



# Appendix C MITIGATION STRATEGY

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Butte County  
Local Hazard Mitigation Plan Update  
Risk Assessment & Mitigation Strategy Meetings

May 17<sup>th</sup> & 18<sup>th</sup>, 2012

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AMEC Earth & Environmental



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## **LHMP Risk Assessment & Mitigation Strategy Meetings Agenda**

### **HMPC Meeting #2: May 17, 2012**

- 1) Introductions
- 2) Status of the DMA Planning Process
- 3) Review of Risk Assessment
- 4) Develop Plan Goals and Objectives
- 5) Review of Mitigation Alternatives

### **HMPC Meeting #3: May 18, 2012**

- 1) Identify Mitigation Projects
- 2) Review Mitigation Selection Criteria
- 3) Prioritize Mitigation Projects
- 4) Review of Schedule/Data Needs

## Hazard Identification & Profiles

**Table C.1. Hazard Summary for Butte County**

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Dam Failure	Significant	Unlikely	Critical	Medium
Drought & Water shortage	Extensive	Occasional	Critical	Medium
Earthquakes	Extensive	Occasional	Critical	Medium
Earth Movements: Landslide	Limited	Likely	Negligible	Low
Earth Movements: Erosion	Limited	Highly Likely	Significant	Medium
Floods: 100/200/500 year	Significant	Occasional	Critical	High
Floods: Localized Stormwater	Extensive	Highly Likely	Critical	Medium
Hazardous Materials Incidents: Transportation	Significant	Likely	Critical	Medium
Invasive Species: Pests/Plants	Significant	Highly Likely	Limited	Low
Levee Failure	Significant	Occasional	Limited	High
Marine Invasive Species	Limited	Occasional	Limited	Low
Severe Weather: Extreme Heat	Significant	Highly Likely	Critical	Low
Severe Weather: Freeze and Winter Storm	Significant	Highly Likely	Critical	Medium
Severe Weather: Heavy rain, hailstorm, lightning	Significant	Highly Likely	Critical	Medium
Severe Weather: Tornado	Limited	Likely	Limited	Low
Severe Weather: Windstorms	Extensive	Highly Likely	Critical	Medium
Volcanoes	Significant	Unlikely	Critical	Low
Wildfires	Significant	Highly Likely	Critical	High
<b>Geographic Extent</b> Limited: Less than 10% of planning area Significant: 10-50% of planning area Extensive: 50-100% of planning area  <b>Probability of Future Occurrences</b> 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.		<b>Magnitude/Severity</b> 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  <b>Significance</b> Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact		

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## C.1 Risk Assessment Methodology

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### C.1.1 Calculating Likelihood of Future Occurrence

The frequency of past events is used in this section to gauge the likelihood of future occurrences. Based on historical data, the likelihood of future occurrence is categorized into one of the following classifications:

- **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.

### C.1.2 Calculating Vulnerability

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:

- **Extremely Low:** The occurrence and potential cost of damage to life and property is very minimal to non-existent.
- **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 already occurred in the past.
- **Extremely High:** Very widespread and catastrophic impact.

### C.1.3 Defining Significance (Priority) of a Hazard

Defining the significance or priority of a hazard to a community is based on a subjective analysis of several factors. This analysis is used to focus and prioritize hazards and associated mitigation measures for the plan. These factors include the following:

- **Past Occurrences:** Frequency, extent, and magnitude of historic hazard events.
- **Likelihood of Future Occurrences:** Based on past hazard events.

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- **Ability to Reduce Losses through Implementation of Mitigation Measures:** This looks at both the ability to mitigate the risk of future occurrences as well as the ability to mitigate the vulnerability of a community to a given hazard event. It also considers the extent to which existing mitigation measures are in place to adequately address the hazard.

## **C.1.4 Butte County Hazard ID/Vulnerability/Priority Summary**

### **Dam failure**

- 4 dam failure incidents for Butte County since 1932 – but since improvements have been made there have been no issues.
- 16 high hazard dams and 5 significant hazard dams in the County with potential to cause damaging floods. 4 low hazard and 10 not ranked.
- LOFO: Unlikely
- Vulnerability: High
- Priority Hazard

### **Drought and Water Shortage**

- 12 multi-year historical Dry Periods in California since 1850
- 4 significant droughts in the last 83 years in Calaveras County
- LOFO: Occasional
- Vulnerability: High
- Priority Hazard

### **Earthquake**

- Limited felt occurrences in Butte County, most notable earthquake is Oroville earthquake in 1975. Property damage of \$2.5 million, mostly minor structural damage.
- County generally at low risk of damaging earthquake occurrence, greater in eastern portion of the County.
- LOFO: Occasional - ground shaking earthquake; Unlikely - large, damaging earthquake
- Vulnerability: Medium
- Priority Hazard

### **Earth Movements**

#### **Landslide**

- County has history of landslides
- LOFO: Likely
- Vulnerability: Low
- Non-Priority Hazard

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## **Erosion**

- Erosion history in County from both wind/rain and along streambanks (need more details)
- LOFO: Highly Likely
- Vulnerability: Medium
- Priority Hazard

## **Flood Hazards**

### ***100/500 year***

- Significant flood history throughout the County
- 12 state and federal declarations for storms and flooding from 1950-2011
- LOFO: 100-Occasional; 500-Unlikely
- Vulnerability: High
- Priority Hazard

### ***Localized/Stormwater flooding***

- Significant localized flood history in the County - occurs annually
- LOFO: Highly Likely
- Vulnerability: Medium
- Priority Hazard

## **Hazardous Materials Incidents: Transportation**

- Railroad: 4 documented incidents. Highway: 10 documented incidents
- LOFO: Likely
- Vulnerability: Medium
- Priority Hazard

## **Invasive Species: Plants/Pest**

- Many instances of invasive species documented in the County
- LOFO: Likely
- Vulnerability: Medium
- Non-Priority Hazard

## **Levee Failure**

- Several protecting levees exist in Butte County
- Multiple levee issues documented on the Feather River Levees over the year
- LOFO: Occasional
- Vulnerability: High

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- Priority Hazard

### **Marine Invasive Species**

- Need more input for plan
- LOFO: ???
- Vulnerability: ???
- Priority Hazard

### **Severe weather**

#### ***Extreme heat***

- Annual occurrences - it gets hot every summer
- 1 excessive heat events occurred in Calaveras County over the last 50 years
- Climate change might affect this hazard in the future
- LOFO: Highly Likely
- Vulnerability: Low
- Non-Priority Hazard

#### ***Freeze***

- Annual occurrences - it gets cold every winter
- 3 excessive heat events occurred in Butte County over the last 50 years
- LOFO: Likely
- Vulnerability: Medium
- Priority Hazard

#### ***Heavy rain and Storms***

- Significant Count history: annual occurrences
- Severe storms/heavy rains are the primary cause of most major flooding/cause of 12 disaster declarations
- LOFO: Highly Likely?
- Vulnerability: High
- Priority Hazard

#### ***Tornadoes***

- 41 tornado in Butte County over 62 years, 2 of these F2, 4 rated F1
- LOFO: Likely
- Vulnerability: Low
- Non-Priority Hazard

## Wind

- 23 recorded significant high wind events (excluding those accompanying thunderstorms) in the past 60 years
- LOFO: Highly Likely
- Vulnerability: Medium
- Priority Hazard

## Volcano

- No recorded impacts (ashfall) to Butte County from historic regional volcanic events
- LOFO: Unlikely
- Vulnerability: Extremely Low
- Non-Priority Hazard

## Wildfire

- Wildfires occur on an annual basis
- 7 federal disaster declarations in County
- LOFO: Highly Likely
- Vulnerability: Extremely High
- Priority Hazard

\*LOFO=Likelihood of Future Occurrence

## C.1.5 Priority Hazards by Jurisdiction

Jurisdiction	Priority Hazards
Unincorporated Butte County	Dam Failure Drought & Water shortage Earthquakes Earth Movements: Erosion Floods: 100/200/500 year Floods: Localized Stormwater Hazardous Materials Incidents: Transportation Levee Failure Severe Weather: Freeze and Winter Storm Severe Weather: Heavy rain, hailstorm, lightning Severe Weather: Windstorms Wildfires
City of Biggs	Earthquakes Floods: 100/500 year Floods: Localized Stormwater Hazardous Materials Incidents: Railroads Levee Failure Severe Weather: Extreme Heat Severe Weather: Freeze Severe Weather: Heavy rain, hailstorm, lightning Severe Weather: Windstorms



Jurisdiction	Priority Hazards
City of Chico	Drought & Water shortage Floods: 100/200/500 year Floods: Localized Stormwater Invasive Species: Pests/Plants Levee Failure Severe Weather: Extreme Heat Severe Weather: Freeze and Winter Storm Severe Weather: Heavy rain, hailstorm, lightning Severe Weather: Windstorms Wildfires
City of Gridley	Drought & Water shortage Floods: Localized Stormwater Hazardous Materials Incidents: Railroads
City of Oroville	Dam Failure Drought & Water shortage Earthquakes Floods: 100/200/500 year Floods: Localized Stormwater Hazardous Materials Incidents: Railroads Levee Failure Severe Weather: Extreme Heat Severe Weather: Freeze and Winter Storm Severe Weather: Heavy rain, hailstorm, lightning Severe Weather: Windstorms Wildfires
Town of Paradise	Dam Failure Drought & Water shortage Earthquakes Earth Movements: Erosion Floods: Localized Stormwater Invasive Species: Pests/Plants Severe Weather: Freeze and Winter Storm Severe Weather: Heavy rain, hailstorm, lightning Severe Weather: Windstorms Wildfires
Paradise Irrigation District	Dam Failure Drought & Water shortage Earthquakes Earth Movements: Landslide Floods: 100/200/500 year Floods: Localized Stormwater Severe Weather: Heavy rain, hailstorm, lightning Wildfires
Thermalito Water and Sewer District	Dam Failure Severe Weather: Heavy rain, hailstorm, lightning Wildfires

## C.2 Mitigation Goals Development

### C.2.1 Formulating Mitigation Goals

Up to now, the HMPC has been involved in collecting and providing data for the Butte County Local Hazard Mitigation Plan. From this information, a Risk Assessment has been developed

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that describes the risk and vulnerability of the Butte County Planning Area to identified hazards and includes an assessment of the area's current capabilities for countering these threats through existing policies, regulations, programs, and projects.

This analysis identifies areas where improvements could or should be made. Formulating Goals will lead us to incorporating these improvements into the Mitigation Strategy portion of the plan. Our planning goals should provide direction for what should be done to make the planning area more disaster resistant.

**GOALS:** Goals are stated without regard for implementation, that is, implementation cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that the goals are not dependent on the means of achievement. Goals are public policy statements that:

- Represent basic desires of the jurisdiction;
- Encompass all aspects of planning area, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- Are time-independent, in that they are not scheduled events.

While goals are not specific (quantitative), they should not be so general as to be meaningless or unachievable.

Goals statements will form the basis for objectives. They should be stated in such a way as to develop one or more objectives related to each goal.

The key point in writing goals is to remember that they must deal with results, not the activities that produce those results.

Finally, before we formulate our goals, we should consider other planning area goals from other regional/county/city plans, programs, and priorities. This keeps us from "reinventing the wheel," as well as being consistent with Multi-Objective Management --- or "MOM" --- where communities strive for efficiency by combining projects/needs that are similar in nature or location. Utilizing "MOM" effectively results in multiple sources of funding that can be "packaged" and broadening the supporting constituency base by including "outcomes" desired by various stakeholder groups.

Types/Sources of other area mitigation plans and programs include:

- Emergency Operations/Response Plans
- General Plans
- Stormwater Program and Plans
- Flood/Watershed Management Plans and Studies

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- Water Management/Drought Plans
  - Community Wildfire Protection Plans
  - Dam Failure Plans

## **C.2.2 Goal Development**

***Example: Goals from the Sacramento County General Plan Safety Element***

### **Seismic and Geologic Hazards**

- Goal: Minimize the loss of life, injury, and property damage due to seismic and geological hazards.

### **Flooding**

- Goal: Minimize the loss of life, injury, and property damage due to flood hazards.

### **Fire Hazards**

- Goal: Minimize the loss of life, injury, and property damage due to fire hazards.

### **Emergency Response**

- Goal: An Emergency Preparedness System that can effectively respond in the event of a natural or manmade disaster.

You will each be given 3 sticky notes. On each note you will write what you think the goals for this mitigation planning effort should be. To get you started, provided below are possible goals for this mitigation plan. You may reword these or develop your own. These goal statements should serve as examples. It is vital that our Hazard Mitigation Planning Committee establish its own goals. Use one note for each goal. The purpose of the goal development is to reach a consensus on plan goals --- something everyone can live with.

- Minimize risk and vulnerability from natural hazards
- Increase communities' awareness of vulnerability to hazards
- Increase the use of shared resources
- Improve communities' capabilities to mitigate losses
- Maintain coordination of disaster plans with changing DHS/FEMA needs
- Maintain FEMA eligibility/position jurisdictions for grant funding
- Maintain/enhance the flood mitigation program to provide 200/500-year flood protection
- Maintain current service levels
- Provide protection for existing facilities from hazards
- Provide protection for future development from hazards

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- Provide protection for natural and cultural resources from hazard impacts
  - Provide protection for people's lives from hazards
  - Provide protection for public health
  - Provide protection for critical facilities and services from hazard impacts
  - Provide protection for critical lifeline utilities from hazard impacts
  - Reduce exposure to hazard related losses
  - Reduce the number of emergency incidents
  - Make better use of technology

When done, we will:

- Pin/tape them to the wall/easel-chart and arrange them by category
- Combine and reword them into 3-4 goals for the plan.

### **Goals from 2004 LHMP**

The 2004 plan contained the following goals:

- 1) Wildfire: Reduce impact of wildland fire to infrastructure
- 2) Flood: Protect infrastructure and agriculture from long-term risks of flood
- 3) Earthquake: To mitigate access issues and improve survivability
- 4) Landslide: Identify and inventory areas prone to risk
- 5) Extreme Weather: Improve public notification process/system and mitigate risks
- 6) Dam Failure: Improve public notification and evacuation programs
- 7) Volcano: Increase responsiveness to a volcanic event
- 8) Haz Mat: Minimize the impact of a Haz Mat incident
- 9) Insect Infestation: Increase detection and prevention of insect infestation
- 10) Naturally Occurring Biological Threats: Increase detection, preparedness and responsiveness to potential biological threats
- 11) Terrorism: Increase deterrence and prevention measures

## **C.3 Categories of Mitigation Measures Considered**

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The following categories are based on the Community Rating System.

- Prevention
- Emergency Services
- Property Protection
- Natural Resource Protection
- Structural Projects
- Public Information

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## C.4 Alternative Mitigation Measures per Category

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### Prevention

Preventive measures are designed to keep the problem from occurring or getting worse. Their objective is to ensure that future development is not exposed to damage and does not increase damage to other properties.

- Planning
- Zoning
- Open space preservation
- Land development regulations
- Subdivision regulations
- Floodplain development regulations
- Stormwater management
- Fuels management, fire breaks
- Building codes
  - Firewise construction
- (also see Property Protection)

### Emergency Services

Emergency services protect people during and after a disaster. A good emergency services program addresses all hazards. Measures include:

- Warning (floods, tornadoes, ice storms, hail storms, dam failures)
  - NOAA weather radio all hazards
  - Sirens
  - Reverse 911
- Evacuation and sheltering
- Communications
- Emergency planning
  - Activating the emergency operations room (emergency management)
  - Closing streets or bridges (police or public works)
  - Shutting off power to threatened areas (utility company)
  - Holding children at school/releasing children from school (school district)
  - Passing out sand and sandbags (public works)
  - Ordering an evacuation (mayor)
  - Opening evacuation shelters (red cross)
  - Monitoring water levels (engineering)

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- Security and other protection measures (police)
  - Monitoring of conditions (dams)
  - Critical facilities protection (buildings or locations vital to the response and recovery effort, such as police/fire stations, hospitals, sewage treatment plants/lift stations, power substations)
    - Buildings or locations that, if damaged, would create secondary disasters, such as hazardous materials facilities and nursing homes
    - Lifeline utilities protection
    - Health and safety maintenance

## Property Protection

Property protection measures are used to modify buildings subject to damage rather than to keep the hazard away. A community may find these to be inexpensive measures because often they are implemented by or cost-shared with property owners. Many of the measures do not affect the appearance or use of a building, which makes them particularly appropriate for historical sites and landmarks.

- Retrofitting/disaster proofing
  - Floods
    - Wet/dry floodproofing (barriers, shields, backflow valves)
    - Relocation
    - Acquisition
  - Tornadoes
    - Safe rooms
    - Securing roofs and foundations with fasteners and tie-downs
    - Strengthening garage doors and other large openings
  - Drought
    - Improve water supply (transport/storage/conservation)
    - Remove moisture competitive plants (tamarisk/salt cedar)
    - Water restrictions/water saver sprinklers/appliances
    - Grazing on CRP lands (no overgrazing-see noxious weeds)
    - Create incentives to consolidate/connect water services
    - Recycled wastewater on golf courses
  - Earthquakes
    - Removing masonry overhangs, bracing, and other parts
    - Tying down appliances, water heaters, bookcases, and fragile furniture so they will not fall over during a quake.
    - Installing flexible utility connections that will not break during shaking (pipelines, too)
  - Wildland fire
    - Replacing building components with fireproof materials (roofing, screening)

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- Creating "defensible space"
  - Installing spark arrestors
  - Fuels modification
  - Noxious weeds/insects
    - Mowing
    - Spraying
    - Replacement planting
    - Stop overgrazing
    - Introduce natural predators
  - Insurance

### **Natural Resource Protection**

Natural resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. In so doing, these activities enable the naturally beneficial functions of floodplains and watersheds to be better realized. These natural and beneficial floodplain functions include the following:

- Storage of floodwaters
- Absorption of flood energy
- Reduction in flood scour
- Infiltration that absorbs overland flood flow
- Groundwater recharge
- Removal/filtering of excess nutrients, pollutants, and sediments from floodwaters
- Habitat for flora and fauna
- Recreational and aesthetic opportunities

Methods of protecting natural resources include:

- Erosion and sediment control
- Wetlands protection
- Riparian area/habitat protection
- Threatened and endangered species protection
- Fuels management
- Set-back regulations/buffers
- Best management practices-Best management practices ("BMPs") are measures that reduce nonpoint source pollutants that enter the waterways. Nonpoint source pollutants come from non-specific locations. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, and other farm chemicals, animal wastes, oils from street surfaces and industrial areas and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers,

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ditches and streams. BMPs can be implemented during construction and as part of a project's design to permanently address nonpoint source pollutants. There are three general categories of BMPs:

- Avoidance-Setting construction projects back from the stream.
  - Reduction-Preventing runoff that conveys sediment and other water-borne pollutants, such as planting proper vegetation and conservation tillage.
  - Cleanse-Stopping pollutants after they are en route to a stream, such as using grass drainageways that filter the water and retention and detention basins that let pollutants settle to the bottom before they are drained
- Dumping regulations
  - Water use restrictions
  - Weather modification
  - Landscape management

## **Structural Projects**

Structural projects have traditionally been used by communities to control flows and water surface elevations. Structural projects keep flood waters away from an area. They are usually designed by engineers and managed or maintained by public works staff. These measures are popular with many because they "stop" flooding problems. However, structural projects have several important shortcomings that need to be kept in mind when considering them for flood hazard mitigation:

They are expensive, sometimes requiring capital bond issues and/or cost sharing with Federal agencies, such as the U.S. Army Corps of Engineers or the Natural Resources Conservation Service.

- They disturb the land and disrupt natural water flows, often destroying habitats.
- They are built to a certain flood protection level that can be exceeded by a larger flood, causing extensive damage.
- They can create a false sense of security when people protected by a structure believe that no flood can ever reach them.
- They require regular maintenance to ensure that they continue to provide their design protection level.

Structural measures include:

- Detention/retention structures
- Erosion and sediment control
- Basins/low-head weirs
- Channel modifications
- Culvert resizing/replacement/maintenance



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- Levees and floodwalls
  - Fencing (for snow, sand, wind)
  - Drainage system maintenance
  - Reservoirs (for flood control, water storage, recreation, agriculture)
  - Diversions
  - Storm sewers

## **Public Information**

A successful hazard mitigation program involves both the public and private sectors. Public information activities advise property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. These activities can motivate people to take protection

- Hazard maps and data
- Outreach projects (mailings, media, web, speaker's bureau)
- Library resources
- Real estate disclosure
- Environmental education
- Technical assistance

## **C.5 Mitigation Alternative Selection Criteria**

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The following criteria were used to select and prioritize proposed mitigation measures:

### **STAPLE/E**

- Social-Does the measure treat people fairly? (different groups, different generations)
- Technical-Will it work? (Does it solve the problem? Is it feasible?)
- Administrative-Do you have the capacity to implement and manage project?
- Political-Who are the stakeholders? Did they get to participate? Is there public support? Is political leadership willing to support?
- Legal-Does your organization have the authority to implement? Is it legal? Are there liability implications?
- Economic-Is it cost-beneficial? Is there funding? Does it contribute to the local economy or economic development?
- Environmental-Does it comply with environmental regulations?

### **Sustainable Disaster Recovery**

- Quality of life
- Social equity

- Hazard mitigation
- Economic development
- Environmental protection/enhancement
- Community participation

### Smart Growth Principles

- Infill versus sprawl
- Efficient use of land resources
- Full use of urban resources
- Mixed uses of land
- Transportation options
- Detailed, human-scale design

### Other

- Does measure address area with highest risk?
- Does measure protect...
  - The largest # of people exposed to risk?
  - The largest # of buildings?
  - The largest # of jobs?
  - The largest tax income?
  - The largest average annual loss potential?
  - The area impacted most frequently?
  - Critical infrastructure (access, power, water, gas, telecommunications)?
- What is timing of available funding?
- What is visibility of project?
- Community credibility

**Table C.2. Butte County Initial Prioritization Process**

Responsible Jurisdiction/ Department	Mitigation Action Title	Hazards Addressed	Points/ Worksheet Status
AMEC	Public outreach: Education and Preparedness for all Hazards	Multi-hazard	Not included in voting
	Coop planning, to include records backup/storage	Emergency Services/Multi-hazard	14
	Relocate EOC	Emergency Services/Multi-hazard	13

<b>Responsible Jurisdiction/ Department</b>	<b>Mitigation Action Title</b>	<b>Hazards Addressed</b>	<b>Points/ Worksheet Status</b>
	Improve Alert and notification system: --upgrade reverse 911 --improve capacity and coverage for cell phones --mass notification system --warning sirens	Emergency Services/Multi-hazard	21
	Enhance interoperability of radios and infrastructure	Emergency Services/Multi-hazard	0
	Cell tower backup/generator systems	Emergency Services/Multi-hazard	6
	Conduct Interagency training and exercises	Emergency Services/Multi-hazard	0
	Establish mobile command center	Emergency Services/Multi-hazard	0
	Evacuation Plan for key dams	Dam Failure	5
	Replace Magalia Dam	Dam Failure	40
	Install a 3' Bladder Dam at Paradise Lake	Drought & Water Supply	1
	Establish Regional Interties with PG&E	Drought & Water Supply	10
	Replaced the Dam and establish hydro power at Magalia Reservoir	Drought & Water Supply	5
	Implement compliance program with metering	Drought & Water Supply	3
	Develop conservation based water management program	Drought & Water Supply	0
	Automated metering system for all end users	Drought & Water Supply	6
	Ongoing pipe replacement program	Drought & Water Supply	4
All Jurisdicitons	Conduct URM inventory	Earthquake	1
	Stockpile materials in advance of disaster	Erosion	7
	Erosion repairs – Sacramento River – River Road	Erosion	0
	Develop a drainage master plan for Palermo area	Flood & Levee Failure	0
	Relocate EOC	Flood & Levee Failure	20
	Increase Chico Creek/Mud Creek levee system protection levels to 200-year	Flood & Levee Failure	5
SBFCA	West Feather River Flood Control Project	Flood & Levee Failure	0
	Acquisition project	Flood & Levee Failure	0

<b>Responsible Jurisdiction/ Department</b>	<b>Mitigation Action Title</b>	<b>Hazards Addressed</b>	<b>Points/ Worksheet Status</b>
	Elevation project	Flood & Levee Failure	10
	Increase Butte Creek/Cherokee Creek to 100-year flood protection	Flood & Levee Failure	7
	Provide flood control on Rock Creek and Keifer Slough (100-year)	Flood & Levee Failure	5
	Harden the 3 Bs overflow facility along Sacramento River	Flood & Levee Failure	5
All Jurisdictions	Culvert Improvement Projects – various planning area roads	Flood & Levee Failure	27
All Jurisdictions	Implement various stormwater improvement projects	Flood & Levee Failure	16
Biggs	Box culvert project – Hamilton Sleugh	Flood & Levee Failure	10
Glen County	Hamilton (J-levee) Improvements	Flood & Levee Failure	0
	Conduct Little Chico Creek study to determine 100/200 level flood protection	Flood & Levee Failure	3
Gridley	Reinforce city infrastructure adjacent to Feather River to protect wastewater treatment facility	Flood & Levee Failure	13
	Remove dips from roads – River Road/Old Ferry Road	Flood & Levee Failure	1
	Maintain a well trained level A Haz Mat response team	Hazardous Materials Incidents: Transportation	0
	Railway maintenance (include landslide issues)	Hazardous Materials Incidents: Transportation	0
	Enhance Haz Mat compliance program	Hazardous Materials Incidents: Transportation	0
	Coordinate response training with railroad	Hazardous Materials Incidents: Transportation	0
Agriculture Commissioner	To be identified	Invasive Species	-
Fish & Wildlife	To be identified	Marine Invasive Species	-
Caltrans	Maintenance and rock curtains: Hwy 70 up Canyon	Landslide	0
	Repair areas: Concow	Landslide	0
	Repair areas: Oro Quincy area	Landslide	0
	Repair areas: Clark Road	Landslide	0

<b>Responsible Jurisdiction/ Department</b>	<b>Mitigation Action Title</b>	<b>Hazards Addressed</b>	<b>Points/ Worksheet Status</b>
	Develop heat contingency plan including thresholds for establishing cooling centers and conducting welfare checks	Severe Weather: Extreme Heat	20
	Provide NOAA weather radios for schools and other key locations/facilities	Severe Weather: Heavy rain, hailstorms, lightning	9
	Conduct regular power line maintenance to prevent power outages	Severe Weather: Wind	5
	Insulate fire sprinkler systems	Winter Weather/Freeze/Snow	0
	Establish road treatment program	Winter Weather/Freeze/Snow	0
	Improve and complete Skyway	Wildfire	0
	Fuel reduction projects	Wildfire	27
	Education	Wildfire	3
	Prescribed fires	Wildfire	9
	Defensible space	Wildfire	3
	Invasive plant removal	Wildfire	4
	Evacuation planning	Wildfire	11
	Identify and establish additional water sources	Wildfire	0
	Establish fire lookouts/staff with volunteers	Wildfire	0
	Establish inmate firefighting facilities in or near Butte County	Wildfire	7
		Wildfire	

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## Mitigation Action Status Summary Worksheet

**Title of Project:**

**Progress to date:**

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## INITIAL PRIORITIZATION INSTRUCTIONS

Connecting the Dots!

Our Team mitigation recommendations are listed on flip-chart paper around the room.

You each have 3 sets of colored dots:

- 3 red dots
- 3 blue dots
- 3 green dots

The red dots are for high priority

The blue dots are for medium priority

The green dots are for low priority

Place your dots on the recommendations, using the different colors to indicate your priority. You may use as many of your dots, of any color, on any recommendation --- or you may spread them out using as few of your dots as you wish. The dots will indicate the consensus of the team.

Use your list of criteria to help you make your determinations.

After the totals are counted, we will discuss them further to confirm or change any of the results as we see fit.

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## **Mitigation Action Worksheet: New 2012 Projects**

Instructions: Use this guide to record potential mitigation projects (1 page per project).

**Mitigation Project Title:**

**Hazards Addressed:**

**Issue/Background:**

**Other Alternatives:**

**Existing Planning Mechanism(s) through which Action Will Be Implemented:**

**Responsible Office:**

**Priority (H, M, L):**

**Cost Estimate:**

**Benefits (Losses Avoided):**

**Potential Funding:**

**Schedule:**