles of soil loose that move downhill and are carried away by running water. Fire also destroys most of the roots that hold the soil in place, allowing running water to wash the soil away. Mudslides and mudflows can result from these processes.

**Growth and Development in the Interface**

The hills and mountainous areas of Southern California are considered to be interface areas. The development of homes and other structures is encroaching onto the wildlands and is expanding the wildland/urban interface. The interface neighborhoods are characterized by a diverse mixture of varying housing structures, development patterns, ornamental and natural vegetation, and natural fuels.

In the event of a wildfire, vegetation, structures and other flammables can merge into unwieldy and unpredictable events. Factors important to the fighting of such fires include access, firebreaks, proximity of water sources, distance from a fire station and available firefighting personnel and equipment. Reviewing past wildland/urban interface fires shows that many structures are destroyed or damaged for one or more of the following reasons:

- Combustible roofing material
- Wood construction
- Structures with no defensible space
- Fire department has poor access to structures
- Subdivisions located in heavy natural fuel types
- Structures located on steep slopes covered with flammable vegetation
- Limited water supply
- Winds over 30 miles per hour
PART IV: APPENDIX

Resource Directory

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

The Planning Team will continue to add contact information for organizations currently engaged in hazard mitigation activities. This section may also be used by various District members interested in hazard mitigation information and projects.

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<td></td>
<td>Kansas City, MO 64108-2641</td>
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<td>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.</td>
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</tr>
<tr>
<td>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</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building Seismic Safety Council (BSSC)</td>
<td>National</td>
<td>Earthquake</td>
<td><a href="http://www.bssconline.org">www.bssconline.org</a></td>
</tr>
<tr>
<td>1090 Vermont Ave., NW, Suite 700</td>
<td></td>
<td></td>
<td>Washington, DC 20005</td>
</tr>
<tr>
<td>Notes: The Building Seismic Safety Council (BSSC) develops and promotes building earthquake risk mitigation regulatory provisions for the nation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Department of Conservation: Southern California Regional Office</td>
<td>State</td>
<td>Multi</td>
<td><a href="http://www.consrv.ca.gov">www.consrv.ca.gov</a></td>
</tr>
<tr>
<td>655 S. Hope Street, #700</td>
<td></td>
<td></td>
<td>Los Angeles, CA 90017-2321</td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California Department of Forestry and Fire Protection (CalFIRE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level: State</td>
<td>Hazard: Multi</td>
<td>URL</td>
<td></td>
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<tr>
<td>-------------</td>
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<td></td>
</tr>
<tr>
<td>210 W. San Jacinto</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perris, CA 92570</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes: The California Department of Forestry and Fire Protection (CalFIRE) protects over 31 million acres of California’s privately-owned wildlands. CalFIRE emphasizes the management and protection of California’s natural resources.</td>
<td></td>
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</tr>
</tbody>
</table>

**California Department of Transportation (CalTrans)**

<table>
<thead>
<tr>
<th>Level: State</th>
<th>Hazard: Multi</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 S. Spring Street</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Los Angeles, CA 90012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**California Department of Water Resources (DWR)**

<table>
<thead>
<tr>
<th>Level: State</th>
<th>Hazard: Flood</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1416 9th Street</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**California Division of Mines and Geology (DMG)**

<table>
<thead>
<tr>
<th>Level: State</th>
<th>Hazard: Multi</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>801 K Street, MS 12-30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes: The California Geological Survey develops and disseminates technical information and advice on California's geology, geologic hazards, and mineral resources.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**California Emergency Management Agency (Cal EMA)**

<table>
<thead>
<tr>
<th>Level: State</th>
<th>Hazard: Multi</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>3650 Schriever Ave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mather, CA 95655</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes: California Emergency Management Agency 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.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**California Environmental Resources Evaluation System (CERES)**

<table>
<thead>
<tr>
<th>Level: State</th>
<th>Hazard: Multi</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>900 N St., Suite 250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes: CERES is an excellent website for access to environmental information and websites.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### California Planning Information Network

<table>
<thead>
<tr>
<th>Level: State</th>
<th>Hazard: Multi</th>
<th><a href="http://www.calpin.ca.gov">www.calpin.ca.gov</a></th>
</tr>
</thead>
</table>

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.

### California Resources Agency

<table>
<thead>
<tr>
<th>Level: State</th>
<th>Hazard: Multi</th>
<th><a href="http://resources.ca.gov/">http://resources.ca.gov/</a></th>
</tr>
</thead>
</table>

1416 Ninth Street, Suite 1311
Sacramento, CA 95814

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.

### Community Rating System (CRS)

<table>
<thead>
<tr>
<th>Level: Federal</th>
<th>Hazard: Flood</th>
<th><a href="http://www.fema.gov/nfip/crs.shtm">www.fema.gov/nfip/crs.shtm</a></th>
</tr>
</thead>
</table>

500 C Street, S.W.
Washington, D.C. 20472

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.

### Environmental Protection Agency (EPA), Region 9

<table>
<thead>
<tr>
<th>Level: Regional</th>
<th>Hazard: Multi</th>
<th><a href="http://www.epa.gov/region9/">http://www.epa.gov/region9/</a></th>
</tr>
</thead>
</table>

75 Hawthorne Street
San Francisco, CA 94105

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 (FEMA), Region IX

<table>
<thead>
<tr>
<th>Level: Federal</th>
<th>Hazard: Multi</th>
<th><a href="http://www.fema.gov">www.fema.gov</a></th>
</tr>
</thead>
</table>

1111 Broadway, Suite 1200
Oakland, CA 94607

Notes: The Federal Emergency Management Agency is tasked with responding to, planning for, recovering from and mitigating against disasters.

### Federal Emergency Management Agency (FEMA), Mitigation Division

<table>
<thead>
<tr>
<th>Level: Federal</th>
<th>Hazard: Multi</th>
<th><a href="http://www.fema.gov/fima/planhowto.shtm">www.fema.gov/fima/planhowto.shtm</a></th>
</tr>
</thead>
</table>

500 C Street, S.W.
Washington, D.C. 20472
Notes: The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has 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

<table>
<thead>
<tr>
<th>Level</th>
<th>Hazard</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>Flood</td>
<td><a href="http://www.floodplain.org">www.floodplain.org</a></td>
</tr>
</tbody>
</table>

P.O. Box 50891  
Sparks, NV 89435-0891

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.

### Landslide Hazards Program, USGS

<table>
<thead>
<tr>
<th>Level</th>
<th>Hazard</th>
<th>Website</th>
</tr>
</thead>
</table>

12201 Sunrise Valley Drive, MS 906  
Reston, VA 20192

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.

### National Fire Protection Association (NFPA)

<table>
<thead>
<tr>
<th>Level</th>
<th>Hazard</th>
<th>Website</th>
</tr>
</thead>
</table>

1 Batterymarch Park  
Quincy, MA 02169-7471

Notes: The mission of the international nonprofit NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life. It does this by providing and advocating scientifically-based consensus codes and standards, research, training, and education.

### National Floodplain Insurance Program (NFIP)

<table>
<thead>
<tr>
<th>Level</th>
<th>Hazard</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>Flood</td>
<td><a href="http://www.fema.gov/nfip/">www.fema.gov/nfip/</a></td>
</tr>
</tbody>
</table>

500 C Street, S.W.  
Washington, D.C. 20472

Notes: The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has 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 and Atmospheric Administration (NOAA)

<table>
<thead>
<tr>
<th>Level</th>
<th>Hazard</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>Multi</td>
<td><a href="http://www.noaa.gov">www.noaa.gov</a></td>
</tr>
</tbody>
</table>
Notes: NOAA’s historic role has been to predict environmental changes, protect life and property, provide decision makers with reliable scientific information, and foster global environmental stewardship.

| National Resources Conservation Service (NRCS) | | |
| Level: Federal | Hazard: Multi | [www.nrcs.usda.gov/] |
| 14th and Independence Ave., SW, Room 5105-A | | |
| Washington, DC 20250 | | |
| 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 Weather Service (NWS) | | |
| Level: Federal | Hazard: Multi | [www.nws.noaa.gov/] |
| 520 North Elevar Street | | |
| Oxnard, CA 93030 | | |
| 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. | | |

| National Weather Service, Office of Hydrologic Development (OHD) | | |
| 1325 East West Highway, SSMC2 | | |
| Silver Spring, MD 20910 | | |
| 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. | | |

| Southern California Association of Governments (SCAG) | | |
| Level: Regional | Hazard: Multi | [www.scag.ca.gov] |
| 818 W. Seventh Street, 12th Floor | | |
| Los Angeles, CA 90017 | | |
| 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. | | |

| Southern California Earthquake Center (SCEC) | | |
| Level: Regional | Hazard: Earthquake | [www.scec.org] |
| 3651 Trousdale Parkway, Suite 169 | | |
| Los Angeles, CA 90089-0742 | | |
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.

<table>
<thead>
<tr>
<th>State Fire Marshal (SFM)</th>
<th>Level: State</th>
<th>Hazard: Wildfire</th>
<th><a href="http://osfm.fire.ca.gov">http://osfm.fire.ca.gov</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>1131 “S” Street</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95814</td>
<td></td>
<td></td>
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</tbody>
</table>

Notes: The Office of the State Fire Marshal (SFM) supports the mission of the California Department of Forestry and Fire Protection (CalFIRE) 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.

<table>
<thead>
<tr>
<th>US Army Corps of Engineers (USACE)</th>
<th>Level: Federal</th>
<th>Hazard: Multi</th>
<th><a href="http://www.usace.army.mil">www.usace.army.mil</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>P.O. Box 532711</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Los Angeles CA 90053-2325</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>345 Middlefield Road</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Menlo Park, CA 94025</td>
<td></td>
<td></td>
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</tbody>
</table>

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.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>6000 J Street, Placer Hall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacramento, CA 95819-6129</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Notes: The USGS Water Resources mission is to provide water information that benefits the Nation’s citizens: publications, data, maps, and applications software.

<table>
<thead>
<tr>
<th>Western States Seismic Policy Council (WSSPC)</th>
<th>Level: Regional</th>
<th>Hazard: Earthquake</th>
<th><a href="http://www.wsspc.org/home.html">www.wsspc.org/home.html</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>125 California Avenue, Suite D201, #1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palo Alto, CA 94306</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Level: Regional</th>
<th>Hazard: Multi</th>
<th><a href="http://www.westside-la.or">www.westside-la.or</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>120 Wilshire Boulevard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Monica, CA 90401</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.