



Annex N Placer County Flood Control and Water Conservation District

N.1 Introduction

This Annex details the hazard mitigation planning elements specific to the Placer County Flood Control and Water Conservation District (PCFCWCD), a participating jurisdiction to the Placer County Local Hazard Mitigation Plan (LHMP) Update. This Annex is not intended to be a standalone document, but appends to and supplements the information contained in the base plan document. As such, all sections of the base plan, including the planning process and other procedural requirements apply to and were met by the District. This Annex provides additional information specific to the PCFCWCD, with a focus on providing additional details on the risk assessment and mitigation strategy for this special district.

N.2 Planning Process

As described above, the District followed the planning process detailed in Section 3 of the base plan. In addition to providing representation on the Placer County Hazard Mitigation Planning Committee (HMPC), the District formulated their own internal planning team to support the broader planning process requirements. Internal planning participants, their positions, and how they participated in the planning process are shown in Table N-1. Additional details on plan participation and City representatives are included in Appendix A.

Table N-1 District Planning Team

Name	Position/Title	How Participated
Brian Keating	District Manager	Attended meetings. Provided logo and hazard ID table. Provided update to previous mitigation actions. Provided new mitigation actions. Provided input on assets at risk. Provided updates to vulnerability sections of the Plan Update. Reviewed and updated 2010 Annex. Reviewed and provided input on flood section of base plan.
Ken Grehm	Executive Director	Provided overall management review and input.

Coordination with other community planning efforts is paramount to the successful implementation of this plan. This Section provides information on how the District integrated the previously-approved 2010 Plan into existing planning mechanisms and programs. Specifically, the District incorporated into or implemented the 2010 LHMP through other plans and programs shown in Table N-2.

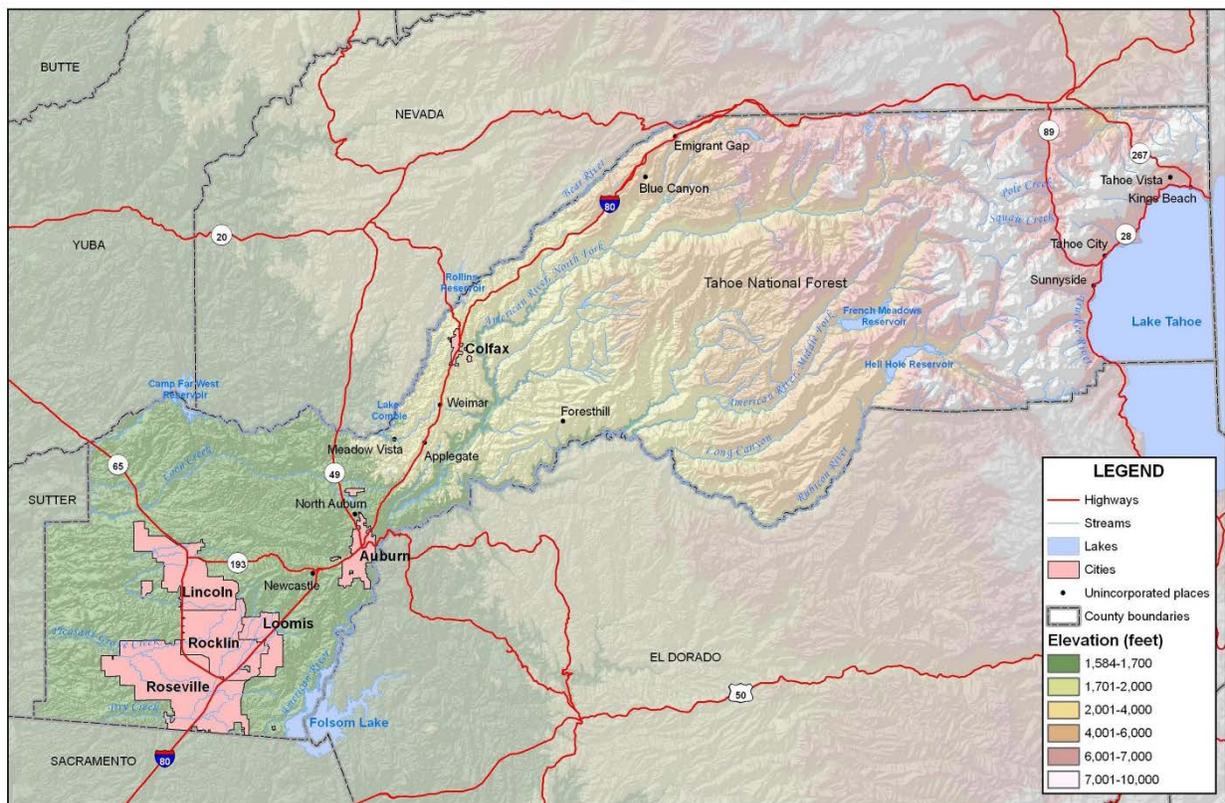
Table N-2 2010 LHMP Incorporation

Jurisdiction	Planning Mechanism 2010 LHMP Was Incorporated/Implemented In. Details?
PCFCWCD	District's Annual Short-term and Long-Term (5-year) Work Plans
PCFCWCD	2011 Updated Dry Creek Watershed Flood Control Plan
PCFCWCD	Annual Updates to District's Flood Response Handbook

N.3 District Profile

The District service area is illustrated in Figure N-1.

Figure N-1 Placer County Flood Control and Water Conservation District Service Area



Source: PCFCWCD

N.3.1. District Information and Background

The Placer County Flood Control and Water Conservation District was established in 1984 by the State Legislature as a Special District, separate from County government, to address flood control issues arising with growth. District boundaries are the same as Placer County boundaries.

The primary purpose of the District is to protect lives and property from the effects of flooding by comprehensive, coordinated flood prevention planning. The District uses consistent standards to evaluate

flood risk, and implements flood control measures such as requiring new development to construct detention basins and operation and management of a flood warning system.

The District:

- Implements regional flood control projects;
- Develops and implements master plans for selected watersheds in the County;
- Provides technical planning, support and information during times of flood and drought for the cities, the County, and the development community;
- Operates and maintains the County flood warning system;
- Reviews proposed development projects to see they meet District standards;
- Develops hydrologic and hydraulic models for County watersheds; and
- Provides technical support for Office of Emergency Services activities.

N.4 Hazard Identification and Summary

The District's planning team identified the hazards that affect the District and summarized their frequency of occurrence, spatial extent, potential magnitude, and significance specific to the District (see Table N-3).

Table N-3 Placer County Flood and Water Conservation District Hazard Identification Table

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Agricultural Hazards				
Avalanche				
Dam Failure	Significant	Unlikely	Critical	High
Drought and Water Shortage	Significant	Occasional	Critical	Medium
Earthquake				
Flood: 100/500 year	Significant	Occasional	Critical	High
Flood: Localized Stormwater Flooding	Significant	Likely	Limited	Medium
Landslides and Debris Flows				
Levee Failure	Limited	Unlikely	Negligible	Low
Seiche (Lake Tsunami)				
Severe Weather: Extreme Heat				
Severe Weather: Freeze and Snow				
Severe Weather: Fog and Freezing Fog				
Severe Weather: Heavy Rains and Storms (Thunderstorms/Hail, Lightning/Wind/Tornadoes)	Extensive	Likely	Critical	Medium
Soil Bank Erosion				
Subsidence				
Wildfire	Extensive	Highly Likely	Limited	Medium
Hazardous Materials Transport				
Geographic Extent Limited: Less than 10% of planning area Significant: 10-50% of planning area Extensive: 50-100% of planning area		Magnitude/Severity Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid		
Probability of Future Occurrences Highly Likely: Near 100% chance of occurrence in next year, or happens every year. Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less. Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years. Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.		Significance Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact		

Impacts of past events and vulnerability to specific hazards are discussed below (see Section 4.1 Hazard Identification for more detailed information about these hazards and their impacts on Placer County). The District has also created, and annually updates, its own Flood Response Handbook (FRH). The FRH

addresses emergency communications procedures, emergency material supplies and equipment availability, technical resources and data to help predict flooding events, and State level emergency operations manuals. The FRH also contains countywide GIS based Flood Hazard Awareness Mapping, including areas of known flooding, locations of critical facilities such as police and fire stations, government centers, schools, nursing homes, and hospitals. Roads subject to flooding closures and preferred evacuation routes are also identified. This mapping is also posted at the County’s Emergency Operations Center (EOC) and distributed to our member agencies.

N.5 Vulnerability Assessment

The intent of this section is to assess the District’s vulnerability separate from that of the planning area as a whole, which has already been assessed in Section 4.3 Vulnerability Assessment in the main plan. This vulnerability assessment analyzes the population, property, and other assets at risk to hazards ranked of medium or high significance that may vary from other parts of the planning area. For more information about how hazards affect the County as a whole, see Chapter 4 Risk Assessment in the main plan.

N.5.1. Assets at Risk

This section considers the District’s assets at risk, specifically critical facilities and infrastructure, natural resources, and growth and development trends. Table N-4 lists particular critical facilities and other community assets identified by the District’s planning team as important to protect in the event of a disaster.

Table N-4 Placer County Flood Control and Water Conservation District s Critical Facilities, Infrastructure, and Other District Assets

Name of Asset	Facility Type	Address	Replacement Value	Hazard Info
Stream and rain gages	ALERT type gage (16 gages)	–	\$12,000 each	Theft, vandalism, damage due to flooding
Miners Ravine Off-Channel Detention Basin Facility and Dam	Regional Flood Control Facility	7500 Sierra College Boulevard Roseville, California	\$4.8 million	Damages due to flooding or dam failure

Source: PCFWCD

Natural Resources

The geographical boundaries of the Placer County Flood Control and Water Conservation District are the same as those for the Placer County Planning Area. As such, the Natural Resources for District boundaries are the same as those for the entire planning area included in Section 4 of the main plan.

Growth and Development Trends

The geographical boundaries of the Placer County Flood Control and Water Conservation District are the same as those for the Placer County Planning Area. As such, the Growth and Development Trends for

District boundaries are the same as those for the entire planning area included in Section 4 of the main plan.

Development since 2010 Plan

The District has seen the same development as the County, as shown in Section 4.3.1 of the base plan.

N.5.2. Estimating Potential Losses

This section provides the vulnerability assessment, including any quantifiable loss estimates, for those hazards identified above in Table N-3 as high or medium significance hazards. Impacts of past events and vulnerability of the District to specific hazards are further discussed below (see Section 4.1 Hazard Identification for more detailed information about these hazards and their impacts on the Placer County planning area). Methodologies for calculating loss estimates are the same as those described in Section 4.3 of the base plan. In general, the most vulnerable structures are those located within the floodplain, in the wildland urban interface, other priority hazard areas, unreinforced masonry buildings, and buildings built prior to the introduction of modern building codes.

An estimate of the vulnerability of the District to each identified hazard, in addition to the estimate of risk of future occurrence, is provided in each of the hazard-specific sections that follow. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High**—Very widespread with catastrophic impact.

With the geographical boundaries of the Placer County Flood Control and Water Conservation District being the same as those for the Placer County Planning Area, the risk and vulnerability of the agency to identified natural hazards are similar to those presented in Section 4 Risk Assessment portion of the main plan. The sections that follow highlight those hazards of greatest concern to the agency and identify those District assets most vulnerable to these hazards.

Dam Failure

Likelihood of Future Occurrence–Unlikely

Vulnerability–High

A dam failure can range from a small uncontrolled release to a catastrophic failure, caused by prolonged rainfall and flooding. The primary danger associated with dam failure is the high velocity flooding of those properties downstream of the dam. Dam failure flooding varies by area depending on which dam fails and the nature and extent of the dam failure and associated flooding.

Vulnerability to dam failures is generally confined to the areas subject to inundation downstream of the facility. Based on analysis provided in the Placer County General Plan Background Report, only four dams within Placer County have the potential to affect more than 100 persons. Again, with the District's boundaries being the same as for the Planning Area, Section 4 of the main plan describes the risk and vulnerability of the District to dam failure.

Those agency assets located within flood inundation areas are the most vulnerable to extensive flooding caused by a dam failure. These include the District's ALERT system of stream level and rain gages listed in Table N-4, as well as the land improvements associated with the District's Miners Ravine Off-Channel Detention Basin Facility and dam located at 7500 Sierra College Boulevard in Roseville, California. A specific dam failure analysis prepared for the State Division of Safety of Dams exists for the District's Miners Ravine Off-Channel Detention Basin Facility and dam as prepared by RBF Consulting in October 2004.

Earthquake

Likelihood of Future Occurrence–Unlikely

Vulnerability–Medium

As indicated on the Earthquake Shaking Map in Section 4.2.10 of the main plan, the shaking potential is greatest in the eastern portion of the County, but the western portion of the County is also at risk, primarily due to the location of development and population being concentrated in the middle to western portion of the County. The District's risk and vulnerability from earthquake is set forth in Section 4.2.10 of the main plan that includes the earthquake analysis for the entire Placer County Planning Area. Due to their location, year and type of construction, those agency assets most vulnerable to an earthquake include the assets listed in Table N-4.

Flood: 100/500 year and Localized Flooding

Likelihood of Future Occurrence–Occasional/Likely

Vulnerability–High/Medium

Flooding due to heavy rains and snow runoff has been a historical problem in the Placer County Planning Area. Abundant snowfall in the mountains combined with rain and steep terrain can mean rapid runoff and flooding in the mountainous eastern section of the County. Of particular concern in this area of the County are rain-on-snow type events producing high runoff volumes. In the more heavily populated

western portion of the County, flooding is often the result of heavy rains over lower permeability soils found within the relatively large Dry Creek and Cross Canal watersheds. Many of the small creeks within these watersheds respond quickly to heavy rains in the winter season producing peak flood flows within relatively short time frames. The historical practice of development within or in close proximity to floodplains has resulted in frequent and repeated flood losses in specific areas.

Significant flooding events resulting in federal disaster declarations for Placer County occurred in 1986, 1995, and 1997, with the most substantial damages occurring within the Cross Canal, Dry Creek, and Truckee River watersheds. The primary impacts from flooding within the District boundaries include damage to roads, utilities, bridges; and flooding of homes, businesses and critical facilities. Road closures create difficulties in providing emergency services to areas cut off by flooding and limit the area's ability to evacuate. With respect to District-owned assets, areas subject to stormwater flooding are the biggest concern. District assets at the greatest risk include those listed in Table N-4.

Severe Weather: Heavy Rains and Storms (Thunderstorms/Hail, Lightning/Wind/Tornadoes)

Likelihood of Future Occurrence–Likely
Vulnerability–Medium

Heavy rain, thunderstorm activity, and hail usually occur on an annual basis in the Placer County Planning Area. Often during these events, the local stormwater drainage system can be impacted and landslides and localized erosion can occur. Recent significant events include the heavy rains occurring during December 2005 into January 2006. An estimated 2-year rain event in January 2008 resulted in approximately \$14,000 worth of hillside erosion and drainage repairs at the District's Miners Ravine Off-Channel Detention Basin Facility. No other severe weather damages have occurred to date that significantly impacted District assets.

Wildfire

Likelihood of Future Occurrence–Highly Likely
Vulnerability–Medium

Over one hundred years of aggressive fire suppression under the national fire suppression policy has rendered wild lands severely overgrown. Much of the private land in the Placer County Planning Area is in the wildland urban interface with increasing residential development. Those Agency assets at greatest risk to wildland fire include the ALERT system of stream and rain gages listed in Table N-4.

N.6 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into four sections: regulatory mitigation capabilities; administrative and technical mitigation capabilities; fiscal mitigation capabilities; and mitigation education, outreach, and partnerships.

N.6.1. Regulatory Mitigation Capabilities

Table N-5 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the District.

Table N-5 Placer County Flood Control and Water Conservation District's Regulatory Mitigation Capabilities

Plans	Y/N Year	Does the plan/program address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan		
Capital Improvements Plan	Y	Annual Short-term and 5-year Long-Term Work Plans; used to implement mitigation actions
Economic Development Plan		
Local Emergency Operations Plan	Y	Annual updates to District's Flood Response Handbook; not used to implement mitigation actions
Continuity of Operations Plan	Y	Annual District Timeline of Operations
Transportation Plan		
Stormwater Management Plan/Program	Y, 1990	District's Stormwater Management Manual (SWMM) and Amendments
Engineering Studies for Streams	Y, Varies	2011 Updated Dry Creek Watshed Flood Control Plan, 1992 Auburn Bowman Community Plan Hydrology Study, 1994 Placer/Sutter County Joint Study Auburn Ravine, Coon and Pleasant Grove Creeks
Community Wildfire Protection Plan	N/A	
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)		
Building Code, Permitting, and Inspections	Y/N	Are codes adequately enforced?
Building Code	N/A	Version/Year:
Building Code Effectiveness Grading Schedule (BCEGS) Score	N/A	Score:
Fire department ISO rating:	N/A	Rating:
Site plan review requirements	N/A	
Land Use Planning and Ordinances	Y/N	Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	N/A	See Placer County Requirements
Subdivision ordinance	N/A	See Placer County Requirements
Floodplain ordinance	N/A	See Placer County Requirements

Natural hazard specific ordinance (stormwater, steep slope, wildfire)	N/A	See Placer County Requirements
Flood insurance rate maps	N/A	See Placer County Requirements
Elevation Certificates	N/A	See Placer County Requirements
Acquisition of land for open space and public recreation uses	N/A	See Placer County Requirements
Erosion or sediment control program	N/A	See Placer County Requirements
Other		
How can these capabilities be expanded and improved to reduce risk?		

As indicated above, the District has several programs, plans, policies, codes and ordinances in place. These include regional watershed wide flood control plans and a county-wide stormwater management manual. The District, working cooperatively with Placer County and other local agencies, developed three major flood control plans in the early 1990's which cover a majority of the watersheds within western Placer County. In addition to the Plans listed below the District maintains and references a number of detailed local drainage studies from its library.

Stormwater Management Manual

For policy, guidelines, specific design criteria for the development and management of natural resources, drainage facilities, and infrastructure for stormwater management please download the current version of the Placer County Flood Control & Water Conservation District Stormwater Management Manual (SWMM) (a link to our SWMM is on the District's website page at www.placer.ca.gov). There is currently a planned update to the SWMM to meet Senate Bill 5 and Urban Level of Flood Protection (ULOP) requirements, amongst other necessary updates.

Dry Creek Watershed Flood Control Plan

The purpose of the 1992 Dry Creek Watershed Flood Control Plan is to provide the District and other governmental agencies in both Placer and Sacramento Counties with the information and policies necessary to manage flood waters within the Dry Creek Watershed, which includes Miners Ravine, Linda Creek, Secret Ravine, Antelope Creek, Cirby Creek, and Dry Creek. The Plan evaluates existing flooding problems and identifies flood management options as well as a funding mechanism to achieve Plan recommendations. The plan was first drafted in 1992 and updated for re-publication in 2011. This plan may be found on the District's website.

Placer/Sutter County Joint Flood Study Auburn Ravine, Coon and Pleasant Grove Creeks (Cross Canal Watershed Flood Control Plan)

The purpose of the 1994 Cross Canal Watershed Flood Control Plan is to provide the District and other governmental agencies in both Placer and Sacramento Counties with the information and policies necessary to manage flood waters within the Cross Canal Watershed, which includes Pleasant Grove,

Auburn Ravine, Markham Ravine, and Coon Creek. The Plan evaluates existing flooding problems and identifies flood management options as well as a funding mechanism to achieve Plan recommendations.

Auburn/Bowman Community Plan Hydrology Study

The purpose of the 1992 Auburn Bowman Community Plan Hydrology Study is to provide the District and other governmental agencies in Placer County with the information and policies necessary to manage flood waters within the study area, which includes Auburn Ravine, Mormon Ravine, Dutch Ravine, and many other tributaries. The Plan evaluates existing flooding problems and identifies flood management options as well as a funding mechanism to achieve Plan recommendations.

Countywide Grading Ordinance, 1988:

A countywide grading ordinance was completed in 1988. It has since been adopted by the County and cities and last updated in 2000 as Article 15.44 of the County Code.

Placer County Flood Damage Prevention Regulations:

Placer County has adopted Flood Damage Prevention Regulations, Article 15.52 of the County Code, which have as its purpose “to promote public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas.” The regulations provide specific construction and development standards for flood hazard reduction in areas of special flood hazard.

Flood Response Handbook with Flood Hazard Awareness Maps

The District, in conjunction with its member agencies, has developed a Flood Response Handbook (FRH) that includes Flood Hazard Awareness Maps of the unincorporated area and all cities. The FRH details roles, responsibilities, and processes for responding to a flood event.

Flood Hazard Awareness Maps (FHAM) have been created by the District for the purposes of identifying areas of the western County where flood hazards from local creeks are known to exist. The maps delineate the established FEMA 100-year and 500-year floodplains (where established) including a 250 foot setback limit from the 100-year floodplain. The setback limit was selected to assist emergency responders and planners in identifying local flood hazard areas, but is not a regulatory limit. Critical emergency response facilities including police and fire stations are shown as are other facilities which may be useful during a flooding event including hospitals, schools, churches and miscellaneous public facilities. Street crossings potentially impacted by flooding are also highlighted in red and the locations of sand bags for flood fighting purposes are also shown. The District intends to update these maps periodically as new information becomes available

Placer County Flood Prone Map

The District and its member agencies have developed a database and GIS mapping of both residential and commercial structures that are subject to damage from repeat flooding events. The database on these properties has been developed over the years beginning with the 1986 flood event and is helpful in identifying these properties and general flood hazard areas. The database includes information (where

available and recorded) on high water, finished floor elevations, previous flooding impact, and whether or not the structure had been elevated or not through a FEMA sponsored HMGP grant program. A GIS based mapping of these flood prone properties has been created and is color coded to indicate structures that have already been elevated versus those that have not. The mapping is useful in identifying flood hazard areas where it can be expected that most of the flood fighting and emergency response efforts will be focused. It is also useful in planning future flood mitigation strategies, elevation projects and regional flood control projects.

Flood Response Handbook

The District has also created, and annually updates its own Flood Response Handbook (FRH). The FRH addresses emergency communication procedures, emergency material supplies and equipment availability, technical resources, and data to help predict flooding events, and State level emergency operations manuals. The FRH also contains countywide GIS based Flood Hazard Awareness Mapping including areas of known flooding, locations of critical facilities such as police and fire stations, government centers, schools, nursing homes, and hospitals. Roads subject to flooding closures and preferred evacuation routes are also identified. This mapping is also posted at the County’s Emergency Operations Center (EOC) and distributed to our member agencies.

N.6.2. Administrative/Technical Mitigation Capabilities

The District is governed by a nine-person board of directors. Members include a representative from each of the six incorporated cities in Placer County, two representatives from the Board of Supervisors and one member-at-large appointed by the Board of Supervisors.

The Cities, the County and the District have adopted a formal coordination agreement to identify responsibilities. There are two District Advisory Committees. The Policy Advisory Committee (PAC) has seven voting members - the six city managers of the incorporated cities and the County Executive Officer. The PAC provides guidance on policy and program issues that affect all jurisdictions. The Technical Advisory Committee (TAC) is composed of representatives of Placer County, incorporated cities, Placer County Resource Conservation District, Placer County Water Agency, Sacramento County Water Agency, Nevada Irrigation District, Sutter County Flood Control and Water Conservation District, and the Reclamation District 1001. The TAC is relied on for technical analysis and interpretation of ideas, policies, and programs.

The State legislation creating the District allows Placer County employees to act as District employees. There are three District staff members: the District Manager; the Development Coordinator; and the District Secretary. The Placer County Director of Public Works and Facilities serves as the Executive Director of the District. Table N-6 identifies the personnel responsible for activities related to mitigation and loss prevention in the District.

Table N-6 Placer County Flood Control and Water Conservation District’s Administrative and Technical Mitigation Capabilities

Administration	Describe capability Y/N Is coordination effective?
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Planning Commission		
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Y	District staff manage the County's annual stream channel maintenance program
Mutual aid agreements	N/A	See Placer County Requirements
Other	Y	District Board of Directors and Technical Advisory Committee
Staff	Y/N FT/PT	Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?
Chief Building Official		Utilize Resources of Placer County
Floodplain Administrator		Utilize Resources of Placer County
Emergency Manager		Utilize Resources of Placer County
Community Planner		Utilize Resources of Placer County
Civil Engineer		Utilize Resources of Placer County
GIS Coordinator		Utilize Resources of Placer County
Other		
Technical	Y/N	Describe capability Has capability been used to assess/mitigate risk in the past?
Warning systems/services (Reverse 911, outdoor warning signals)	Y	Everbridge flood warning system, ALERT system of precipitation and stream level gages
Hazard data and information	Y	District's Flood Response Handbook – Updated Annually
Grant writing	Y	District has received FEMA CTP grants, State DWR Prop 84 IRWM grants; DWR Flood Corridor Protection Program grant; DWR USRP grant
Hazus analysis	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		
Enlarge and update system of ALERT gages; Pursue flood inundation forecasting software systems		

N.6.3. Fiscal Mitigation Capabilities

Table N-7 identifies financial tools or resources that the District could potentially use to help fund mitigation activities.

Table N-7 Placer County Flood Control and Water Conservation District's Fiscal Mitigation Capabilities

Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
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Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Y	District's General Fund
Authority to levy taxes for specific purposes	N	
Fees for water, sewer, gas, or electric services		
Impact fees for new development	Y	Dry Creek Trust Fund; used for two regional flood control projects within the watershed
Storm water utility fee	N	
Incur debt through general obligation bonds and/or special tax bonds	N	
Incur debt through private activities	N	
Community Development Block Grant	N	
Other federal funding programs	Y	FEMA CTP program for floodplain mapping studies
State funding programs	Y	State DWR Prop 84 IRWM grants; DWR Flood Corridor Protection Program grant; DWR USRP grant
Other		
How can these capabilities be expanded and improved to reduce risk?		
Help develop new impact fees on new development within the Cross Canal Watershed area of the County		

N.6.4. Mitigation Outreach and Partnerships

Table N-8 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information. More information can be found below the table.

Table N-8 Placer County Flood Control and Water Conservation District's Mitigation Education, Outreach, and Partnerships

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Y	American Basin Watershed Council; District staff attend monthly meetings
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)		Utilize Resource of Placer County
Natural disaster or safety related school programs		Utilize Resources of Placer County

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
StormReady certification	N	
Firewise Communities certification	N/A	
Public-private partnership initiatives addressing disaster-related issues	Y	FEMA Flood Mitigation Assistance Program (FMA) to assist with residential and commercial building elevation projects
Other		
How can these capabilities be expanded and improved to reduce risk?		
Additional public outreach and educational efforts		

The District boundaries are the boundaries of Placer County. District programs are accomplished through a cooperative effort involving Placer County and all of the municipalities in the County which include: the City of Auburn, City of Colfax, City of Lincoln, Town of Loomis, City of Rocklin, and City of Roseville. In addition, cooperative agreements have been established with Sacramento and Sutter Counties for addressing issues in commonly shared watersheds, and other governmental agencies, such as Reclamation District 1001, the Nevada Irrigation District, and the Placer County Water Agency who also participate in District programs.

The cities and County formally adopted a Coordination Agreement in February 1986, which was also reaffirmed with minor changes in 1997. The agreement identifies mutual responsibilities and established the Technical Advisory Committee and the Policy Advisory Committee as forums for formulating standards, policies, and programs to be recommended to the Board of Directors.

N.6.5. Other Mitigation Efforts

The District is involved in a variety of mitigation activities including public outreach and project activities. These mitigation activities include:

- Provides information and support to the public on flood and drought related issues
- Collects and interprets data from a network of stream and precipitation gages operated by the District and others
- Collects data and coordinates with the National Weather Service
- Performs annual stream maintenance on the Dry Creek Watershed
- Provides technical support to the cities, county, and private sector by reviewing plans for public and private lands and for policy issues in flood control, drainage, and related areas
- Develops and implement master plans for key watersheds
- Supports regional floodplain management, including coordination with the NFIP
- Participates on special flood control and drainage projects.

Specific accomplishments of the District since the 2005 LHMP include:

2004: Land acquisition is completed for the 26 acre Miners Ravine off-channel basin project in Roseville. Major consulting contract for the Miners Ravine off-channel basin facility including planning, permitting, design, and construction oversight is awarded and begun. Land acquisition negotiations begin for proposed Secret Ravine floodplain restoration site in Rocklin. A study of remaining alternative regional detention sites in the Dry Creek Watershed is completed with no viable sites found. ALERT system software upgrades and three new gage installations are completed. An electronic version of the District's Stormwater Management Manual (SWMM) as well as Board meeting agenda/minutes are posted to the web. Biennial audit is completed. Work on development of the County's Local Hazard Mitigation Plan per the Disaster Mitigation Act of 2000 is completed.

2005: The District is awarded \$300,000 from the State Department of Water Resources under the Urban Streams Restoration Program and the District procures a consultant to perform planning, design, permitting, and construction oversight of the Secret Ravine floodplain restoration project. A new five-year MOU with the Department of Fish and Game is finalized for continued Dry Creek watershed stream channel maintenance activities. Planning and design of the Miners Ravine off-channel detention basin project reaches a 95 percent level of completion. An update of the District's Flood Response Handbook is completed and distributed.

2006: District staff respond to the New Year's Day flooding event by helping activate the County's emergency operation center and by providing technical assistance as necessary. The Board approves all CEQA related documents and construction bid documents for the Miners Ravine Off-Channel Detention Basin Facility. Construction bids are received, all necessary permits are obtained, a construction contract is awarded, and construction commences on the Miners Ravine Facility in August. Construction reaches an approximate 70 percent completion level prior to winterization of the Miners Ravine site in early November. Planning and design of the Secret Ravine Floodplain restoration project begins and reaches an approximate 30 percent completion level by the end of the year. The District's ALERT flood warning software system is upgraded to the web-based Conrail system and plans are approved to install up to seven new gages.

2007: Construction of the Miners Ravine Off-Channel Detention Basin Facility is completed and the start of long-term operations and maintenance activities begins. A five year long vegetation and debris maintenance contract is executed with the California Conservation Corps (CCC) for the Miners Facility. The Secret Ravine Floodplain Restoration Project is placed on hold and an existing grant with the Department of Water Resources (DWR) is terminated due to easement acquisition difficulties and limited benefits of the proposed project. A \$2.8 million grant application for the Scilacci Farms Flood and Conservation Easement Project on Coon Creek is submitted to the DWR Flood Protection Corridor Program. Six new ALERT stream level and precipitation gages are purchased, installed and made operational within the District's ALERT system of gages. A professional services agreement is awarded to complete an update to the 1992 dated Dry Creek Watershed Flood Control Plan.

2008: Significant progress is made towards completing the update to the 1992 dated Dry Creek Watershed Flood Control Plan. The District's Miners Ravine Off-Channel Detention Basin Facility wins an award for engineering excellence and long term operations, maintenance, and monitoring activities continue at the facility. The Scilacci Farms Flood and Conservation Easement project is submitted to the

State of California Department of Conservation grant program for consideration. FEMA coordinates with District to release results of 60 miles of creek study revisions and digitized floodplain mapping.

2010: The updated Dry Creek Watershed Flood Control Plan is released for public and agency review and presentations to our Board and the public are made. Coordinated with PCWA to submit a joint grant application under the State DWR Prop 84 IRWM program for the Antelope Creek Water Efficiency and Flood Control Project. Adopted the 2010 update to Placer County's Local Hazard Mitigation Plan. Coordinated with FEMA and our member agencies in the release and review of the Digital Flood Insurance Rate Maps (DFIRMS). Approved billing rates and methodology for reimbursement of all District staff time spent on development review submittals. Completed job classification studies of the District staff positions.

2011: The District receives a \$741,000 grant award under the State DWR Prop 84 IRWM program to assist with Phase 1 of the Antelope Creek Water Efficiency and Flood Control project and procures professional consulting services to assist with the project. The District Board accepts the 2011 Update to the Dry Creek Watershed Flood Control Plan as final and directs staff to move forward with the required financial nexus study and compliance under CEQA. The District receives a \$300,000 federal grant award through a FEMA Cooperating Technical Partnership and begins detailed floodplain mapping studies of six creeks in Placer County. Major upgrades to the District's website are completed. The District updated the DCWS plan. It was finalized in 2011.

2012: The District begins work on the preliminary design, permitting and flood easements for the regional Antelope Creek Flood Control project. Considerable progress is made towards completion of a filing under CEQA and financial nexus studies for the 2011 Update to the Dry Creek Watershed Flood Control Plan. The District and its consultant make considerable progress towards completion of the FEMA Cooperating Technical Partnership project including detailed floodplain mapping studies of six creeks in Placer County. FEMA completes additional LIDAR topographic surveys for remaining portions of County. Staff provide information to member agencies regarding local legislative impacts of newly adopted State Department of Water Resources Central Valley Flood Protection Plan and Senate Bill 5 requirements.

2013: CEQA is completed for the Antelope Creek Flood Control Project and the project planning and design reaches a 65% level of completion. The City of Roseville and Placer County enter into a MOU to provide an additional \$400,000 of funding for this project. A major land acquisition for a flowage easement across private property is also executed for this project. The Board approves of the financial nexus study and revised fee structure recommended from the 2011 Updated Dry Creek Watershed Flood Control Plan. A second Cooperating Technical Partners agreement is entered into with FEMA wherein the District will provide specific duties during the public outreach phase and release of final floodplain mapping of six creeks in Placer County.

2014: Planning and design activities for the Antelope Creek Flood Control Project reach a 100% level of completion in advance of the start of construction anticipated in summer 2015. Required agency permit applications are submitted and additional required flowage easements on both private and publicly held lands are acquired. A grant application is prepared and submitted under the DWR Urban Streams Restoration Program for additional funding necessary to complete the construction of this project. All

hydrologic modeling work on the first CTP agreement with FEMA is completed and preliminary floodplain mapping activities begin. A multi-agency Flood Emergency Response planning project gets underway including flood forecasting, flood inundation mapping and emergency response plan updates.

2015: Final permitting and land acquisition activities associated with the Antelope Creek Flood Control Project continue but have delayed the start of project construction until June 2016. FEMA produces preliminary FIRM maps for six new floodplain mapping studies of creeks in western and eastern Placer County. Work on the multi-agency Flood Emergency Response planning project continues including flood forecasting, flood inundation mapping and emergency response plan updates.

N.7 Mitigation Strategy

N.7.1. Mitigation Goals and Objectives

The District adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

N.7.2. Mitigation Actions

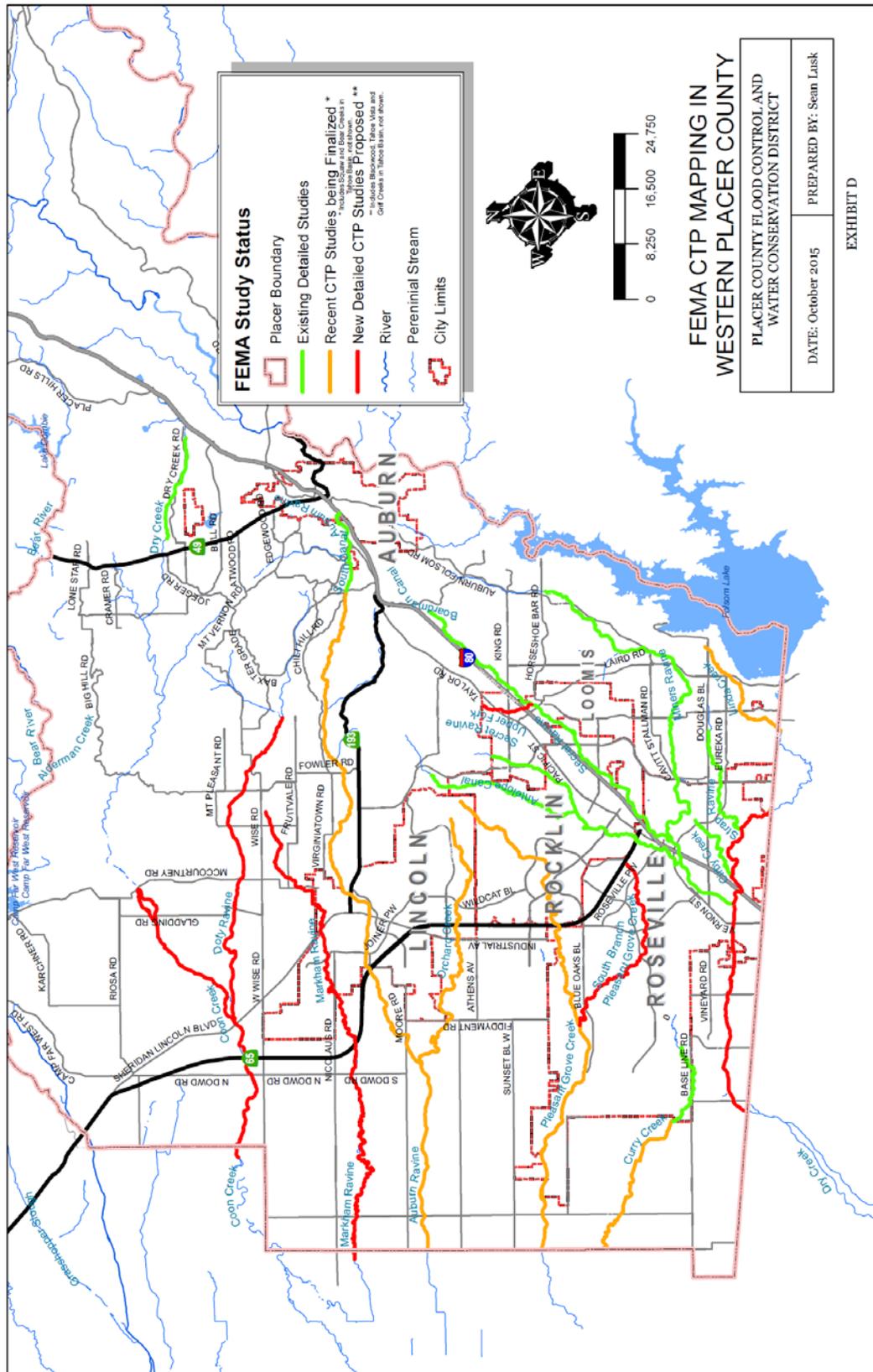
The planning team for the District identified and prioritized the following mitigation action based on the risk assessment. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, partners, potential funding, estimated cost, and schedule are included.

Action 1. FEMA CTP DFIRM Mapping Study

Hazard Addressed: Flooding

Issue/Background Statement: The Placer County Flood Control and Water Conservation District (District), coordinating closely with local member agencies, has prepared a list of additional study areas within Placer County recommended to be considered for the next round of Risk Map (CTP No.3) floodplain mapping studies. Six areas were identified as priority stream limits, with consideration given to communities at flood risk, population growth, new development, peak flow increases, recent flooding history and changes to special flood hazard areas. A significant portion (over 30 miles) of the remaining un-mapped Zone A areas within the County was included in the request. The total length of proposed new study area, including all existing A and AE zone reaches amounts to approximately 49.2 miles. The map provided below depicts the FEMA FIRM mapping status and proposed new mapping/study reaches for Placer County. This effort would provide hydrologic modeling and data sufficient for FEMA's contractor to utilize this information to produce future DFIRM mapping. The proposed new mapping study areas are shown in Figure N-2.

Figure N-2 FEMA CTP Mapping



Additional and more accurate DFIRM mapping of new study areas will enable the County to better manage their floodplains and reduce flood risk.

Other Alternatives: No action; maintain current mapping

Existing Planning Mechanisms through which Action Will be Implemented: FIS/DFIRM

Responsible Office: Placer County Flood Control District, FEMA

Priority (H, M, L): High

Cost Estimate: As a Cooperating Technical Partner, the District would be able to cost-share by providing in-kind professional labor services, existing hydrologic models, topographic field data (LIDAR), and other background information on the proposed study areas as has been done in the past.

Benefits (Losses Avoided): Increased understanding of flood risk in the County. Better mapping to prevent citizens from building in the floodplain and reducing resulting NFIP flood claims.

Potential Funding: FEMA CTP, District General Fund

Schedule: As soon as funding is available and FEMA is ready to start the process

Action 2. Pursue Regional Detention and Retention Projects within the Dry Creek and Cross Canal Watersheds

Hazard Addressed: Flooding

Issue/Background Statement: Historically, flooding in the Dry Creek and Cross Canal watersheds has been a major concern. Placer County is not only concerned with existing flooding problems, but with future problems resulting from increased growth and development in the area. Specifically, this action recommends projects be pursued for regional detention and retention within the Dry Creek and Cross Canal watersheds. Implementation of the regional Antelope Creek Flood Control Project is currently the highest regional priority project for the District. This site was identified within the updated 2011 Dry Creek Watershed Flood Control Plan prepared for the District. Implementation of regional detention and retention projects will reduce future flood-related losses. It is recommended the District continue to attempt to partner with Placer County regarding a possible regional retention project on the Scilacci Farms project in the Cross Canal watershed, along Coon Creek.

Other Alternatives: No action.

Existing Planning Mechanisms through which Action Will be Implemented:

Responsible Office: Placer County Flood Control and Water Conservation District, in conjunction with its member agencies.

Priority (H, M, L): High

Cost Estimate: \$20 million +

Benefits (Losses Avoided): Life safety; reduction in property loss.

Potential Funding: HGMP, PDM, Dry Creek Trust Fund, other grants (federal, state).

Schedule: Within five years.

Action 3. Update the Flood Control Plan for the Cross Canal Watershed

Hazard Addressed: Flooding

Issue/Background Statement: The flood control plan for the Cross Canal watersheds is outdated having been performed in 1993. Rapid urbanization within this watershed has occurred and is projected to continue with significant impacts to creeks within the watershed due to increasing amounts of impervious surfaces and altered land uses. Updated hydrology and hydraulic models are now available for most creeks within this watershed and can be referenced for both flood control and land use planning purposes.

Other Alternatives: Continue to review urbanization projects with outdated models.

Existing Planning Mechanisms through which Action Will be Implemented:

Responsible Office: Placer County Flood Control and Water Conservation District and its member agencies.

Priority (H, M, L): High

Cost Estimate: \$500,000

Benefits (Losses Avoided): Improved flood control and land use planning capabilities throughout western Placer County.

Potential Funding: Placer County Flood Control District reserves, PDM, State Planning Grants

Schedule: Immediate and ongoing.

Action 4. Upgrade Flood Warning System to ALERT 2, Add Additional Gage Locations and Flood Forecasting Capabilities

Hazard Addressed: Flooding

Issue/Background Statement: The Placer County Flood Control District, in conjunction with OES, has installed an ALERT flood warning system in the County consisting of 16 precipitation and stream level gages. The regional system, including ALERT gages owned and operated by the City of Roseville and Sacramento County, consists of approximately 28 rain gages and 22 stream gages. Additionally, the District monitors several rain and stream gages in the Truckee River Watershed. These ALERT gages provide the District with real-time rainfall amounts and stream level data. An upgraded system to include

ALERT 2 type improvements, as well as real time flood warning gages and flood forecasting capabilities for flood-prone areas would increase the warning time for implementation of effective mitigation measures and necessary evacuations. The ALERT 2 type upgrades are being funded by the State DWR FERP program over the next several years. ALERT 2 improvements would include upgrades to Base stations and Site ALERT2 upgrades.

Other Alternatives: No action – continue with current plan

Existing Planning Mechanisms through which Action Will be Implemented:

Responsible Office: Placer County Flood Control District and Placer County Office of Emergency Services

Priority (H, M, L): Medium

Cost Estimate: \$100,000

Benefits (Losses Avoided): Life-safety, reduction in property loss, improved warning, increased lead time.

Potential Funding: PDM, HGMP, District reserves.

Schedule: Within two years