



Meeting Agenda:

Local Hazard Mitigation Plan (LHMP) 2016-17 Update

Planning Committee Meeting #4

Wednesday, February 22nd, 2017, 4:30 p.m. – 6:30 p.m.

▪ **Part I (60 MINS)**

- Goals and Objectives Review (See notes below)
- Review Capabilities Assessment
- Mitigation Alternative Review
- Draft Mitigation Action Review
- Mitigation Actions Prioritization

NOTES

ALL HAZARD GOAL: Significantly reduce life loss and injuries resulting from natural hazards. (California Multi-Hazard Mitigation Plan, 2013)

ALL HAZARD OBJECTIVE 1: Continuously improve hazard and vulnerability assessments.

ALL HAZARD OBJECTIVE 2: Evaluate and improve ability to alert and warn residents of natural hazard risk.

ALL HAZARD OBJECTIVE 3: Support mitigation planning in all City Operations.

ALL HAZARD OBJECTIVE 4: Explore ways to increase the City's capability to provide mitigation opportunities for residents.





1. EARTHQUAKE

Description	Mitigation Alternatives	Potential Capability/ Measure
<p>1. Damage to the City's two water reservoirs (Palm Avenue and Blue Mountain) in the event of an earthquake may present a water supply issue.</p>	<p>SP, PPRO</p>	<p>Reservoirs might have been replaced or lining in the reservoirs have been replaced. Contact. Riverside Highland Water Company is the water purveyor for domestic taps.</p> <p>From 2015 Santa Bernardino Valley URWMP:</p> <p>RHWC's seven storage reservoirs hold 8 million gallons, which is sufficient water to meet health and safety requirements of 50 gallons per day per capita for the 4,000 customers for 13 days. This assumes zero non-residential use. RHWC also has interconnections with the Cities of Colton and Rialto for emergency supplies. RHWC has portable back-up generators that can be used in the event of an area wide power outage. The generators can be located on both wells and booster stations throughout the system to continue water production.</p>
<p>2. Potential damage to I-215 overpasses would impede travel. Specifically, the Barton Rd. Overpass, built in 1959.</p>	<p>SP</p>	<p>Approved project in place to upgrade this overpass for planned development. Leave this in for future reporting if possible.</p>
<p>3. Protecting utility service such as water & sewer from earthquake damage.</p>	<p>SP, PRV</p>	<p>Water mains constructed or upgraded in the 1990's-200's replacement. Reservoirs might have been replaced. Riverside Highland Water Company is the water purveyor for domestic taps.</p>



Description	Mitigation Alternatives	Potential Capability/ Measure
4. Public facility infrastructure i.e. fire stations with earthquake damage risk.	SP, PPRO	Fire station built in early 1980's, possibly tile roof.
5. Structural adequacy of city buildings / facilities?	SP	One City Building. Double check year built. Type of structure, and visible deviancies in structure if any..
6. Content damage in City buildings	PPRO	Small Tenant Improvement projects and other improvements over the past decades should be reviewed for structural bracing. Contents should be evaluated for bracing standards. i.e. bookcases, computers, large file cabinets. Most damage to buildings that are built after benchmark years are from contents shifting inside the building. City Hall was built in 1981. Fire Station was built in 1983, and Out building behind City hall were built in 2001 and 2004.
7. <i>ID of buildings (city & other) in need of retrofit work and seismic safety review.</i>	PRV, SP	Could start with gathering facilities. I.e. churches, and schools. The Division of State Architects are responsible EQ safety when schools are built or larger projects at schools. No one is evaluating projects for schools 100,000 or less for seismic standards 100k or less includes tenant improvement and equipment upgrades.
8. <i>Retrofit Unreinforced Masonry (URM) buildings prior to event?</i>	SP, PRV	There was a retro fit program for the County, and listing all URM for every city in California.



2. LANDSLIDE

Description	Mitigation Alternatives	Potential Capability/ Measure
1. Steep slopes along the northern end of Mt. Vernon (along Grand Terrace/ Colton boundary) experience severe mud slides that could potentially impede traffic in all travel lanes.	SP, PRV, NRP	Car got flipped over by mudslide, someone was seriously injured.
2. Residential neighborhoods in the eastern part of the City at the foothill of Blue Mountain are vulnerable to mud slides.	PPRO, PRV, NRP, SP	
3. Blue Mountain is one of the City's most vulnerable areas for erosion / slope failure after being damaged by a fire in 2006.	NRP, PRV	
1. Landslides/mudslides are likely to occur: <ul style="list-style-type: none"> • Along Mt. Vernon Ave. from East Canal St. to Vista Grande Way • On Barton Ave. at the Colton border • At Vivienda Ave. and Burns Ave. 	SP, PRV	

3. WILDFIRE

Description	Mitigation Alternatives	Potential Capability/ Measure
1. Residents along the City's east/ northeast and western-most borders of the city are in the Very High fire hazard severity zone.	PRV, PE&A, PPRO	



Description	Mitigation Alternatives	Potential Capability/ Measure
2. <i>City open spaces / vegetative fuels backing up to resident's property / homes.</i>	PE&A, PPRO, PRV, SP	Defensible spaces, maintaining your property, weed abatement, hand out fliers. County does violations. Residents are supposed to be responsible for everything around their home.
3. <i>Vegetation management in fire prone areas?</i>	PRV, NRP	
4. <i>Repair of burned slopes; Landslide / mudslides / slope stabilization after a fire.</i>	SP, PRV, NRP	
5. <i>Public notice to areas of extreme fire danger (clear brush etc.)?</i>	PE&A, ES	

4. FLOOD

Description	Mitigation Alternatives	Potential Capability/ Measure
1. Several streets are rendered impassable during heavy rain storms, such as all of Pico Street from east to west city limits as well as sections of Michigan Street near Pico Street, trapping residents.	PRV, PPRO, SP, PE&A	
2. The northwestern portion of the City bordering the Santa Ana River is located in the 100-year flood zone.	PRV, PE&A, PPRO	
3. <i>Closure of streets or inability to access affected locations.</i>	PRV, ES	



Description	Mitigation Alternatives	Potential Capability/ Measure
4. <i>Debris near street drain.</i>	PRV, PE&A	
5. <i>Damage to public infrastructure caused by flood waters (streets, signals / street lights, etc.)</i>	PRV, SP	

5. CLIMATE CHANGE

Description	Mitigation Alternatives	Potential Capability/ Measure
1. <i>Other natural disaster such as drought, severe weather, flood, and wildfire occurrence intervals can change. I.e. Increased wildfire risk due to a drier climate, in dry years, variability and the frequency/severity of hazard events i.e. El Nino Events in wet years.</i>	PRV, NRP, PE&A, SP	



Mitigation Action Development

Based upon planning committee priorities, risk assessment results, and mitigation alternatives, mitigation actions were developed. Most importantly, the newly developed mitigation actions acknowledge updated risk assessment information outlined in Section 4. Mitigation actions presented in Table 5-10 establish 22 possible mitigation actions. Some mitigation actions support ongoing City activities, while other actions are intended to be completed when funding is available. Regardless, mitigation actions will be part of an annual review.

Table 5-1: Mitigation Action Abbreviated List

Action No.	Specific Mitigation Action	Mitigation Type	Priority Rating
EQ 1.1	Evaluate all proposed developments for impacts associated with geologic and seismic hazards. (Grand Terrace General Plan, 2010)	PRV	
EQ 1.2	Perform a seismic review (both structural and non-structural) on city buildings and city owned critical facilities i.e. City Hall, Public Works building and Fire Station.	PRV, PPRO	
EQ 3.1	Mitigate unreinforced masonry buildings in the City, starting with gathering facilities.	PPRO	
EQ 3.2	Conduct seismic retrofitting on Barton Rd. Overpass.	SP	
EQ 3.3	Upgrade or seismically retrofit transportation infrastructure including overpasses, underpasses, and other transportation infrastructure vulnerable to seismic events.	SP	
EQ 4.1	Work with local insurance brokers to encourage earthquake insurance for homeowners.	PE&A, PPRO	
EQ 4.2	Provide residents the means to seismically retrofit their homes.	SP	
EQ 4.3	Provide automatic shutoff valves for gas meters in the Grand Terrace service area.	PPRO	
LS 1.2	Develop a feasibility study for slope stabilization for areas of slope failure concern, such as Mt. Vernon, along Barton Ave and at Vivienda and Burns Ave.	PRV	
LS 3.1	Plant deep-rooted vegetation on bare slopes.	NRP, PRV	



LS 3.2	Perform earth / slope stabilization near landslide / rockslide / mudslide hazard zones, such as along the northern end of Mt. Vernon.	PRF, SP	
LS 4.1	Encourage homeowners in high landslide hazard areas to plant native trees and shrubbery.	PE&A, PRV	
LS 4.2	Develop public education and awareness material regarding vegetation and erosion control and provide resources for erosion control and slope failure on private properties.	PE&A, NRP	
WF 2.1	Improve public education programs for residents to reduce wildfire risk.	PE&A, PRV	
WF 3.1	Maintain and improve access to fire prone areas such as Blue Mountain.	SP, PRV	
WF 3.2	Continue the weed abatement program and fuel management and fuel reduction in open space, creeks, around critical facilities, and urban / wildland interface areas.	PRV, NRP	
WF 3.3	Repair/ replant vegetation on slopes after a fire to minimize the risk of landslides, mudslides or slope failure.	NRP, PRV	
FL 1.1	Perform a feasibility study for retention and detention of storm water to include water sensitive urban design.	PRV	
FL 1.3	Evaluate public infrastructure (bridges, traffic signals, street lights, etc.) and its ability to withstand localized flood events.	PRV	
FL 1.4	Perform a feasibility study for stormwater drainage along Pico Ave.	PRV, SP	
FL 4.1	Implement a Maintain-A-Drain program to keep street drains clear from debris.	PE&A, PRV	
FL 3.	Ensure undeveloped properties adhere to General Plan Land Use designations and flood plain preservation and risk reduction methodologies.		
CC 3.2	Accrue property and construct parks and open space for every 1,000 residents, reducing the impacts of high heat on urbanized areas. (Grand Terrace General Plan, 2010)	PRV, NRP	
CC 3.3	Plant street trees to provide shade on high heat days and reduce the urban heat island effect.	PRV	



CC 4.1	Continue working with Southern California Edison to promote energy conservation at residences and businesses. (Grand Terrace General Plan, 2010) This may include implementing an Air Conditioning Replacement Program or encouraging a reduction in energy consumption on high heat days.	PE&A, PRV, NRP	
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Capabilities Assessment

The mitigation strategy includes an assessment of the City's planning and regulatory, administrative/technical, fiscal, and political capabilities to augment known issues and weaknesses from identified natural hazards.

1.1.1 Local Planning and Regulatory Mitigation Capabilities

The information in Table 5-6 is used to construct mitigation actions aligned with existing planning and regulatory capabilities of the City. Planning and regulatory tools typically used by local jurisdictions to implement hazard mitigation activities are building codes, zoning regulations, floodplain management policies, and other municipal planning documents.

Table 5-1: Planning and Regulatory Mitigation Capabilities Summary

Hazard	Plan/Program/Regulation	Responsible Agency	Comments
Multi-Hazard	Grand Terrace / California Building Code 2016 Edition	Building Dept.	The City has adopted the California Building Code 2016 Edition, Volumes 1 and 2. The California Building codes protect buildings to the extent possible from natural occurring hazards.
Multi-Hazard	City of Grand Terrace General Plan Safety Element	Community Development Dept.	The General Plan was updated in 2010.
Multi-Hazard	Grand Terrace Capital Improvement Plan	Public Works Dept.	This can be used to catalog and fund capital related hazard mitigation projects throughout the city.
Wildfire	San Bernardino County Fire Hazard Abatement (FHA) Program	San Bernardino County Land Use Services	The FHA enforces the fire hazard requirements outlined in San Bernardino County Code Section 23.0301–23.0319. The primary function of the Fire Hazard Abatement Program is to reduce the risk of fires within communities by pro-actively establishing defensible space and reduction/removal of flammable materials on properties.



Hazard	Plan/Program/Regulation	Responsible Agency	Comments
Wildfire	Wildfire State Responsibility Area Fire Safe Regulations		Outlines basic wildland fire protection standards for local jurisdictions. SRA Fire Safe Regulations (if policed) can decrease the risk of wildfire events in the wildland interface. SRA Fire Safe Regulations do not supersede local regulations, which equal or exceed minimum state regulations.
Wildfire	Mountain Area Safety Taskforce (MAST)	MAST/ San Bernardino County and Special Districts	MAST provides a single point of coordination for numerous Federal, State, and local agencies that perform a multitude of tasks related to creating fire safe mountain communities. MAST provides an extensive Fuels Reduction Program.
Wildfire	Grand Terrace Code of Ordinances Chapter 8.72		Gives the City the authority to remove trees in abandoned orchards if they constitute a fire hazard.
Flood	National Flood Insurance Program (NFIP)		NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in participating communities. As a participating member of the NFIP, the City has 3 policies held.
Flood	Santa Ana River Integrated Watershed Management Plan		This plan address resources in the Santa Ana River Watershed including hydrogeology, land use, biological resources, water supply, water quality, flood control, and demographics.
Flood	Municipal Code of Ordinances Chapter 18.50- FP Floodplain Overlay District		<p>The FP overlay districts limit the permitted uses of land in areas subject to periodic flooding to the following:</p> <ul style="list-style-type: none"> • Flood control channels, levees, spreading grounds and basins, roads, bridges and diversion drains, where plans are approved by the San Bernardino County flood control district. • Agricultural uses (conditional use permits) <p>All uses and structures must be reviewed subject to the regulations of the Federal Emergency Management Agency (FEMA).</p>



Hazard	Plan/Program/Regulation	Responsible Agency	Comments
Climate Change	2015 San Bernardino Valley Regional Urban Water Management Plan	Riverside Highland Water Company?	This Urban Water Management Plan is a tool that provides a summary of anticipated supplies and demands for the years 2015 to 2040.
Multi-Hazard	2014 Water Shortage Contingency Plan	Riverside Highland Water Company	Riverside Highland Water Company has a “Water Shortage Plan,” in place, programs whereby actions will go into effect if a catastrophic interruption, mandatory prohibition or other causes occur.
Climate Change	The Sustainable Communities and Climate Protection Act of 2008		Looks to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities. Regional targets are established for GHG emissions reductions from passenger vehicle use by the sustainable communities strategy (SCS) established by each metropolitan planning organization (MPO).

1.1.2 Administrative and Technical Capabilities

provides a summary of administrative and technical capabilities organized by staff type and department. It is important to understand current administrative and technical capabilities before developing mitigation activities.

Table 5-2: City Administrative and Technical Mitigation Capabilities

Staff/Personnel Resources	Dept. / Agency	Comments
Planners (with land use / land development knowledge)	Planning and Development Services	Includes Land Use Planning, Planning Commission, Building & Safety, Code Enforcement, and Enforcement Programs.
Planners or engineers (with natural and/or human caused hazards knowledge)	Public Works Dept., Utilities Dept., Planning and Development	Fire Prevention can assist as well.



Staff/Personnel Resources	Dept. / Agency	Comments
	Services	
Engineers or professionals trained in building and/or infrastructure construction practices (includes building inspectors)	Public Works Dept. Utilities Dept. Planning and Development Services	
Floodplain Management	City Manager	The City Manager is the Floodplain Administrator according to FEMA Region IX and NEIP data.
Land / Building surveyors	N/A	City contracts survey services.
Personnel skilled in Geographic Information Systems (GIS) and/or FEMA's HAZUS program	Public Works? Engineering?	
Grant writers or fiscal staff to handle large/complex grants	Community Development Dept. Public Works Dept.	Numerous types of federal, state, local, and private grants have been administered by City staff.
Construction Equipment	Public Works Dept.	Public Works owns and maintains large pieces of equipment available for construction and moving and removal of earthen material.
Emergency Management Personnel	Police Dept. Fire Dept.	State Office of Emergency Services Access Mobile Emergency Personnel
Care and Sheltering	City Community Services Dept. Regional Red Cross Personal (local office at 6235 River Crest Dr, Riverside, CA 92507)	Care and sheltering during extreme heat conditions, will provide sheltering and support services for fire victims.



1.1.3 Fiscal Capabilities

This section identifies the financial tools or resources that the City could potentially use to help fund mitigation activities. Fiscal capabilities include City-specific as well as state and federal resources.

1.1.3.1 Local Fiscal Resources

Table 5-8 provides summary local fiscal capabilities. As indicated in Table 5-8, there are several governmental funds and revenue raising activities that can be allocated for hazard mitigation activities.

Table 5-3: Fiscal Capabilities Table

Financial Resources	Dept. / Agency	Comments
General Fund Revenue	Grand Terrace City Council	\$4,781,700 Adopted Revenue FY2016-17
Street Fund (Special Revenue Fund)		\$1,000 Adopted Revenue FY2016-17
Storm Drain Fund (Special Revenue Fund)		\$600 Adopted Revenue FY2016-17
Facilities Development Fund (Special Revenue Fund)		\$400 Adopted Revenue FY2016-17



State and County Community Development Dept. Block Grants (CDBG)	California Dept. of Housing and Community Development Dept. (HCD)	Programs Include: Community Development (CD) Economic Development (ED) Disaster Recovery Initiative (DRI) Neighborhood Stabilization Program (NSP)
Home Investments Partnership Program	California Dept. of Housing and Community Development	City is a non-entitlement city and must apply competitively for grant funds.

Source: City's Annual Financial Report, Fiscal year XXXX Adopted XXXX

1.1.3.2 State and Federal Fiscal Resources

To augment local resources, Table 5-9 provides a list of potential funding programs and resources provided by state and federal agencies and programs which can be used for local hazard mitigation activities.

Table 5-4: Potential Funding Programs/Grants from State and Federal Agencies

Agency / Grant Name	Potential Programs/Grants
<p>California DWR Proposition 50/84:</p> <p>Integrated Regional Water Management (IRWM) Program.</p>	<p><i>DWR has a number of IRWM grant program funding opportunities. Current IRWM grant programs include planning, implementation, and stormwater flood management.</i></p> <p>http://www.water.ca.gov/irwm/grants/index.cfm</p> <p>Proposition 84, the Safe Drinking Water, Water Quality, and Supply, Flood Control, River and Coastal Protection Bond Act, which provides \$1,000,000,000 (P.R.C. §75001-75130) for IRWM Planning and Implementation. CA Dept. of Water Resources' Flood Emergency Response Projects are posted on the webpage at:</p> <p>http://www.water.ca.gov/floodmgmt/hafoo/fob/floodER/</p>



Agency / Grant Name	Potential Programs/Grants
California Housing and Community Development (HCD) Emergency Solutions Grant (ESG) Program	<p><i>To fund projects that serve homeless individuals and families with supportive services, emergency shelter/transitional housing, assisting persons at risk of becoming homeless with homelessness prevention assistance, and providing permanent housing to the homeless population. The Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) Act of 2009 places new emphasis on assisting people to quickly regain stability in permanent housing after experiencing a housing crisis and/or homelessness.</i></p> <p>http://www.hcd.ca.gov/fa/esg/index.html</p>
CalTrans Division of Local Assistance / Safe Routes to School Program	<p>California Dept. of Transportation. Federal funding administered via Caltrans. Local 10% match is the minimum requirement. http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm</p>
California State Office of Historic Preservation (OHP) / Statewide Historic Preservation Plan:	<p>Local Government; OHP’s Local Government Unit (LGU) offers guidance and assistance to city and county governments to preserve historic properties including damage from natural hazards.</p>
U.S. Dept. of Energy / Energy Efficiency and Conservation Block Grant Program	<p><i>Provides funding for weatherization of structures and development of building codes/ordinances to ensure energy efficiency and restoration of older homes.</i></p> <p>http://www1.eere.energy.gov/wip/eecbg.html</p>
Dept. of Homeland Security (DHS) / FEMA Grants	<p>For more information on current grants visit:</p> <p>http://www.fema.gov/grants</p>



Agency / Grant Name	Potential Programs/Grants
<p>California Emergency Management Agency (Cal EMA) / Proposition 1B Grants Programs</p>	<p>The Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, approved by the voters as Proposition 1B at the November 7, 2006 general election, authorizes the issuance of nineteen billion nine hundred twenty five million dollars (\$19,925,000,000) in general obligation bonds for specified purposes, including grants for transit system safety, security, and disaster response projects.</p> <p>http://www.calema.ca.gov/EMS-HS-HazMat/Pages/Emergency-Management-Homeland-Security-and-Hazard-Mitigation-Grant-Programs.aspx</p>
<p>California Proposition 1: the Water Bond (AB 1471)</p>	<p>Authorize \$7.545 billion in general obligation bonds for state water supply infrastructure projects, such as public water system improvements, surface and groundwater storage, drinking water protection, water recycling and advanced water treatment technology, water supply management and conveyance, wastewater treatment, drought relief, emergency water supplies, and ecosystem and watershed protection and restoration.</p> <p>The State Water Resources Control Board (State Water Board) will administer Proposition 1 funds for five programs. The estimated implementation schedule for each is outlined in Five Categories:</p> <ul style="list-style-type: none"> ▪ Small Community Wastewater ▪ Water Recycling ▪ Drinking Water ▪ Stormwater ▪ Groundwater Sustainability <p>http://www.waterboards.ca.gov/water_issues/programs/grants_loans/proposition1.shtml</p>



Agency / Grant Name	Potential Programs/Grants
<p>Assistance to Firefighters Grant Program (AFG); Fire Prevention and Safety (FP&S)</p>	<p>The primary goal of the FP&S Grants is to enhance the safety of the public and firefighters with respect to fire and fire-related hazards. The Grant Programs Directorate administers the FP&S Grants as part of the AFG Program. FP&S Grants are offered to support projects in two activity areas:</p> <ol style="list-style-type: none"> 1). Fire Prevention and Safety (FP&S) Activity Activities designed to reach high-risk target groups and mitigate the incidence of death and injuries caused by fire and fire-related hazards. 2). Research and Development (R&D) Activity To learn more about how to prepare to apply for a project under this activity, please see the FP&S Research and Development Grant Application Get Ready Guide. <p>https://www.fema.gov/fire-prevention-safety-grants</p> <p>FY 14 Awards:</p> <p>https://www.fema.gov/fire-prevention-safety-grants-award-year-2014</p>
<p>HazMat Emergency Preparedness Grant</p>	<p>The purpose of this grant program is to increase effectiveness in safely and efficiently handling hazardous materials accidents and incidents; enhance implementation of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA); and encourage a comprehensive approach to emergency training and planning by incorporating the unique challenges of responses to transportation situations.</p> <p>http://www.caloes.ca.gov/cal-oes-divisions/fire-rescue/hazardous-materials/hazmat-emergency-preparedness-grant</p>
<p>CERT Program Manager Course</p>	<p>The purpose of this Community Emergency Response Team (CERT) Program Manager course is to prepare CERT Program Managers for the tasks required to establish and sustain an active local CERT program.</p> <p>http://www.californiavolunteers.org/index.php/CERT/PM/</p>



Agency / Grant Name	Potential Programs/Grants
<p>The California Residential Mitigation Program</p>	<p>The California Residential Mitigation Program (CRMP) was established to carry out mitigation programs to assist California homeowners who wish to seismically retrofit their houses.</p> <p>http://www.californiarresidentialmitigationprogram.com/</p>
<p>Earthquake Brace + Bolt</p>	<p>EBB was developed to help homeowners lessen the potential for damage to their houses during an earthquake by offering eligible homeowners up to a \$3,000 incentive to seismically retrofit their homes.</p> <p>https://www.earthquakebracebolt.com/</p>
<p>California Air Resources Board Air Pollution Incentives, Grants and Credit Programs</p>	<p>These programs have hundreds of millions of dollars in grants available over the next several years to reduce emissions from on- and off-road vehicles and equipment.</p> <p>https://www.arb.ca.gov/ba/fininfo.htm</p>



Considering Mitigation Alternatives

During February 2017, the HMP Planning Committee participated in the development and review of mitigation actions with a wide range of alternatives. To narrow mitigation alternatives for inclusion, FEMA's six broad categories of mitigation alternatives were used. Each FEMA category is described below. The HMP Planning Committee developed several mitigation alternatives for implementation under each mitigation category.

PREVENTION (PRV):

Preventative activities are intended to keep hazard problems from getting worse, and are typically administered through government programs or regulatory actions that influence the way land is developed and buildings are built. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial. Examples of preventative activities include:

- Planning and zoning ordinances;
- Building codes;
- Open space preservation;
- Floodplain regulations;
- Stormwater management regulations;
- Drainage system maintenance;
- Capital improvements programming; and
- Riverine / fault zone setbacks.

PRV ALTERNATIVES:

- 1) Evaluate the City's regulations that manage flood risk / stormwater conveyance and consider additional standards to help prevent flood problems from increasing. These include:
 - Practicing Water Sensitive Urban Design such as the incorporation of curb cuts into bioswales to control runoff.
 - Enhanced stormwater regulations to reduce stormwater runoff, especially for new development
- 2) Consider additional policies and regulations to enhance the preservation of Open Space in flood prone and wild land fire high risk areas.
- 3) Training for City Staff:
 - Provide Certified Floodplain Manager training and certification to staff
- 4) Vegetation management in fire prone areas.

PROPERTY PROTECTION (PPRO):

Property protection measures involve the modification of existing buildings and structures to help them better withstand the forces of a hazard, or removal of the structures from hazardous locations. Examples include:



- Critical facilities protection;
- Retrofitting (e.g., seismic design techniques, etc.);
- Insurance.

PPRO ALTERNATIVES:

- 1) Consider promoting and supporting voluntary property protection measures through several activities, ranging from financial incentives to full funding. Examples include Earthquake Brace + Bolt, The California Residential Mitigation Program and California Air Resources Board Air Pollution Incentives, Grants and Credit Programs.
- 2) Promote earthquake insurance for properties with a focus on older structures built before 1980.
- 3) Evaluate public owned facilities and critical facilities for property protection measures.
- 4) Perform seismic review (both structural and non-structural) on city buildings and city owned critical facilities.
- 5) Provide automatic shutoff valves for utility infrastructure.
- 6) Review city owned buildings for seismic risk.
- 7) Identify and mitigate privately owned unreinforced masonry buildings within the City.

PUBLIC EDUCATION AND AWARENESS (PE&A):

Public education and awareness activities are used to advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures to educate and inform the public include:

- Outreach projects including neighborhood and community outreach;
- Speaker series / demonstration events;
- Hazard mapping;
- Real estate disclosures;
- Materials Library;
- School children educational programs; and
- Hazard expositions.

PE&A ALTERNATIVES:

- 1) Enhancing the City's Public Information Program to include both the public and private sectors.
- 2) Education and outreach measures to ensure the community understands **their** role in protecting **themselves** in a disaster event.
 - Mitigation measures for residents at the home (i.e. stabilizing through vegetation)
 - Safety precautions for all types of hazards, but especially earthquakes, wildfires, and drought.
 - Knowing where emergency evacuation routes and shelters are located.
 - Family and emergency preparedness measures.



- 3) Enhance public outreach program to include all hazards. Appropriate ways to spread information are:
 - Websites and social media
 - Mailings to everyone, in utility bills or otherwise
 - News releases or newspaper articles
 - Newsletters
 - Displays, particularly at special events
 - Handouts, flyers and other materials, which can be distributed at special events and presentations

NATURAL RESOURCE PROTECTION (NRP):

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions. Such areas include floodplains, wetlands, steep slopes, and sand dunes. Parks, recreation, or conservation agencies and organizations often implement these protective measures. Examples include:

- Floodplain protection
- Watershed management;
- Vegetation management (e.g., fire resistant landscaping, fuel breaks, etc.);
- Erosion and sediment control;
- Wetland and habitat preservation and restoration;

NRP ALTERNATIVES:

- 1) Inform City Council about the hazard mitigation benefits of restoring natural drainage features, wetlands and other natural areas.
- 2) Develop restoration and protection techniques using water sensitive urban design, landslide areas and high risk wild land fire areas.
- 3) Enhance public education and outreach efforts to inform the public about the need to protect hillsides from erosion. (i.e. stabilizing through vegetation) (City needs to make sure the resources are needed to do this after a fire) Enhance public education and outreach efforts to inform the public about capturing stormwater and using it for landscape features.
- 4) Work with property owners to replant native vegetation after a fire.
- 5) Land use and/or other regulatory control of undeveloped properties in flood zones.

EMERGENCY SERVICES (ES):

Although not typically considered a “mitigation” technique, emergency service measures do minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event. Examples include:

- Warning systems;
- Construction of evacuation routes;
- Sandbag staging for flood protection; and
- Installing temporary shutters on buildings for wind protection.



ES ALTERNATIVES:

- 1) Consider StormReady certification.
- 2) Provide alert and notification to residents for flood risk
- 3) Training for City Staff

STRUCTURAL PROJECTS (SP):

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Stormwater diversions / detention / retention infrastructure;
- Utility Upgrades
- Seismic Retrofits

SP ALTERNATIVES:

- 1) The City has previously constructed flood control and drainage facilities that move storm and flood waters more efficiently and reduced potential for overbank flooding. The City should identify and prioritize additional projects in the City.
- 2) Protecting utilities from EQ damage. Not the City's responsibility but private utility industry.
- 3) Constructing backup utility infrastructure in the event of a natural disaster.
- 4) Check the condition of the City's utility infrastructure.
- 5) Upgrade or seismically retrofit transportation infrastructure including overpasses, underpasses, and other transportation infrastructure vulnerable to seismic events.
- 6) Identify or construct alternative routes for emergency access to the City. Provide shoring and bank stabilization near roadways to prevent further erosion.
- 7) Work with private property owners to reduce runoff.
- 8) Provide City infrastructure to slow the movement of water.