



2016 Hazard Mitigation Plan Update

City of Grand Terrace
Planning Committee Meeting #3
January 25th, 2017



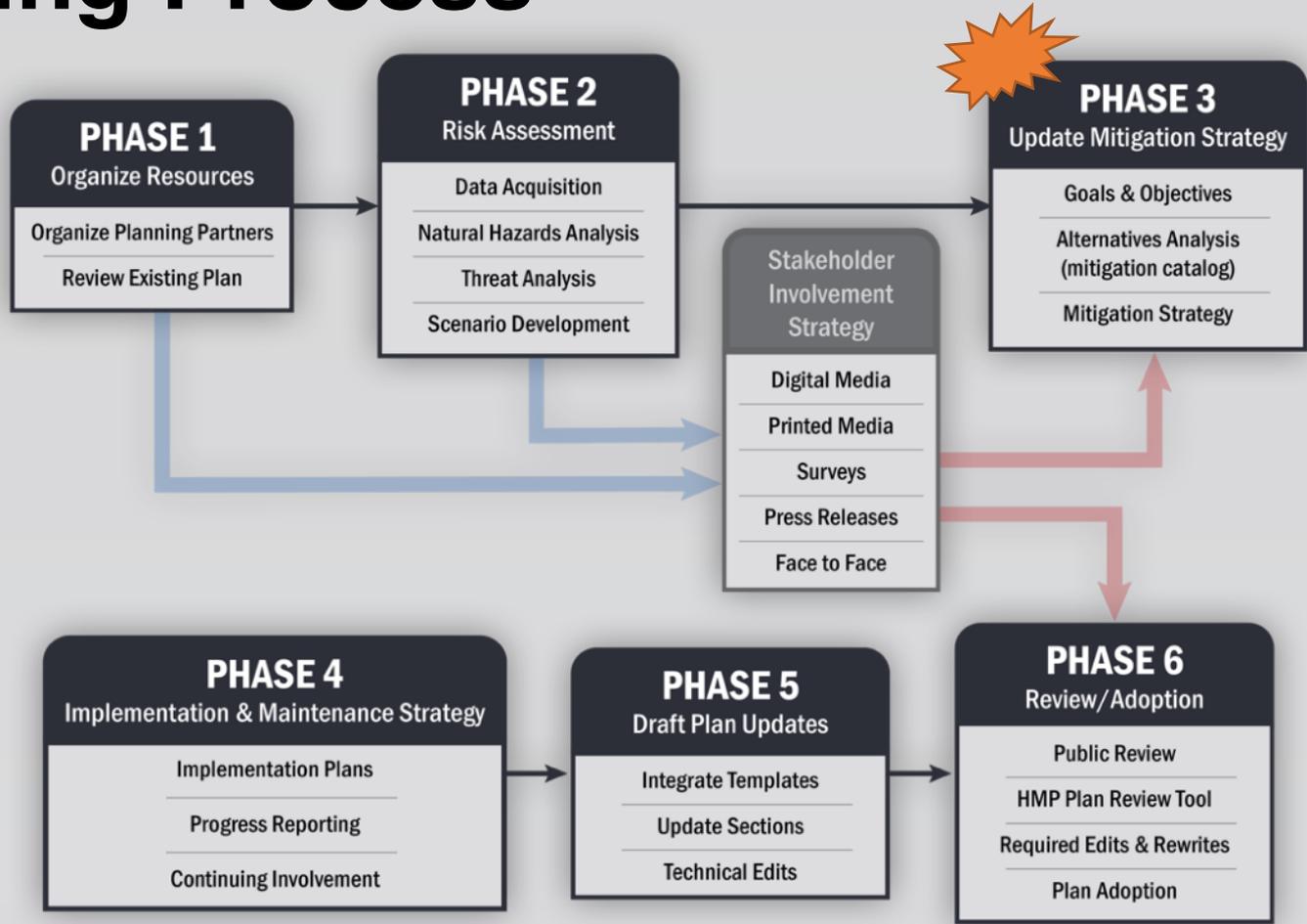
Agenda

- Part I
 - Mitigation Alternatives
 - Problem Statement Review
 - Adding Mitigation Alternatives to problems

- Part III
 - Goals and Objective Definitions
 - Goals and Objectives Review, Editing and Development)



FEMA How to Components Planning Process





Scope of Work

Phase 1: Planning/Development Process

- 1.1 Stakeholder Organization
- 1.2 Document Review
- 1.3 Stakeholder Working Session #1

Phase 2: Risk Assessment

- 2.1 Facility Exposure Analysis
- 2.2 Hazus Risk Assessment
- 2.3 Data Visualization and Mapping
- 2.4 Hazard Profile Development

Phase 3: Hazard Mitigation Strategy

- 3.1 Mitigation Goals and Policy Review and Development
- 3.2 Mitigation Strategy
- 3.3 Stakeholder Working Session #3

Phase 4: Implementation & Maintenance Strategy

- 4.1 Implementation
- 4.2 Integration with Other Planning Efforts
- 4.3 Reporting
- 4.4 Grant Reporting
- 4.5 Continued Public Outreach
- 4.6 Stakeholder Working Session #3

Phase 5: Draft Plan Updates

- 5.1 Update Sections and Technical Edits

Phase 6: Review and Adoption

- 6.1 Plan Review and QA/QC
- 6.2 Socialize and Circulate Plan
- 6.3 Finalize and Submit Plan to Cal OES and FEMA





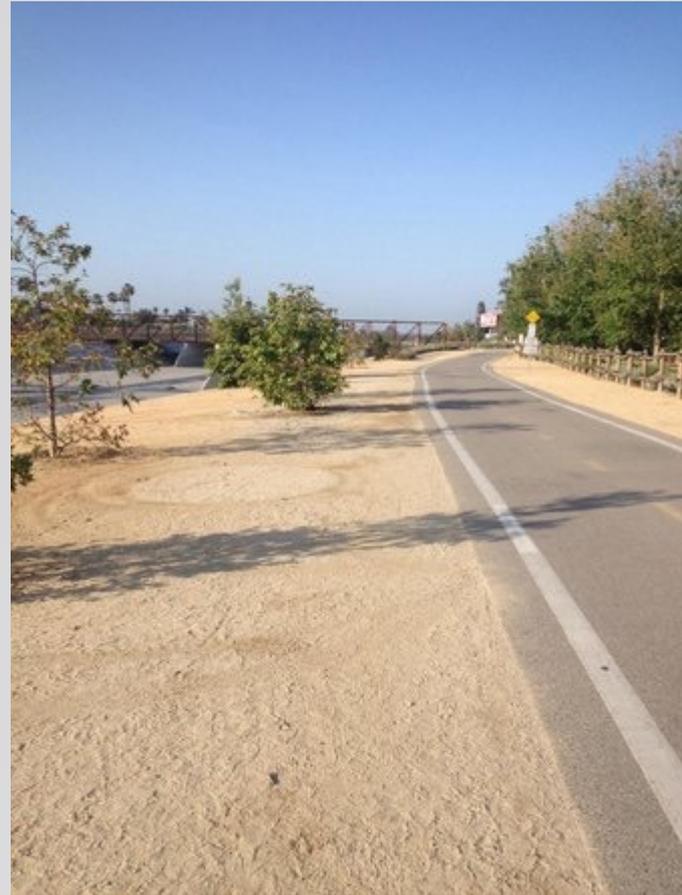
PART I

Mitigation Alternatives



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.



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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.





Public Education & 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.



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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.





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.



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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.





Structural Projects

NOTE: When considering structural projects, it is important to observe benchmark years for construction and building codes.

| Post-Mile | Bridge/Overpass Number | Structure Name | Type | Length (m) | Width (m) | Spans | Clear Height (m) | Year Built | Permit Rating |
|-----------|------------------------|-------------------|------------------|------------|-----------|-------|------------------|------------|--------------------|
| _001.31 | 54 0528 | BARTON ROAD OC | 204 ² | 78.3 | 16.1 | 4 | 4.42 | 1959 | PPPPP ³ |
| _001.78 | 54 1294 | NEWPORT AVENUE OC | 205 ⁴ | 56.4 | 15.5 | 2 | 5.56 | 2014 | PPPPP |

Notes:

¹ The minimum vertical clearance over the traveled way portion of the route in meters.

²204= Concrete, continuous, Tee Beam

³ PPPPP = permit capacity for 5, 7, 9, 11, and 13 axle vehicles.

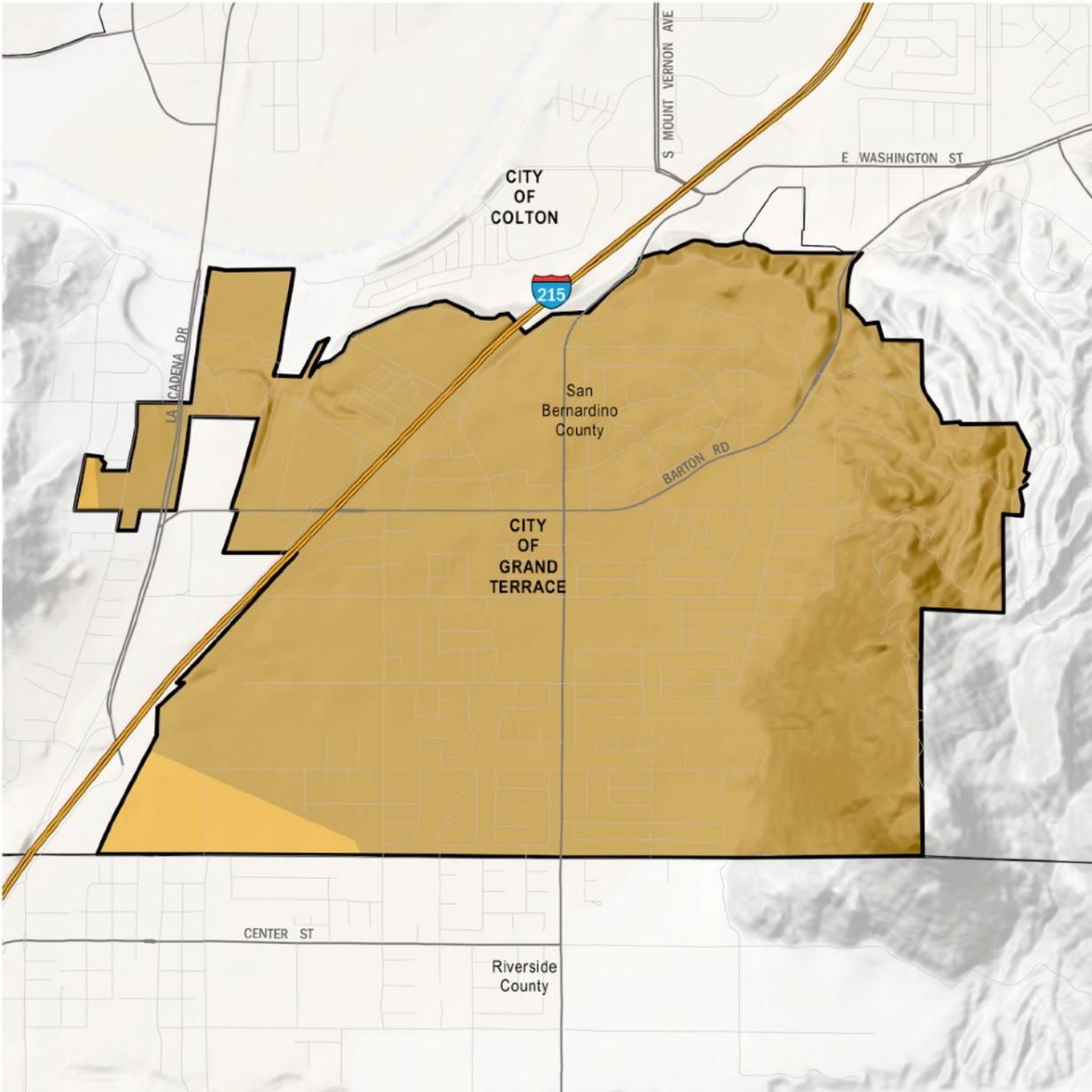
⁴ 205= Concrete, continuous, Box Beam or Gliders - Multiple



Earthquake

Palm Ave and on Blue Mountain-There are two water reservoirs. If they get damaged in an earthquake, they may present a flood hazard.

-Hanni Bennett



EXPLANATION

City of Grand Terrace

Shakeout Full Scenario [MMI]

VIII (Severe)

IX (Violent)

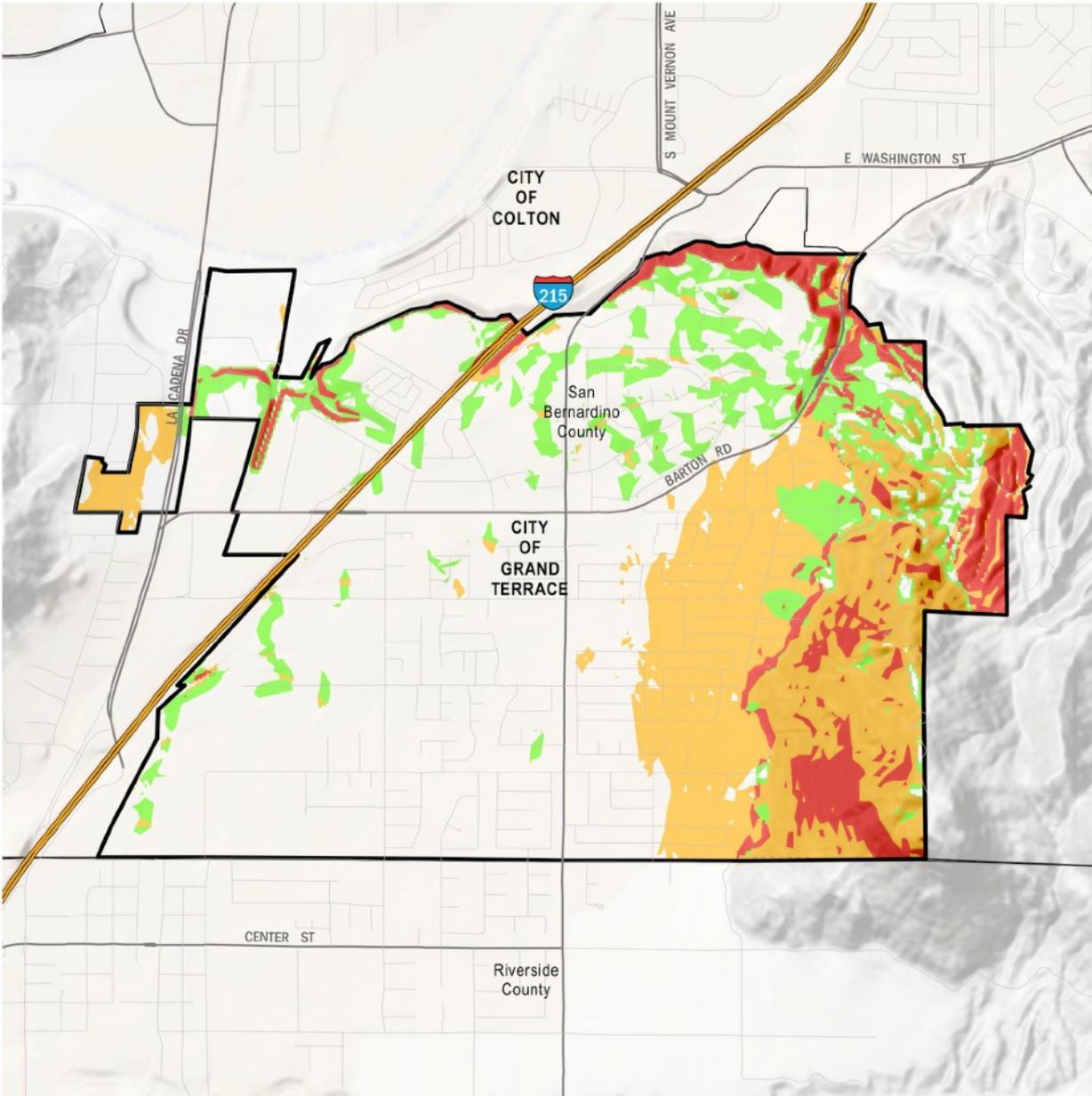




Landslide

There are very steep slopes along the northern end of Mt. Vernon close to City boundary with Colton. In heavy rain storms we do experience severe mud slides that could potentially impede traffic in all travel lanes.

-Yanni Demitri



0 0.35 0.7 Miles

City of Grand Terrace

EXPLANATION

Landslide Susceptibility (CGS)
 Low

Medium
 High

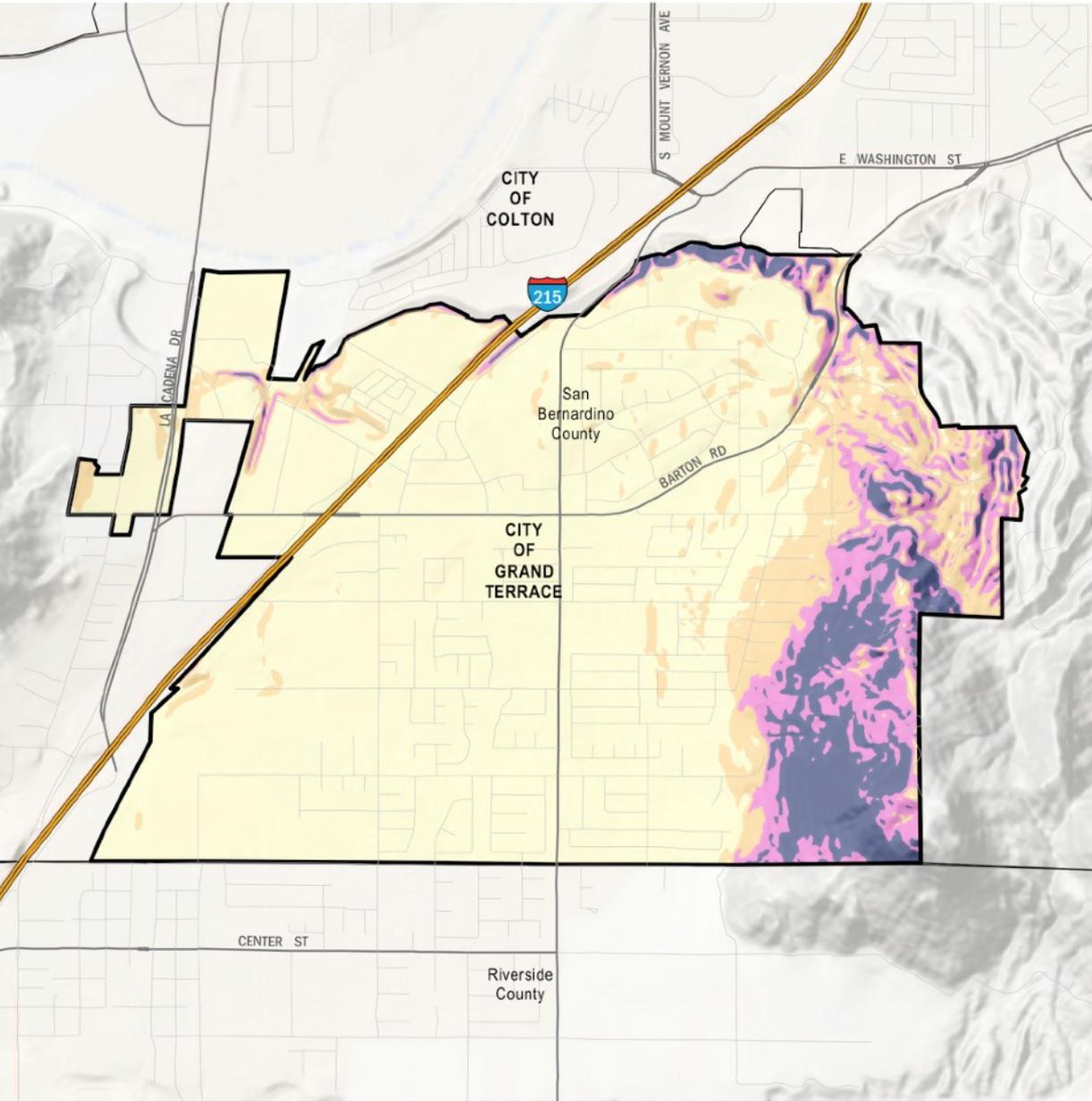




Landslide

Mud slides could also impact all houses at the foothill of Blue Mountain in the eastern part of town.

-Yanni Demitri



EXPLANATION

 City of Grand Terrace

Slope (%)
 <5%

 5-15%
 15-25%

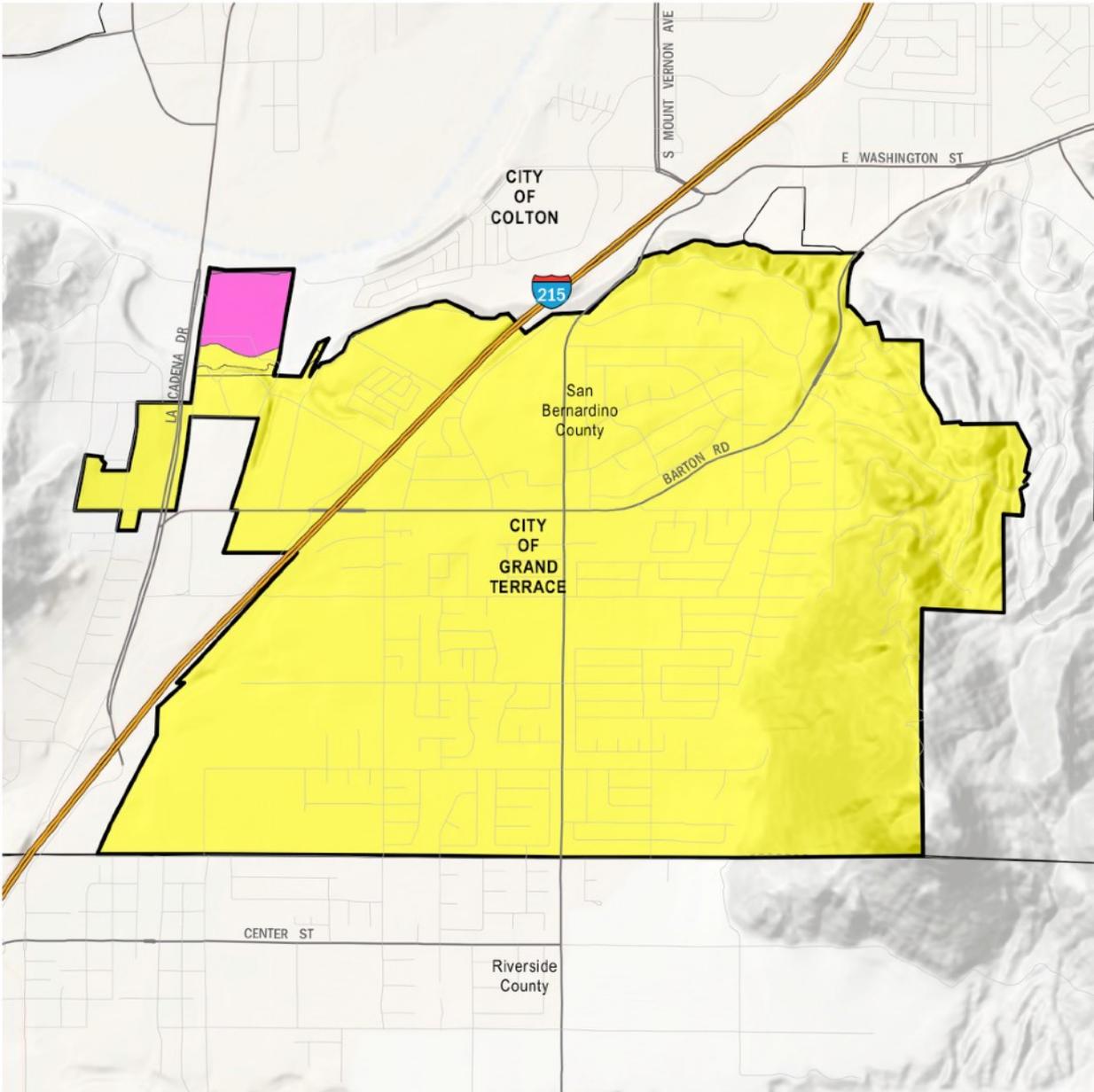
 >25%



Flood

Pico St. - As recent rains have shown, mud and debris clogs up the drains very quickly, and Pico turns into a fast-flowing river. Residents along the street and in the cul-de-sacs off Pico are trapped.

-Hanni Bennett



0 0.35 0.7 Miles

EXPLANATION

 City of Grand Terrace

 100-Year Flood Zone (Floodway)

 500-Year Flood Zone

 100-Year Flood Zone

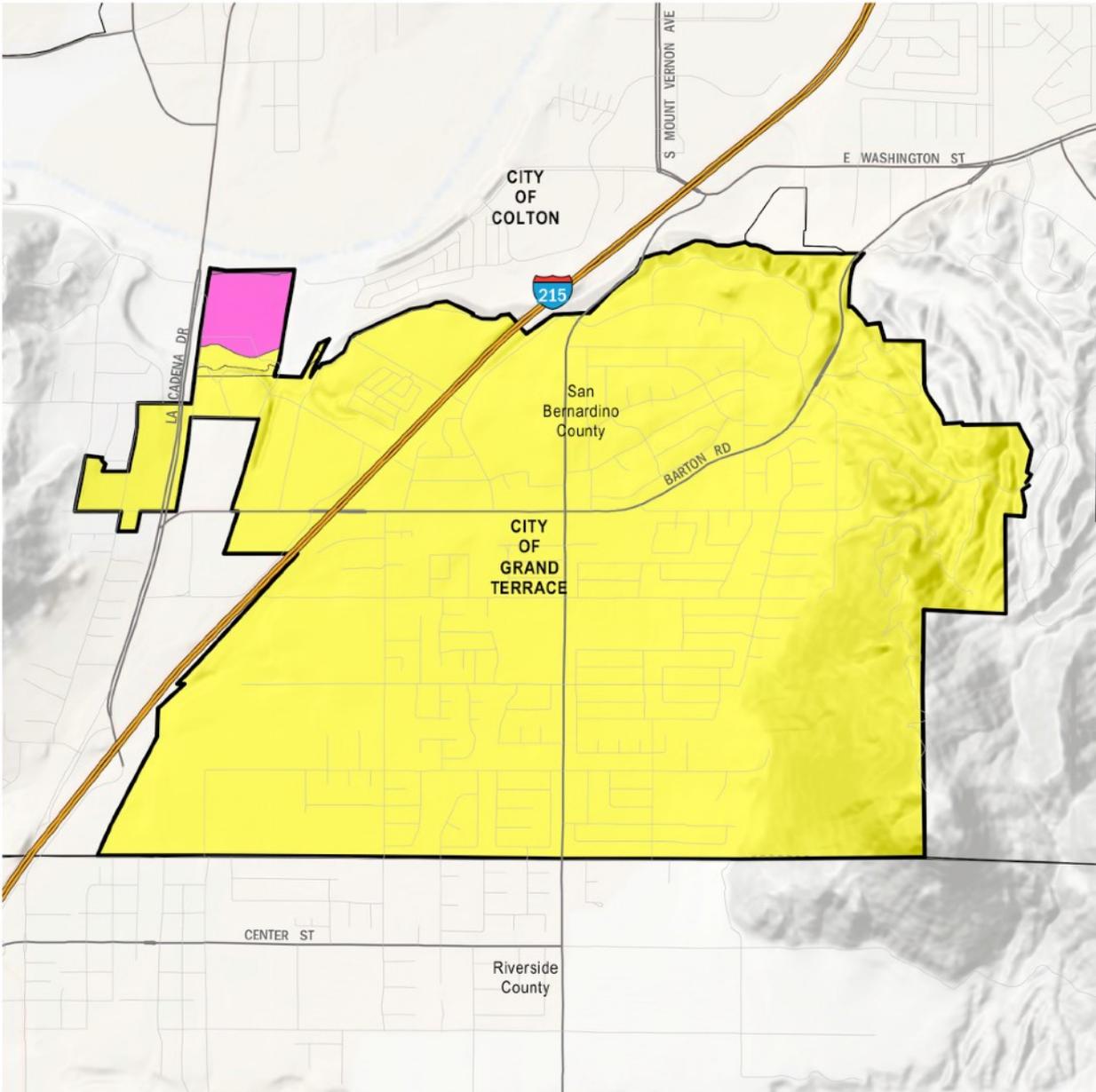




Flood

During heavy rain storms several of our streets are rendered impassable such as all of Pico Street from east to west City limits as well as sections of Michigan Street near Pico Street.

-Yanni Demitri



0 0.35 0.7 Miles

EXPLANATION

 City of Grand Terrace

 100-Year Flood Zone (Floodway)

 500-Year Flood Zone

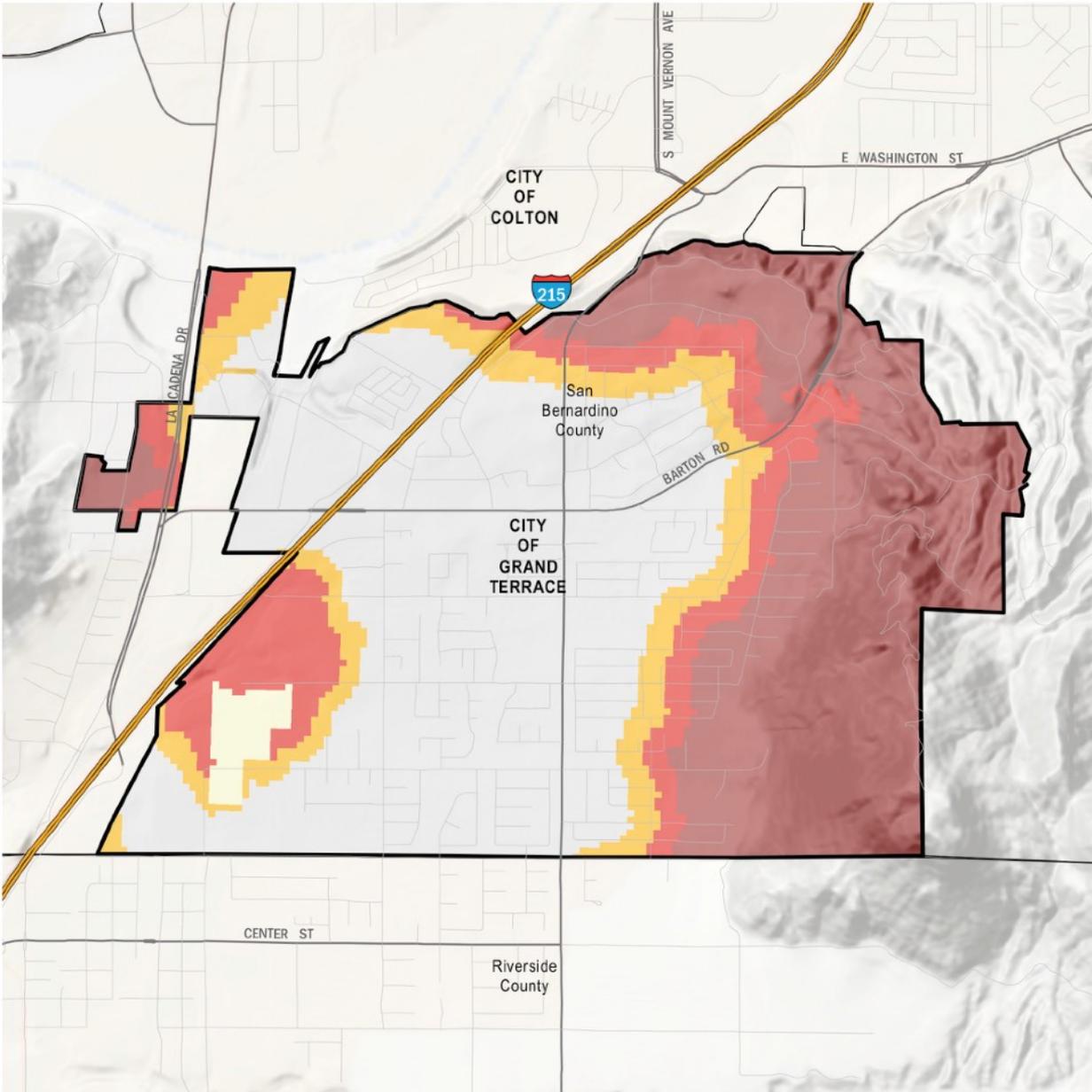
 100-Year Flood Zone





Wildfire

Residents along the City's east/northeast and western-most borders of the city are in the Very High fire hazard severity zone.



0 0.35 0.7 Miles

EXPLANATION

City of Grand Terrace

LRA Fire Hazard Severity Zone

Very High

High

Moderate

Non-Wildland/Non-Urban

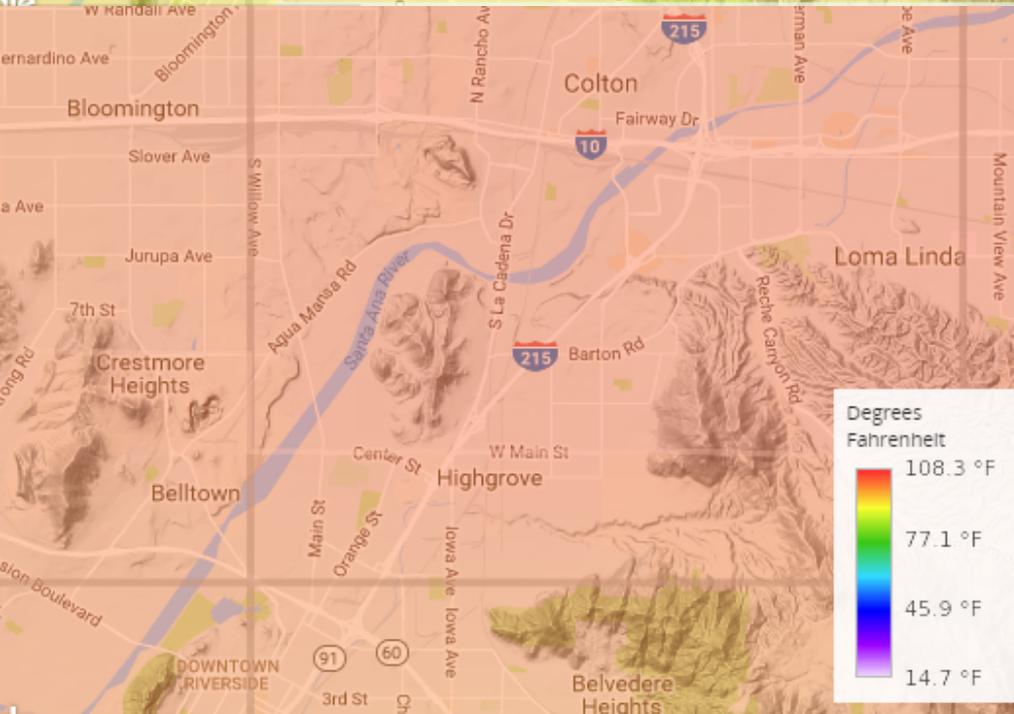
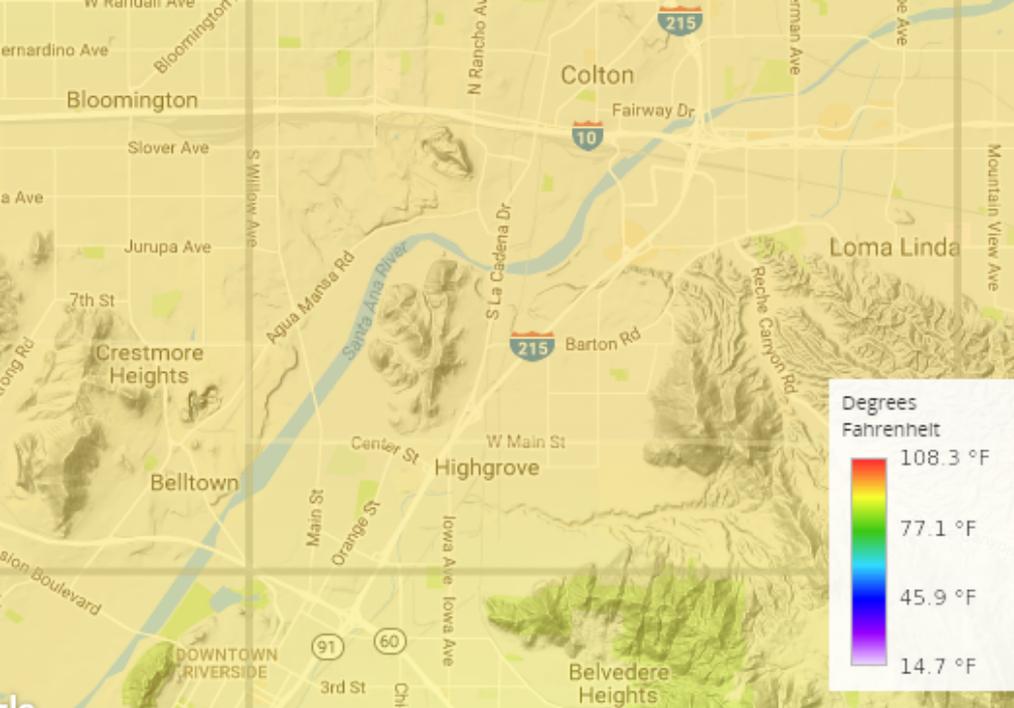
Urban, Unzoned





Climate Change

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.





EXERCISE

Develop / Develop / Finalize Problem Statements

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PART II

Goals and Objectives



Goals VS. Objectives

- **Mitigation goals** are general guidelines that explain what the community wants to achieve with the plan. They are usually broad policy-type statements that are long-term, and they represent visions for reducing or avoiding losses from the identified hazards.
- Example goal: Minimize new development in hazard-prone areas.



Source: FEMA's Local Mitigation Planning Handbook





Goals VS. Objectives

- **Objectives** are broader than specific actions, but are measurable, unlike goals. Objectives connect goals with the actual mitigation actions.
- **Example objective:** Reduce the number of vulnerable structures in flood hazards areas.



Source: FEMA's Local Mitigation Planning Handbook



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Current Goals and Objectives

Something to consider...

- The goals of the 2013 State Hazard Mitigation Plan are to:
 1. Significantly reduce life loss and injuries
 2. Minimize damage to structures and property, as well as minimizing interruption of essential services and activities
 3. Protect the environment
 4. Promote hazard mitigation as an integrated public policy and as a standard business practice





Current Goals and Objectives

- **All Hazards Goal:** Continuously integrate new data on natural and manmade hazards into overlay mapping and the review of land use proposals and applications and the enforcement of development standards through the use of mapping overlays, policies and land use designations. Improve infrastructure to better withstand the occurrence of an event.

2011 Hazard Mitigation Plan



Current Goals and Objectives

- **Wildfire Goal:** Support and expand disaster response programs, and initiate a program for post-disaster planning.

2011 Hazard Mitigation Plan





EXERCISE

Create Goals and Objectives



Goals and Objectives

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2013 State of California Hazard Mitigation Plan Goals

1. Significantly reduce life loss and injuries
2. Minimize damage to structures and property, as well as minimizing interruption of essential services and activities
3. Protect the environment
4. Promote hazard mitigation as an integrated public policy and as a standard business practice

Current Grand Terrace Hazard Mitigation Goals and Objectives

All Hazards Goal:

Continuously integrate new data on natural and manmade hazards into overlay mapping and the review of land use proposals and applications and the enforcement of development standards through the use of mapping overlays, policies and land use designations. Improve infrastructure to better withstand the occurrence of an event.

Earthquake Objectives: Because strong technical input is needed to refine, enlarge and improve the knowledge of geologic hazards in Grand Terrace, the City shall implement the following actions.

1. Coordinate with the Countywide information gathering effort, and ensure that the City will accomplish the following tasks.
 - a. Solicit and coordinate geological studies by the United States Geological Survey (USGS), the California Division of Mines and Geology (DMG), the County and other local agencies, and make the resultant data available to the public and other agencies.
 - b. Maintain clear and comprehensive mapping of all geological hazards.
2. Incorporate newly acquired data and technology into the mapping, policies and procedures of this General Plan.
3. Review and update facilities as needed to ensure better capabilities of withstanding an event occurrence.

Wildfire Objectives: The City shall require, where appropriate, the use of fire safety features in newly-proposed developments which will balance fire protection services with the potential need. These measures may include, but shall not be limited to, measures specified in Development Requirements.



Because fire exists as a hazard City-wide, the following requirements shall apply City-wide unless superseded by the more stringent requirements of the Fire Hazard Overlay:

1. Continue to evaluate and amend as necessary development standards for location, building separations, structural design and detection hardware.
2. The City shall ensure that successive uses of individual buildings comply with appropriate building and fire standards.
3. Continue to work with San Bernardino County Fire Protection District to identify areas of the City that are subject to wild land fires.
4. Areas of the City subject to wild land fires shall be evaluated to determine whether they should be designated as open space.

Wildfire Goal:

Support and expand disaster response programs, and initiate a program for post-disaster planning.

Objectives: Because an integrated approach is needed to coordinate the City's present and future needs in fire protection services in response to fire hazards and risks and to serve as a basis for program budgeting, identification and implementation of optimum cost-effective solutions, the City shall implement the following actions.

1. Continue to coordinate fire protection services for the City, with the County.
2. Require development applicants, in areas of identified fire risk, to comply with specific regulations.
3. Require applicants to fund expansion of local fire protection services by payment of appropriate impact fees.
4. Implement monitoring of fire-prevention measures (such as fuels reduction) to prevent damage to biological habitats in chaparral areas.

Where appropriate, open space shall be used to protect public health and safety resulting from wild land fires in the City of Grand Terrace.



Potential 2017 Goals and Objectives (Option #1):

All Hazards Goal 1: Maintain a high degree of readiness to respond to natural and man-made disasters. (2010 General Plan Public Health and Safety Element)

Earthquake (EQ) Goal: Minimize the risk to public health and safety, social and economic welfare of the City resulting from geologic and seismic hazards. (2010 General Plan Public Health and Safety Element)

EQ Objective 1: All new development shall comply with current seismic design standards. (2010 General Plan Public Health and Safety Element)

EQ Objective 2: All proposed developments shall be evaluated for impacts associated with geologic and seismic hazards. (2010 General Plan Public Health and Safety Element)

EQ Objective 3: Existing structures which are seismically unsound shall be identified and programmed for mitigation or removal where necessary to protect the public safety. Cultural and historic significance of buildings shall be considered in this program. (2010 General Plan Public Health and Safety Element)

EQ Objective 4: Grading plans for development projects shall include an approved drainage and erosion control plan to minimize the impacts from erosion and sedimentation during grading. (2010 General Plan Public Health and Safety Element)

Landslide (LS) Goal: Protect humans and property from hazards associated with slope instability. (2010 General Plan Public Health and Safety Element)

LS Objective 1: The City shall continue to enforce hillside development standards for proposed developments in areas on or near areas of potential slope instability. (2010 General Plan Public Health and Safety Element)

LS Objective 2: All new developments in areas of slope instability shall be required to perform adequate geotechnical analysis and provide an engineered design to assure that slope instability will not impact the development. (2010 General Plan Public Health and Safety Element)



Wildfire (WF) Goal: Minimize the exposure of residents, business owners, and visitors to the impacts of urban and wildland fires. (2010 General Plan Public Health and Safety Element)

WF Objective 1: Where appropriate, open space shall be used to protect public health and safety resulting from wild land fires in the City of Grand Terrace. (2010 General Plan Open Space and Conservation Element)

WF Objective 2: The City shall apply a high fire overlay district to those areas in the City subject to wildland fires such as portions of Blue Mountain.

WF Objective 3: Continue the weed abatement program to ensure clearing of dry vegetation areas.

WF Objective 4: Encourage the use of fire-resistive construction materials.

Flood (FL) Goal: Reduce the risk to life and property in areas designated as flood hazard areas. (2010 General Plan Public Health and Safety Element)

Flood (FL) Alternative Goal: Provide adequate flood protection to minimize hazards and structural damage. (2016 San Bernardino County MJHMP)

FL Objective 1: Open space shall be used to protect public health and safety resulting from flood hazard conditions in the City of Grand Terrace. (2010 General Plan Open Space and Conservation Element)

FL Objective 2: All development proposed within a designated 100-year floodplain shall be reviewed to assure that all structures designated for human habitation are adequately protected from flood hazards. (2010 General Plan Public Health and Safety Element)

FL Objective 3: The City shall work with the San Bernardino County Flood Control District and Army Corps of Engineers to provide adequate flood protection along the Santa Ana River. (2010 General Plan Public Health and Safety Element)

FL Objective 4: The City shall evaluate the flood control system of the City and improve it as required and as funds become available. (2010 General Plan Public Health and Safety Element)

FL Objective 5: The City shall require all development projects to comply with the National Pollutant Discharge Elimination System (NPDES) and implement appropriate Best Management Practices. (2010 General Plan Public Health and Safety Element)



Climate Change (CC) Goal: Reduce the impacts of climate change on the City and limit human activities that change the atmosphere's makeup. (2016 San Bernardino County MJHMP)

CC Objective 1: Meet greenhouse gas (GHG) reductions targets set forth by the Clean Air Act. (2016 San Bernardino County MJHMP)

CC Objective 2: Educate the public on the effects of climate change and reducing our impact. (2016 San Bernardino County MJHMP)



Potential 2017 Goals and Objectives (Option #2):

ALL HAZARD OBJECTIVE 1: Continuously improve hazard 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.

Potential 2017 Goals and Objectives (Option #3, State HMP):

ALL HAZARD OBJECTIVE 1: Significantly reduce life loss and injuries

ALL HAZARD OBJECTIVE 2: Minimize damage to structures and property, as well as minimizing interruption of essential services and activities

ALL HAZARD OBJECTIVE 3: Protect the environment

ALL HAZARD OBJECTIVE 4: Promote hazard mitigation as an integrated public policy and as a standard business practice



Mitigation Alternatives

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To narrow mitigation alternatives for inclusion in the HMP, FEMA's six broad categories of mitigation alternatives will be used. Each FEMA category is described below. We will be developing 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.

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:

- Building elevation;
- Critical facilities protection;
- Retrofitting (e.g., wind proofing, flood proofing, seismic design techniques, etc.);
- Safe rooms, shutters, shatter-resistant glass; and
- Insurance.



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.

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;

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.

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
- New Construction Standards