

EXECUTIVE SUMMARY

Contra Costa County and a partnership of local governments within the county have developed a hazard mitigation plan to reduce future losses resulting from disasters. Hazard mitigation is the use of long- and short-term strategies to reduce the loss of life, personal injury, and property damage that can result from a disaster. It involves planning efforts, policy changes, programs, capital projects, and other activities that can mitigate the impacts of hazards.

The federal Disaster Mitigation Act (DMA) requires proactive pre-disaster planning as a condition of receiving certain financial assistance under the Robert T. Stafford Act. The DMA encourages state and local authorities to work together on pre-disaster planning, and it promotes “sustainable hazard mitigation,” which includes the sound management of natural resources, local economic and social resiliency, and the recognition that hazards and mitigation must be understood in the largest possible social and economic context. The enhanced planning network called for by the DMA helps local governments accurately assess mitigation needs, resulting in faster allocation of funding and more cost-effective risk reduction projects.

The responsibility for hazard mitigation lies with private property owners; business and industry; and local, state and federal government. It is impossible to predict exactly when and where disasters will occur or the extent to which they will impact an area; but with careful planning and collaboration among public agencies, stakeholders and citizens, it is possible to minimize losses that disasters can cause.

PLAN UPDATE

Federal regulations require hazard mitigation plans to include a plan for monitoring, evaluating, and updating the plan. An update provides an opportunity to reevaluate recommendations, monitor the impacts of actions that have been accomplished, and determine if there is a need to change the focus of mitigation strategies. DMA compliance is contingent on meeting the plan update requirement. A jurisdiction covered by a plan that has expired is not able to pursue funding under the Robert T. Stafford Act for which a current hazard mitigation plan is a prerequisite.

Initial Response to the DMA in Contra Costa County

In 2004, The Association of Bay Area Governments (ABAG) led a regional effort to address hazard mitigation planning for jurisdictions within its planning area. This regional template was utilized by numerous counties and cities within the ABAG planning area to achieve initial compliance under the DMA. The ABAG process equipped local governments with tools to complete individual planning processes that met their needs, while pooling resources and eliminating redundant planning efforts. Seventeen local governments in Contra Costa County used the ABAG tools to achieve DMA compliance.

The Contra Costa County Planning Effort

Recognizing limitations in the ABAG planning effort, Contra Costa County Department of Public Works and the County Office of Emergency Services (OES) have teamed together to prepare an updated county-wide hazard mitigation plan that would better suit the needs and capabilities of the County and its planning partners. The Department of Public Works pursued grant funding under the Federal Emergency Management Agency’s (FEMA’s) Pre-Disaster Mitigation Grant program, and OES took the lead on assembling a planning partnership. The grant was awarded in the fall of 2007. The ensuing planning process developed a new plan for the County and its planning partners from scratch, using lessons learned

from the prior planning effort. While this plan is an update for many of the planning partners, it is the initial plan for others. The updated plan differs from the initial plan for a variety of reasons:

- The plan has been totally re-structured as a countywide regional plan, focusing only on Contra Costa County. The risk assessment is not a subset of a larger regional effort. It is isolated to Contra Costa County and focuses on hazards of concern for the county.
- The plan was expanded to include special purpose districts as planning partners.
- The risk assessment has been formatted to better support future grant applications by providing risk and vulnerability information that will directly support the measurement of “cost-effectiveness” required under FEMA mitigation grant programs.
- Newly available data and tools provide for a more detailed and accurate risk assessment. The initial plan did not use tools such as FEMA’s Hazards U.S. Multi-Hazard (HAZUS-MH) computer model or new data such as FEMA’s countywide Digital Flood Insurance Rate Maps (DFIRMs).
- The plan will meet program requirements of the Community Rating System (CRS), providing the additional benefit of reducing flood insurance premiums in participating jurisdictions.
- This planning process will create the opportunity for all municipal planning partners to meet the requirements of California Assembly Bill 2140, which requires integration of hazard mitigation plans into general plans.
- The update gave the County and its planning partners an opportunity to engage local citizens and gauge their perception of risk and support for risk reduction through mitigation.

PLAN UPDATE METHODOLOGY

A partnership of local governments in Contra Costa County collaborated on the development of this hazard mitigation plan update. This partnership followed a five-phase planning process over 24 months that resulted in a document that will provide a blueprint for hazard risk reduction in Contra Costa County for the next five years.

Phase 1—Organize and Review

A planning team was assembled to provide technical support for the plan update, consisting of key County staff from the Department of Public Works and OES, as well as a technical consultant. The first step in developing the plan update was to organize the planning partnership. Of the 17 local governments in the County covered under the ABAG Regional Plan, 15 committed to this update process. The Cities of Clayton and Concord chose not to participate. Clayton has its own plan and Concord chose to stay with the ABAG Regional Plan. With special-purpose districts included, plan coverage was expanded to include 39 planning partners as shown in Tables ES-1 and ES-2. All 39 planning partners committed to the process by providing letters of intent to participate and agreeing to planning partner expectations.

**TABLE ES-1.
MUNICIPAL PLANNING PARTNERS**

Antioch	Brentwood	Danville	El Cerrito
Kensington	Martinez	Pinole	Pleasant Hill
Richmond	San Pablo	San Ramon	Walnut Creek
Contra Costa Co			

**TABLE ES-2.
SPECIAL-PURPOSE DISTRICT PARTNERS**

Antioch Unified School District	Ironhouse Sanitary District
Bethel Island Municipal Improvement District	Kensington Fire protection District
Brentwood Union School District	Knightsen Community Services District
Canyon Elementary School District	Liberty Union High School District
Central Contra Costa Sanitary District	Mt. Diablo Unified School District
Contra Costa Consolidated Fire District	Pittsburg Unified School District
Contra Costa County Flood Control District	Pleasant Hill Recreation & Parks District
Contra Costa Community College District	Reclamation District 800 (Byron Tract)
Contra Costa County Office of Education	Reclamation District 830 (Jersey Island)
Delta Diablo Sanitation District	Rodeo-Hercules Fire District
Diablo Water District	San Ramon Valley Fire Protection District
East Bay Municipal Utility District	Walnut Creek School District
East Contra Costa Fire District	West Contra Costa Unified School District

A 14-member steering committee was assembled to oversee the development of the plan, consisting of planning partner staff, citizens, and other stakeholders in the planning area. A key function of the Steering Committee was to confirm a guiding principal, goals and objectives for this updated plan. Full coordination with other county, state and federal agencies involved in hazard mitigation occurred from the onset of the plan update process.

A multi-media public involvement strategy centered on a hazard preparedness questionnaire was also implemented under this phase, as well as a comprehensive review of the previous plan and the State of California Hazard Mitigation Plan. Additionally, a comprehensive review was performed of existing programs that may support or enhance hazard mitigation actions.

Phase 2—Update the Risk Assessment

Risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards. This process assesses the vulnerability of people, buildings and infrastructure to natural hazards. It focuses on the following parameters:

- Hazard identification and profiling
- The impact of hazards on physical, social and economic assets
- Vulnerability identification
- Estimates of the cost of potential damage or costs that can be avoided through mitigation.

The risk assessment for this hazard mitigation plan meets requirements outlined in Chapter 44 of the Code of Federal Regulations (44CFR). Phase 2 occurred simultaneously with Phase 1, with the two efforts using information generated by one another to create the best possible risk assessment. This was the most comprehensive phase of the plan update process. All facets of the risk assessment of the plan were visited by the planning team and updated with the best available data and technology.

Phase 3—Engage the Public

A public involvement strategy was developed by the Steering Committee that maximized the capabilities of the planning partnership. This strategy was implemented by the planning team and included four public meetings early in the plan update process, two public meetings to review the draft plan, distribution of a hazard mitigation survey, a County-sponsored website dedicated to the plan update, and multiple media releases throughout the process.

Phase 4—Assemble the Updated Plan

The planning team and Steering Committee assembled key information from Phases 1, 2 and 3 into a document to meet the DMA requirements for all planning partners. Under 44CFR, a local hazard mitigation plan must include the following:

- A description of the planning process
- Risk assessment
- Mitigation strategy
 - Goals
 - Review of alternatives
 - Prioritized “action plan”
- Plan maintenance section
- Documentation of adoption.

The updated plan contains two volumes. Volume 1 contains all components that apply to all partners and the broader planning area (plan process, outreach strategy, plan maintenance, risk assessment, goals, objectives and countywide initiatives). Volume 2 contains all components that are jurisdiction-specific (ranking of risk, capability assessment, an action plan, prioritization of that action plan and a status report on prior actions). Each planning partner has a dedicated chapter in Volume 2.

Phase 5—Plan Adoption/Implementation

The final adoption phase will begin once pre-adoption approval is granted by California Emergency Management Agency (Cal EMA) and FEMA. Each partner will adopt the updated plan individually.

A plan implementation and maintenance section included in this document details the formal process for ensuring that the plan remains active and relevant. The plan maintenance process includes a schedule for monitoring and evaluating the plan’s progress annually and producing a plan revision every 5 years. Throughout the life of this plan, a steering committee representative of the original committee will provide a consistent source of guidance and oversight.

The plan adoption phase includes strategies for continued public involvement and incorporation of the recommendations of this plan into other planning mechanisms within the planning area, such as general plans, capital improvement plans, building codes, and emergency management plans.

MITIGATION GUIDING PRINCIPLE, GOALS AND OBJECTIVES

The following principle guided the Steering Committee and the planning partnership in selecting the initiatives contained in this plan update:

Guiding Principle—To reduce the vulnerability from natural hazards within the county in a cost-effective manner, within the capabilities of the partnership.

The Steering Committee and the planning partnership established the following goals for the plan update:

- Goal 1—Save [or protect] lives and reduce injury
- Goal 2—Increase resilience of infrastructure and critical facilities
- Goal 3—Avoid [minimize, or reduce] damage to property
- Goal 4—Encourage the development and implementation of long-term, cost-effective and environmentally sound mitigation projects
- Goal 5—Build and support capacity to enable local government and the public to prepare, respond and recover from the impact of natural hazards.

Plan objectives were developed via a facilitated exercise that focused on finding objectives that meet multiple goals. The objectives are listed in Table ES-3.

MITIGATION INITIATIVES

Mitigation initiatives are activities to reduce or eliminate losses resulting from natural hazards. Mitigation initiatives are the key element of the hazard mitigation plan update. By implementing these initiatives, the planning partnership will strive to become disaster-resistant through sustainable hazard mitigation.

Although adoption of this plan makes the planning partners eligible for FEMA grant funding, the purposes of the plan go beyond grant eligibility. It was important to the planning partnership and the Steering Committee to look at initiatives that will work through all phases of emergency management. Some of the initiatives outlined in this plan are not grant eligible but were chosen for their effectiveness in achieving the goals of the plan. A series of countywide initiatives were identified, as summarized in Table ES-4. Jurisdiction-specific initiatives are listed in Volume 2 of this plan.

IMPLEMENTATION

Full implementation of the recommendations of this plan will require time and resources. Specific recommendations and plan review protocols are provided to evaluate changes in vulnerability and action plan prioritization after the plan is adopted. The true measure of the plan's success will be its ability to adapt to the changing climate of hazard mitigation. Funding resources are always evolving, as are state and federal mandates. Contra Costa County and its planning partners have a long-standing tradition of proactive response to issues that may impact local citizens. Each local government will assume responsibility for adopting the recommendations of this plan and committing resources toward implementation. The framework established by this plan identifies a strategy that maximizes the potential for implementation based on available and potential resources. It commits all planning partners to pursue initiatives when the benefits of a project exceed its costs. The planning partnership developed this plan with extensive public input, and public support of the actions identified in this plan will help ensure the plan's success.

**TABLE ES-3.
OBJECTIVES FOR NATURAL HAZARD MITIGATION PLAN UPDATE**

Objective Number	Objective Statement	Goals for Which It Can Be Applied
O-1	Increase resilience of (or protect and maintain) infrastructure and critical facilities	2, 3, 5
O-2	Sustain reliable local emergency operations and facilities during and after a disaster	1, 5
O-3	Educate the public on the risk from natural hazards and increase awareness, preparation, mitigation, response, and recovery activities	1, 3, 5
O-4	Minimize the impacts of natural hazards on current and future land uses by providing incentives for hazard mitigation	1, 3, 5
O-5	Prevent (or discourage) new development in hazardous areas or ensure that if building occurs in high-risk areas that it is done in such a way as to minimize risk	1, 3, 5
O-6	At the local government level, continually improve understanding of the location and potential impacts of natural hazards, utilizing the best available data and science.	1, 2, 3, 4, 5
O-7	Ensure all structures meet minimum standards for life safety	1, 2, 3, 5
O-8	Monitor plan progress annually to integrate local hazard mitigation plans and the results of disaster- and hazard-specific planning efforts	1, 2, 3, 5
O-9	Lower cost of flood insurance premiums through CRS program	3, 4, 5
O-10	Provide/improve flood protection with flood control structures, and drainage maintenance plans	2, 3, 4
O-11	Strengthen codes, and their enforcement, so that new construction can withstand the impacts of natural hazards and lessen the impact of that development on the environment's ability to absorb the impact of natural hazards.	1, 3
O-12	Consider the impacts of natural hazards in all planning mechanisms that address current and future land uses within the planning area.	1, 3
O-13	Eliminate or minimize disruption of local government operations caused by natural hazards	1, 3, 4
O-14	Consider open space land uses within identified high-hazard risk zones	1, 2, 3, 4, 5
O-15	Retrofit, acquire or relocate identified high-risk structures, including those known to experience repetitive losses.	1, 3, 4
O-16	Establish a partnership among all levels of government and the business community to improve and implement methods to protect property	1, 2, 3, 4, 5

**TABLE ES-4.
ACTION PLAN—COUNTYWIDE MITIGATION INITIATIVES**

Hazards Addressed	Lead Agency	Possible Funding Sources or Resources	Time Line ^a	Objectives
CW-1 —Continue to maintain a Countywide hazard mitigation website that will house the plan and provide the public an opportunity to monitor plan implementation progress. Each planning partner can support this initiative by including an initiative in its action plan of creating a link to the County Hazard Mitigation webpage.				
All Hazards	OES	OES operational budget	Short term/ongoing	3, 6, 16
CW-2 —Leverage public outreach partnering capabilities (such as CERT) within the planning area to promote a uniform and consistent message on the importance of proactive hazard mitigation.				
All Hazards	OES, CERT	OES operational budget	Short term/ongoing	2, 3, 6, 16
CW-3 —Coordinate mitigation planning and project efforts within the planning area to leverage all resources available to the planning partnership.				
All Hazards	OES, Public Works	FEMA mitigation grant funding will reimburse for grant application preparation. General fund allocations of all planning partners.	Short term	6, 16
CW-4 —Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive and severe repetitive loss properties as a priority. Seek opportunities to leverage partnerships within the planning area in these pursuits.				
All Hazards	OES, Public Works	FEMA Mitigation Grant funding	Long-term/depends on funding	7, 15, 16
CW-5 —Continue to update hazard mapping with best available data and science as it evolves within the capabilities of the partnership. Support FEMA's Risk MAP Initiative.				
All Hazards	Public Works	FEMA Mitigation Grant Funding, FEMA's CTP program, County CIP funding	Long-term/depends on funding	3, 6, 16
CW-6 —To the extent possible based on available resources, provide coordination and technical assistance in the application for grant funding that includes assistance in cost vs. benefit analysis for grant eligible projects.				
All Hazards	OES, Public Works	FEMA mitigation grant funding will reimburse for grant application preparation. General fund allocations of all planning partners.	Short term	6, 16
CW-7 —A steering committee will remain as a viable body over time to monitor progress of the hazard mitigation plan, provide technical assistance to Planning Partners and oversee the update of the plan according to schedule. This body will continue to operate under the ground rules established at its inception.				
All Hazards	OES, Public Works	Public Works and OES operational budgets	Short term/ongoing	8, 16

**TABLE ES-4 (CONTINUED).
ACTION PLAN—COUNTYWIDE MITIGATION INITIATIVES**

Hazards Addressed	Lead Agency	Possible Funding Sources or Resources	Time Line ^a	Objectives
CW-8 —Amend or enhance the Contra Costa County Hazard Mitigation Plan on an “as needed” basis to seek compliance with state or federal mandates (i.e., CA. Assembly Bill # 2140) as guidance for compliance with these programs become available.				
All Hazards	OES, DCD, Public Works	County General Fund	Short term/ ongoing	5, 6, 14
CW-9 —Utilize information contained within the Contra Costa County Hazard Mitigation Plan to support updates to other emergency management plans in effect within the planning area.				
All Hazards	OES	Possible DHS funding, General funds of all planning partners	Long term, depends on funding	2, 13, 16
CW-10 —Continue to coordinate emergency management and hazard mitigation planning functions with the Association of Bay Area Governments to leverage resources and information on the planning area to support/enhance these activities for the Contra Costa County planning partnership.				
All Hazards	OES	OES operational budget	Short term/ ongoing	2, 13, 16
<p>a. Short term = 1 to 5 years; Long Term= 5 years or greater OES = Sheriff's Office of Emergency Services; DCD = Contra Costa County Department of Conservation and Development</p>				

CHAPTER 22. CONTRA COSTA COUNTY FIRE PROTECTION DISTRICT ANNEX

22.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Rich Grace, Assistant Fire Chief
2010 Geary Road
Pleasant Hill, CA 94523
Telephone: (925) 941-3501
e-mail Address: rgrac@cccfd.org

Alternate Point of Contact

John Ross, Assistant Fire Chief
2010 Geary Road
Pleasant Hill, CA 94523
Telephone: (925) 941-3500
e-mail Address: jross@cccfd.org

22.2 JURISDICTION PROFILE

Contra Costa County Fire Protection District (Con Fire) provides fire prevention, suppression, and emergency medical response for advanced and basic life support to nine cities and much of the unincorporated area in the central and western portions of Contra Costa County. Con Fire was formed on December 29, 1964 as a county-dependent district governed by the Contra Costa County Board of Supervisors. The principal act that governs the District is the Fire Protection District Law of 1987 (California). Since its inception, Con Fire has consolidated with several other fire districts with the most recent significant consolidation occurring in 1994. There were some subsequent detachments of portions of Con Fire between 1997 and 2001, but since 2001 Con Fire's service area has remained the same.

The following is a summary of key information about the jurisdiction:

- **Population Served**—598,051
- **Land Area Served**—Approximately 300 square miles
- **Value of Area Served**—Total assessed property value (FY 09/10) for the area served by Con Fire is \$67,647,071,600
- **Land Area Owned**—Approximately 48 acres (35 separate locations throughout Contra Costa County)
- **List of Critical Infrastructure/Equipment Owned by the Jurisdiction** (the apparatus are located at 30 different sites (fire stations) all of which are in natural hazard risk zones):
 - 28 Type 1 engines
 - 2 Type 2 engines
 - 17 Type 3 engines
 - 1 Type 4 engine
 - 6 Quints
 - 4 specialty rescue vehicles
 - 1 rescue boat

- **Total Value of Critical Infrastructure/Equipment**—The total replacement cost value of critical infrastructure and equipment owned by the jurisdiction is \$29,240,000.
- **List of Critical Facilities Owned by the Jurisdiction:** See Table 22-1
- **Total Value of Critical Facilities**—The total value of critical facilities owned by the jurisdiction is \$52,327,800
- **Current and Anticipated Service Trends**—The fire district has experienced a 28 percent increase in call volume since 2000, and this trend is expected to continue. Approximately 75 percent of the calls are for Emergency Medical Services (EMS). According to the Association of Bay Area Governments (ABAG) the projected growth rate from 2008 to 2030 is 16 percent. The largest area (approximately 5,000 acres) of future growth will be in the central portion of the county that was once part of the Concord Naval Weapons Station (CNWS). The planned development of the CNWS site will result in a significant increase in population density that will require an expansion of fire and emergency medical service resources to accommodate the increase in call volume. Other planned developments in the eastern portion of the fire district will necessitate additional fire and emergency medical resources to handle population growth, as well as mitigate emergency response times.

**TABLE 22-1.
DISTRICT-OWNED CRITICAL FACILITIES**

Station #/ Building Name	Location	Station #/ Building Name	Location
1	1330 Civic Drive, Walnut Creek, CA 94596	22	5050 Crystal Ranch Road, Concord, CA 94521
2	2012 Geary Road, Pleasant Hill, CA 94523	69	4640 Appian Way, El Sobrante, CA 94803
3	1520 Rossmoor Parkway, Walnut Creek, CA 94595	70	13928 San Pablo Avenue, San Pablo, CA 94806
4	700 Hawthorne Drive, Walnut Creek, CA 94596	81	315 West 10 th Street, Antioch, CA 94509
5	205 Boyd Road, Pleasant Hill, CA 94523	82	196 Bluerock Drive, Antioch, CA 94531
6	2210 Willow Pass Road, Concord, CA 94520	83	2717 Gentrytown Drive, Antioch, CA 94509
7	1050 Walnut Avenue, Walnut Creek, CA 94598	84	1903 Railroad Ave., Pittsburg, CA 94565
8	4647 Clayton Road, Concord, CA 94521	85	2331 Loveridge Road, Pittsburg, CA 94565
9	209 Center Street, Pacheco, CA 94553	86	3000 Willow Pass Road, Pittsburg, CA 94565
10	2955 Treat Boulevard, Concord, CA 94518	87	800 West Leland Drive, Pittsburg, CA 94565
11	6500 Center Street, Clayton, CA 94517	88	4288 Folsom Drive, Antioch, CA 94531
12	1240 Shell Avenue, Martinez, CA 94553	Administration	2010 Geary Road, Pleasant Hill, CA 94523
13	251 Church Street, Martinez, CA 94553	Fire Prevention East	4527 Deerfield Drive, Antioch, CA 94531
14	521 Jones Street, Martinez, CA 94553	Apparatus Shop	2951 Treat Boulevard, Concord, CA 94518
15	3338 Mt. Diablo Boulevard, Lafayette, CA 94549	Apparatus Annex	2951 Treat Boulevard, Concord, CA 94518
16	4007 Los Arabis Road, Lafayette, CA 94549	Supply Warehouse	2955 Treat Boulevard, Concord, CA 94518
17	620 St. Mary's Road, Lafayette, CA 94549	EMS Division	2945 Treat Boulevard, Concord, CA 94518
18	145 Sussex Street, Clyde, CA 94520	Training Complex	2945 Treat Boulevard, Concord, CA 94518
		Communication Center	2900 Dorothy Drive, Pleasant Hill, CA 94523

The Con Fire boundaries encompass the central and northern portions of Contra Costa County, extending from the City of Antioch in the east to the eastern boundary of the City of Richmond in the west, and as far south as the northern boundary of the Town of Moraga. The jurisdiction's boundaries are shown on Figure 1-1.

22.3 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 22-2 lists all past occurrences of natural hazards within the jurisdiction.

22.4 HAZARD RISK RANKING

Table 22-3 presents the ranking of the hazards of concern.

22.5 APPLICABLE REGULATIONS AND PLANS

The following existing codes, ordinances, policies or plans are applicable to this hazard mitigation plan:

- California Department of Public Health
- California and US Environmental Protection Agencies
- California Code of Regulations
- Federal Endangered Species Act
- California Environmental Quality Act (CEQA)
- California Building Code, Chapter 7a: Standards intended to prevent ignition of structures from wildland fire exposure. These building standards relate to roof assemblies and materials, windows, siding, decks and eave vents all of which are prone to ignition from burning embers.
- Contra Costa County Ordinance 2007-47 (adopting of Fire Code): Under Chapter 3 (General Precautions Against Fires), it provides for landscaping/vegetation management requirements to reduce and/or prevent the spread of wildland fires.
- Contra Costa County Operational Area Hazard Mitigation Plan

22.6 CLASSIFICATION IN HAZARD MITIGATION PROGRAMS

The jurisdiction's classifications under various hazard mitigation programs are presented in Table 22-4.

22.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 22-5 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 22-6 identifies the priority for each initiative. Table 22-7 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

22.8 ADDITIONAL COMMENTS

Con Fire is currently (FY 09/10) experiencing a drastic decrease in our property tax revenues. Since property taxes account for approximately 85 percent of the District's total revenue, thus the fire district is faced with unprecedented budgetary challenges. It is anticipated that property tax revenues will not recover and/or increase until FY 11/12. Therefore, implementation of hazard mitigation initiatives will be subject to these extreme budgetary constraints.

**TABLE 22-2.
NATURAL HAZARD EVENTS**

Type of Event	FEMA Disaster #	Date	Preliminary Damage Assessment
Wind	NA	12/25/2008	\$13,500
Wind	NA	12/15/2008	\$3,000
Flood	NA	1/1/2006	\$22,000,000
Flood	FEMA-1628	12/31/2005	\$22,000,000
Wildfire	NA	6/20/2004	\$500,000
Wind	NA	11/7/2002	\$200,000
Wind	NA	12/18/2000	\$550,000
Wind	NA	11/24/2000	\$700,000
Flood	NA	2/14/2000	\$100,000
Wind	NA	12/22/1999	\$62,500
Wind	NA	2/9/1999	\$200,000
Severe Weather	NA	12/12/1995	\$6,000,000
Wind	NA	11/14/1993	\$62,500
Wind	NA	2/19/1993	\$50,000
Severe Weather	NA	12/25/1990	\$86,206
Flood	NA	5/28/1990	\$500,000
Severe Weather	NA	12/3/1983	\$312,500
Wind	NA	12/22/1982	\$1,041,666
Flood, Severe Weather	NA	1/3/1982	\$7,142,857

Note: Con Fire responds to an average of approximately 285 wildland fires per year and many of those threaten residential structures.

**TABLE 22-3.
HAZARD RISK RANKING**

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Earthquake	54
2	Severe Weather	18
3	Wildfire	6
4	Flood	6
5	Drought	6
6	Landslide	2
7	Dam Failure	1

**TABLE 22-4.
COMMUNITY CLASSIFICATIONS**

	Participating?	Classification	Date Classified
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

Notes:

Con Fire participates in the Diablo Fire Safe Council planning and outreach efforts primarily in the central and western portions of the fire district.

Public protection: ISO 3/8 *Higher classification applies to when subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

**TABLE 22-5.
HAZARD MITIGATION ACTION PLAN MATRIX**

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Initiative 1 —Continue with installation of emergency generators at fire stations						
New & Existing	All	1,2,13	Con Fire	Low	Capital Funds	Short-Term, Ongoing
Initiative 2 —Structural seismic retrofit of fire facilities						
Existing	Earthquake/Severe Weather	1,2,7,13,14	Con Fire	High	Grants/Fire Facilities Fees	Long-Term
Initiative 3 —Adoption of Fire Hazard Maps – “Very High Fire Hazard Severity Zone” (VHFHSZ) maps currently under development						
New & Existing	Wildfire	1,2,3,6,12, 16	Con Fire	Low	General Fund	Short-Term, Ongoing
Initiative 4 —Enhance/Improve County Code language and enforcement including: County Building Codes to increase compliance with SB 1369 Defensible Space and Other Fire Safe Requirements in the unincorporated county areas						
New & Existing	Wildfire	3,4,5,11,16	County OES/Planning-Fire District	Low	General Fund	Short-Term, Ongoing
Initiative 5 —Improve, expand and develop new programs that increase awareness of and reduce risk to wildfires including: Support of Diablo Fire Safe Council vegetation management workshops and chipper program						
New & Existing	Wildfire	3,4,16	Con Fire	Medium	No-Match Grants	Long-Term
Initiative 6 —Implementation of projects listed in the Community Wildfire Protection Plan (CWFPF)						
Existing	Wildfire	3,15, 16	County OES/Planning	Low	Existing funding-grants where eligible	Short-Term, Ongoing

TABLE 22-5 (continued). HAZARD MITIGATION ACTION PLAN MATRIX						
Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Initiative 7 —Participate in annual multi-agency Wildland Fire Training						
Existing	Wildfire	2,3,6,13,16	Fire Depts	Low	General Fund	Short-Term, Ongoing
Initiative 8 —Pursue implementation of projects listed in Con Fire Capital Improvement Plan						
New & Existing	All	1,2,3,7,13,15, 16	Con Fire	High	Grants, Fire Facilities Fees	Long-Term
Initiative 9 —Educate the public on the risks associated with natural hazards and methods to prepare for and mitigate those risks						
New & Existing	All	2,3,6,16	Con Fire	Medium	General Fund, Grants	Short-Term, depends on funding
Initiative 10 —Support County-wide initiatives identified in Volume 1.						
New & Existing	All Hazards	All	County, Planning	Low	District Funds	Short Term, ongoing
Initiative 11 —Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1.						
New & Existing	All Hazards	All	County, Planning	Low	District Funds, FEMA Mitigation Grant Funding for 5-year update	Short Term, ongoing
Initiative 12 —Integrate Local Hazard Mitigation Plan into the Safety Element of the General Plan						
New & Existing	All Hazards	4,5,14	OES & DCD	Low	District Funds	Short Term

**TABLE 22-6.
MITIGATION STRATEGY PRIORITY SCHEDULE**

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/Budgets?	Priority ^a
1	3	Medium	Low	Yes	No	Yes	High
2	5	High	High	Yes	Yes	No	Low
3	6	Medium	Low	Yes	No	Yes (not entirely)	Medium
4	5	Medium	Low	Yes	No	Yes	High
5	3	Low	Low	Yes	No	Yes (not entirely)	Medium
6	3	High	Low	Yes	Yes	Yes	Medium
7	5	Low	Low	Yes	No	Yes	High
8	8	High	High	Yes	Yes	No	Medium
9	4	High	Medium	Yes	Yes	No	Medium
10	16	Medium	Low	Yes	No	No	High
11	16	Medium	Low	Yes	Yes	Yes	High
12	3	Low	Low	Yes	No	Yes	High

a. Explanation of priorities

- High Priority: Project meets multiple plan objectives, benefits exceed cost, funding is secured under existing programs, or is grant eligible, and project can be completed in 1 to 5 years (i.e., short term project) once funded.
- Medium Priority: Project meets at least 1 plan objective, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable, and project can be completed in 1 to 5 years once funded.
- Low Priority: Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is long term (5 to 10 years).

**TABLE 22-7.
ANALYSIS OF MITIGATION INITIATIVES**

Hazard Type	Initiative Addressing Hazard, by Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Dam Failure	11, 12	None	9, 10, 11	None	1, 8, 9	None
Drought	11, 12	None	9, 10, 11	None	None	None
Earthquake	8, 11, 12	2	9, 10, 11	None	1, 2, 8, 9	None
Flood	11, 12	None	9, 10, 11	None	1, 2, 8, 9	None
Landslide	5, 11, 12	None	9, 10, 11	None	1, 8, 9	None
Severe Weather	2, 8, 11, 12	2, 8	9, 10, 11	None	1, 2, 8, 9	None
Wild Fire	4, 8, 11, 12	4	5, 9, 10, 11	None	1, 3, 4, 5, 6, 8, 9	None

Notes:

1. Prevention: Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
2. Property Protection: Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
3. Public Education and Awareness: Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
4. Natural Resource Protection: Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
5. Emergency Services: Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
6. Structural Projects: Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.

CHAPTER 32.

CONTRA COSTA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT ANNEX

32.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Paul R. Detjens, Senior Civil Engineer
255 Glacier Drive
Martinez, CA 94553
Telephone: 925-313-2394
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Alternate Point of Contact

Mitch Avalon, Deputy Chief Engineer
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32.2 JURISDICTION PROFILE

The Contra Costa Flood Control and Water Conservation District (District) is a dependent Special District, first formed by an act of the State legislature in 1951. Its governing document is the Contra Costa County Flood Control and Water Conservation District Act, last amended in 1992, which grants the District various powers such as the ability to acquire and hold property; sue and be sued; conserve, store and import water; control flood waters; issue bonds; levy taxes and assessments and use eminent domain. The governing board of the District is the County's five-member Board of Supervisors, which are elected to four year terms. Each Supervisor represents a specific area of the County.

The District plans, constructs and maintains major flood protection infrastructure to reduce flooding risk. The District's jurisdiction encompasses all of Contra Costa County, including all nineteen incorporated cities.

The District's funding comes from a combination of ad-valorem taxes and fees paid by developers upon creation of impervious surfaces. The District has approximately 20 staff, and relies on other specialists from the Contra Costa County Public Works Department, with whom they share office space.

The following is a summary of key information about the jurisdiction:

- **Population Served**—1,060,435 residents as of January 1, 2009 (California Department of Finance)
- **Land Area Served**—720 square miles
- **Value of Area Served**—The estimated value of the area served by the jurisdiction is \$174,133,000
- **Land Area Owned**—2,600 acres in fee, 1450 acre easement
- **List of Critical Infrastructure/Equipment Owned by the Jurisdiction:**
 - 21 Drop Structures \$46 million
 - 89,650 feet of Concrete Channels \$225 million
 - 4 Dams \$112 million
 - 34,600 feet of Levees \$35 million

- 12 Detention Basins \$10 million
- Various Specialized equipment and trucks \$1 million
- **Total Value of Critical Infrastructure/Equipment**—The total replacement cost value of critical infrastructure and equipment owned by the jurisdiction is \$383 million.
- **List of Critical Facilities Owned by the Jurisdiction:**
 - CC Rich Building, Glacier Drive (District main office)
 - Waterbird Maintenance Yard
- **Total Value of Critical Facilities**—The total value of critical facilities owned by the jurisdiction is \$10 million.
- **Current and Anticipated Service Trends**—The District’s service area is broken up into three distinct regions of the County: west, central and east. The west and central portions of the county are nearing their full development potential. Service demands are expected to increase in these areas not because of added population, but primarily because of increased customer demands for more ecologically sensitive flood protection, including potential removal of concrete lining of channels and restoration of the resulting streams. Other factors expected to increase demands for District services include the effect of global climate change on low-lying areas, increased regulatory requirements on operation and maintenance of existing facilities, and new clean water requirements on trash and other pollutants.
- The eastern portion of the District’s service area includes the fast-growing cities of Pittsburg, Antioch, Oakley and Brentwood. Here, population growth means significantly increased runoff and customer demands for improved levels of protection as agricultural lands are converted to residential and commercial uses. Additionally, this eastern portion of the County has the same issues noted for central and west portions noted above.

The area served includes all of Contra Costa County, including all nineteen incorporated cities. The jurisdiction’s boundaries are shown on Figure 1-1.

32.3 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 32-1 lists all past occurrences of natural hazards within the jurisdiction.

32.4 HAZARD RISK RANKING

Table 32-2 presents the ranking of the hazards of concern.

32.5 APPLICABLE REGULATIONS AND PLANS

The following existing codes, ordinances, policies or plans are applicable to this hazard mitigation plan:

- California Department of Public Health
- California and US Environmental Protection Agencies
- California Code of Regulations
- Federal Endangered Species Act
- California Environmental Quality Act (CEQA)
- Regulatory permits
- Contra Costa County Operational Area Hazard Mitigation Plan

- The District has a business plan, an expenditure policy and a Capital Improvement Plan. The expenditure policy sets the following order of priorities: system preservation, public safety, and system expansion. This relates to hazard mitigation plan because it emphasizes repair and rehabilitation of existing facilities to ensure they remain able to reduce flood risk and minimize the risk of dam failure.

32.6 CLASSIFICATION IN HAZARD MITIGATION PROGRAMS

The jurisdiction's classifications under various hazard mitigation programs are presented in Table 32-3.

32.7 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED INITIATIVES

Table 32-4 lists the initiatives that make up the jurisdiction's hazard mitigation plan. Table 32-5 identifies the priority for each initiative. Table 32-6 summarizes the mitigation initiatives by hazard of concern and the six mitigation types.

32.8 FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

The District has number of areas where lack of information limits smart planning efforts:

- East county floodplain maps are approximate - have good topography, but need a detailed two dimensional floodplain analysis.
- Kellogg Creek FIRM does not correctly show the effect of the Los Vaqueros Reservoir. Need to revisit this analysis and update.
- District reservoirs are nearing 50 years old, and will likely need rehabilitation including a seismic vulnerability analysis. Needed to keep probability of dam failure low.
- District capital improvement plan (CIP) needs to be updated.
- District funding sources are insufficient to meet new or expected clean water mandates, such as trash and mercury total maximum daily loads (TMDL).
- Some District levees no longer enjoy FEMA accreditation, and the District lacks the resources to study and potentially improve these levees be re-accredited.

**TABLE 32-1.
NATURAL HAZARD EVENTS**

Type of Event	FEMA Disaster #	Date	Preliminary Damage Assessment
Severe Weather, Flood, Landslides	FEMA-1628	12/31/2005	\$1,900,000
Severe Weather, Flood	FHWA	12/16/2002	No data
Severe Weather, Flood, Landslides	FEMA-1203	2/2/1998	\$1,200,00
El Nino Storm, Flood, Landslides	FEMA-1155	1/1/1997	\$973,000
Severe Weather, Flood	FEMA-1046	3/1995	\$753,000
Severe Weather, Flood	FEMA-1044	1/1995	\$1,100,000
Severe Weather, Flood	FEMA-979	1/1993	\$911,000
Severe Weather, Flood, Landslides	FEMA-758	2/17/1986	\$63,000
Severe Weather, Flood	NA	3/1980	\$150,000
Severe Weather, Flood, Landslides	NA	11/21/1977	No data

**TABLE 32-2.
HAZARD RISK RANKING**

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Severe Weather	45
2	Flood	39
3	Landslide	36
4	Drought	36
5	Earthquake	32
6	Dam Failure	12
7	Wildfire	6

**TABLE 32-3.
COMMUNITY CLASSIFICATIONS**

	Participating?	Classification	Date Classified
Public Protection	No	N/A	N/A
Storm Ready	No	N/A	N/A
Firewise	No	N/A	N/A
Tsunami Ready	No	N/A	N/A

**TABLE 32-4.
HAZARD MITIGATION ACTION PLAN MATRIX**

Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Initiative 1 —Repair bank erosion, various sites countywide (Green Valley Creek at Buckeye Lane, Grayson Creek at County Quarry, etc).						
Existing	Landslide/Bank Failure/Severe Weather	1, 10	FCD	Medium to low	FCD Zone 3B, FCD Zone 1, other FCD Zones	Short term
Initiative 2 —Construct/expand detention basins (implement basin construction as identified in FCD CIP).						
New and existing	Flood/Dam Failure/Severe Weather	1, 10	FCD	Medium	FCD Zone 3B, FCD Zone 1, other FCD Zones	Short term
Initiative 3 —Expand Upper Sand Creek detention basin to significantly reduce flood risk for downstream communities. Construct Upper Sand Creek dam to state Division of Dam Safety requirements.						
Existing	Flood/Dam Failure/Severe Weather	1, 10	FCD	High	Drainage Area 130, FCD Zone 1	Short term
Initiative 4 —Repair bank erosion, various sites countywide (Green Valley Creek at Buckeye Lane, Grayson Creek at County Quarry, etc).						
Existing	Landslide/Bank Failure/Severe Weather	1, 10	FCD	Medium to low	FCD Zone 3B, FCD Zone 1, other FCD Zones	Short term
Initiative 5 —Widen creeks/channels and raise/rehabilitate levees (implement projects as identified in FCD CIP: Marsh Creek, East and West Antioch Creeks, etc.).						
Existing	Flood/Severe Weather	1, 10	FCD	Medium	FCD Zone 3B, FCD Zone 1, other FCD Zones	Short term
Initiative 6 —Assess condition of Wildcat and San Pablo Creek levees to determine seek levee re-accreditation .						
Existing	Flood/Bank Failure/Severe Weather	1, 10	FCD	Medium to low	FCD Zone 6 and FCD Zone 7	Short term
Initiative 7 —Remove sediment from channels and detention basins (implement projects as identified in FCD CIP. i.e.: Kubicek Basin, Walnut Creek, Grayson Creek, etc).						
New and existing	Flood	1, 10	FCD	Medium	FCD Zone 3B, FCD Zone 1, other FCD Zones	Short term
Initiative 8 —Seismic assessment of existing dams.						
Existing	Earthquake/Dam Failure	1, 10	FCD	Medium	FCD Zone funds	Long term

TABLE 32-4 (continued). HAZARD MITIGATION ACTION PLAN MATRIX						
Applies to new or existing assets	Hazards Mitigated	Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Timeline
Initiative 9 —Seismic rehabilitation/retrofitting of existing dams (may combine with FCD5 above).						
Existing	Earthquake/Dam Failure	1, 10	FCD	High	FCD Zone funds, National Dam Safety Grant, FEMA PDM grant, DHS Urban Area Security Initiative Grant, other grants.	Long term
Initiative 10 —Acquire floodplain easements over privately held parcels at various sites District-wide (i.e.: Trembath floodplain on East Antioch Creek, floodplains on Marsh Creek, Walnut Creek overflow area at Pacheco Creek, etc).						
New and Existing	Flood	1, 10	FCD, Cities	Medium	FCD Zone funds, FEMA HMGP & PDM grants, other grants	Short term and long term.
Initiative 11 —Support County-wide initiatives identified in Volume 1.						
New & Existing	All Hazards	All	County, Planning	Low	District Funds	Short Term, ongoing
Initiative 12 —Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Volume 1.						
New & Existing	All Hazards	All	County, Planning	Low	District Funds, FEMA Mitigation Grant Funding for 5-year update	Short Term, ongoing

**TABLE 32-5.
MITIGATION STRATEGY PRIORITY SCHEDULE**

Initiative #	# of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/Budgets?	Priority ^c
1	2	High	Low	Yes	Yes	Yes	High
2	2	High	Medium	Yes	Yes	Yes	High
3	2	High	Medium	Yes	Yes	Yes	High
4	2	High	Low	Yes	Yes	Yes	High
5	2	Medium	Low	Yes	Yes ^b	Yes	Medium
6	2	High ^a	High	Yes	Yes	No	Medium
7	2	Medium	Medium	Yes	Yes	Yes	Medium
8	2	Medium	Low	Yes	Yes ^b	Yes	High
9	2	High ^a	High	Yes	Yes	No	Medium
10	3	Low	Low	Yes	No	Yes	High
11	2	Medium	Medium	Yes	Yes	Yes	Medium
12	16	Medium	Low	Yes	Yes	Yes	High

a. Assumes deficiencies are uncovered in Initiative 5, as expected.

b. Grant-eligible if combined with Initiative 6

c. Explanation of priorities

- High Priority: Project meets multiple plan objectives, benefits exceed cost, funding is secured under existing programs, or is grant eligible, and project can be completed in 1 to 5 years (i.e., short term project) once funded.
- Medium Priority: Project meets at least 1 plan objective, benefits exceed costs, requires special funding authorization under existing programs, grant eligibility is questionable, and project can be completed in 1 to 5 years once funded.
- Low Priority: Project will mitigate the risk of a hazard, benefits exceed costs, funding has not been secured, project is not grant eligible, and time line for completion is long term (5 to 10 years).

**TABLE 32-6.
ANALYSIS OF MITIGATION INITIATIVES**

Hazard Type	Initiative Addressing Hazard, by Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Dam Failure	2, 5, 6, 9, 10, 12	2, 6	8, 9, 11	2	6	2, 3, 4, 6
Drought	9, 10, 12		8, 9, 11			
Earthquake	5, 6, 9, 10, 12	6	8, 9, 11		6	6
Flood	1, 2, 3, 4, 6, 7, 9, 10, 12	1, 2, 3, 4, 7	8, 9, 11	1, 2, 3, 4, 7		1, 2, 3, 4
Landslide	1, 6, 9, 10, 12	1	8, 9, 11	1		1, 2, 3, 4
Severe Weather	1, 2, 3, 9, 10, 12	1, 2, 3	8, 9, 11	1		1, 2, 3
Wild Fire	9, 10, 12		8, 9, 11			

Notes:

1. Prevention: Government, administrative or regulatory actions that influence the way land and buildings are developed to reduce hazard losses. Includes planning and zoning, floodplain laws, capital improvement programs, open space preservation, and stormwater management regulations.
2. Property Protection: Modification of buildings or structures to protect them from a hazard or removal of structures from a hazard area. Includes acquisition, elevation, relocation, structural retrofit, storm shutters, and shatter-resistant glass.
3. Public Education and Awareness: Actions to inform citizens and elected officials about hazards and ways to mitigate them. Includes outreach projects, real estate disclosure, hazard information centers, and school-age and adult education.
4. Natural Resource Protection: Actions that minimize hazard loss and preserve or restore the functions of natural systems. Includes sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
5. Emergency Services: Actions that protect people and property during and immediately after a hazard event. Includes warning systems, emergency response services, and the protection of essential facilities.
6. Structural Projects: Actions that involve the construction of structures to reduce the impact of a hazard. Includes dams, setback levees, floodwalls, retaining walls, and safe rooms.