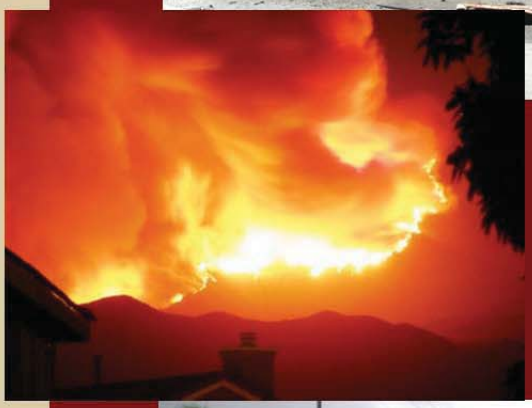

City of Moreno Valley

Local Hazard Mitigation Plan

October 4, 2011

Prepared By:
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Office of Emergency Management

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Plan Adoption

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF RIVERSIDE) ss.
CITY OF MORENO VALLEY)

I, JANE HALSTEAD, City Clerk of the City of Moreno Valley, California, do hereby certify and attest the foregoing to be a true and correct copy of the original Resolution No. 2011-102 on file in my office.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the City of Moreno Valley, this 1st day of November, 2011.

Jane Halstead, CMC, City Clerk
City of Moreno Valley

(SEAL)

RESOLUTION NO. 2011-102

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, ADOPTING THE CITY OF MORENO VALLEY LOCAL HAZARD MITIGATION PLAN AS REQUIRED BY THE FEDERAL DISASTER MITIGATION AND COST REDUCTION ACT OF 2000.

WHEREAS, the Disaster Mitigation and Cost Reduction Act of 2000 (DMA 2000) was signed into law on October 30, 2000 by the President of the United States; and

WHEREAS, the DMA 2000 requires all jurisdictions to be covered by a Local Hazard Mitigation Plan to be eligible for Federal Emergency Management post-disaster funds; and

WHEREAS, the Office of Emergency Management for the City of Moreno Valley developed a Local Hazard Mitigation in 2011 that is specific for Moreno Valley; and

WHEREAS, the City of Moreno Valley is concerned about mitigating potential losses from natural disaster before they occur; and

WHEREAS, the Local Hazard Mitigation Plan identifies potentials hazards, potential losses, and potential mitigation measures to limit losses;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

1. Resolution 2005-11 and all prior enactments on the same subject are hereby repealed

2. The City of Moreno Valley Local Hazard Mitigation Plan is adopted effective immediately

SIGNATURE PAGE FOLLOWS

APPROVED AND ADOPTED this 25th day of October, 2011.

Mayor of the City of Moreno Valley

ATTEST:

City Clerk

APPROVED AS TO FORM:

City Attorney

Executive Summary

The 2011 City of Moreno Local Hazard Mitigation Plan (LHMP) is designed to reduce or eliminate the long-term natural or man-made hazard risks to human life and property for the City of Moreno Valley and its citizens.

The 2011 LHMP is a new plan that completely replaces the 2004 Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan which Moreno Valley City Council adopted on January 25, 2005 (Resolution No. 2005-11). The 2011 LHMP is more specific and focused to the City of Moreno Valley, rather than summarized in fill-in the blank forms and yes and no questionnaires utilized in the 2004 multi-jurisdiction plan. As such, and according to FEMA's 2008 Local Multi-Hazard Mitigation Planning Guidance, the plan may involve a major plan rewrite.

The City of Moreno Valley Local Hazard Mitigation Plan is written so that all stakeholders can understand Moreno Valley's hazard risks and the city's corresponding mitigation strategy. Hazard mitigation responsibility rests with everyone. The City of Moreno Valley encourages its citizens to do mitigation planning at every level – at home, in the workplace and in their communities.

The City of Moreno Valley Local Hazard Mitigation Plan was prepared pursuant to the requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by Section 322 of the Disaster Mitigation Act of 2000 and the 44 Code of Federal Regulations (CFR) Part 201 – Mitigation Planning. The goals of the plan are to: 1) Protect life, property and the environment; 2) Provide public awareness; 3) Protect the continuity of government; and 4) Improve emergency management, preparedness, collaboration and outreach.

The mitigation plan is divided into 3 parts.

- Part 1 provides a profile of the City of Moreno Valley and describes the local planning process, as well as, public participation. It also provides a process for monitoring, evaluating and updating the plan.

- Part 2 provides a detailed assessment of the risks associated with each hazard and historical information on past occurrence. Part 2 also discusses vulnerabilities from each hazard, the impact to Moreno Valley and its citizens and when data is available, it provides information on the potential loss.

- Part 3 provides information about the City's mitigation goals to reduce or avoid long-term vulnerabilities to the hazards that may affect the City of Moreno Valley and an action plan for those goals, with an emphasis on prioritization and implementation.

PART 1

INTRODUCTION

Chapter 1: Community Profile

1.1 Planning Area Description

The City of Moreno Valley officially incorporated on December 3, 1984 as a California general law municipality. Moreno Valley is comprised of three once-rural communities (Sunnymead, Edgemont and Moreno) and is located in the northwestern portion of Riverside County, approximately 66 miles east of Los Angeles, 42 miles west of Palm Springs and 100 miles north of San Diego. Moreno Valley is situated in a crescent of land bounded by the Box Springs Mountains to the north, the hills of the Badlands to the east and the mountains of Lake Perris State Recreation Area. The surrounding jurisdictions include the City of Riverside, the City of Perris, March Air Reserve Base, the San Jacinto Wildlife Area and Lake Perris State Recreation Area.

Moreno Valley is 51.56 square miles and is situated along two major freeways, State Route 60 to the east and Interstate 215, which runs by the westerly City limits.

The elevation of Moreno Valley ranges from a low of approximately 1,550 feet to a high of 1,800 feet. Moreno Valley gradually slopes to the south and southwest with the higher elevations north of State Route 60 and the lower elevations near March Air Reserve Base. The City lies primarily on bedrock geology known as the Perris Block. The Perris Block is a large mass of granitic rock generally bounded by the San Jacinto Fault, the Elsinore Fault, the Santa Ana River and a non-defined southeast boundary.

There are a few small ponds and lakes scattered throughout the City. In addition, Lake Perris is located south of the City. Moreno Valley is located within the Santa Ana River and the San Jacinto River watersheds, with the majority of the City being within the watershed of the San Jacinto River.

The topography and climate combine to make the air basin an area of high air pollution potential. The basin fails to meet state and federal air quality standards for four of the six criteria pollutants including ozone, nitrogen dioxide, carbon monoxide and fine particulate matter.

The natural habitat is largely disturbed by urban development, weed abatement or agricultural activities. The City also supports other native, semi-native and non-native plants. Moreno Valley has a rich diversity of wildlife species located mostly in undeveloped portions of the City, including mule deer, coyotes, bobcats, badgers and gray fox. The City also includes a few species listed under the Endangered Species Act such as Stephen's kangaroo rat, the California gnatcatcher, the Least bells vireo, and the San Bernardino kangaroo rat. Potentially listed species include the orange throated whiptail, the San Diego horned lizard and the short nosed pocket mouse.

1.2 Population/Demographics

The City of Moreno Valley is among California's fastest growing cities and the second most populous in Riverside County. According to the 2010 United States Census, the population of the City of Moreno Valley was reported at 193,365. The population density was 3,756.5 people per square mile. This was an increase in population of 43,162 from the amount reported in the multi-jurisdictional hazard mitigation plan in 2004. Population growth is expected to reach nearly 227,612 by 2016, thus creating more community exposure to natural and man-made hazards.

Table 1-2: Population

Population	
193,365[1]	43,162 increase from 2004
227,612	Projected by 2016[2]

The 2010 United States Census reported the racial makeup of Moreno Valley is 80,969 White, 34,889 African American, 1,721 Native American, 11,867 Asian, 1,117 Pacific Islander and 51,741 were from other races and 11,061 were from two or more races. Hispanic or Latino of any race was 105,169.

The Census reported that 192,811 people (99.7% of the population) lived in households, 471 (0.2%) lived in non-institutionalized group quarters, and 83 (0%) were institutionalized.

There were 51,592 households, out of which 28,586 (55.4%) had children under the age of 18 living in them. 6,094 households (11.8%) were made up of individuals and 1,611 (3.1%) had someone living alone who was 65 years of age or older. There were 12,134 people who were 65 years of age or older. The average household size was 3.74. There were 43,181 families (83.7% of all households) with an average family size of 3.99.

1.3 Climate

Moreno Valley is in a semi-arid area of western Riverside County just east of the San Bernardino Mountains and south of the San Gabriel Mountains. According the Köppen climate classification system, which is a widely used climate classification system, Moreno Valley is located in the CSa class.

The average annual mean temperature for January is 55 degrees. In July, the average mean temperature is 76 degrees. The highest recorded temperature was 115 degrees in 1960. During the summer, the maximum temperature ranges from 90 to 100 degrees

[1] United States Census (2010)
[2] Nielsen Report (2012)

Fahrenheit. According to the California Department of Water Resources, annual rainfall can vary greatly from year to year, but averages in the region are from 11 to 14 inches annually.

Table 1-3: Moreno Valley Climate by Month[3]

Month	High	Low	Average	Precipitation
January	66.9°F (19.4°C)	46.2°F (7.9°C)	55.4°F (13.0°C)	2.68" (68.0 mm)
February	63.8°F (17.7°C)	42.9°F (6.0°C)	52.3°F (11.3°C)	2.24" (56.8 mm)
March	70.0°F (21.1°C)	45.1°F (7.3°C)	56.8°F (13.8°C)	0.68" (17.1 mm)
April	73.5°F (23.1°C)	47.5°F (8.6°C)	59.4°F (15.2°C)	0.45" (11.3 mm)
May	78.8°F (26.0°C)	51.3°F (10.7°C)	63.8°F (17.7°C)	0.31" (7.7 mm)
June	85.8°F (29.9°C)	56.1°F (13.4°C)	69.7°F (20.9°C)	0.01" (0.3 mm)
July	93.7°F (34.3°C)	62.6°F (17.0°C)	76.7°F (24.8°C)	0.02" (0.5 mm)
August	95.1°F (35.1°C)	63.1°F (17.3°C)	77.7°F (25.4°C)	0.00" (0.0 mm)
September	92.4°F (33.6°C)	63.1°F (17.3°C)	76.4°F (24.6°C)	0.08" (2.1 mm)
October	80.1°F (26.7°C)	56.4°F (13.6°C)	66.9°F (19.4°C)	0.32" (8.1 mm)
November	73.9°F (23.3°C)	49.9°F (10.0°C)	60.6°F (15.9°C)	0.74" (18.8 mm)
December	63.3°F (17.4°C)	44.1°F (6.7°C)	52.5°F (11.4°C)	5.24" (133.1 mm)

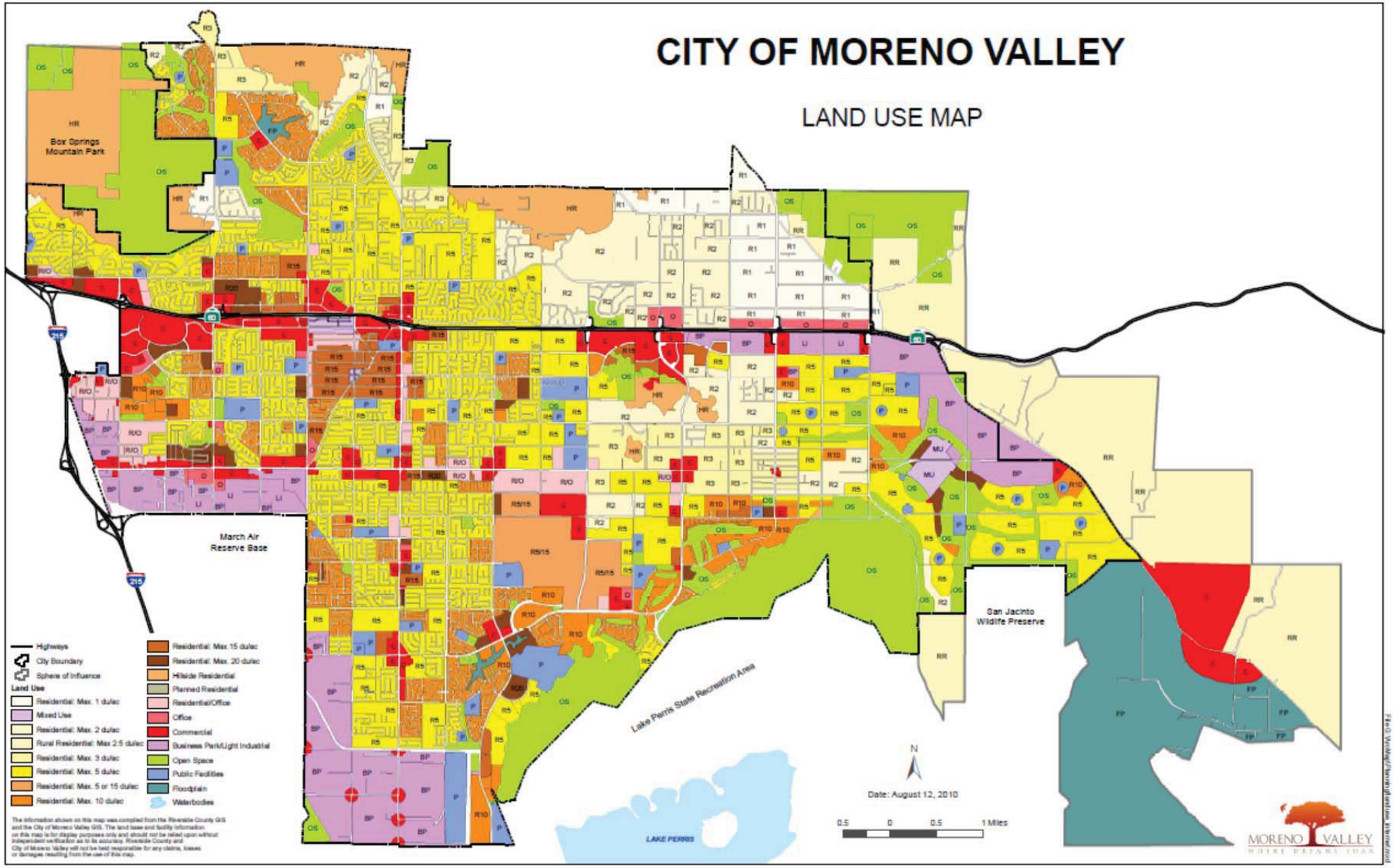
1.4 Land Use

Land use within Moreno Valley has been primarily residential, which includes approximately 60,000 homes/apartments. Other land uses include commercial and industrial. There are approximately 4,766 commercial businesses, with several planned developments on the horizon which will increase the amount of commercial business within the City. Agricultural production land is concentrated in the eastern portion of the City. A joint civilian and military airport is located at the southwestern boundary. The State of California owns and operates two regional recreation and open space areas, the San Jacinto Wildlife and the Lake Perris State Recreation Areas at the southern boundary. See Figure 1.4.

Neighboring land uses include the San Jacinto Wildlife Area, which is located near the southeastern boundary of the City of Moreno Valley and was created by the State of California as mitigation for the loss of wildlife habitat. Part of the San Jacinto Wildlife Area is within the historic floodplain of the San Jacinto River and is subject to periodic flooding. The resulting floodwater, known as Mystic Lake has been known to inundate the area for months or years at a time. The neighboring area of Lake Perris State Recreation Area is situated along the southern boundary of the City. Riverside County operates Box Springs Mountain Park along the northwest City boundary.

[3] http://weathercurrents.com/morenovalley/Climate.do Retrieved September 24, 2011

Figure 1-4 Land Use Map



Chapter 2: The Planning Process

2.1 Coordination Among Agencies and Departments

The overall approach to the City of Moreno Valley Local Hazard Mitigation Plan (LHMP) was to develop an understanding of the natural and man-made hazards to the City of Moreno Valley and to determine ways to reduce those risks, prioritize and implement mitigation strategies.

To complete these objectives, the City of Moreno Valley assigned Office of Emergency Management (OEM) staff to coordinate and collaborate with departments, agencies, neighboring communities, businesses, academia, and other stakeholders. During the planning process, OEM staff participated in several Operational Area Planning Committee meetings and workshops where the Local Hazard Mitigation Plan process was discussed amongst multi-agencies and non-profits throughout Riverside County.

A local planning meeting was held on September 13, 2011, with numerous agencies such as Moreno Valley Kaiser Hospital; Riverside Community College (RCC) representing Moreno Valley College, RCC Norco Campus and RCC Riverside Campus; Riverside County Office of Education; March Air Reserve Base; special districts; and volunteer agencies, as well as, surrounding cities such as the City of Riverside. Discussions included a history of disasters, mitigation efforts and identifying and ranking local hazards.

Over the last year, OEM staff collaborated with City departments, divisions and programs such as Capital Projects, Transportation and Engineering, Electric Utility, Police, Fire, Building and Safety, Planning, Land Development, Parks and Community Services, Finance and GIS to identify hazards; conduct a risk assessment for each hazard; and identify goals, actions and implementation of mitigation strategies for the City of Moreno Valley Local Hazard Mitigation Plan. Individual OEM staff collaborated with were: City Clerk, Fire Marshal, Fire Battalion Chief, Police Lieutenant, Community and Economic Development Analyst, Building Official, Associate Planner, Planning Technician, Electric Utility Division Manager, Fire Management Assistant, and Finance Accounting Assistant. Many of these collaborations included discussion of municipal laws and building codes related to hazard mitigation, hazard-specific information and mitigation strategies.

Existing plans, studies, reports and technical information where reviewed and implemented during this process, which included the 2008 FEMA Local Multi-Hazard Mitigation Planning Guidance; 2010 State of California Multi-Hazard Mitigation Plan; 2009 Emergency Operations Plan; 2006 General Plan, Environmental Impact Report and Safety Element; 2011 Standard Plans; 2008

Storm Water Quality Best Management Practice; 2011 Capital Improvement Plan, numerous municipal codes; Special Report 186 - The Landslides in the Highway 60 Corridor report; 2004 Riverside County Water Quality Management Plan for Urban Runoff; and the 2004 Riverside County Operational Area Multi-Jurisdictional Hazard Mitigation Plan.

2.2 Public Participation

Moreno Valley conducted several meetings to solicit public participation for the Local Hazard Mitigation Plan (LHMP) planning process. On October 22, 2010, a meeting was held to a group of volunteers representing a sampling of citizens within Moreno Valley. The objective was to inform of the overall mitigation strategy, discuss the hazard ranking and obtain comments. Citizens were very pleased with the LHMP process and ranking and offered no other comments. No formal agenda was prepared.

A second public meeting was held on September 15, 2011 to another group of volunteers, again representing a sampling of citizens within Moreno Valley. A copy of the agenda is included in Appendix B. The citizens provided input to the hazard matrix and discussed rankings for severity and probability. Comments were specific to incidents that occurred within our City. For instance, when discussing flooding within Moreno Valley, they discussed the flooding on the east side of the City. During discussion of transportation incidents, they recalled the January 2003 incident where a big rig truck plunged 20 feet off Highway 60 overpass at Perris Blvd, striking vehicles below and causing a hazardous materials incident.

Public participation was also solicited during a Local Hazard Mitigation Planning Meeting held on September 29, 2011. Citizens were given an overview of the hazard mitigation strategy and hazard ranking and hazard relationships were discussed. Citizens were pleased with the process and offered comments related to their experiences with previous events that occurred in and around Moreno Valley. A copy of the agenda and announcement of meeting is also included in Appendix B. In addition, mitigation planning and strategies were discussed at each Community Emergency Response Team (CERT) class that was held during the planning process.

Moreno Valley City Council, who remains engaged in hazard mitigation through regular updates at the Public Safety Subcommittee and through review and adoption of municipal codes and policies and approval of projects that support the City mitigation goals, strategies and actions, formally adopted the plan on October 27, 2011. This televised meeting was open to the public and advertised in advance on the City website and posted strategically at locations within the City, which allowed for public comment.

2.3 Plan Maintenance

The City of Moreno Valley Local Hazard Mitigation Plan (LHMP) remains an important tool to reduce the effects of hazards within the City. According to 44 Code of Federal Regulations §201.6(c)(4), the plan must have a maintenance strategy that includes a method and schedule for monitoring, evaluating and updating the plan; a process for incorporating into existing planning mechanisms; and a strategy for continuing public involvement.

Method/Schedule for Monitoring the Plan:

The LHMP includes mitigation goals that reduce or avoid long-term vulnerabilities to the hazards identified and specific mitigation actions. Together, they provide a framework for activities that the City can choose to implement over the next five years. The effectiveness of the plan depends on the incorporation of the action items into existing City plans, policies, and programs.

Office of Emergency Management (OEM) staff will assume the lead role of monitoring the mitigation plan and coordinating with appropriate departments, divisions and programs within the City to ensure that the identified mitigation goals and actions are incorporated into plans, policies and existing City programs. OEM will confer with City staff annually to perform annual reviews of the LHMP and its implementation. The goal will be to discuss any hazard events that occurred during the prior year and their impact on the City of Moreno Valley; evaluate the mitigation goals and actions to determine if the timeline is appropriate; determine what plans, policies and procedures need to be updated as a result of the LHMP; and to determine if additional mitigation actions need to be added; and to discuss new mitigation grant funding opportunities.

Evaluating and Updating the Plan:

As required by the 44 Code of Federal Regulations §201.6(d)(3), the City of Moreno Valley will update the LHMP every five years. The Office of Emergency Management (OEM) staff is responsible for the update every five years and will follow the following process during the update:

- In January 2015, OEM will convene the hazard mitigation planning committee consisting of representatives from Capital Projects, Transportation and Engineering, Electric Utility, Police, Fire, Building and Safety, Planning, Land Development, Solid Waste, Maintenance and Operations, Special Districts, Parks and Community Services, Finance and GIS, as well as representatives from local school districts, hospitals and other agencies and stakeholders.
- Using the best available guidance, information and technology, regulatory policies and procedures, each chapter will be reviewed and updated to determine if changes are needed.

- The mitigation action plan will be reviewed and revised to account for any initiatives completed, discontinued and/or changed and to account for changes in the risk assessment or new City policies identified through other planning mechanisms, as appropriate (such as the general plan).
- In April 2015, the draft update will be sent to the hazard mitigation planning committee and other stakeholders for review and comment.
- In April 2015, the public will be given an opportunity to comment on the update prior to adoption. Office of Emergency Management (OEM)will request the mitigation area of the City website be updated for ease of public review and comments of the draft plan. OEM will request that a slide be added to the City's cable channel 3, notifying the public of hazard mitigation planning meetings held and inviting them to attend.
- In May 2015, OEM will forward the revised Local Hazard Mitigation Plan (LHMP) to Moreno Valley City Council for adoption via Resolution.
- In July 2015, OEM will forward the revised LHMP along with a copy of the Resolution to CalEMA and FEMA for review and approval.

Incorporation into existing planning mechanisms:

The hazard mitigation plan process provided the City of Moreno Valley with an opportunity to review and expand on policies, plans and existing City programs. The hazard mitigation strategies of the Moreno Valley General Plan have been integrated into the LHMP. The LHMP will be provided to those involved in development of the General Plan; Environmental Impact Report; Emergency Operations Plan (EOP); Evacuation, Mass Care, and Terrorism EOP annexes; and City ordinances to insure that consistency is maintained. Whenever there are substantive changes to the LHMP, those involved in planning mechanisms will be included in the review process.

Strategy for Continuing Public Involvement:

The City of Moreno Valley will continue its public involvement by making the most up-to-date LHMP available for review on the City website and at the public library; by encouraging public comments; and by involving the public in the update process. These strategies will include the use of media outlets, such as the local newspaper, City website, Twitter and Facebook. All of these mechanisms will be facilitated by OEM and will include the OEM staff member phone number and email address for ease of public comments and for tracking.

PART 2

RISK ASSESSMENT

Chapter 3: Risk Assessment Overview

3.1 Introduction

A risk assessment provides the factual basis for determining strategies to reduce losses from identified hazards. Conducting a risk assessment can provide information on the location of hazards, the probability, the severity, and the risk to life, property and the environment. This chapter will provide information about the impact of each hazard and the severity, probability and potential losses.

3.2 Inventory of Assets

To assist in assessing the risks of hazards that may affect the City of Moreno Valley; critical facilities, historical sites, hospitals and other assets are identified below. Where possible, HAZUS-MH was utilized. HAZUS-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences.

Critical Facilities: The impact to critical facilities could be significant, not only for the financial loss, but because it would severely affect the City's ability to respond to and recover from incidents.

Table 3-2: Transportation System Lifeline Summary[4]

System	Component	# of Locations	Replacement value (millions of dollars)
Highway	Bridges	49	68.80
	Segments	1	57.80
	Tunnels	0	0.00
			Subtotal = 126.70
Railways	Bridges	0	0.00
	Facilities	1	2.60
	Segments	4	10.80
	Tunnels	0	0.00
			Subtotal = 13.40
Airport	Facilities	0	0.00
	Runways	0	0.00
			0.00
			Total = 140.00

[4] HAZUS-MH

Table 3-2.1: Utility System Lifeline Inventory[5]

System	Component	# of Locations	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	19.90
	Facilities	1	39.30
	Pipelines	0	0.00
			Subtotal = 59.20
Waste Water	Distribution Lines	NA	12.00
	Facilities	0	0.00
	Pipelines	0	0.00
			Subtotal = 12.00
Natural Gas	Distribution Lines	NA	8.00
	Facilities	0	0.00
	Pipelines	0	0.00
			Subtotal = 8.00
Electric Power	Facilities	34	NA
			Subtotal = 0.00
Communication	Facilities	4	0.50
			0.50
			Total = 79.60

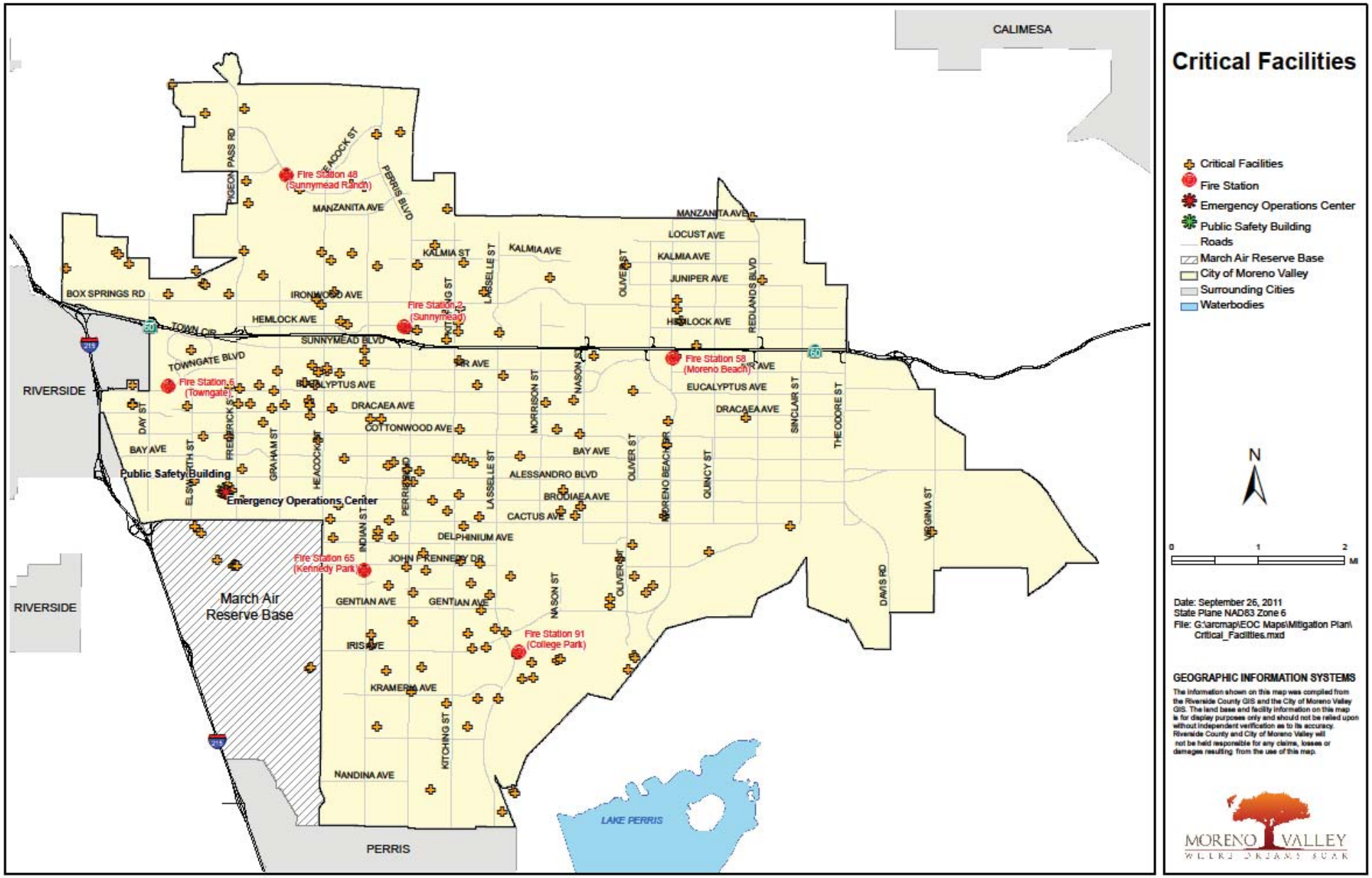
[5] HAZUS-MH

Table 3-2.2: Other Critical Facilities

Critical Facility Type	How Many?	Value, If Known
Emergency Operations Center	1	$3,500,000
EOC Family Care Center	1	$20,315,827
City Hall	1	$28,236,740
Animal Shelter	1	$7,704,224
Fire Stations	7*	$42,337,000
Public Safety Building	1	$35,849,400
Corporate Yard	1	$50,828,000
Residential Care Facilities	72	NA
Hospitals/Urgent Care	4	NA
Schools/College	56	NA
Commercial Fuel Stations	2	NA
Pharmacies	24	NA
Total:	**203**	**$188,771,191**

*Includes a future fire station scheduled to open in October 2012.

Figure 3-2: Map of Critical Facilities



Historical Sites: The potential impact from natural or man-made hazards to historic buildings and structures could be significant. The most important historic structure in Moreno Valley is a Mission style structure with wood and stucco siding and arched entry. The former old Moreno School, located at 28780 Alessandro Boulevard, may be eligible for the California Register of Historical Resources. Renovation of the structure to convert it for use as a private residence was approved by the City in 2004. The historical sites in Moreno Valley are valued at a little over 2 million.

Table 3-2.3: Moreno Valley Historical Sites

Historical Site	Approx. Year Built	Description	Value of Structure (Assessor's data)
21730 Bay Ave	1947	A bungalow style house, located on the north side of Bay Avenue, east of Edgemont Street.	$ 30,137.00
21613 Cottonwood Ave	1930	A vernacular wood frame style house that is located on the south side of Cottonwood Avenue and east of the Old Interstate 215 Frontage Road.	$ 14,119.00
21768 Cottonwood Ave	1941	A moorish style house located at the northeast corner of Cottonwood Avenue and Edgemont Street. This house appears eligible for listing in the California Register of Historical Resources.	$ 118,851.00
13694 Edgemont St	1920	A vernacular wood frame style house that is located on the east side of Edgemont Street between Brill Road and Bay Avenue.	$ 30,755.00
24638 Fir Ave	1915	A vernacular wood frame style house that is located on the north side of Fir Avenue and east of Indian Street next to the flood control channel.	$ 81,596.00
23741 Hemlock Ave	1910	A vernacular wood frame style house that is located on the south side of Hemlock Avenue and east of Graham Street.	$ 355,673.00
24215 Fir Ave	1891	The New English style First Congregational Church thought to be built in 1891 and was relocated to the current address.	$ 165,154.00
28780 Alessandro Blvd	1928	A Mission style structure with wood and stucco siding and arched entry. The former Old Moreno School may be eligible for the California Register of Historical Resources. Renovation of the structure to convert it for use as a private residence was approved by the City in 2004.	$ 695,869.00
27476 Cottonwood Ave	1928	Vernacular adobe style residence that is located on the north side of Cottonwood Avenue, east of Nason Street.	$ 57,277.00

12130 Theodore St.	1920	Vernacular wood frame style house located on the east side of Theodore Street and south of Ironwood Avenue.	$ 29,719.00
12400 Theodore St.	1915	There are three homes on the property that are part of the Anco Ranch, which was built sometime around 1915.	$ 467,644.00
27913 Cottonwood Ave	1885 1937 1940	There are three structures on the property which include a wood frame residence built in 1885, an adobe style block building that was moved to the site in 1937 and a large concrete block building dating from the 1940's. This site was designated as a City landmark by the City's Environmental and Historical Preservation Board on 09/12/11.	No value identified, City owned property.
		TOTAL:	**$ 2,016,657.00**

Commercial and Residential Properties: The City of Moreno Valley has approximately 43,636 residential homes and apartments, valued at approximately $7,679,831,568.00. The Nielson Report projects the residential housing in Moreno Valley to increase to 60,191 in 2017. There are approximately 1,996 commercial businesses located in Moreno Valley.

3.3 Summary of Hazards

This section will provide a summary of the hazards that impact the City of Moreno Valley, along with information on the severity and probability of each hazard, as well as, the relationships of each hazard to other hazards.

Severity and Probability Methodology

Collaboration between departments, divisions, programs, surrounding agencies, citizens and other stakeholders identified and ranked natural and man-made hazards that would likely affect the City of Moreno Valley (Table 3-3). To assist in ranking the identified hazards, the following scale for rating was utilized:

Severity
0 – Does not apply
1 – Negligible damage/injuries
2 – Limited damage/injuries
3 – Critical damage/injuries
4 – Catastrophic damage/injuries

Probability
0 – Does not apply
1 – Unlikely to happen
2 – Possible (1%-10% chance in next year)
3 – Likely (10%-100% chance in next 10 years)
4 – Highly likely (near 100% in next year)

Table 3-3: Moreno Valley Hazard Location, Severity and Probably

Hazard	Location	Severity (0-4)	Probability (0-4)
Earthquake	Citywide	4	3
Wildland and Urban Fires	Citywide, especially at Box Springs (northwest area), San Timoteo Canyon (north end), Reche Canyon (northeast area)	2	3
Flooding	Citywide, especially on the east end of the City	3	3
Drought	Citywide	2	3
Landslide	Mostly in the eastern portion of the City	2	2
Insect Infestation	Citywide	1	2
Extreme Weather	Citywide	2	3
Severe Wind	Citywide	2	3
Dam Failure/Inundation	Perris Dam inundation southeast corner of Moreno Valley and Pigeon Pass Dam (during periods of extensive flooding along the downstream watercourse)	2	2
Pipeline	Citywide	2	2
Transportation	Citywide and Hwy 60 and Interstate 215; San Timoteo Canyon, north of City and along Interstate 215; west end, near March Air Reserve Base	2	2
Power Outage	Citywide	3	4
Hazardous Materials	Citywide	3	2
Nuclear	Citywide	4	2
Terrorism Attack	Citywide	4	2
Civil Unrest	Citywide	2	2
Pandemic Flu/Disease	Citywide	3	2

Relationships of Hazards

Table 3-3.1 shows a summary of the relationships between hazards, often called cascading hazards. For example a flood may trigger other hazards, such as a landslide. A civil disorder may cause fires or may be a cause of terrorism. Another example is earthquakes, which may cause fires, pipeline incidents, hazardous materials incidents and power outages.

Table 3-3.1: Summary of Relationships of Hazards

May Cause Other Hazards → / Hazard Description	Earthquake	Fire	Flooding	Drought	Landslide	Insect Infestation	Extreme Weather	Dam Failure	Pipeline	Transportation	Power Outage	Hazardous Materials	Nuclear	Terrorist Attack	Civil Unrest	Pandemic/Disease
Earthquake	X	X	X		X			X	X	X	X	X			X	
Fire		X	X		X				X	X	X	X			X	
Flooding			X		X	X		X	X	X	X	X			X	X
Drought		X	X	X		X									X	
Landslide			X		X				X	X	X	X				
Insect Infestation						X										X
Extreme Weather							X		X	X	X	X			X	
Dam Failure			X		X			X	X	X	X	X				
Pipeline			X						X	X		X			X	X
Transportation		X								X	X	X			X	
Power Outage										X	X				X	X
Hazardous Materials		X										X			X	
Nuclear													X		X	
Terrorist Attack		X	X			X		X	X	X	X	X	X	X	X	X
Civil Unrest		X	X						X	X	X	X			X	
Pandemic/Disease										X					X	X

Summary of Major Declarations

Table 3-3.2 shows a list of major declarations affecting the City of Moreno Valley and surrounding areas.

Table 3-3.2: Major Declarations[6]

Year	Disaster Type	Federal/State Cost	Riverside County Cost	Moreno Valley Cost	Disaster Programs Given	Categories
2010	Severe Winter Storms DR-1952	$37 million	$262,945	N/A	PA & HMGP	A-G
2010	Severe Winter Storms DR-1884	N/A	$452,105	Preliminary Damage Report $195,000	PA, IA & HMGP	A-G
2008	Wildfires DR-1810	$59 million	$20,377	N/A	PA, IA & HMGP	A & B
2007	Wildfires DR-1731	$146 million	$264,977	$7,220	PA, IA & HMGP	A & B
2007	Severe Freeze DR-1689	$23 million	N/A	N/A	HMGP	
2005	Severe Storms DR-1585	$75 million	$1,485,753	$16,275	PA & HMGP	A & G

[6] http://www.fema.gov/news/disasters_state.fema?id=6 Retrieved September 27, 2011

2005	Severe Storms DR-1577	$228 million	$1,327,801	$23,164	PA, IA & HMGP	A-G
2003	Wildfires DR-1498	$133 million	$240,568	N/A	PA, IA & HMGP	A & B
1998	Severe Storms DR-1203	N/A	$657,162	N/A	PA, IA & HMGP	A & B
1995	Severe Storms DR-1046	N/A	$151,027	N/A	PA, IA & HMGP	A-G
1995	Severe Storms DR-1044	N/A	$498,347	N/A	PA, IA & HMGP	A-G
1993	Fires, Severe Storms DR-1005	N/A	$511,311	N/A	PA, IA & HMGP	A-G
1993	Severe Storms DR-979	N/A	$2,303,998	N/A	PA, IA & HMGP	A-G

3.4 Profiling Hazards

Hazard profiles are designed to assist in evaluating the hazards that can impact the Moreno Valley area by comparing a number of hazard factors. Each type of hazard has unique characteristics and the impact associated with a specific hazard can vary depending on the severity and location of each event. Further, the probability of occurrence of a hazard in a given location impacts the priority assigned to that hazard. Beginning in Chapter 4, each identified hazard will be profiled with an overview of the hazard that includes previous occurrences, probability of future events, its impact and potential losses.

Chapter 4: Earthquake

Moreno Valley Rating: **Severity = 4**
Probability = 3

4.1 Earthquake Profile – Overview/Location

There are three major faults/fault zones that directly affect Moreno Valley. They are the southern section of the San Andreas Fault, the San Jacinto Fault Zone, and the Elsinore Fault Zone. The San Jacinto Fault Zone is considered to be the most active fault in Southern California. It is the closest fault to Moreno Valley and runs through the eastern portion of the City, followed by the Elsinore Fault Zone which is located approximately 12-18 miles south of Moreno Valley. The San Andreas Fault Zone is located approximately 15-20 miles north of Moreno Valley (see Figure 4-1.1). The largest earthquake to occur within 100 miles of Moreno Valley was the 7.4 magnitude Hector Mine earthquake in 1999.

San Andreas Fault

The San Andreas Fault Zone is a major geologic feature of North America and consists of several major and numerous minor, branches, especially in southern California. This fault zone runs approximately 4 to 10 miles under the Earth's crust, making earthquakes from the San Andreas Fault Zone more destructive in nature.

The San Andreas Fault Zone enters the Inland Empire through the Cajon Pass, separating the San Gabriel Mountains from the San Bernardino Mountains. The fault becomes extremely complex in this area, dividing into several right-lateral elements that run somewhat parallel to each other. Principal among these, are two fault zones that have a significant impact on Moreno Valley. They are the San Jacinto Fault Zone and the Elsinore Fault Zone. The slip rate on the southern section of the San Andreas Fault Zone, which runs from the Mojave Desert south towards the Salton Sea before reaching the United States border with Mexico, is 24 millimeters per year. Earthquakes along this section of the San Andreas fault are typically above 6.0 in magnitude. Geologists estimate that this fault could produce an 8.2 magnitude earthquake.

The last significant earthquake that occurred over the section of the San Andreas fault that runs south from Cajon Pass was on December 8, 1812. Geologists estimate that the earthquake was over 7.0 in magnitude with an epicenter near the City of Wrightwood. Shortly after that earthquake, in 1857, an earthquake ruptured the San Andreas fault from Monterey down to the Cajon Pass.

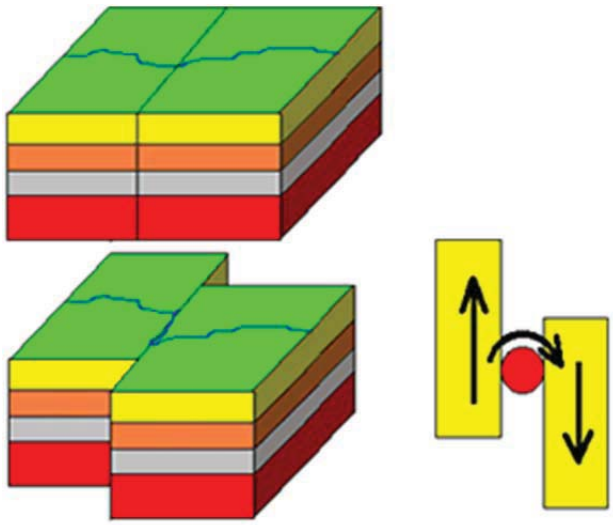
San Jacinto Fault Zone

The San Jacinto Fault Zone extends for 180 miles through the counties of San Bernardino, Riverside, San Diego, and Imperial and is comprised of the very active Imperial and Superstition Hill faults. The San Jacinto Fault Zone is a right lateral strike-slip Fault (Figure 3.4) that branches westward from the San Andreas Fault and runs parallel to the Elsinore Fault. It is also considered one of the more seismically active fault zones in Southern California with a slip rate of 12 millimeters per year. Both the San Jacinto fault and Elsinore fault are classified as part of the San Andreas Fault system. The San Jacinto Fault Zone does extend through the eastern part of Moreno Valley and has the potential to host a 7.2 magnitude earthquake.

Elsinore Fault Zone

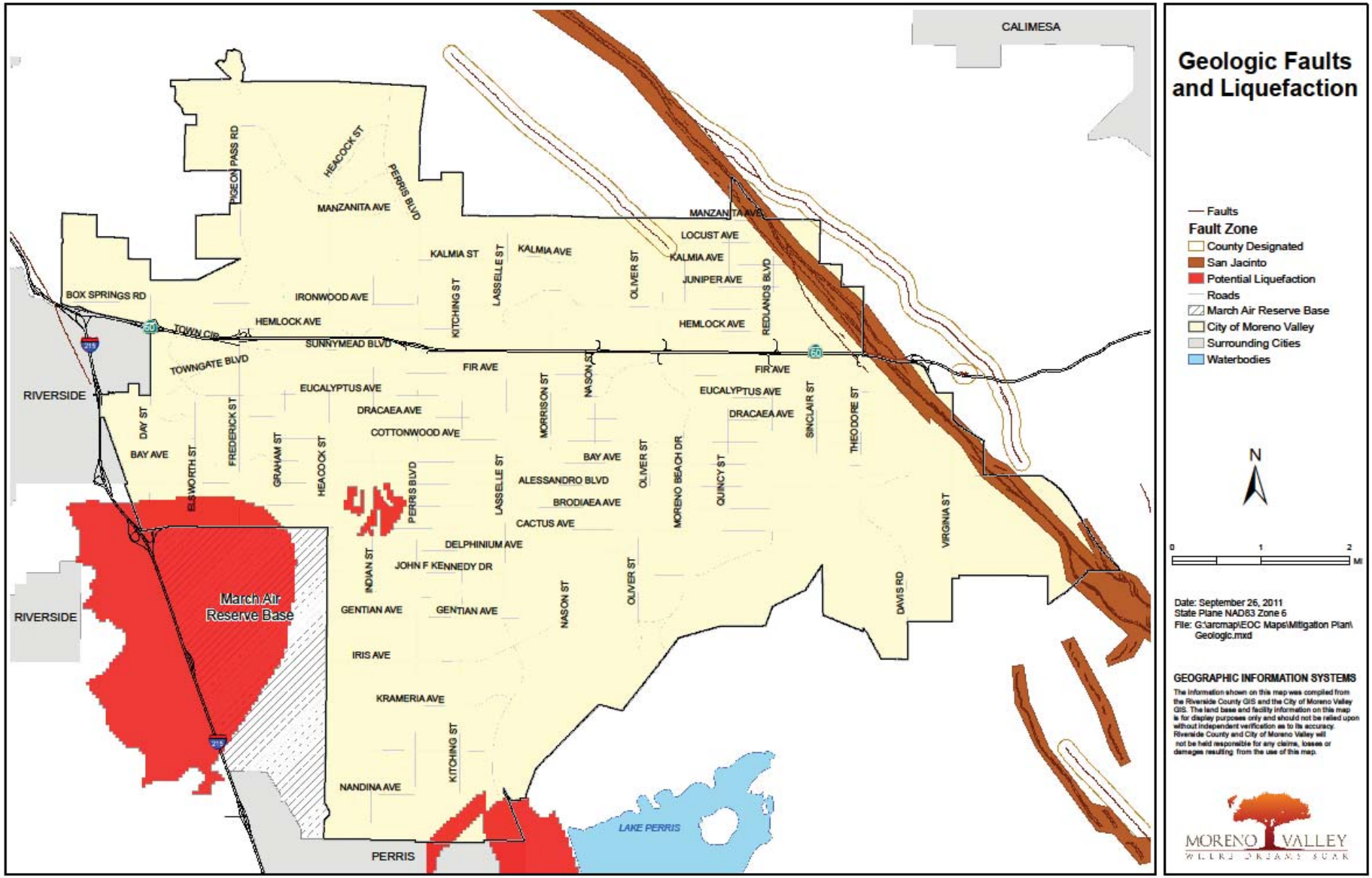
The Elsinore Fault is a large right-lateral strike-slip fault (Figure 3-4) and is part of the trilateral split of the San Andreas Fault and runs parallel to that fault. Though its 111 miles in length makes it one of the larger faults in the area, it is extremely quiet. This fault zone forms a complex series of pull-apart basins, with the largest basin being known as La Laguna. The La Laguna basin is partially filled with water from Lake Elsinore and is the terminus for the San Jacinto River. The slip rate of this fault is 4 millimeters per year and is capable of producing a quake of 6.5 - 7.5 in magnitude. Geologists estimate that the interval between major rupture events on the Elsinore is 250 years. The last known major earthquake occurred northwest of the City of Lake Elsinore in 1910.

Figure 4-1: Right-Lateral Strike-Slip Fault[7]



[7] US Geological Survey

Figure 4-1.1: Moreno Valley Geologic Faults and Liquefaction



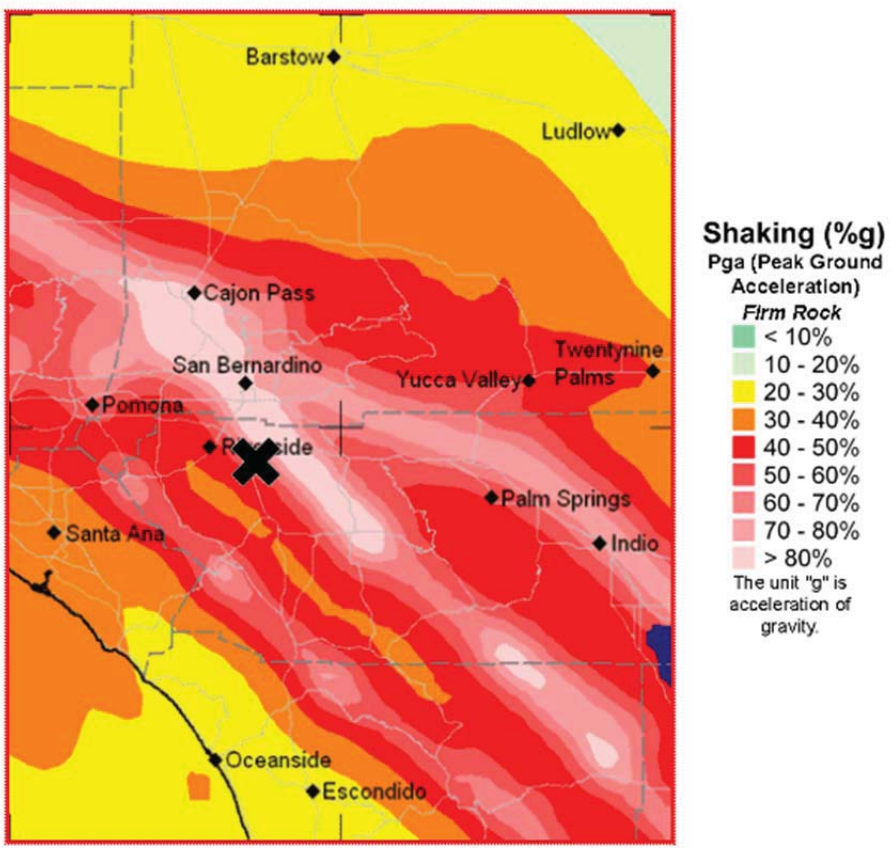
Earthquake Related Hazards

Ground shaking, landslides, liquefaction, and amplification are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude, and the type of earthquake.

Ground Shaking

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter. Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock. Figure 4-1.2 shows the shaking intensity for the City of Moreno Valley. The darker shaded areas indicate greater potential for shaking.

Figure 4-1.2: Moreno Valley Area Ground Shaking Map[8]



[8] http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamap.asp Retrieved September 29, 2011

Earthquake-Induced Landslides

Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake. Many communities in Southern California have a high likelihood of encountering such risks, especially in areas with steep slopes. The abundant shales and siltstones underlying the Badlands are highly porous in the Moreno Valley area and do not hold together well when wet, which can lead to slope instability and landslides

Liquefaction

Liquefaction occurs when ground shaking causes surface soils, primarily sands and silts, to become saturated with water and temporarily lose strength, causing it to become sticky liquid. This results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures. Many communities in Southern California are built on ancient river bottoms and have sandy soil. In some cases this ground may be subject to liquefaction, depending on the depth of the water table.

Although the City has seen no evidence of liquefaction events occurring in the community nor has any geotechnical report recently submitted to the City identify liquefaction hazards, the Riverside County General Plan has identified a range of liquefaction susceptibility in Moreno Valley from very low with deep groundwater in the northern and eastern portions of the community to very high with shallow groundwater generally west of Perris Boulevard.

Amplification

Soils and soft sedimentary rocks near the earth's surface can modify ground shaking caused by earthquakes. One of these modifications is amplification. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and structures built on soft and unconsolidated soils can face greater risk. Amplification can also occur in areas with deep sediment filled basins and on ridge tops.

4.1.1 Earthquake Profile – Previous Occurrences

Table 4-1 shows some of the more notable earthquakes in the Southern California region, many of which were felt in the City of Moreno Valley.

Table 4-1: History of Major Southern California Earthquakes[9]

Year	Richter Scale Magnitude	Description
1812	7.0	Occurred on the southern section of the San Andreas fault near Wrightwood.
1857	7.9	Occurred 60 miles northwest of Fort Tejon and ruptured 225 miles of the San Andreas fault.
1890	6.5	Occurred in the "San Jacinto or Elsinore Fault region" on the Rockhorse Truck Trail, north of the Borrego Valley Airport.
1890	6.5	Occurred in the same region as the 1890 earthquake.
1899	6.4	San Jacinto earthquake destroys San Jacinto and Hemet, and was strongly felt in Moreno Valley.
1910	5.0	Occurred on the Elsinore fault northwest of the City of Lake Elsinore.
1918	6.9	San Jacinto earthquake strikes the same area that was damaged by an earthquake 19 years earlier.
1923	6.3	North San Jacinto Fault earthquake damaged the San Bernardino and Redlands area. This the last known time that this fault, which runs under the I-215/I-10 interchange, ruptured in this area. The epicenter was located just northeast of Moreno Valley in San Timoteo Canyon.
1937	6.0	Terwilliger Valley earthquake was in the same general area as the 1890 earthquake.
1942	6.3	Fish Creek Mountains earthquake was south of the Ocotillo airport.
1954	6.2	Arroyo Salada earthquake was west of the Salton Sea.
1968	6.5	Borrego Mountain Earthquake was northeast of Ocotillo Wells
1987	6.6	Superstition Hills earthquake near the Salton Sea
1992	7.2	Occurred near Landers, California and caused the rupture of five different faults. Those faults were: Johnson Valley, Landers, Homestead Valley, Emerson, and Camp Rock.
1992	7.3	Occurred 3 hours after the Landers Earthquake with an epicenter near Big Bear, CA, just 34.4 miles from Moreno Valley.
1994	6.8	Northridge Earthquake occurs in a neighborhood of the City of Los Angeles and is located 78.8 miles from Moreno Valley
1999	7.4	Hector Mine Earthquake, located 25 miles from the Landers Earthquake and just 61 miles from Moreno Valley
2010	5.4	Borrego Springs earthquake believed by seismologists to have been possibly triggered by the strong earthquake which occurred near Calexico in 2010.

[9] http://pasadena.wr.usgs.gov/info/cahist_eqs.html Retrieved September 24, 2011

4.1.2 Earthquake Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

The City of Moreno Valley could be affected by large earthquakes occurring in many parts of the Southern California region. However, the degree to which the earthquakes are felt, and the damages associated with them may vary. At risk from earthquake damage are critical facilities, buildings, bridges, highways and roads; hazardous materials facilities; sewer, water, and natural gas pipelines; earth dams; petroleum pipelines; and private property located in the City. The relative or secondary earthquake hazards, which are liquefaction, ground shaking, amplification, and earthquake-induced landslides, can be just as devastating as the earthquake.

The USGS estimates that there is a 99.599% chance of a major earthquake occurring within 31 miles of Moreno Valley within the next 50 years (Figure 4-1-1).

Table 4-1.1: Probability of an Earthquake near Moreno Valley within the Next 50 Years[10]:

Richter Scale Magnitude	Probability
5.0	99.599%
5.5	95.303%
6.0	87.490%
6.5	77.391%
7.0	56.242%
7.1	51.403%
7.2	46.551%
7.3	40.898%
7.4	35.138%
7.5	28.218%
7.6	20.869%
7.7	14.225%
7.8	9.043%
7.9	5.352%
8.0	2.557%

[10] US Geological Survey

4.2 Earthquake Vulnerability – Overview/Impact

The severity rating for this hazard is a 4, which means that there is a potential for catastrophic damage, causing multiple deaths, complete shutdown of critical facilities for 30 days or more and/or more than 50% of property has a potential to be damaged.

As shown in Figure 4-1.1, the probability of a major earthquake occurring near Moreno Valley within the next 50 years is close to 100%. Scientists agree that it is not a matter of 'if' a major earthquake will occur; it is a matter of 'when'. Even if a major earthquake is located in the surrounding area, it will have a severe impact to the City of Moreno Valley. Seismic shaking and aftershocks associated with the earthquake can cause damage to a wide-spread area. The hazards associated with aftershocks are the same as the main shock and may cause significant damage or disruption as well.

4.2.1 Earthquake Vulnerability – Potential Impact and Losses

Earthquakes can cause devastating injuries and loss of life and damage to infrastructure, structures, personal belongings and more. Earthquakes and its aftershocks can cause other hazards such as pipeline ruptures, dam failures, landslides, soil liquefaction, flooding, fires, power outages, hazardous materials incidents and civil unrest. There are no known repetitive loss properties.

HAZUS-MH Summary: For purposes of analyzing the impact and estimating potential loss for the City of Moreno Valley, HAZUS-MH was utilized.

The scenario for the HAZUS-MH earthquake risk assessment was a 6.5 Richter scale magnitude earthquake on the San Jacinto Fault. The longitude of the Epicenter was -117.24 and the latitude was 34.02. The depth of the earthquake was 10.00 Km (6.21 miles), with a rupture length of 18.20 Km (11.3 miles).

Current residential count was found using the Riverside County Assessor Parcel Layer (September 2011). Parcels were overlaid onto the zoning layer. All of the parcels that fell within a residential zone were selected out. From that selection, another query was run to pull all the parcels out with a structure value over $10,000. The final query returned all records that fall within Residential Zoning and have a structure value over $10,000. The count on the residential buildings is 43,636. The structure value is derived from Assessor Parcel table. The value total for the selected parcels is $7,679,831,568.

The business license layer that was used was processed July 2010. Due to time constraints we were unable to process (geocode) a current data table. The commercial business licenses were found by first querying out all records that had a Location type = Home Occupation or Residential. This left the records equal to Location Type = Commercial and those with NULL value. The remaining

records were overlaid on top of zoning layer. A selection of businesses was then processed based on those points falling within Commercial, Industrial/Business Park, and Office. The final count of businesses in the City based on the 2010 Business License database is 1996.

The Critical Facilities layer was comprised of the Business License layer and existing Moreno Valley GIS layers. Residential Care Facilities (72), Hospitals (2), Urgent Care (2), and Pharmacies (22) were created from the Business License database. The rest of the Critical Facilities were created from existing GIS layers resulting with a total of 201 facilities.

Development Trends: Future development of buildings, residential structures, critical facilities and infrastructure are expected to comply with the most recent Uniform Building Code seismic design standards. New development is shown in Appendix C.

Potential Impact and Losses: On the next several pages, you will find information about the potential impact and losses that may be experienced in the City of Moreno Valley. HAZUS-MH was utilized to analyze the impact and cost.

Table 4-2: Damage to Buildings

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	96	0.58	81	0.44	69	0.72	26	1.45	8	1.66
Commercial	373	2.27	398	2.14	487	5.10	226	12.66	62	13.38
Education	267	1.62	254	1.37	222	2.33	82	4.58	17	3.64
Government	8	0.05	6	0.03	7	0.07	3	0.17	1	0.18
Industrial	80	0.49	89	0.48	117	1.23	57	3.17	16	3.57
Other Residential	285	1.73	535	2.89	954	10.00	684	38.28	172	37.35
Religion	35	0.21	35	0.19	35	0.37	16	0.89	4	0.94
Single Family	15,307	93.05	17,149	92.46	7,648	80.18	693	38.79	181	39.28
Total	**16,450**		**18,548**		**9,539**		**1,786**		**461**	

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	2	1	0	0
Schools *	840	44	0	42
EOCs	2	0	0	1
PoliceStations	1	0	0	1
FireStations	7	0	0	5

*HAZUS-MH is reporting 840 schools. It should be 56.

Table 4-2.1: Damage to Transportation Systems

System	Component	Number of Locations_				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	1	0	0	1	1
	Bridges	49	1	0	48	49
	Tunnels	0	0	0	0	0
Railways	Segments	4	0	0	4	4
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	1	1	0	1	1
Light Rail	Segments	0	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0

Table 4-2.2: Damage to Utilities

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	1	1	0	0	1
Waste Water	0	0	0	0	0
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	4	4	0	4	4

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	997	471	118
Waste Water	598	373	93
Natural Gas	399	399	100
Oil	0	0	0

Table 4-2.3: Damage to Potable Water and Electric Power

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	40,033	18,678	6,414	0	0	0
Electric Power		6,419	3,401	1,103	171	11

Table 4-2.4: Causality Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	2	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	1	0	0	0
	Industrial	1	0	0	0
	Other-Residential	50	10	1	2
	Single Family	146	19	1	1
	Total	**200**	**31**	**2**	**3**
2 PM	Commercial	133	33	5	10
	Commuting	0	0	0	0
	Educational	62	15	2	4
	Hotels	0	0	0	0
	Industrial	7	2	0	0
	Other-Residential	11	2	0	0
	Single Family	30	4	0	0
	Total	**243**	**56**	**8**	**15**
5 PM	Commercial	126	31	5	9
	Commuting	2	2	4	1
	Educational	6	1	0	0
	Hotels	0	0	0	0
	Industrial	4	1	0	0
	Other-Residential	19	4	0	1
	Single Family	56	8	0	1
	Total	**213**	**48**	**10**	**12**

Table 4-2.5: Economic Losses (Millions of Dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	3.81	21.28	0.66	2.56	28.30
	Capital-Related	0.00	1.63	17.95	0.39	0.90	20.88
	Rental	12.64	4.62	10.43	0.18	0.87	28.74
	Relocation	48.33	4.01	15.93	0.83	11.53	80.64
	Subtotal	**60.97**	**14.07**	**65.59**	**2.07**	**15.86**	**158.56**
Capital Stock Loses							
	Structural	79.71	6.77	20.75	2.77	15.67	125.68
	Non_Structural	405.98	29.48	63.87	9.27	52.59	561.18
	Content	127.21	6.18	29.47	5.91	10.25	179.03
	Inventory	0.00	0.00	0.83	1.49	0.34	2.65
	Subtotal	**612.91**	**42.43**	**114.92**	**19.44**	**78.85**	**868.55**
	Total	**673.88**	**56.50**	**180.51**	**21.50**	**94.71**	**1,027.10**

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	57.85	$0.00	0.00
	Bridges	68.84	$4.20	6.10
	Tunnels	0.00	$0.00	0.00
	Subtotal	**126.70**	**4.20**	
Railways	Segments	10.78	$0.00	0.00
	Bridges	0.00	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Facilities	2.57	$0.80	31.18
	Subtotal	**13.40**	**0.80**	
Light Rail	Segments	0.00	$0.00	0.00
	Bridges	0.00	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Bus	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
	Total	**140.00**	**5.00**	

Figure 4-2: Map of Earthquake Scenario Showing Critical Facilities and Historical Sites

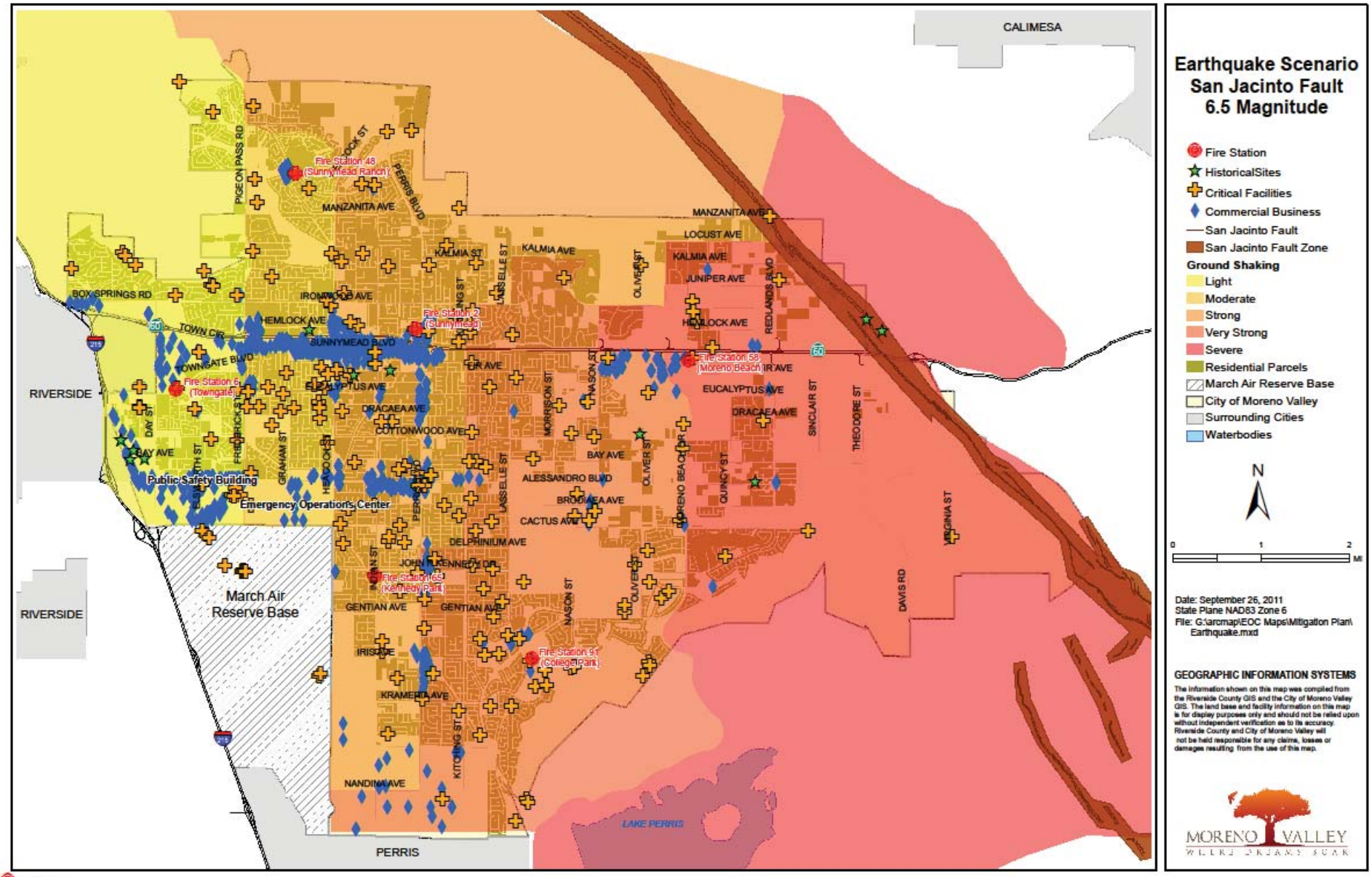


Figure 4-2.1: Map of Earthquake Scenario Showing Transportation (Rail, Highway, Bridges)

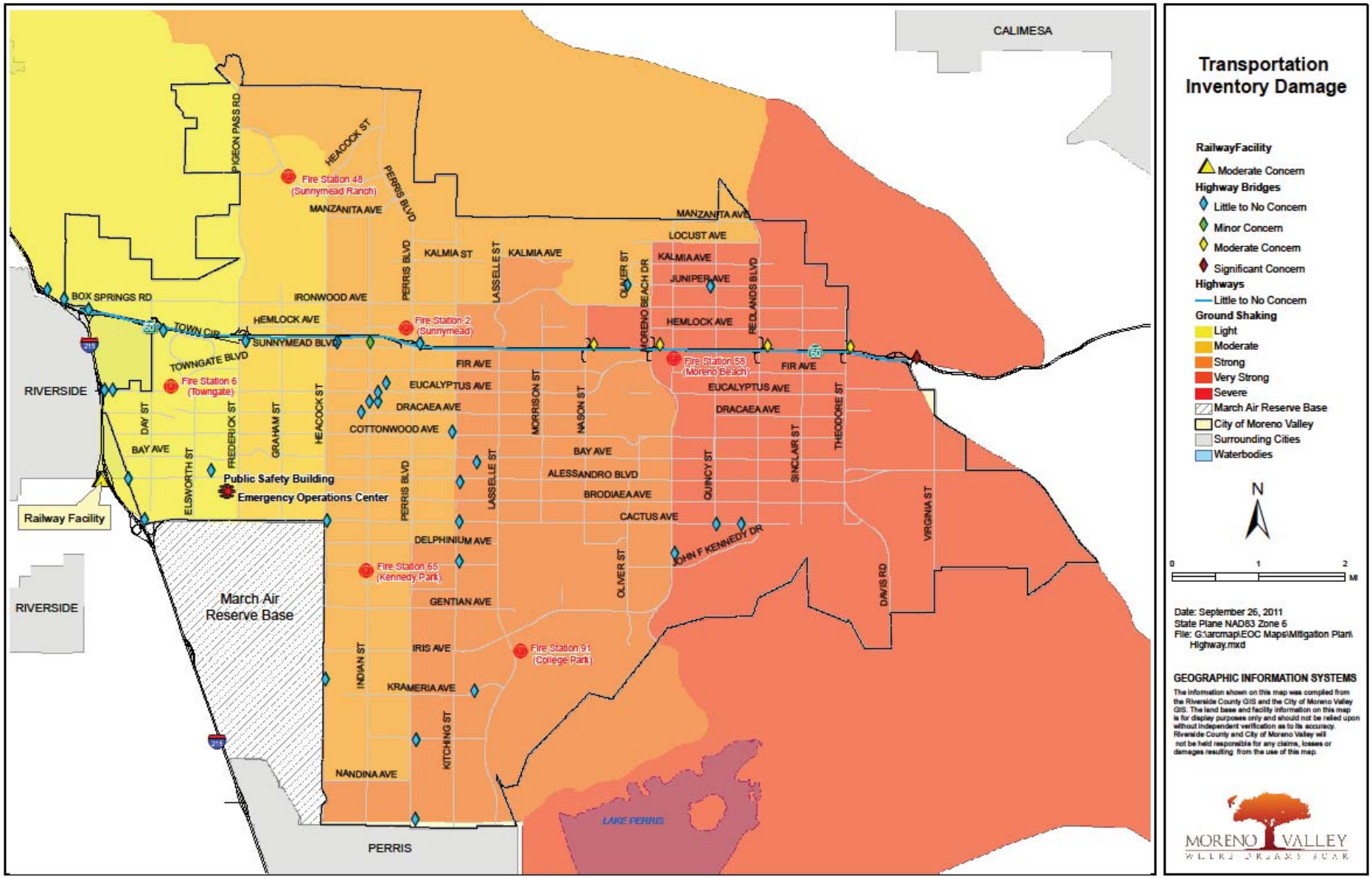


Figure 4-2.2: Map of Earthquake Scenario Showing Utility Damage

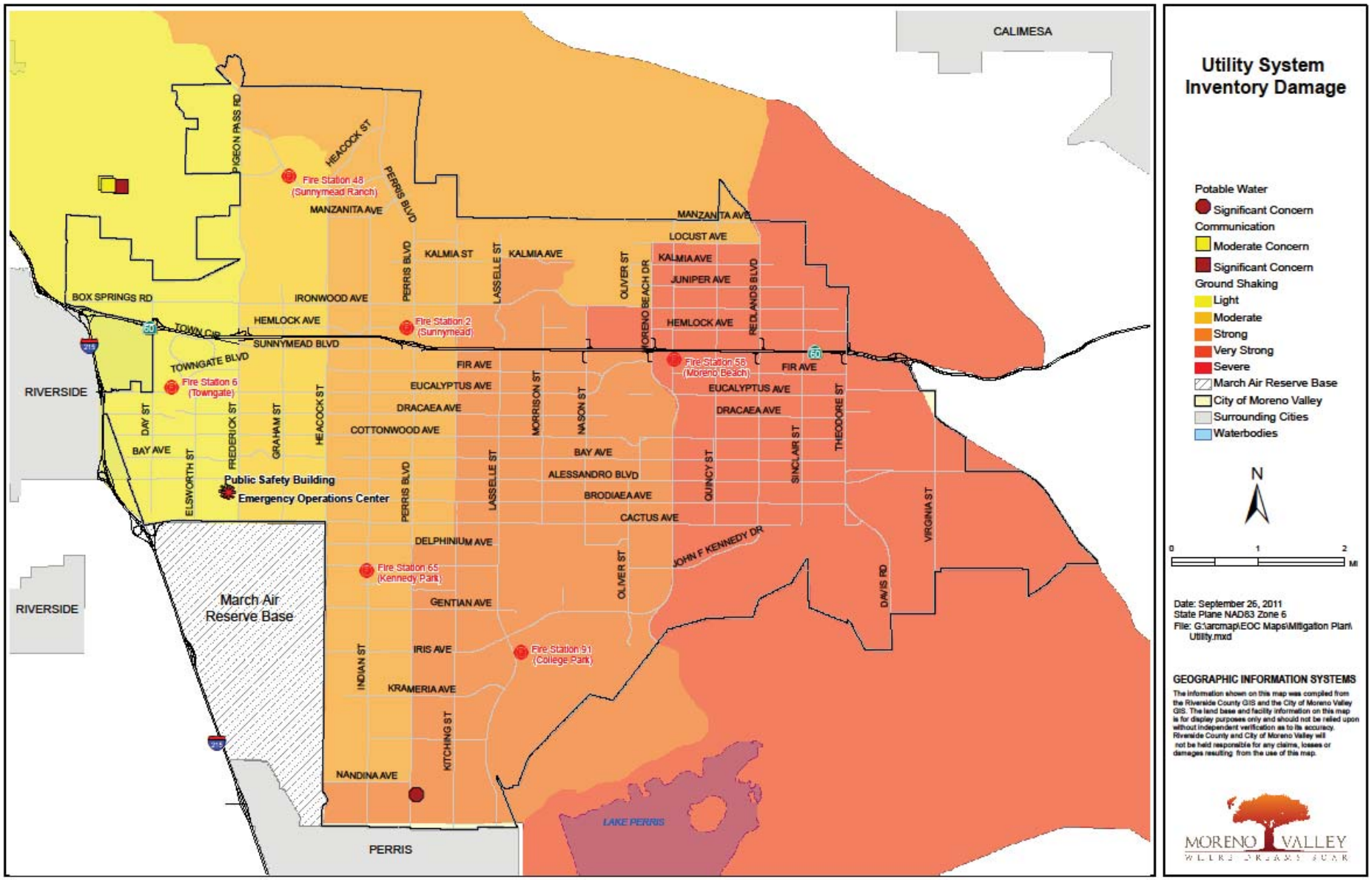


Figure 4-2.3: Map of Earthquake Scenario Showing Commercial Building Damage

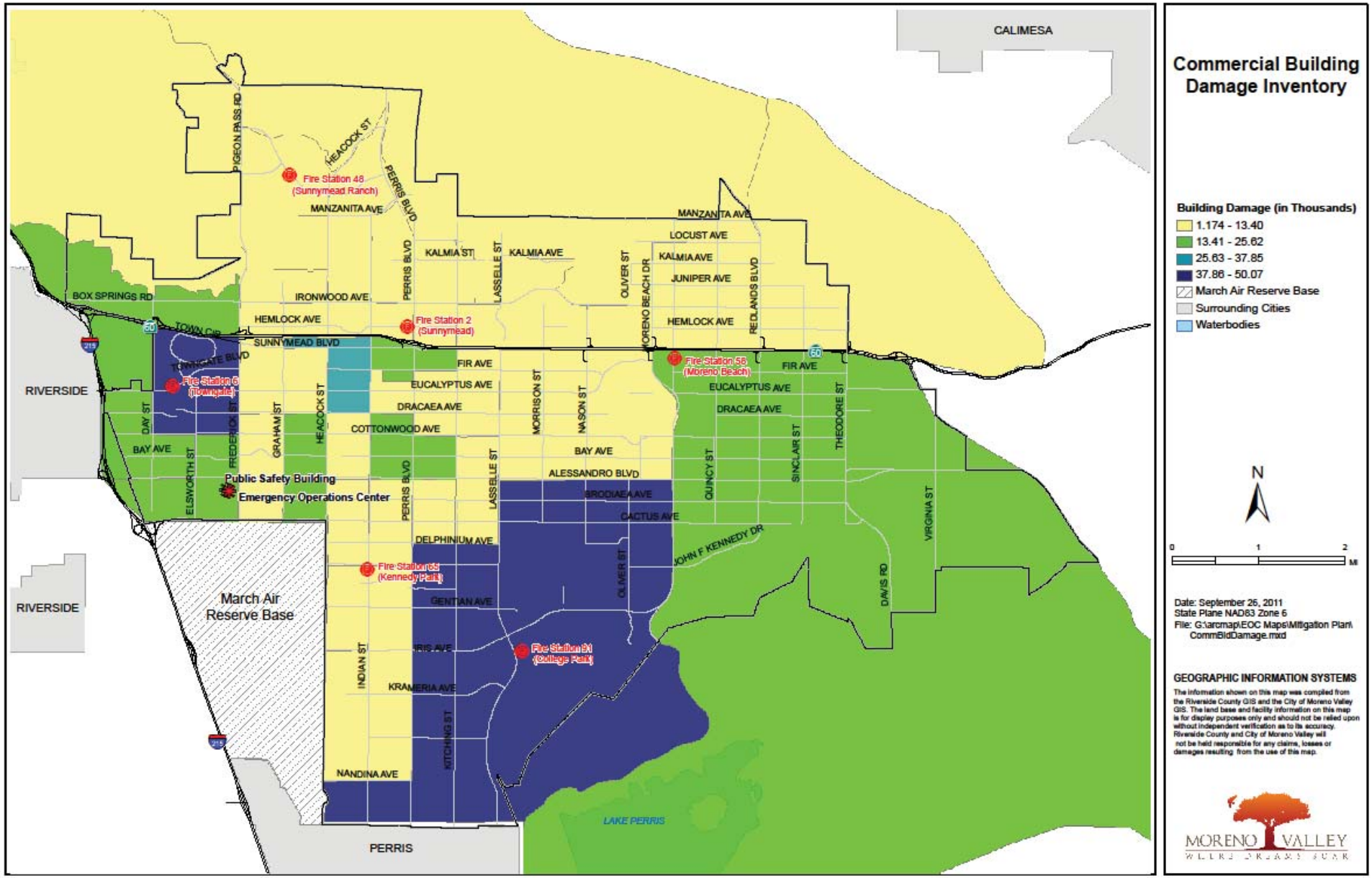
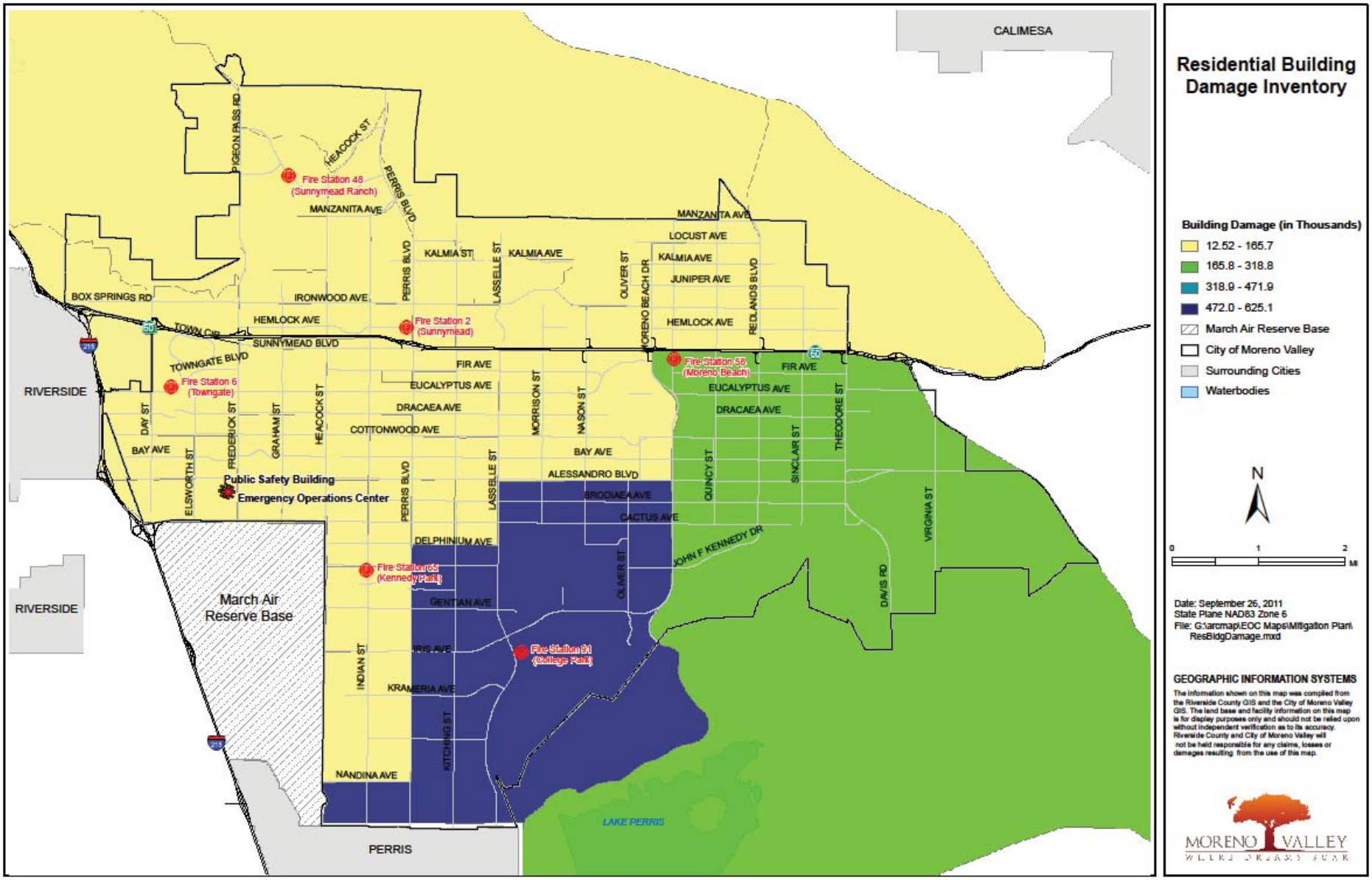


Figure 4-2.4: Map of Earthquake Scenario Showing Residential Building Damage



Chapter 5: Wildland and Urban Fires

Moreno Valley Rating: **Severity = 2**
Probability = 3

5.1 Wildland and Urban Fires Profile – Overview/Location

The City of Moreno Valley is subject to both wildland and urban fires. The natural vegetation in the area is highly prone to fire, as well as, the urbanized portions of the City are subject to structural fires.

A wildland fire is an uncontrolled fire in combustible vegetation that is typically found in a rural or wilderness area. Also known as a vegetation fire, brush fire, forest fire or grass fire, a wildland fire differs from other fires by its extensive size and the speed by which it can spread. These types of fires have a great potential to change direction unexpectedly and can frequently jump roads and fire breaks, making them difficult to control. Wildland fires pose a great danger to urban areas where lives and property can be severely affected.

Within the City of Moreno Valley, wildfire poses a threat to the northern and eastern portions of the City, as those areas are within the high fire hazard area. Areas of concern include Box Springs (northwest area), San Timoteo Canyon (north end) and Reche Canyon (northeast area).

5.1.1 Wildland and Urban Fires Profile – Previous Occurrences

From 2003 to 2011, there were 485 wildland fires located within the City of Moreno Valley varying in size and impact. Of those, there were 4 that were over 50 acres in size.[11] The table below summarizes fires over 50 acres in size that impacted Moreno Valley.

Table 5-1: History of Fire in Moreno Valley and Surrounding Areas

Year	Description
2002	April 21, 2002 – Redlands Fire – San Timoteo E/O Redlands Blvd. burned 150 acres. No damage information was available.
2003	August 18, 2003 – Locust Fire: wildfire at Redlands Blvd, East end of Moreno Valley burned 1,600 acres with urban interface. Significant voluntary evacuations with major livestock movement. No other damage information was available.

[11] Riverside County Fire

2003	October 21, 2003 – Pass Fire; wildfire at Reche Canyon, ½ mile North of Moreno Valley burned 2,360 acres and damaged 2 single family dwellings, 2 mobile homes, 8 outbuildings and other structures and vehicles.[12]
2007	March 4, 2007 - Wildfire at Gilman Springs Road x Alessandro burned 680 acres. No damage information was available.
2009	May 27, 2009 - Wildfire at Via del Lago x Alta Calle burned 503 acres near the North entrance of Lake Perris State Recreational Area. No damage information was available.
2011	On June 27, 2011, a wildfire at Camino Real x Oliver burned 52 acres near the North entrance of Lake Perris State Recreational Area. No damage information was available.
2011	On August 6, 2011, a wildfire at Hwy 60 x Gilman Springs Road burned 945 acres. No damage information was available.

5.1.2 Wildland and Urban Fires Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

Due to the natural topography, terrain, volatile fuel types and climate conditions, wildfire in Moreno Valley will continue to be an ongoing threat.

The potential for large and damaging fires to Moreno Valley is present throughout much of the year. During the months when the Santa Ana winds blow, the potential for a large and damaging wildfire fire is increased significantly.

5.2 Wildland and Urban Fires Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged.

Impact to Population and Structures: Injuries and/or deaths may occur during fires. In addition, portions of the population could be affected by smoke inhalation and heat from the fire, as well as, poisonous gases that cause disorientation and drowsiness. Those affected could be requested to evacuate their homes and businesses, causing both emotional and financial hardship. Seniors and individuals with access and functional needs may need special assistance to evacuate. Structures, vehicles and personal belongings could be damaged or destroyed by fire.

Impact to Essential Facilities/Historical Sites: Damage to essential facilities would impact the ability to appropriately respond to emergencies. Damage to

[12] Pass Fire Damage Report, Riverside County Office of Emergency Services, October 23, 2003

historical sites would be particularly devastating as they would be difficult to replace.

Impact to Infrastructure: Firefighting can cause an increased demand to the water supply. Infrastructure could be affected by fires and/or evacuations.

Future Development Trends: Implementation of any of the General Plan Land Use Alternatives will result in new development and the expansion adjacent to the high wildland fire hazard area; however, the existing practices and General Plan objectives, policies and programs will serve to avoid any significant wildland and urban fire impact. New development is shown in Appendix C.

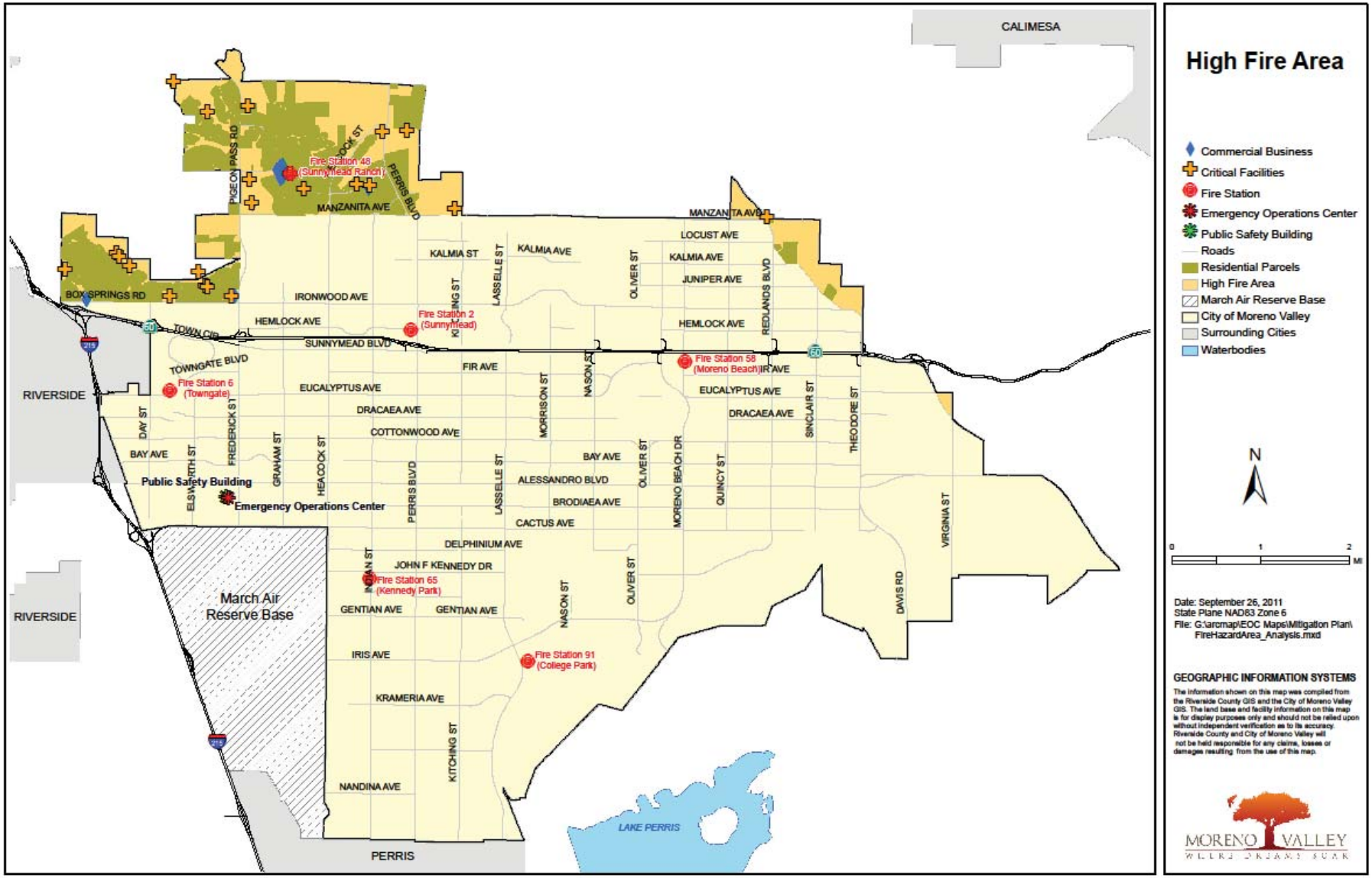
5.2.1 Wildfire Vulnerability – Potential Loss

As shown on Figure 5-2 (map), there is vulnerability to residential property, businesses and essential facilities that are located in or near high fire areas within the City of Moreno Valley. Utilizing Moreno Valley and Riverside County Assessor Data, potential loss was calculated (no contents) and the results are:

Building Type	High Fire Area (#, Value)
Residential	5664 - $1,114,849,698
Commercial	54 - $21,171,266
Critical Facilities	22 - $7,439,356
Historic Sites	0

If a wildfire siege such as the one that occurred in California from October to November 1993 were to occur and damage occurred to 50% of the structures located in the wildfire area, the potential loss would be $571 million. There are no known repetitive loss properties.

Figure 5-2: Moreno Valley High Fire Area Map



Chapter 6: Flooding

Moreno Valley Rating: **Severity = 3**
Probability = 3

6.1 Flooding Profile – Overview/Location

There are four types flooding conditions that exist within the Moreno Valley area: flooding in defined watercourses, ponding, sheet flow, and dam inundation. Flooding within defined watercourses occurs within drainage channels and immediately adjacent floodplains. Ponding occurs when water flow is obstructed due to manmade obstacles such as the embankments of State Route 60 and other roadways where they cross-defined watercourses. Sheet flow occurs when capacities of defined watercourses are exceeded and water flows over broad areas.

Known flood-prone areas as noted in the General Plan are:

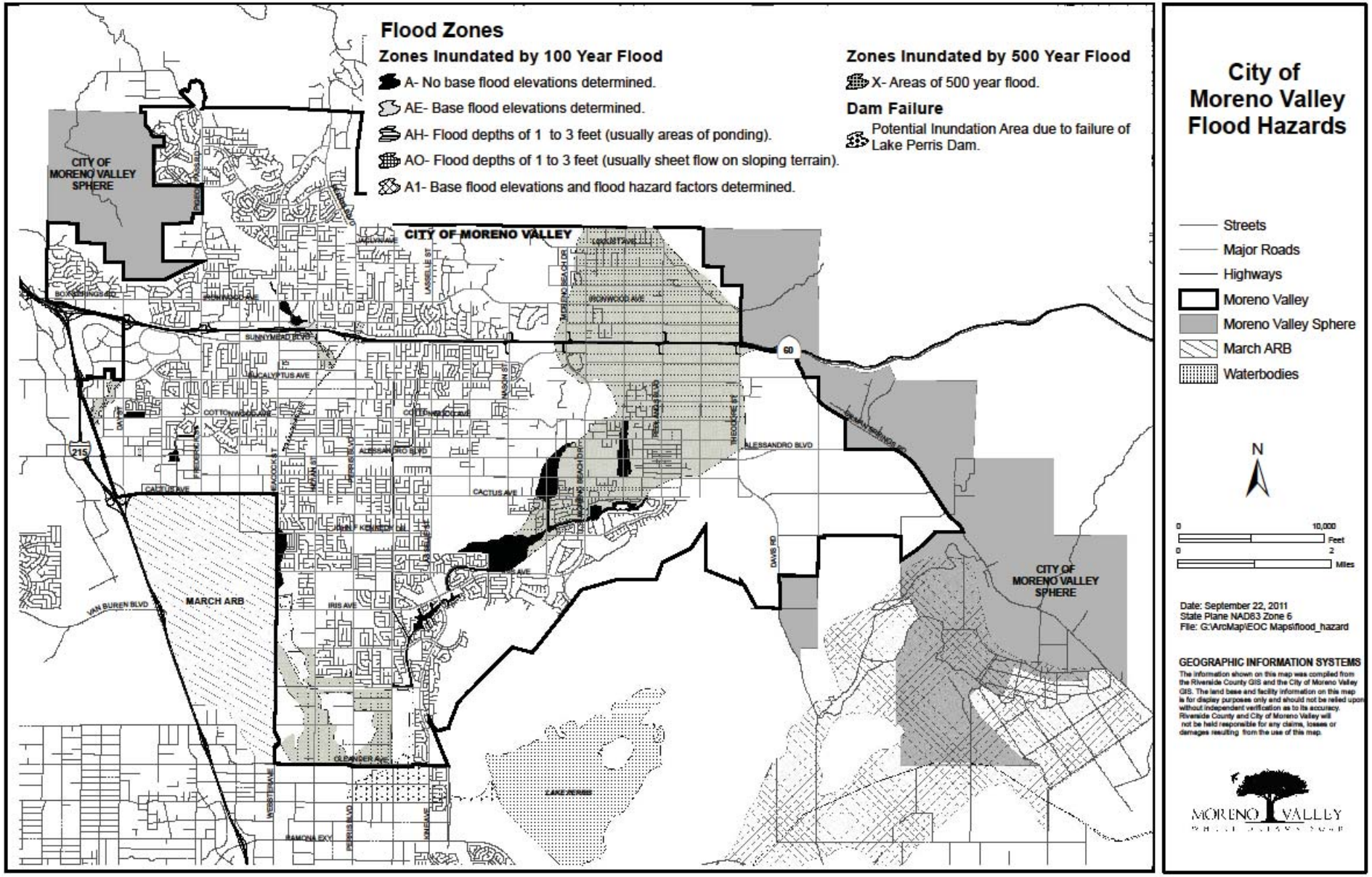
- Along the Quincy Channel between Cottonwood Avenue and Cactus Avenue.

- An extensive floodplain that extends along the Oliver Street alignment from a point north of Alessandro Boulevard to John F. Kennedy Drive and extending in a southwesterly direction as far as the northeast corner of Morrison Street and Filaree Avenue and the northeast corner of Nason Street and Iris Avenue.

- East of Heacock Street and Lateral A of the Perris Valley Channel between Cactus Avenue and a point north of the intersection of Lateral A and Indian Street (next to March Air Reserve Base).

Several portions of the Moreno Valley area are subject to a 100-year flood, meaning a flood with a one percent chance of occurring in any given year. 100 year and 500 year flood as well as dam inundation is shown on Figure 6-1.

Figure 6-1: Moreno Valley Flood Hazards



6.1.1 Flooding Profile – Previous Occurrences

Moreno Valley has a long history of being affected by flooding. Notable flooding incidents since 2005 include:

Table 6-1: History of Flooding in Moreno Valley

Year	Description
2005	DR1577, January 2005, 12 homes were damaged throughout the City from flooding. Asphalt and pavement were washed out at various sites throughout the City. Heacock and Cactus channel flooded and block public right of way. $23K public assistance.
2005	DR-1585, February 2005, flooding in the area of Reche Vista, Ironwood and Davis St., Heacock channel north of JFK Blvd; 15 homes throughout the City with minor flood damage. $16K public assistance.
2010	DR-1884 Jan 2010 – Flooding damage/road closures throughout the City. Example of damage included: erosion of Heacock Channel (south of Iris north of Cactus) causing encroachment to the roadway. Slope and down drain repair at Reche vista; damage to retention basin/drainage swales on Redlands Blvd; and debris /road cleanup throughout City. Preliminary damage assessment $195K.
2010	DR-1952, December 2010, Flooding was citywide. Heacock channel, 10 City parks, several home were damaged from flooding. Damage to the Indian Basin basin while under construction for improvement. Preliminary damage assessment $998K.

6.1.2 Flooding Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

6.2 Flooding Vulnerability – Overview/Impact

The severity rating for this hazard is a 3, which means that there is a potential for critical damage, causing injuries and/or illnesses resulting in permanent disability, complete shutdown of critical facilities for two weeks and/or 25% to 49% of property is severely damaged. Flooding could cause cascading hazards such as landslides, dam failure, pipeline hazards, transportation incidents, power outages, hazardous materials incidents, civil unrest, diseases and insect infestations.

Impact to Population and Structures: Flooding can cause a huge impact to both the population and structures. Injuries and/or deaths could occur from drowning or traffic collisions, as well as, from cascading hazards such as power lines down, landslides and other hazards. Communications could be impacted by flooding and people could be evacuated from dangerous areas. Seniors and individuals with access and functional needs may need special assistance to evacuate. Structures could be damaged, as well as, property.

Impact to Essential Facilities/Historical Sites: Essential facilities fall within the 100 year and 500 year flood zones and therefore could suffer damage from flooding. Historical sites could also suffer damage.

Impact to Infrastructure: Flooding could cause power outages, which would affect traffic lights and transportation. Damage to pipelines and communication infrastructure could occur. Mud and debris could affect infrastructure.

Future Development Trends: Future development will result in an increased demand for flood control and drainage services. Moreno Valley participates in the National Flood Insurance Program (NFIP) as well as the voluntary Community Rating System (CRS), which is administered by the FEMA. The NFIP program provides federal flood insurance and federally financed loans for property owners in flood prone areas. For more information about the City's participation in NFIP and CRS, see Chapter 21.4 National Flood Insurance Program. To qualify for federal flood insurance, the City must identify flood hazard areas and implement a system of protective controls. In addition, all development is required to comply with Riverside County Flood Control and Water Conservation District requirements for construction of master drainage plan facilities. New development is shown in Appendix C.

6.2.1 Flooding Vulnerability – Repetitive Loss

There are no repetitive loss properties.

6.2.2 Flooding Vulnerability – Potential Loss

The City was unable to utilize HAZUS-MH for flooding because the data only includes river overflows. Utilizing Moreno Valley and Riverside County Assessor Data, potential loss was calculated (no contents) and the results are:

Building Type	100 Year Flood (#, Value)	500 Year Flood (#, Value)
Residential	79 - $15,987,491	2,537 $594,668,376
Commercial	47 - $15,189,420	112 - $316,145,220
Critical Facilities	2 - $2,987,491	14 - $17,384,137
Historic Sites	0	4 - $791,584

Chapter 7: Drought

Moreno Valley Rating: **Severity = 2**
Probability = 3

7.1 Drought Profile – Overview/Location

Drought is a complex issue involving many factors that can be described as a below normal expected precipitation occurring over a long period of time; inadequate water supply to meet the needs of crops and livestock; deficiencies in the stream flow, snowpack, lakes, reservoirs and groundwater levels; its impact to health and quality of life; and adverse economic impact. Drought is based on its meteorological, agricultural, hydrological and socioeconomic effects on the region.

Due to the geographic extent of drought, it would be located throughout the entire City of Moreno Valley.

7.1.1 Drought Profile – Previous Occurrences

The City of Moreno Valley has an early history of drought when, in 1887, Frank E. Brown sought to provide water to the barren plain that is now Moreno Valley. Mr. Brown built a dam at Bear Valley in the San Bernardino Mountains and formed the Bear Valley Land and Water Company. This company provided water to the City of Redlands as well as to Alessandro and Moreno, which is currently known as the City of Moreno Valley.

Unfortunately a drought struck Southern California in 1899, causing Mr. Brown to terminate the water supply to this area as the City of Redlands had first rights to the water supply. As a result of the loss of water delivery, the residents of Moreno Valley were forced to leave the area in search of a more livable environment. By 1901, few people resided in Moreno Valley, and those who remained turned primarily to the dry farming of hay, grain, and grapes.[13]

Below is a chronological list of dates of the severe droughts that have occurred in California:

- 1929-1934 – was the most severe drought in California's history at that time[14]
- 1943-1951 – was more severe in southern California[15]
- 1959-1962 – was more severe in the Sierra Nevada[15]

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[13] http://mvhistoricalsociety.com/history.htm Retrieved September 24, 2011
[14] http://www.calwatercrisis.org/pdf/ACWA.WS.RecordDrought%202007.pdf Retrieved September 24, 2011
[15] http://geochange.er.usgs.gov/sw/impacts/hydrology/state_fd/cawater1.html Retrieved September 24, 2011

- 1976-1977 – 1977 was the single driest year on record for California[16]
- 1987-1992 – Caused 23 of California's 58 counties to declare county-wide local states of emergency in 1991[16]
- 2007-2009 – one of the more severe droughts in California's history with 2007 setting records in the southern coastal region as one of the driest years on record.[17]

7.1.2 Drought Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

7.2 Drought Vulnerability – Overview/Impact/Development Trends

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged. Drought could cause cascading incidents such as fires, flooding, insect infestations and civil unrest.

Impact to Population and Structures: Drought could impact the population by the potential of imposing water restrictions, thus impacting crops, livestock, land, vegetation and urban water supplies. One of the most significant impacts could be its effect on wildfire protection. Dry vegetation has a potential to increase wildfires in and around the City of Moreno Valley. In addition, firefighting efforts may be hindered due to inadequate water supplies. Drought may also cause soil to compact and not absorb water well, thus making an area more susceptible to flooding.

Impact to Essential Facilities/Historical Sites: Essential facilities and historical sites could be impacted by inadequate water supplies and the potential for flooding in and around the site. Firefighting efforts may be hindered due to inadequate water supplies and damage to landscaping may occur.

Impact to Infrastructure: The impact of drought to infrastructure could be severe as the availability of water could be affected. Drought could affect the stream flow, snowpack, lakes, reservoirs and groundwater levels.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted by drought. A potential of inadequate water supply during periods of drought may need to be considered for future development. New development is shown in Appendix C.

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[16] http://www.water.ca.gov/drought/docs/CalDrought.pdf Retrieved September 24, 2011
[17] http://www.water.ca.gov/drought/docs/timeline-present.pdf Retrieved September 24, 2011

7.2.1 Drought Vulnerability – Potential Loss

Due to the limitation of data, it is not possible to analyze the potential loss for Moreno Valley. However, there would be a significant loss from its related impact to wildfires, as well as, the cost to replace landscaping. There are no known repetitive loss properties.

Chapter 8: Landslide

Moreno Valley Rating: **Severity = 2**
Probability = 2

8.1 Landslide Profile – Overview/Location

The primary factors that determine an area's susceptibility to slope instability are the underlying geologic and soils characteristics. The abundant shales and siltstones underlying the Badlands are highly porous and do not hold together well when wet, which can lead to slope instability and landslides. Cascading hazards contributing to the possibility of landslides include rain storms and earthquakes. A "slow moving" landslide reportedly exists along Gilman Springs Road in the eastern portion of the Moreno Valley area.

A 2002 report prepared for California Department of Transportation, states that there have been over 8,500 landslides mapped within the corridor area between Gilman Springs Road and Jack Rabbit Trail. Of those, only 281 are the relatively deep, slower-moving types of landslides that typically cause damage to roadways. The majority of the larger and deeper landslides that were mapped, are dormant-mature based on the landslide features and level of erosion. Dormant-mature, in this area may only mean a low level of activity over several decades. The small number of historic rock-slides that was mapped does suggest, however, that the deeper and slower moving slides are not a very frequent occurrence in this highway corridor. In contrast, small, shallow, rapidly-moving debris flows are very abundant in the San Timoteo Badlands. Thousands of individual flows were triggered by the storms of 1969, and hundreds of additional slides were triggered by the storms of 1998. Overall the debris flow process is probably the main erosional force on the slopes of the badlands.[18]

8.1.1 Landslide Profile – Previous Occurrences

Table 8-1 shows a history of landslides in the Moreno Valley area.

Table 8-1: History of Landslides

Year	Description
2005	Slope failure in the Bonita Heights area of Moreno Valley. Amount of damage unknown.
2010	Slope failure due to winter storm impacting Duckbill and Mallow drive in Moreno Valley. Voluntary evacuations of 6 houses. Amount of damage unknown.

[18] http://www.consrv.ca.gov/cgs/rghm/landslides/SR_186/Documents/CT60riv.pdf Retrieved October 1, 2011

8.1.2 Landslide Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

8.2 Landslide Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged. Landslides could cause cascading hazards such as hazardous materials incidents, transportation incidents, power outages and pipeline incidents.

Impact to Population and Structures: There could be injuries and/or deaths from landslides due to debris flow and/or flooding. Damage to structures and personal property could occur due to the debris flow and/or flooding. People could be asked to evacuate and/or detour. Seniors and individuals with access and functional needs may need special assistance to evacuate.

Impact to Essential Facilities/Historical Sites: Essential facilities and/or historical sites are not located near landslide areas; however they could be impacted from failure of smaller slopes, debris flow and flooding.

Impact to Infrastructure: There could be plugging of culverts and related flooding and erosion of basin overflows. Transportation corridors could be impacted, causing traffic to be detoured. Evacuations could occur.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure would not be impacted. New development is shown in Appendix C.

8.2.1 Landslide Vulnerability – Potential Loss

If there were a landslide affecting the Highway 60 San Timoteo Badlands area, the potential loss would be to people traveling on Highway 60 and may not involve Moreno Valley residents. Cal Trans would be responsible for losses related to the highway. There are no known repetitive loss properties.

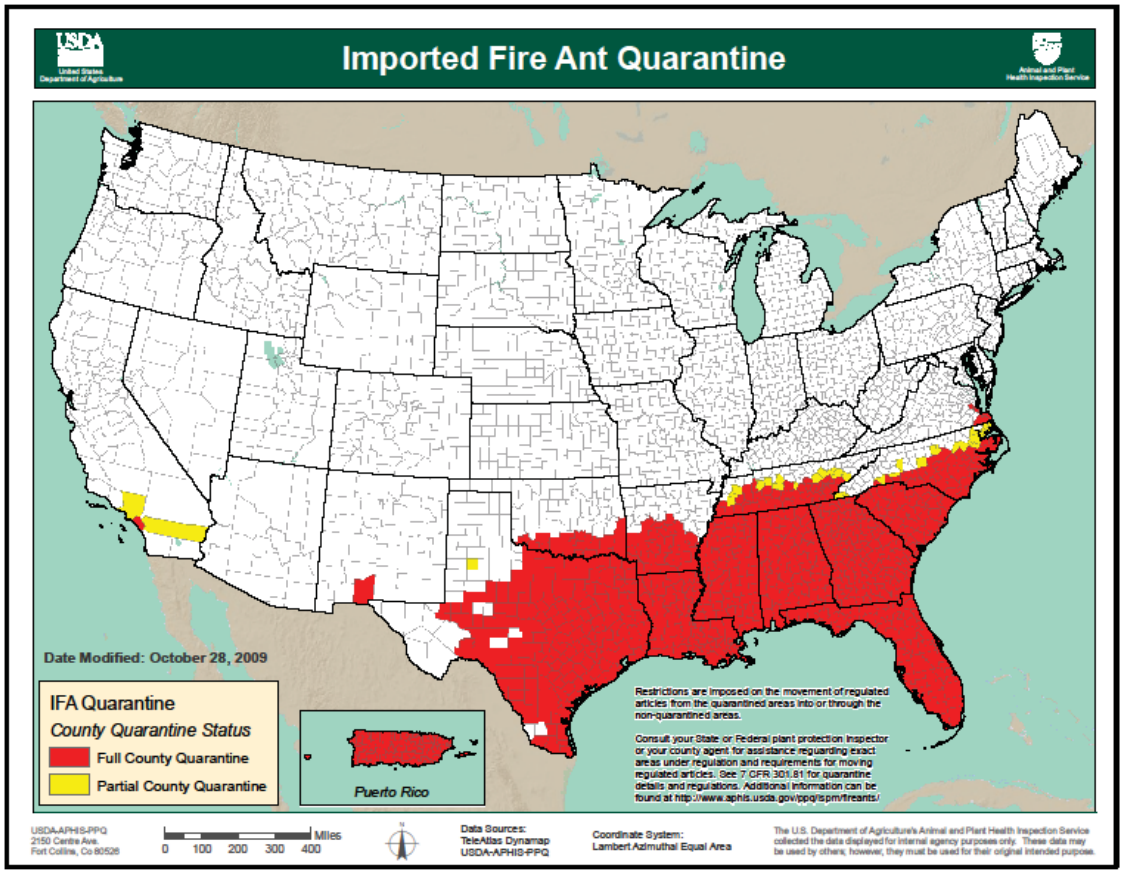
Chapter 9: Insect Infestation

Moreno Valley Rating: **Severity = 1**
Probability = 2

9.1 Insect Infestation Profile – Overview/Location

The City of Moreno Valley is vulnerable to insect infestation, mostly from Africanized Honey Bees and Red Imported Fire Ants. The red imported fire ant came to Southern California when bees were brought in from Texas to pollinate the almond orchards in 1997.[19] By 1988, the red imported fire ants were found in most of Orange County and in parts of Riverside. These ants are highly aggressive when their nests are disturbed. There are reports where people who are allergic to their venom have died.[20] In the past, Moreno Valley has been subject to quarantine limiting the movement of plants and soil (Figure 9-1).

Figure 9-1: Imported Fire Ant Quarantine[21]



[19] Dowell, R.V, A. Gilbert, and J. Sorensen. 1997. "Red Imported Fire Ant Found in California." *California Plant Pest & Disease Report.* 16:50-55.
[20] http://www.ars.usda.gov/fireant/publications/EPDC_151.pdf Retrieved September 25, 2011
[21] http://www.aphis.usda.gov/plant_health/plant_pest_info/fireants/downloads/fireant.pdf Retrieved September 27, 2011

The Africanized Honey Bee is an African Honey Bee, bred with one of four European Honey Bees. The hybrid is virtually indistinguishable from the common honey bee. The major difference between the Africanized Honey Bee and the European Honey Bee is that Africanized Honey Bees are more aggressive in defending its home and will swarm in the hundreds to thousands to sting anything that the hive views as a threat. These attacks tend to be deadly in nature due to the sheer number of bee stings that an animal or person will receive, causing anaphylactic shock. The only known Africanized Honey Bee hive in Moreno Valley was located in 1998 at the Moreno Valley Unified School District; however, the Africanized Honey Bee has been in California since 1994 and has completely colonized numerous counties in California, including Riverside County.

9.1.1 Insect Infestation Profile – Overview/Location

Table 9-1: History of Insect Infestation

Year	Description
1998	Red imported fire ant, Latin name *Solenopsis invicta,* caused 1 square mile of Moreno Valley to be quarantined.[22]
1998	An Africanized Honey Bee, Latin name *Apis mellifera scutellata Lepeletier,* attack occurred in October at the Moreno Valley Unified School District located on Perris Boulevard.[23]
2000	A resident in Banning, CA is killed by swarm of bees. Banning is located 22 miles north of Moreno Valley.[24]
2006	Red imported fire ant hive found on the football field at Canyon Springs High School. Football field was out of service for approximately one month due to the infestation.[25]
2010	Two horses are killed by swarming bees in the City of Menifee which is located 17.8 miles south of Moreno Valley.[26]
2011	Bee attack in the Arlanza area of the City of Riverside kills a horse, owner is hospitalized. Riverside is a neighboring jurisdiction to Moreno Valley.[27]
2011	Swarm of bees in Wildomar neighborhood attack dog. Wildomar is located 35 miles south of Moreno Valley.[28]

[22] http://www.ars.usda.gov/fireant/publications/EPDC_151.pdf Retrieved September 25, 2011
[23] http://articles.latimes.com/1998/dec/17/local/me-54929 Retrieved September 25, 2011
[24] http://www.stingshield.com/2000news.htm Retrieved September 27, 2011
[25] http://www.pe.com/localnews/sbcounty/stories/PE_News_Local_S_fireants29.6ed14e.html?npc Retrieved September 27, 2011
[26] http://www.nctimes.com/news/local/menifee/article_8b756184-96eb-5575-949d-aedef97981cf.html Retrieved September 27, 2011
[27] http://latimesblogs.latimes.com/lanow/2011/07/horse-killed-bees-riverside.html Retrieved September 27, 2011
[28] http://www.nbclosangeles.com/news/local/Bees-Sward-Riverside-Neighborhood-125669843.html Retrieved September 27, 2011

9.1.2 Insect Infestation Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

9.2 Insect Infestation Vulnerability – Overview/Impact

The severity rating for this hazard is a 1, which means that there is a potential for negligible damage, causing injuries and/or illnesses treatable with first aid, minor quality of life lost, shutdown of critical facilities and services for 24 hours or less and/or no more than 1% of property is severely damaged. Insect infestation could cause cascading hazards such as pandemic flu or disease.

Impact to Population and Structures: Injuries and/or deaths from insect infestations are likely. The amount of injuries and/or deaths is not expected to be high. There could be an impact to vegetation as well as, structures.

Impact to Essential Facilities/Historical Sites: There could be an impact to essential facilities and historical sites, as well as, landscaping.

Impact to Infrastructure: No impact is expected.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted by insect infestations. Eradication costs may need to be considered. New development is shown in Appendix C.

9.2.1 Insect Infestation Vulnerability – Potential Loss

If an imported red fire ant insect infestation were to impact Moreno Valley and quarantine were ordered, the potential loss would be to area nurseries and to eradication of the pest. Due to limitation of data, the actual cost is not known. There are no known repetitive loss properties.

Chapter 10: Extreme Weather

Moreno Valley Rating: **Severity = 2**
Probability = 3

10.1 Extreme Weather Profile – Overview/Location

For purposes of profiling the extreme weather hazard for this plan, extreme weather includes lightening, hail, freezing and heat. Flooding is profiled in chapter 6 and severe wind is profiled in chapter 11. Extreme weather could affect the entire City of Moreno Valley.

Lightening – Lightning can strike anywhere and typically follows the shortest, easiest path to the earth, striking buildings, trees or other objects such as poles and metal objects. Lightening can enter a building through a direct strike by striking a metal object that is attached to the building or by following a power line or unground wire fence that is attached to a building.

Hail/Freezing – Hail is a form of solid precipitation. It consists of balls or irregular lumps of ice, each of which is referred to as a hail stone. Hail formation requires environments of strong, upward motion of air with the parent thunderstorm (similar to tornadoes) and lowered heights of the freezing level (< 32 °Fahrenheit, 0 Celsius). Hail is most frequently formed in the interior of continents within the mid-latitudes of Earth, with hail generally confined to higher elevations within the tropics.[29]

Heat – Extreme heat may occur in the summer.

10.1.1 Extreme Weather Profile – Previous Occurrences

Table 10-1 shows the history of extreme weather for the City of Moreno Valley and surrounding area.

Table 10-1: History of Extreme Weather

Year	Description
1972	Lightning struck the Riverside and Norco area. One boy was killed.[30]
1995	July, 27-28, 1995, Heat wave: 111° Banning, Moreno Valley, and Sun City[30]
2005	February 24, 2005, Lightning struck a girl in Moreno Valley.[30]

[29] http://en.wikipedia.org/wiki/Hail
[30] http://www.wrh.noaa.gov/sgx/document/weatherhistory.pdf

2007	September 1-3, 2007, Heat wave - 110° in the Inland Empire and high deserts, and 115° in the lower deserts. At least six deaths from heat related illnesses.[30]
2008	May 22, 2008, Hail on Moreno Beach Drive at the 60 Freeway in Moreno Valley. The nickel size hail downpour was brief, and it melted quickly. Awnings, trees and vehicles were damaged. [31]
2008	May, 22, 2008, Heavy rain from thunderstorms. 28 residences were flooded and damaged in the northeast Moreno Valley.[30]
2008	December 26, 2008, Freezing temperatures in Moreno Valley, (31°)[32]
2010	December 30, 2010, Freezing temperatures in Moreno Valley, (32°)[33]

10.1.2 Extreme Weather Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

10.2 Extreme Weather Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged. Extreme weather can cause cascading hazards such as pipeline incidents, transportation incidents, power outages, hazardous materials incidents and civil unrest.

Impact to Population and Structures: The impact to the population from lightning strikes, hail or freezing and/or extreme heat could involve injuries and/or deaths. For heat, the population is susceptible to heat exhaustion and heat stroke. The elderly, children, people with functional needs and those that have pre-existing medical conditions are very susceptible to heat injuries during extreme heat. Structures may be susceptible to damage from all types of extreme weather. Extreme heat may impact vegetation.

Impact to Essential Facilities/Historical Sites: Essential facilities and/or historical sites may be susceptible to damage from all types of extreme weather. Extreme heat may impact vegetation.

[31] http://weathercurrents.com/morenovalley/PhotoDisplay.do?Id=9&Story=main/22May2008Hail

[32] http://weathercurrents.com/morenovalley/NewsItemDisplay.do?Id=527

[33] http://weathercurrents.com/morenovalley/NewsItemDisplay.do?Id=704

Impact to Infrastructure: Extreme weather may cause power outages and disruptions to communications and transportation.

Development Trends: Since vulnerability to extreme weather is Citywide, future development trends are not expected to impact the vulnerability to extreme weather. New development is shown in Appendix C.

10.2.1 Extreme Weather Vulnerability – Potential Loss

If a lightening event were to damage the Conference and Recreation Center, located on Frederic Street, the potential loss could be from structural and infrastructure damage. The value of the building is $20,315,827.00 (does not include contents). It is estimated that the potential loss could be 1% of the value, which would be $203,158.00. There are no known repetitive loss properties.

Chapter 11: Severe Wind

Moreno Valley Rating: **Severity = 2**
Probability = 3

11.1 Severe Wind Profile – Overview/Location

Winds around Moreno Valley are generally cyclic, blowing from the southwest and west, especially in the summer and during the day. At night, especially during the winter, a weak off-shore breeze occurs. Occasionally in the fall these cyclical breezes are interrupted by strong, dry, warm desert winds (Santa Anas) from the north/northeast.

11.1.1 Severe Wind Profile – Previous Occurrences

The City of Moreno Valley and surrounding area has a history of chronic windstorms. While extremely rare, the Moreno Valley area is also susceptible to tornadoes. In May of 2008, two tornadoes barreled across Interstate 215 south of March Air Reserve Base, knocking over a tractor trailer and several box cars from a nearby train.[34]

Figure 11-1: Two Tornadoes Touched Down Across Interstate 215[35]

[34] http://www.pe.com/localnews/morenovalley/stories/PE_News_Local_D Retrieved September 28, 2011
[35] Photo From Anonymous Author

Table 11-1: History of Severe Wind/Tornadoes Near Moreno Valley

Year	Description
1955	Tornado north of Moreno Valley[36]
1982	Tornado in Riverside.
1993	Funnel cloud in Moreno Valley.
1996	Two funnel clouds southwest of Moreno Valley.
1996	Tornado in Cabazon. Threw a 5 ton mobile home 30 feet. Minor damage to six other mobile homes.
1998	Tornado in Homeland, Funnel clouds in in Homeland and Moreno Valley. Damage to mobile homes on Homeland.
2005	A tornado hit Hemet. A funnel cloud was reported in Mira Loma. The tornado picked up a storage shed in Diamond Valley and threw it into a power pole.
2005	A tornado struck Hemet. Trees downed.
2005	60 -70 mph winds hit the Hemet, Canyon Lake and Menifee region.
2006	50 mph+ winds demolished the "M" on Box Springs Mountain, above Moreno Valley
2008	Four Tornadoes touched down near Moreno Valley, one was rated on the Enhanced Fujita Scale an EF-2 and was on the ground for an exceptional 21 minutes. 9 railroad cars were derailed. A semi-truck was lifted 30 -40 feet in the air, severely injuring the driver. Damage to roofs, trailers and sheds occurred.

Figure 11-1.1: Enhanced Fujita Scale[37]

EF 0	65-85 mph
EF 1	86-110 mph
EF 2	111-135 mph
EF 3	136-165 mph
EF 4	166-200 mph
EF 5	Over 200 mph

[36] http://www.wrh.noaa.gov/sgx/document/weatherhistory.pdf Retrieved September 28, 2011

[37] http://students.rochester.k12.mi.us/hart/fall20009tornado/tornadogranth/Enhanced_Fujita_Scale_V1.JPG Retrieved September 28, 2011

11.1.2 Severe Wind Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

11.2 Severe Wind Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged. Severe wind could cause cascading hazards such as transportation and hazardous materials incidents, power outages, fires and pipeline incidents.

Impact to Population and Structures: Severe wind and/or tornadoes could cause major injuries. The potential for impaled objects exists as well. Severe wind and/or tornadoes could cause damage to structures and cause an increased chance of fires.

Impact to Essential Facilities/Historical Sites: Severe wind and/or tornadoes could cause damage to essential facilities and/or historical sites and cause an increased chance of fires.

Impact to Infrastructure: Severe wind and/or tornadoes could cause power outages.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted by severe winds and/or tornadoes; however, there are no recommendations for changes to development trends. New development is shown in Appendix C.

11.2.1 Severe Wind Vulnerability – Potential Loss

If a severe wind event were to occur, causing a power outage near the Moreno Valley Mall area during mall hours, the potential loss could be loss of retail sales and the cost to restore power. Due to limitation of data available, it is not possible to estimate the potential loss. There are no known repetitive loss properties.

Chapter 12: Dam Failure/Inundation

Moreno Valley Rating: **Severity = 2**
Probability = 2

12.1 Dam Failure/Inundation Profile – Overview/Location

Dam inundation is a potential flood hazard in several portions of Moreno Valley from two dams: Poorman Reservoir (Pigeon Pass Reservoir) and Lake Perris.

Pigeon Pass: Failure of the dam at Pigeon Pass (Poorman Reservoir) could result in extensive flooding along the downstream watercourse. The risk of flooding due to dam failure is limited to the period during and immediately after major storms. The reservoir does not retain water throughout the year.

Perris: Failure of the dam at Lake Perris would only affect a very small area south of Nandina Avenue along the Perris Valley Storm Drain and the Mystic Lake area in the southeast corner of Moreno Valley.

In 2005, a study by the state found that the Perris Dam likely would crumble in the range of a 7.5 magnitude earthquake, unleashing billions of gallons of water across western Riverside County. After that, the lake was dropped 25 feet to a safer level and will remain there until repairs can be completed. The seismic repairs are expected to begin in early 2013 and be finished by the end of 2014.[38]

The state plans to inject cement and soil into the deepest and most unstable parts of the dam's foundation so it will better withstand shaking from an earthquake. A stability berm would be built on top of the new foundation, allowing the lake to be taken to its previous level. A new outlet tower to funnel lake water into the regional drinking water system also would be built.[38]

A two-mile-long emergency channel would be constructed next to the Ramona Expressway so large water releases during a disaster would be directed away from neighborhoods and into a storm drain.[38]

Figure 12-1: Perris Dam Construction Project[39]

[38] http://www.pe.com/localnews/morenovalley/stories/PE_News_Local_D_dam22.112a702.html Retrieved October 1, 2011
[39] http://www.water.ca.gov/lakeperris/ Retrieved September 30, 2011

A map of Moreno Valley flooding and dam inundation is included in chapter 6. Table 12-1 shows a summary of Pigeon Pass and Lake Perris information.

Table 12-1: Pigeon Pass and Lake Perris Summary

Dam	Height	Storage (acre-feet)	Year Built	Drainage Area (square miles)
Pigeon Pass	36	900 (approx. 293,000 gal)	1958	8.71
Perris	130	2,340 (approx. 42,834,000 gal)	1973	10

12.1.1 Dam Failure/Inundation Profile – Previous Occurrences

There are no previous occurrences of dam failure/inundation.

12.1.2 Dam Failure/Inundation Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

12.2 Dam Failure/Inundation Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged. For information about flooding, see Chapter 6. Dam failure/inundation could cause cascading hazards such flooding, pipeline hazards, transportation, power outages and hazardous materials incidents.

Impact to Population and Structures: The population in the dam inundation areas could be requested to evacuate. Seniors and individuals with access and functional needs may need special assistance to evacuate. An evacuation map (Figure 12-2) shows the nearby population to the inundation area. There could be damage to structures in the inundation areas affected by flood waters.

Impact to Essential Facilities/Historical Sites: Failure of the Perris Dam would only affect a very small area south of Nandina Avenue along the Perris Valley Storm Drain and the Mystic Lake area in the Southeast corner of Moreno Valley. While two schools, Rancho Verde High School and El Potrero Elementary School, are not located in the inundation area, they may be impacted

by an evacuation. The schools near (not in) the inundation area are shown on the evacuation map (Figure 12-2). No historical sites are within the dam inundation area.

Impact to Infrastructure: An evacuation could impact transportation routes.

Development Trends: Future development will result in an increased demand for flood control and drainage services. Moreno Valley participates in the National Flood Insurance Program (NFIP) as well as the voluntary Community Rating System (CRS), which is administered by the FEMA. The NFIP program provides federal flood insurance and federally financed loans for property owners in flood prone areas. For more information about the City's participation in NFIP and CRS, see Chapter 21.4: National Flood Insurance Program. To qualify for federal flood insurance, the City must identify flood hazard areas and implement a system of protective controls. In addition, all development is required to comply with Riverside County Flood Control and Water Conservation District requirements for construction of master drainage plan facilities. New development is shown in Appendix C.

12.2.1 Dam Failure/Inundation Vulnerability – Potential Loss

If a dam failure occurred at Perris Dam, the potential loss would be limited to a very small area south of Nandina Avenue along the Perris Valley Storm Drain in the southeast corner of Moreno Valley. Please see Chapter 6 for losses related to flooding. There are no repetitive loss properties.

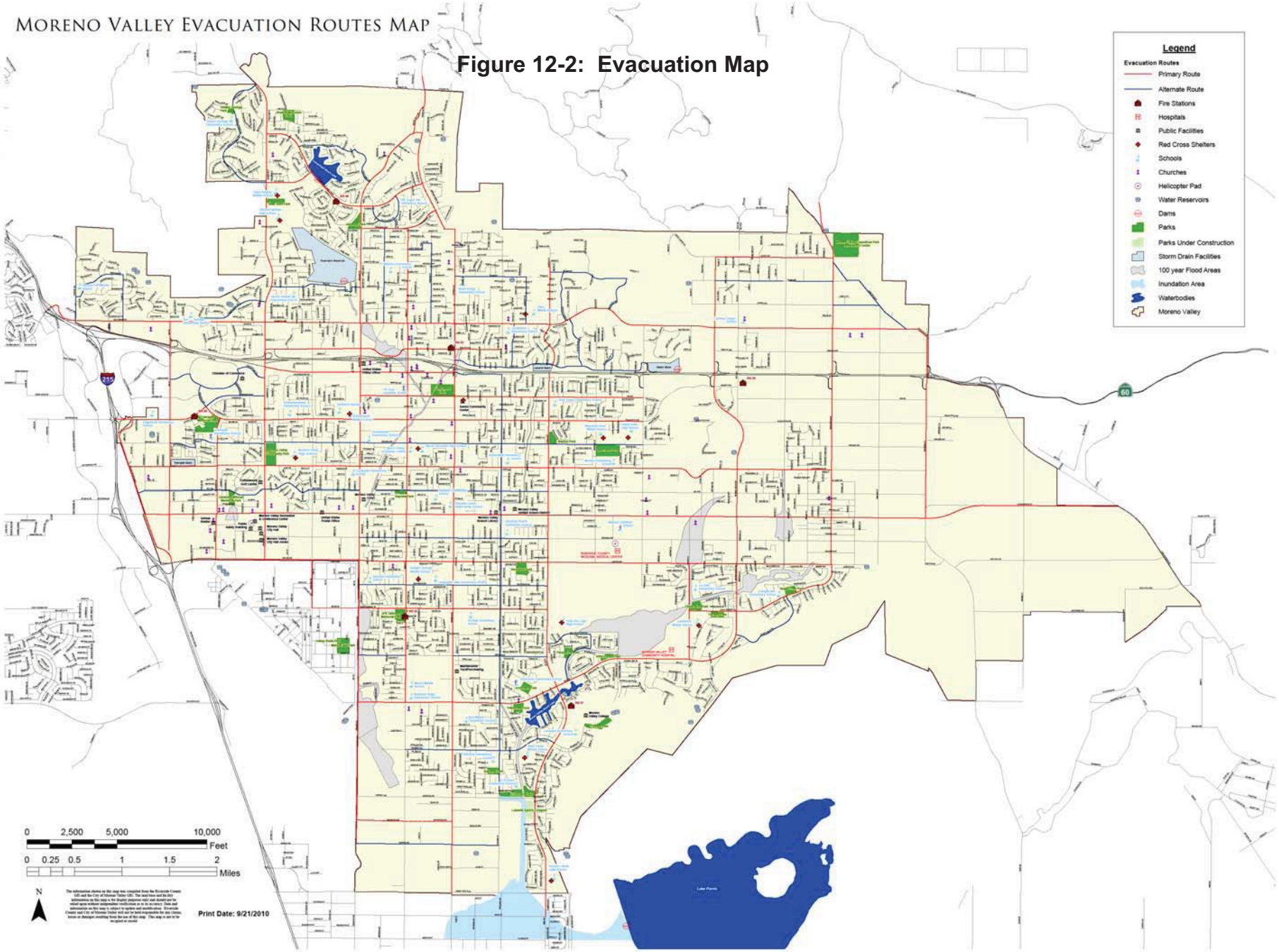


Figure 12-2: Evacuation Map

Chapter 13: Pipeline

Moreno Valley Rating: **Severity = 2**
Probability = 2

13.1 Pipeline Profile – Overview/Location

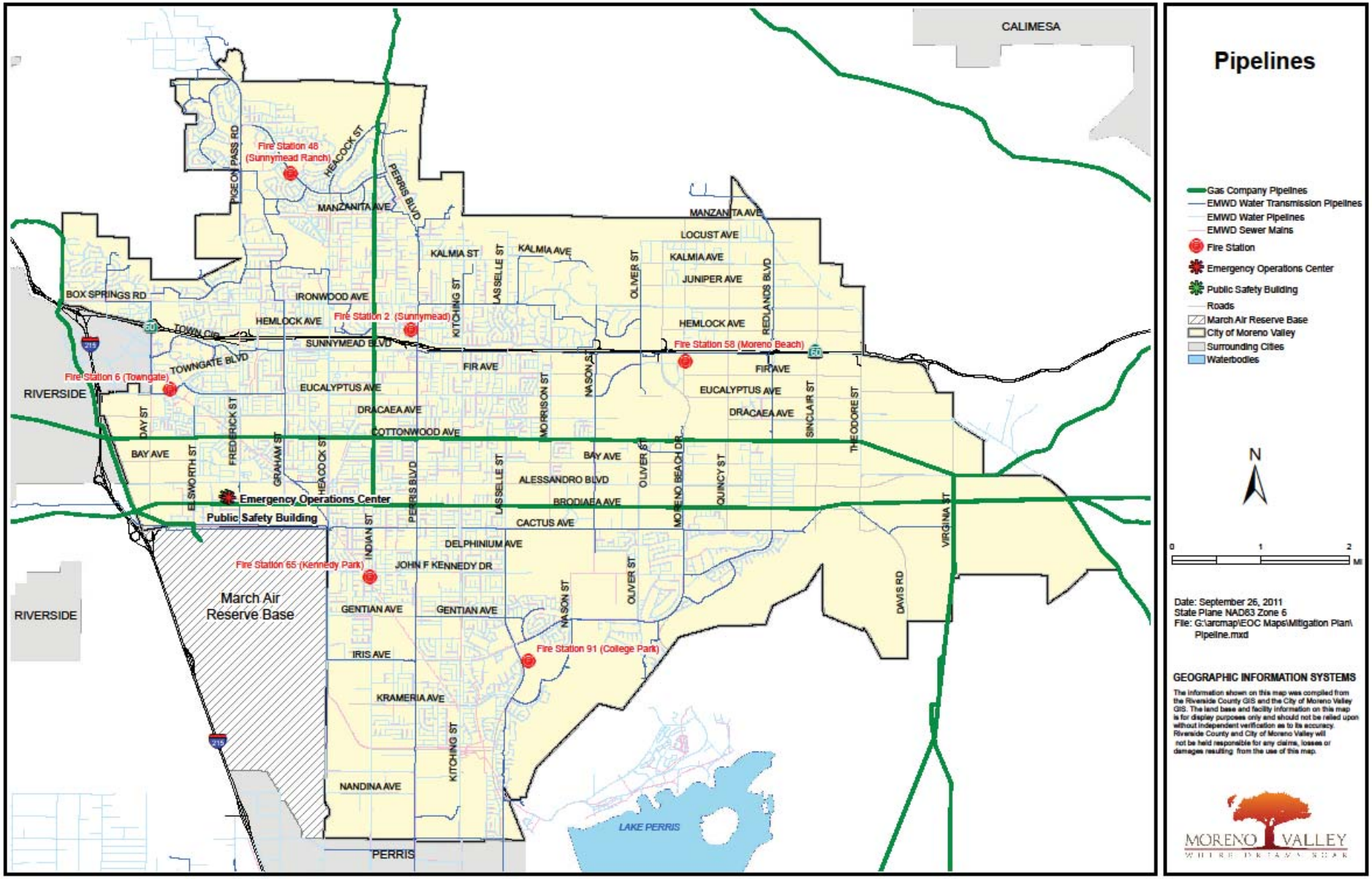
Natural gas, oil, water and sewer are transported via pipeline, mostly by underground pipes in developed and urban areas.

Water: Most of the City's water is imported via the California Aqueduct from northern and central California. Box Springs Mutual Water Company serves a small portion of the community, while the primary purveyor of water in Moreno Valley since the 1950's is Eastern Municipal Water District (EMWD). EMWD completed a major water supply line along Perris Boulevard in 1954 through which water became available in 1955. The existing water companies were responsible for connecting to the main water supply system, including the Edgemont Gardens Mutual Water Company and the Sunnymead Mutual Water Company. An underground segment of the aqueduct runs from the northwest corner of Moreno Valley to Lake Perris. Water from Lake Perris is pumped to the Mills Filtration Plant in the City of Riverside before it is distributed to Moreno Valley customers.

Natural Gas: The Southern California Gas Company maintains a comprehensive system of distribution and service lines throughout the City. In addition to local lines, two major 30-foot wide transmission lines cross Moreno Valley. Line number "2001" is located in Cottonwood Avenue and line number "2000" is located in Brodiaea Avenue. Both lines run east-west through the entire City. There are also 8-inch and 12-inch major distribution supply lines located on Indian Avenue, running north from Brodiaea Ave through Moreno Valley. All of these are considered "high-pressure" lines, meaning that they contain over 60 pounds per square inch (psi). There is also an aviation fuel line that runs through Moreno Valley, however, this line no longer provides fuel to March Air Reserve Base.

Sewer: Eastern Municipal Water District operates over 356 miles of sewer mains (12" and above) and six sewage lift stations to provide wastewater collection services within Moreno Valley. All wastewater is collected and conveyed to the Moreno Valley Regional Water Reclamation Facility located in the southwestern portion of the City and has a capacity to treat 16 million gallons of wastewater (mgd) per day and a capacity to expand to 41 mgd. Sewer services for the southwestern Moreno Valley are provided by the Edgemont Community Services District. The District provides wastewater treatment under contract with the City of Riverside. According to the District, the pipes that transmit sewage to the City of Riverside Water Quality Control Plant are over 50 years old and are in need of repair.

Figure 13-1: City of Moreno Valley Pipeline Map



13.1.1 Pipeline Profile – Previous Occurrences

Moreno Valley and the surrounding area have a history of pipeline ruptures, spillage and vandalism to natural gas and sewer lines. Table 13-1 shows incidents dating from 1991.

Table 13-1 Moreno Valley Area Natural Gas and Sewer Line Incidents

Year	Description
1991	Two inch natural gas pipe ruptured by back hoe. Occurred at 9:45 a.m. in the 12700 block of Pembridge Drive, south of State Highway 60. No explosion, but gas did ignite when it contacted the backhoe's muffler. Incident was contained within one hour.[40]
2001	Eastern Municipal Water District estimates 46,000 gallons of sewage spilled due to a block sewer line in the area north of John F. Kennedy Drive and east of Moreno Beach Drive in a vacant lot. [41]
2002	Eastern Municipal Water District estimates 2,500 gallons of sewage spilled out of a manhole at the intersection of Indian Avenue and John F. Kennedy Drive.[42]
2005	Vandalism causes $61,696 in damage to Southern California Gas Company gas line.[43]
2007	69 gallons of sewer discharged at 24512 Filaree due to a blocked manhole[44]
2007	420 gallons of sewage discharged at 16674 Century Street44
2007	300 gallons of sewage discharged at 21880 Winding Road44
2008	450 gallons of sewage discharged at 13874 Rockcrest Drive44
2008	1,500 gallons of sewage discharged at 12080 Pigeon Pass[45]
2008	450 gallons of sewage discharged at 13874 Rockcrest Drive45
2009	2,590 gallons of sewage released at Ironwood and Talbor[46]
2009	270 gallons of sewage released at Pan Am and Eucalyptus46
2009	7,000 gallons of sewage released at 23650 Hemlock46

[40] Press Enterprise Article *Punctured gas line sparks fire* published on unknown date in 1991
[41] http://www.emwd.org/news/news-archives/news_01/mv-sewer_0710.html Retrieved September 25, 2011
[42] http://www.emwd.org/news/news-archives/news_02/mv-sewer_412.html Retrieved September 25, 2011
[43] http://www.pstrust.org/library/docs/gt1986to2009.xls Retrieved September 25, 2011
[44] https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportId=sso_overview_region&reportAction=generate&region=8&agency=EasternMunicipalWaterDistrict&collSys=Eastern Municipal Water District CS&count=10&curpage=0&pagesize=25&sortop=y Retrieved September 25, 2011
[45] http://www.calema.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%202008.xls Retrieved September 26, 2011
[46] http://www.calema.ca.gov/HazardousMaterials/Documents/Hazmat%20Spill%20Reports%202009.xls Retrieved September 26, 2011

2009	Two inch underground gas line broke on Daimler Street between Margarita Street and Bay Avenue at 2 p.m. Two homes were evacuated. Repairs took three hours.[47]
2011	A four to five inch natural gas main was ruptured on Cactus Avenue east of Moreno Beach Drive at a construction site.[48]
2011	1,140 gallons of sewage discharged at 12640 Memorial Way[49]
2011	6,500 gallons of sewage discharged at 12926 Indian Street44
2011	4" gas main was struck by a back hoe at Cactus Avenue and Wilmot.49

13.1.2 Pipeline Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

13.2 Pipeline Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged. Pipeline incidents could cause cascading hazards such as flooding, transportation and hazardous materials incidents, civil unrest and pandemic flu or disease.

Impact to Population and Structures: Pipeline incidents could impact the population by causing injuries, illness or death. People affected may have to be evacuated or asked to shelter in place. Seniors and individuals with access and functional needs may need special assistance to evacuate. People could be asked to drink bottled water or to boil their water before drinking, if sewage were to contaminate the water. Damage to structures and/or property may occur.

Impact to Essential Facilities/Historical Sites: Essential facilities and/or historical sites could be affected by pipeline incidents. Pipeline incidents could hinder emergency operations due to lack of water or evacuation of essential facilities.

Impact to Infrastructure: A pipeline incident would have a large effect on infrastructure. For instance, a sewer line rupture could contaminate water; a water line rupture could limit emergency responder's ability to fight fires; and a natural gas rupture could cause fires, evacuations and more.

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[47] Press Enterprise *Gas line breaks, two homes evacuated*, June 18, 2009
[48] http://www.swrnn.com/2011/05/23/moreno-valley-natural-gas-line-ruptures-at-construction-site/ Retrieved September 25, 2011
[49] http://www.calema.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%202011.xls Retrieved September 25, 2011

Development Trends: An increase in development is expected to result in incremental increased demand for infrastructure. Future planned development is expected to be constructed utilizing Uniform Building Codes and design standards. New development is shown in Appendix C.

13.2.1 Pipeline Vulnerability – Potential Loss

If a gas line explosion were to occur at City Hall, the damage to the building and infrastructure could be significant and is estimated at 25 million. There are no known repetitive loss properties.

Chapter 14: Transportation

Moreno Valley Rating: **Severity = 2**
Probability = 2

14.1 Transportation Profile – Overview/Location

The City of Moreno Valley has an extensive transportation network that includes of state highways, arterials and local streets, public transit, and nearby rail. For purposes of this plan, transportation emergencies involve highways, arterials and surface streets, as well as, rail and air.

Highways and Arterials - State Route 60 (SR-60) is a major regional east-west highway linking Moreno Valley to both neighboring and outlying communities. Additional regional east-west travel is provided by Box Springs/Ironwood, Sunnymead Boulevard and Alessandro Boulevard, both of which are maintained by the City. Sunnymead Boulevard serves as the traditional commercial corridor of Moreno Valley. Alessandro Boulevard serves as a commercial and industrial corridor at its westerly end. Other major east-west routes within the City are, from north to south, Eucalyptus Avenue, Cottonwood Avenue and Cactus Avenue.

Interstate 215 (I-215) is immediately to the west of the City and is the primary regional route for north-south travel, linking Moreno Valley to both neighboring and outlying communities. Additional regional north-south routes include Perris Boulevard, Redlands Boulevard and Gilman Springs Road. Other north-south access is provided by Moreno Beach Drive and Pigeon Pass Road/Frederick Street.

Rail - The nearest railway is the Burlington Northern and Santa Fe railway which runs parallel to I-215. A major train derailment could impact the City of Moreno Valley if the crash involved a hazardous materials accident.

Air - There is an airfield located southwest of the City limits. The airfield is operated by two entities: March Air Reserve Base and the March Inland Port Airport Authority. The land at each end of the runway is subject to significant danger of aircraft accidents during takeoff and landing. The land below the landing approach is designated as the clear zone and is located at the northeast corner of Heacock Street and Oleander Avenue in the City. Air crash zones are mapped into various categories: areas on or adjacent to the runway; areas within the areas within the clear zone; Accident Potential Zone (APZ) I; and Accident Potential Zone (APZ) II. The risk is greatest immediately under the takeoff and landing zone located at either end of the runway(s). The accident potential within the clear zone, which extends 3,000 feet from each end of the runway, is considered to be of such high risk that few uses are acceptable. A small area at the extreme southwest corner of the City is within the clear zone.

Figure 14-1: City of Moreno Valley Transportation Map

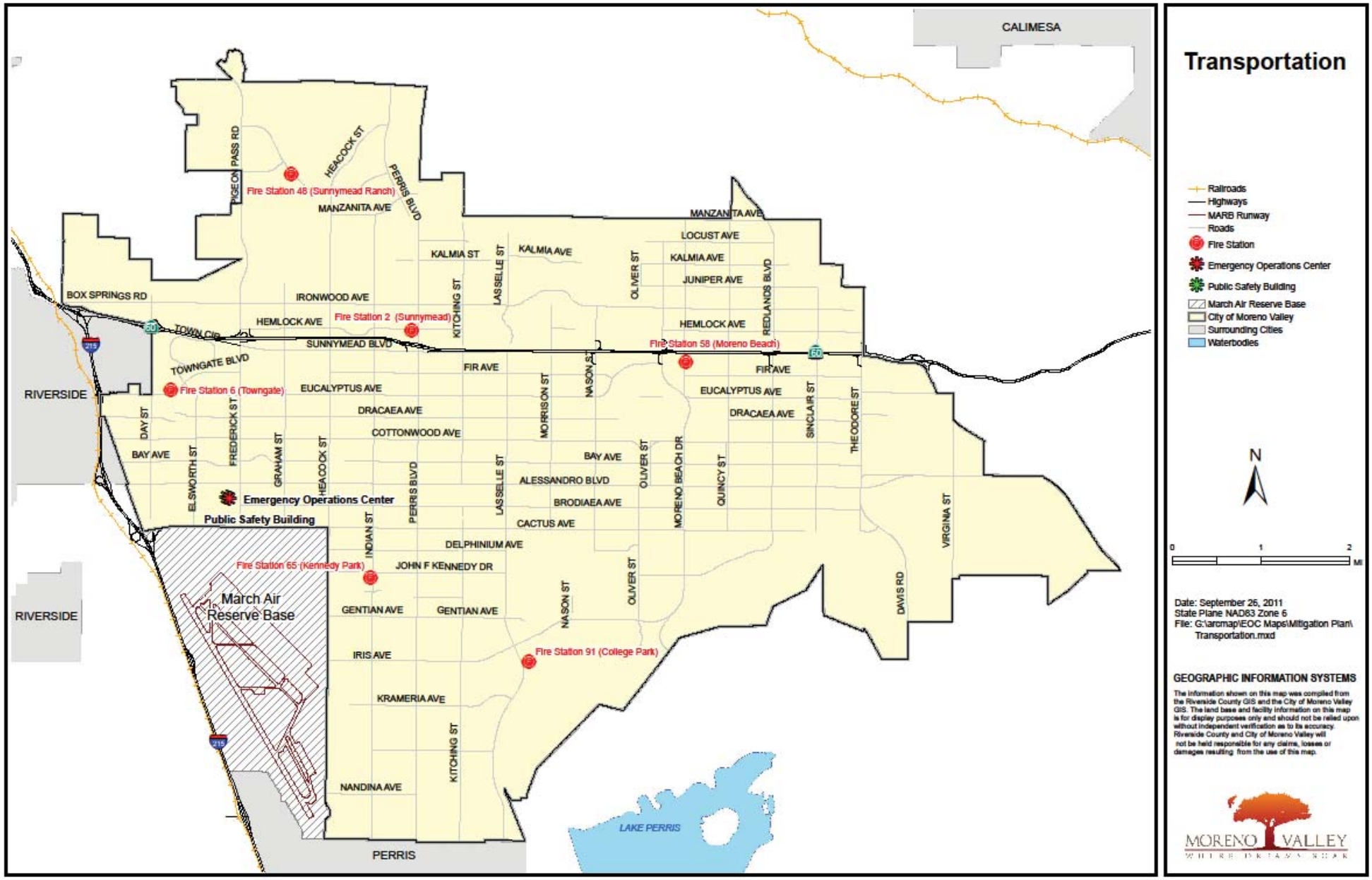
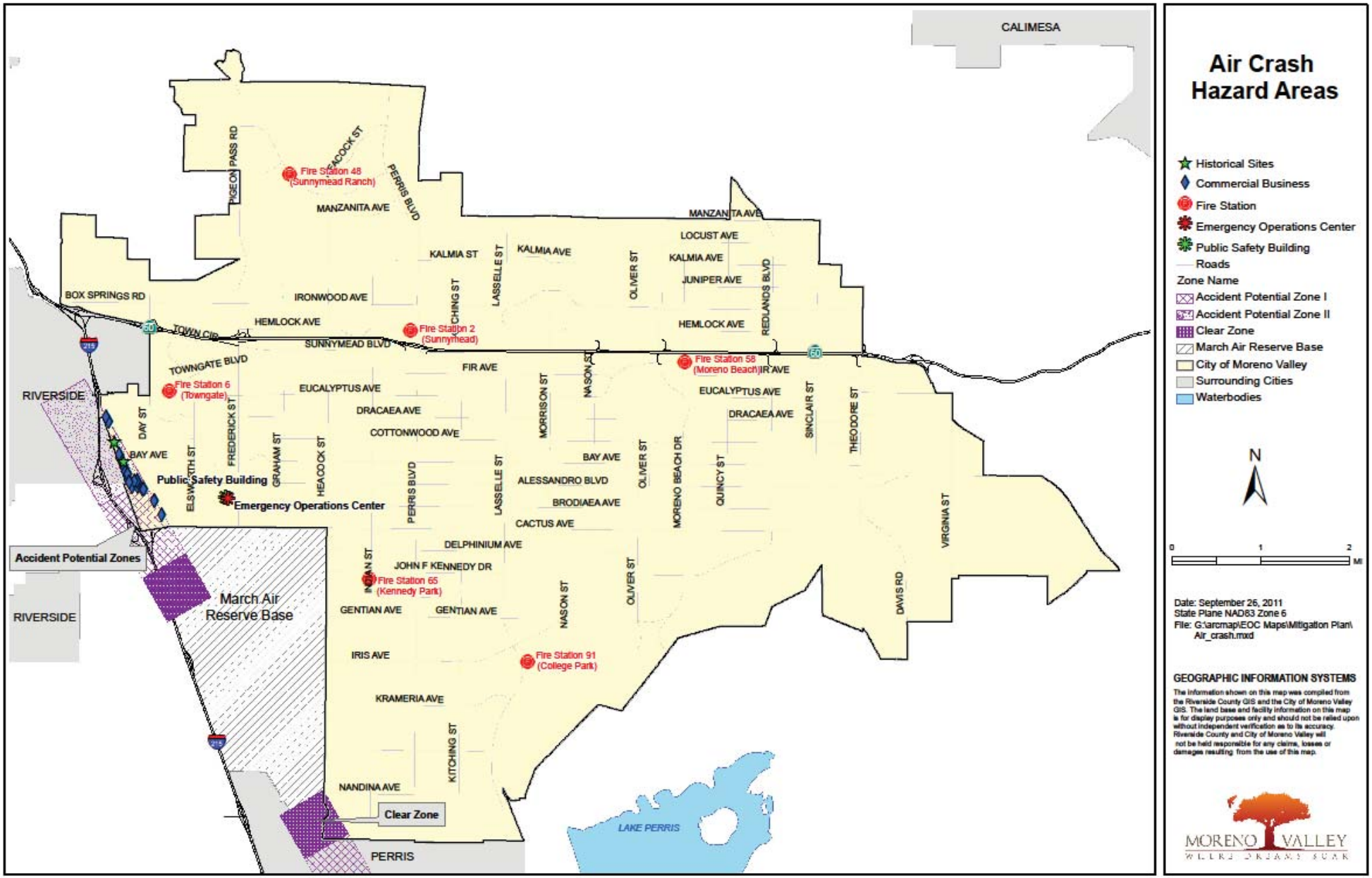


Figure 14-1.1: Moreno Valley Air Crash Hazard Map



14.1.1 Transportation Profile – Previous Occurrences

Table 14-1 shows a history of transportation incidents in Moreno Valley and the surrounding area.

Table 14-1: Moreno Valley Transportation History of Incidents

Year	Description
1998	Union Pacific train derailment occurred with 4,000 gallons of hazardous fuel near Moreno Valley in San Timoteo Canyon. Damage costs were estimated at $1.3 million.[50]
1998	UP 967, SP 8617, SP 8651, and SP 9206 were involved in a train wreck at Redlands, Calif., on 8 July 1998. Redlands, Calif., is located at the west end of Beaumont Hill, east of Colton. The collision occurred after speeds reached 84 mph.[51]
1999	Amateur built airplane crashes in a parking lot one mile from March Air Reserve Base.[52]
2003	18-wheeler tanker drives off the State Highway 60 overpass at Perris Boulevard.[53] Tanker truck explodes shortly after impact and there was a hazardous material spill.
2003	Train derailment in San Timoteo Canyon scatters 22 rail cars and three locomotives from two trains along the tracks.[54]
2005	Moreno Valley Fire Department fire engine rolls off eastbound Interstate 10 at State Highway 60 during severe rain storm.[55]
2006	Seven of nine engines derail in San Timoteo Canyon after locomotives reach speeds of 80 mph, causing San Timoteo Canyon to be closed between Alessandro Road and Redlands Boulevard. [56]
2010	Private plane runs out of fuel and crash lands in Moreno Valley at Cactus Avenue and Redlands Boulevard.[57]
2010	Plane crashes near Lake Perris, killing the pilot.[58]
2011	18-wheeler truck turned on its side on eastbound State Highway 60 at Theodore due to the truck being driven too fast for the conditions. Driver was killed.
2011	An 18-wheeler semi-truck caught fire and exploded on eastbound State Highway 60 at Frederick Street. The 50-foot trailer had been fully loaded but it was unclear if the materials were flammable. [59]
2011	18-wheeler semi-truck collides with RV on eastbound State Highway 60 at Perris Boulevard. 40 gallons of diesel fuel spill. [60]

[50] Press Enterprise, 1998
[51] http://utahrails.net/articles/up-wrecked-units.php Retrieved September 26, 2011
[52] http://aircrashed.com/cause/cLAX00LA052.shtml Retrieved September 26, 2011
[53] Press Enterprise *Rib plunges off overpass* January 8, 2003
[54] http://articles.latimes.com/2003/sep/26/local/me-sbriefs26.2 Retrieved September 26, 2011
[55] Press Enterprise *Firefighter dies in truck accident* August 7, 2005
[56] http://www.pe.com/localnews/inland/stories/PE_News_Local_H_train29.380729f.html Retrieved September 26, 2011
[57] Press Enterprise *Private plane runs out of fuel, crashes in Moreno Valley* June 26, 2010
[58] http://www.swrnn.com/2010/12/20/rivco-deputies-searching-for-possible-plane-down-near-moreno-valley-perris/ Retrieved September 26, 2011
[59] http://www.swrnn.com/2011/01/26/highway-60-in-moreno-valley-closed-tuesday-night-by-crash-and-fire/ Retrieved September 26, 2011
[60] http://www.kesq.com/news/27710556/detail.html Retrieved September 26, 2011

14.1.2 Transportation Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

14.2 Transportation Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged.

Impact to Population and Structures: Highway, arterial roads and streets as well as air and/or rail incidents could cause severe injuries and/or deaths. They could also cause burns and/or illness due to exposure to fires and/or potential hazardous materials on board. Structures could be damaged or could be used for sheltering.

Impact to Essential Facilities/Historical Sites: Essential facilities could be damaged or impacted by cascading hazards such as power outages, pipeline ruptures or hazardous materials incidents from transportation hazards.

Impact to Infrastructure: Infrastructure could be impacted by cascading hazards such as power outages, pipeline ruptures or hazardous materials incidents from transportation hazards.

Development Trends: Development is expected to increase demand on transportation infrastructure. New residential developments in the eastern portion of the City will require the installation of additional infrastructure such as new roadways, water systems, and sewage disposal to serve these areas. Future development will comply with adopted land use standards, policies, and ordinances and will be compatible with land uses in surrounding areas. For air hazards, only open space uses are appropriate within the clear zone. New development is shown in Appendix C.

14.2.1 Transportation Vulnerability – Potential Loss

Air: There are 3 historical sites and 30 commercial business located within the air crash zone. The potential loss of these sites would be $75,011 historical and $36,753,019 commercial. Data was from Moreno Valley and Riverside County Assessor (2011). No contents were valued.

Due to the limitation of data related to rail and highway losses within Moreno Valley, it is not possible to analyze the potential loss. There are no known repetitive loss properties.

Chapter 15: Power Outage

Moreno Valley Rating: **Severity = 3**
Probability = 4

15.1 Power Outage Profile – Overview/Location

A power failure can range in magnitude and impact from a relatively modest power outage to a catastrophic regional blackout. Power outages may affect a specific area of the City of Moreno Valley or the entire City.

15.1.1 Power Outage Profile – Previous Occurrences

The City of Moreno Valley has been affected by power outages in the past for various reasons, such as severe winds, storms and damaged power equipment and equipment failures. Table 15-1 shows a history of power outages affecting the City of Moreno Valley.

Table 15-1: History of Power Outages in Moreno Valley

Year	Description
1998	Power outage affects Moreno Valley causing Canyon Springs High School to delay basketball games. [61]
2003	High winds cause power outage in Moreno Valley.[62]
2005	Power outage for the Lasselle circuit occurs due to a storm. 466 Moreno Valley Utility customers are without power for 2 hours, 5 minutes.[63]
2006	1,175 residents are without power for 2 hours when Moreno Valley Utility's Lasselle Circuit goes down.63
2006	1,245 residents are without power for 3 ½ hours when Moreno Valley Utility's Cactus circuit goes down.63
2006	950 residents are without power for 1 hour 5 minutes when Moreno Valley Utility's Globe circuit goes down.63
2006	1,175 residents are without power for 5 hours, 50 minutes when Moreno Valley Utility's Lasselle circuit goes down63
2006	1,245 residents are without power for 3 ½ hours when Moreno Valley Utility's Cactus circuit goes down.63
2006	Power outage due to a prolonged heat wave affects Moreno Valley.[64]

[61] http://www.socalhoops.tierranet.com/archive/prepnotes/Feb98/riv211c.htm Retrieved September 27, 2011
[62] MTV-3 provided photographs of wind event that occurred in 2003 showing downed power lines
[63] Information provided by Moreno Valley Utility on September 27, 2011
[64] http://www.edison.com/pressroom/pr.asp?bu=sce&year=0&id=6317 Retrieved September 27, 2011

2007	Planned power outage by Southern California affects 800 residents in the area between Moreno Beach Drive and Redlands Boulevard, and extends from Eucalyptus and Dracaea avenues on the north, to Cottonwood and Bay avenues on the south.[65]
2009	Southern California Edison power outage affects 268,000 residents in Riverside County for 10 minutes, including residents in Moreno Valley.[66]
2010	Southern California Edison power outage affects residents in Riverside County, including Moreno Valley.[67]
2010	3,906 Moreno Valley Utility customers lose power for 58 minutes. [63]
2010	890 Moreno Valley Utility customers lose power for 1 hour 6 minutes. [63]
2010	High winds caused power outages statewide, 4,000 residents affected in Moreno Valley.[68]
2010	200 Moreno Valley Utility customers lose power for 14 hours 37 minutes when a vehicle collides with a capacitor bank. [63]
2011	Massive power outage affecting electric customers in western Arizona, Southern California, and northern Baja, Mexico has an impact on Moreno Valley as residents from those areas travel to cities with power.[69]

15.1.2 Power Outage Profile – Probability of Future Events

The probably rating for this hazard is a 4, which means that it is highly likely and there is a near 100% chance that it will occur within the next year.

15.2 Power Outage Vulnerability – Overview/Impact

The severity rating for this hazard is a 3, which means that there is a potential for critical damage, causing injuries and/or illnesses resulting in permanent disability, complete shutdown of critical facilities for two weeks and/or 25% to 49% of property is severely damaged. Power outages could cause cascading hazards such as transportation incidents, civil unrest and disease.

Loss of electric power could have a major impact on the City of Moreno Valley and its citizens.

Impact to Population and Structures: The impact to the population from loss of power may include disruption of power to critical medical devices. Medical

[65] http://www.pe.com/localnews/morenovalley/stories/PE_News_Local_R_rpower19.5eda61.html Retrieved September 27, 2011
[66] http://weathercurrents.com/morenovalley/NewsItemDisplay.do?Id=548 Retrieved September 27, 2011
[67] http://www.nbclosangeles.com/news/local/Large-Power-Outage-in-Riverside-County.html Retrieved September 27, 2011
[68] http://www.fema.gov/emergency/reports/2010/nat012010.shtm September 27, 2011
[69] http://en.wikipedia.org/wiki/2011_Southwestern_United_States_blackout Retrieved September 27, 2011

conditions could be affected by an increase of temperatures due to loss of the use of air conditioners or fans. Loss of lighting and the inability to refrigerate food would also impact the population. Structures would be impacted due to loss of power to elevators, lighting, air conditioning, communications and other systems that may not operate without a generator or alternate power sources.

Impact to Essential Facilities/Historical Sites: Essential facilities would be impacted due to loss of power to elevators, lighting, air conditioning, communications and other systems that may not operate without a generator or alternate power sources. A power outage could impact emergency operations. Historical sites within Moreno Valley would be impacted the same as structures listed above.

Impact to Infrastructure: Loss of power would severely impact infrastructure. It would affect traffic lights, which could increase in the chances of traffic collisions and various types of communications, which run off of power.

Development Trends: New development will result in an additional demand for electricity; however, General Plan objectives and associated policies encourage the efficient use of energy, including passive cooling with landscaping and the use of solar power. New development is shown in Appendix C.

15.2.1 Power Outage Vulnerability – Potential Loss

If a power outage were to occur city-wide for eight hours, the potential would be limited to loss of food, cost of fuel to run generators, potential for damage to vehicles from traffic accidents and loss of income to commercial businesses. There are no repetitive loss properties.

Chapter 16: Hazardous Materials Accident

Moreno Valley Rating: **Severity = 3**
Probability = 3

16.1 Hazardous Materials Profile – Overview/Location

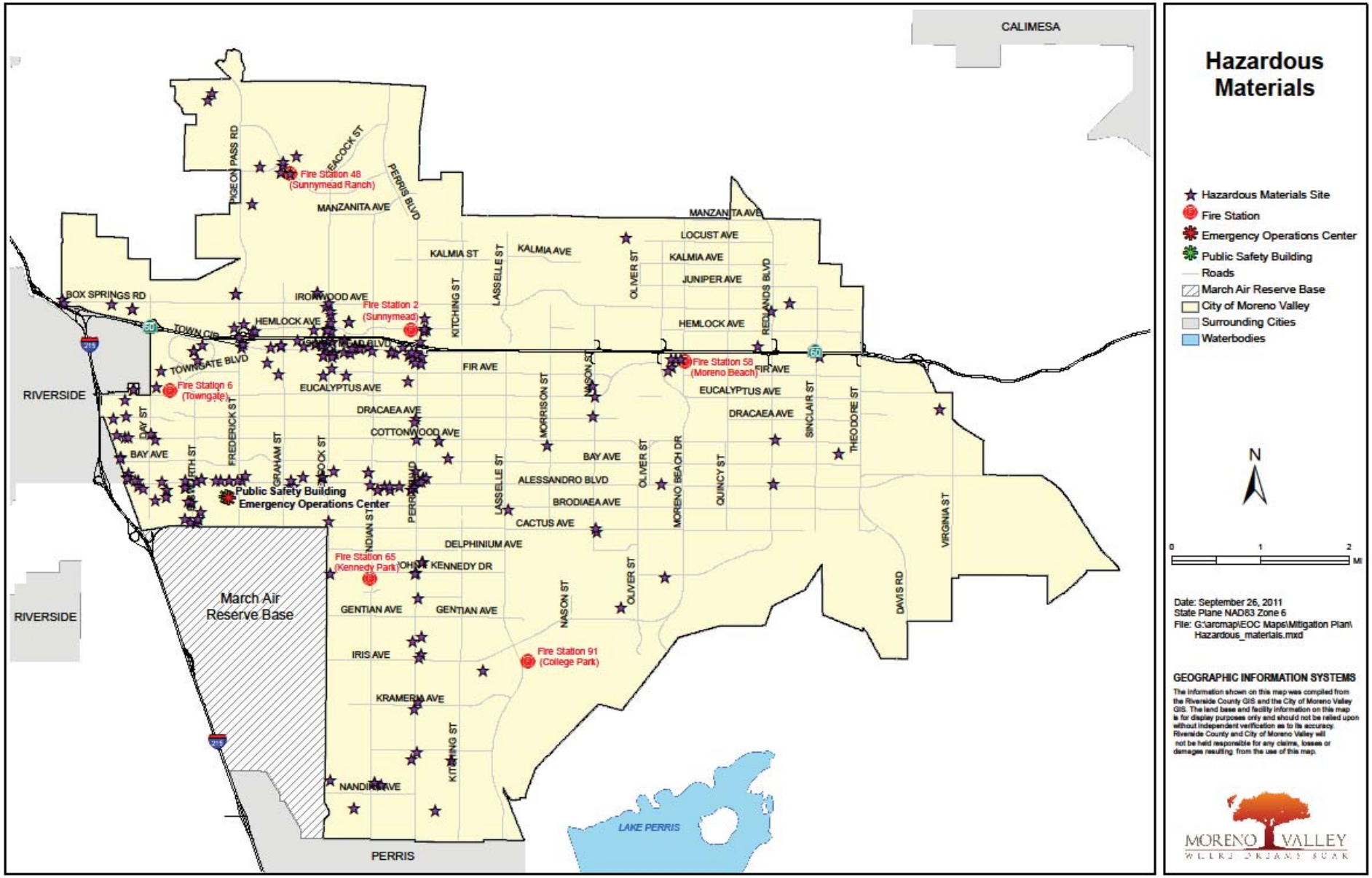
Hazardous materials are any substance or combination of substances that may pose a risk to human health and safety or to the environment. Hazardous materials include toxic, corrosive, infectious, flammable, explosive and radioactive materials. Businesses, public or private institutions and private households all use or generate hazardous materials to some extent. Some of the larger businesses use certain classes of hazardous materials that require accidental release scenario modeling in order to plan, prepare and respond to the worst case scenario.

Hazardous materials are routinely manufactured, used, stored or transported in nearly every community and would therefore occur anywhere within the City of Moreno Valley. The probability of hazardous materials spills is accentuated by the fact that the region is susceptible to earthquakes. Loss of human and wildlife, as well as, significant effects on the environment and substantial cleanup costs could have a large impact on the City.

A hazardous chemical release in the City of Moreno Valley would most likely occur either by transportation of chemicals, the use of chemicals at a business, or illegal dumping of chemical waste.

Currently there is one business located in Moreno Valley that exceeds the Federal and California threshold for storing chemicals and is required to file both Federal and California response plans. The City of Moreno Valley has over 328 sites that store hazardous materials such as gas stations, retail stores, dry cleaners, auto repair shops, hospitals, schools, utilities, restaurants, etc. Figure 16-1 shows locations of hazardous material sites throughout Moreno Valley.

Figure 16-1: Moreno Valley Hazardous Materials Map



16.1.1 Hazardous Materials Profile – Previous Occurrences

The following table describes hazardous materials incidents that have impacted Moreno Valley and surrounding area.

Table 16-1: Moreno Valley Hazardous Materials Incident History

Year	Description
2003	18-wheeler tanker drives off the State Highway 60 overpass for Perris Boulevard. Tanker truck explodes shortly after impact. [70].
2008	Unknown amount of digester gas released at 17140 Kitching Street by Eastern Municipal Water District[71]
2008	30,000 cubic feet of methane gas released due to power outage at 17140 Kitching Street[71]
2008	70 gallons mineral oil at 21272 O'Casey Ct. due to an equipment failure of a pad mount transformer. [71]
2008	70 gallons mineral oil at 25944 Andre Ct due to an equipment failure of a pad mount transformer. [71]
2009	Westbound State Highway 60 just east of mile marker 24 in Moreno Valley is an 80 gallon diesel fuel spill.[72]
2010	46,885 cubic feet of digester gas was released at the EMWD facility located at 17140 Kitching Street. Attributed to a power loss to the pressure gauge that controls flare offs.[73]
2011	An 18-wheeler semi-truck caught fire on eastbound State Highway 60 at Frederick Street. The fuel tank ruptured which caused the fire as well as a freeway closure for several hours. [74]
2011	Westbound State Highway 60 is closed from Beaumont to Moreno Valley due to a 100 gallon fuel spill.[75]
2011	68 gallons of Mineral Oil spilled by Southern California Edison at 23343 Hemlock[76]

[70] Press Enterprise *Rib plunges off overpass* January 8, 2003

[71] http://www.calema.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%202008.xls Retrieved September 26, 2011

[72] http://www.calema.ca.gov/HazardousMaterials/Documents/Hazmat%20Spill%20Reports%202009.xls Retrieved September 26, 2011

[73] http://www.calema.ca.gov/HazardousMaterials/Documents/Hazmat%20Spill%20Reports%202010.xls Retrieved September 26, 2011

[74] http://www.swrnn.com/2011/01/26/highway-60-in-moreno-valley-closed-tuesday-night-by-crash-and-fire/ Retrieved September 26, 2011

[75] http://www.kpsplocal2.com/news/local/story/100-Gallon-Fuel-Spill-Prompts-Badlands-Freeway/X7WvEkjOW0-5ghMaXD5h7g.cspx?rss=2276 Retrieved September 25, 2011

[76] http://www.calema.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%202011.xls Retrieved September 26, 2011

2011	500 gallons of Ferric Chloride spilled at 17140 Kitching Street by EMWD. Spill was contained by their containment area. [76]

16.1.2 Hazardous Materials Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

16.2 Hazardous Materials Vulnerability – Overview/Impact

The severity rating for this hazard is a 3, which means that there is a potential for critical damage, causing injuries and/or illnesses resulting in permanent disability, complete shutdown of critical facilities for two weeks and/or 25% to 49% of property is severely damaged.

Impact to Population and Structures: Exposure to hazardous materials is expected to cause injuries and/or deaths. In addition, people may be evacuated or asked to shelter in place during a hazardous materials incident. Seniors and individuals with access and functional needs may need special assistance to evacuate. People may also be required to be decontaminated to remove the hazard from their structures, property and clothing. There may be economic impacts as well due to cleanup and removal of hazardous materials.

Impact to Essential Facilities/Historical Sites: Exposure to hazardous materials could impact essential facilities and historical sites. Essential facilities may be closed for decontamination, thus causing an interruption to services.

Impact to Infrastructure: Runoff from hazardous materials has a potential to affect the waterways and drainage systems, as toxic substances may leach into local groundwater supplies. Also, transportation systems could be impacted due to decontamination as well as evacuation efforts.

Development Trends: Future development of buildings, residential structures, critical facilities and infrastructure are expected to be constructed according to the most recent Uniform Building Codes and design standards and are expected to carefully consider for adding to vulnerability from hazardous materials. New development is shown in Appendix C.

16.2.1 Hazardous Materials Vulnerability – Potential Loss

Analysis of the one business located in Moreno Valley that exceeds the Federal and California threshold for storing chemicals shows that a worst case scenario could have a significant environmental and financial impact to the City of Moreno Valley. Due to the limitation of data available, it is not possible to calculate the potential loss. There are no known repetitive loss properties.

Chapter 17: Nuclear

Moreno Valley Rating: **Severity = 4**
Probability = 2

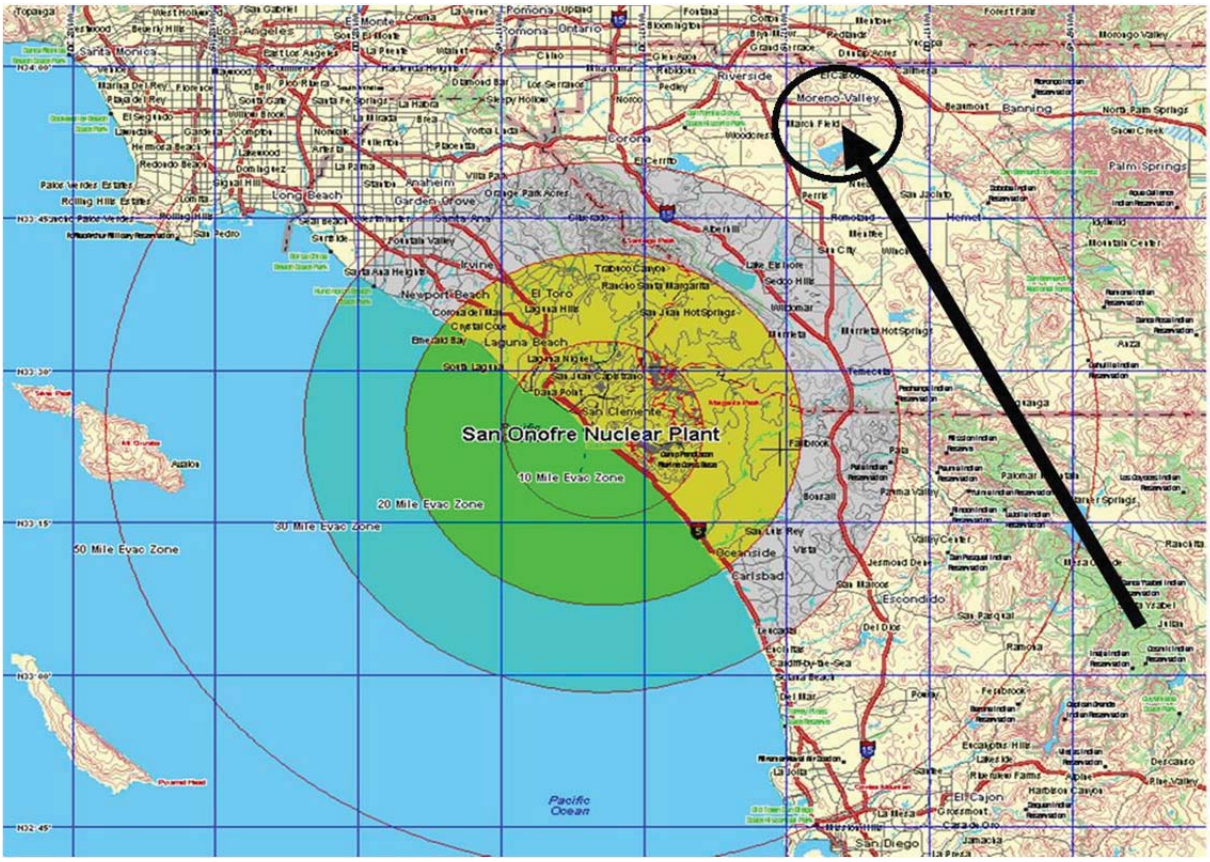
17.1 Nuclear Profile – Overview/Location

Nuclear incidents can occur whenever radioactive materials are used, stored or transported. Nuclear power plants, hospitals, universities, research laboratories, industries, major highways and railroads may be a site for a nuclear accident. In addition, nuclear material could be included in a "dirty bomb", which is a bomb with nuclear material added (usually waste material).

In California, there are two nuclear power plants: Diablo Canyon, which is located in San Luis Obispo County and San Onofre, which is located in the northwestern corner of San Diego County.

The City of Moreno Valley is located within the 50-mile Ingestion Pathway Zone for the San Onofre Nuclear Generating System (SONGS).

Figure 17-1: SONGS Map Showing Moreno Valley in the Ingestion Zone[77]



[77] San Onofre Nuclear Generating System (SONGS)

17.1.1 Nuclear Profile – Previous Occurrences

No nuclear incidents are documented for the City of Moreno Valley or the surrounding area. However, recently, San Onofre transported the first of four retired steam generators, each weighing 700,000 pounds, through the City of Moreno Valley on its way to a depository in Clive, Utah.[78]

Figure 17-1.1: 700,000 Pound Retired Steam Generator[79]

17.1.2 Nuclear Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

17.2 Nuclear Vulnerability – Overview/Impact

The severity rating for this hazard is a 4, which means that there is a potential for catastrophic damage, causing multiple deaths, complete shutdown of critical facilities for 30 days or more and more than 50% of property has a potential to be damaged.

[78] http://www.pe.com/localnews/sbcounty/stories/PE_News_Local_D_nukeship01.3010c63.html Retrieved September 27, 2011
[79] http://m.nctimes.com/mobile/article_2f19ab9e-b34b-5ac0-a9cb-f4c371631c3c.html Retrieved September 27, 2011

A nuclear incident could impact the entire City of Moreno Valley or a portion of the City, depending on the type of incident. If a release occurred at San Onofre, the entire City could be impacted for days, weeks or months, as Moreno Valley is located in the Ingestion Pathway Zone. The Ingestion Pathway Zone is the outermost zone and is approximately a 50-mile radius around the plant.

Impact to Populations and Structures: A nuclear incident has a potential to cause multiple deaths and injuries with long-term illness. People, animals and livestock would be impacted if they eat or drink contaminated food, grains, water, fish and dairy products. Ingestion of contaminated food, grains, water fish and dairy products could cause cancer, particularly thyroid cancer. A “Dirty Bomb” or nuclear explosion could impact structures.

Impact to Essential Facilities/Historical Sites: A “Dirty Bomb”, nuclear explosion or nuclear release could impact essential facilities and/or historical sites. Emergency response could be impaired if facilities are contaminated.

Impact to Infrastructure: A nuclear incident could severely impact the water supply. Potential exposure to radioactive material could impact bathing, swimming or using other radioactive water sources.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted by a nuclear hazard, depending on the location of the incident. Radiological contamination may need to be considered for location of future development. New development is shown in Appendix C.

17.2.1 Nuclear Vulnerability – Potential Loss

If a nuclear release happened at San Onofre, Moreno Valley would be within the 50 mile ingestion zone. Costs related to contamination of water and food, such as the cost of bottled water for drinking, cooking, showering and other daily activities would be substantial. Moreno Valley does not have significant agriculture production within its boundaries; however, the cost of providing non-contaminated food for outdoor animals would be increased. There are no repetitive loss properties.

Chapter 18: Terrorist Attack

Moreno Valley Rating: **Severity = 4**
Probability = 2

18.1 Terrorist Attack Profile – Overview/Location

Terrorism, as defined by the FBI, is "the unlawful use of force against persons or property to intimidate or coerce a government, the civilian population or any segment thereof, in the furtherance of political or social objectives". The act of terrorism could involve chemicals, biological agents, radiological, nuclear, explosives or cyber-terrorism.

A specific location for a terrorist attack is not known; however terrorism could occur anywhere within the City of Moreno Valley and has the potential to impact a portion or all of the City of Moreno Valley.

18.1.1 Terrorist Attack Profile – Previous Occurrences

Terrorism attacks can take many forms, from incendiary devices to biological weapons to weapons of mass destruction. On September 11, 2001, the United States of America was attacked by terrorists when four airplanes were hijacked by members of Al-Qaeda. Two of these planes were crashed into the World Trade Center, one into the Pentagon, and the fourth never reached its destination as the passengers retook control of the airplane and crashed it into a field in Pennsylvania. These major terrorist attacks were followed one week later by the mailing of Anthrax to two United States Senators and several news media offices, killing five people and infecting 17 others.[80]

The City of Moreno Valley has experienced seven incidents since the terrorist attacks on September 11, 2001. Four of these incidents occurred shortly after the 9-11 terrorism attack.

The first incident occurred on October 24, 2001 at Canyon Springs High School when a student at the school located a clear plastic bag that contained a white powder in the A-wing hallway. The hallway, adjacent classrooms, gymnasium and theater were evacuated. The Hazardous Materials Team tested the material and determined it was some form of nutritional additive that posed no threat to the school.[80] The area was still decontaminated as a safety precaution.

On October 26, 2001, a white powdery substance was discovered on the front walkway to the Sunnymead Middle School administration building. Twenty additional white powdery spots were located throughout the parking lot. The administration building and parking lot were cordoned off while the Riverside

[80] http://en.wikipedia.org/wiki/2001_anthrax_attacks

County Hazardous Materials team disinfected the area. The substance later turned out to be harmless. [80]

On October 29, 2001, another white substance was located on Moreno Valley Unified School District property near a cargo container. It was subsequently determined to be white chalk that was stored in the container for marking football fields.[80]

On October 31, 2001, a white powdery substance was located on the picnic tables at Bayside Elementary School. The Moreno Valley Police Department cordoned off the area and relocated staff to an area approximately 200 feet away. After testing by the Riverside County Hazardous Materials Team it was determined that the substance was talcum powder. [80]

Table 18-1: History of Moreno Valley Incidents of Concern

Year	Description
2001	White powdery substance is found at Canyon Springs High School and was treated as an Anthrax incident.[81]
2001	White powdery substance is discovered at Sunnymead Middle School. Substance was treated as if it was Anthrax. [80]
2001	White powdery substance located next to a cargo container on Moreno Valley Unified School District property. Incident was initially responded to as an Anthrax incident until it was determined that the white powder was chalk for marking athletic fields.[80]
2001	White powdery substance found at Bayside Elementary School and treated as an Anthrax incident. [80]
2004	A backpack with a bomb threat note is located at Canyon Springs High School. Riverside Sheriff's Department Hazardous Device Team detonates the backpack. Upon investigation, no parts to a bomb device were located after the backpack was detonated. The date of this incident was on the five year anniversary of Columbine. Another bomb threat was received on the same day for March Mountain High School but no device was located . [82]
2004	The City receives a phone call stating that there is a bomb located inside City Hall. The building is evacuated while the Riverside Sheriff's Department conducts a search of the facility for any potential hazardous device. No device is located.[83]
2010	A bomb threat note was found at Canyon Springs High School causing the campus to be evacuated while the Riverside Sheriff's Department searched for the device. No bomb was located.[84]

[81] Notes from meeting with Moreno Valley Unified School District
[82] http://www.pe.com/localnews/morenovalley/stories/PE_News_Local_bomb21.f0b0.html Retrieved September 27, 2011
[83] Meeting notes on debriefing for the evacuation of City Hall due to a bomb threat
[84] http://www.instantriverside.com/2010/04/canyon-springs-high-school-bomb-threat/ Retrieved September 27, 2011

18.1.2 Terrorist Attack Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

18.2 Terrorist Attack Vulnerability – Overview/Impact

The severity rating for this hazard is a 4, which means that there is a potential for catastrophic damage, causing multiple deaths, complete shutdown of critical facilities for 30 days or more and more than 50% of property has a potential to be damaged.

Impact to Population and Structures: A terrorist attack is expected to cause multiple deaths and injuries and extensive damage to structures. The amount of expected injuries and deaths is dependent on the type of terrorist event.

Impact to Essential Facilities/Historical Sites: Government buildings, schools, special events and historical sites are especially vulnerable to terrorist attacks. The impact could be devastating, and could severely interrupt emergency response efforts, as well as, government services.

Impact to Infrastructure: Depending on the type of attack, it is expected that a terrorist attack would have a severe impact on infrastructure. Depending on the type of incident, this could involve loss of electricity, water, sewer and communications.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted by a terrorist attack, depending on the location of the incident. The environmental impact of biological, chemical and/or radiological contamination may need to be considered prior to the determination of the location of future development. New development is shown in Appendix C.

18.2.1 Terrorist Attack Vulnerability – Potential Loss

If a terrorist attack were to occur at City Hall, the structural and infrastructure damage could be approximately $25 million. There are no repetitive loss properties.

Chapter 19: Civil Unrest

Moreno Valley Rating: **Severity = 2**
Probability = 2

19.1 Civil Unrest Profile – Overview/Location

Civil unrest typically begins as nonviolent gatherings and progresses to violence These types of incidents have a potential to escalate into destruction of property, purposely- set fires, and injury to others. Often times, injuries are restricted to police and individuals observed to be breaking the law. Out of control crowds have been known to throw bottles, rocks, and other projectiles. Civil unrest incidents could happen in any location, but they typically occur near government buildings.

19.1.1 Civil Unrest Profile – Previous Occurrences

The City of Moreno Valley does not have a history of violent civil unrest. Fortunately, the two civil demonstrations listed below were both non-violent.

Table 19-1: History of Moreno Valley Civil Demonstrations

Year	Description
2001	Protestors marched in front of the Moreno Valley police station regarding the shooting of an African American male by a Riverside County Sheriff Deputy.[85] This was a non-violent protest.
2006	1,000 demonstrators gathered at Moreno Valley Community Park to demonstrate against the passage of House of Representatives Bill 4377 (H.R. 4377), a Federal law aimed at illegal immigration. Protestors then marched to City Hall and conducted a non-violent protest regarding the passage of this Federal legislation.[86]

19.1.2 Civil Unrest Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

[85] http://la.indymedia.org/news/2001/03/5706_comment.php?theme=2 Retrieved September 26, 2011

[86] http://www.pe.com/localnews/morenovalley/stories/PE_News_Local_M_mprotest02.7f76ec.html Retrieved September 26, 2011

19.2 Civil Unrest Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged.

Impact to Population and Structures: Injuries could occur to protestors or demonstrators and are often a result of resisting arrest and exposure to tear gas or mace, but could also be due to protestors throwing bottles or other projectiles. Impacts to buildings and structures could involve smashed windows, building destruction and fire damage.

Impact to Essential Facilities/Historical Sites: Protestors could damage facilities and/or historical sites during civil unrest. Impact to essential facilities and/or historical sites could involve smashed windows, building destruction and fire damage.

Impact to Infrastructure: Protestors could damage facilities and/or historical sites during civil unrest. The impact could involve loss of electricity, water, sewer and communications.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure would not be impacted by civil unrest. New development is shown in Appendix C.

19.2.1 Civil Unrest Vulnerability – Potential Loss

If civil unrest were to occur at the Public Safety Building involving, perhaps, fire, the potential loss could be $35 million. There are no repetitive loss properties.

Chapter 20: Pandemic Flu/Disease

Moreno Valley Rating: **Severity = 3**
Probability = 2

20.1 Pandemic Flu/Disease Profile – Overview/Location

A pandemic is an epidemic of infectious disease that is spreading through human populations across a large region, continents, or even worldwide. A widespread disease that is stable in terms of how many people are getting sick from it is not a pandemic. Further, flu pandemics exclude seasonal flu, unless the flu of the season is a pandemic. Throughout history there have been a number of pandemics, such as smallpox and tuberculosis. More recent pandemics include the HIV pandemic and the H1N1 pandemic.[87]

Significant public health emergencies have been affecting populations since well before 430 BC. Some of the most notable pandemics are:

Plague of Athens, 430 BC – The cause of the Plaque of Athens was unknown until recent examination of DNA from the dental pulp of the teeth of those affected. It was determined by the University of Athens to have been typhoid. The fever killed a quarter of the Athenian troops, and a quarter of the population over four years.[87]

Black Death, 14th century. The total number of deaths worldwide is estimated at 75 million people. Eight hundred years after the last outbreak, the plague returned to Europe. Starting in Asia, the disease reached Mediterranean and western Europe in 1348 (possibly from Italian merchants fleeing fighting in the Crimea), and killed an estimated 20 to 30 million Europeans in six years.[87]

Spanish Flu, 1918–1919 - Caused ≈50 million deaths worldwide. The Spanish Flu is a subtype of avian strain H1N1. In the United States, about 28% of the population suffered, and 500,000 to 675,000 died.[88]

20.1.1 Pandemic Flu/Disease Profile – Previous Occurrences

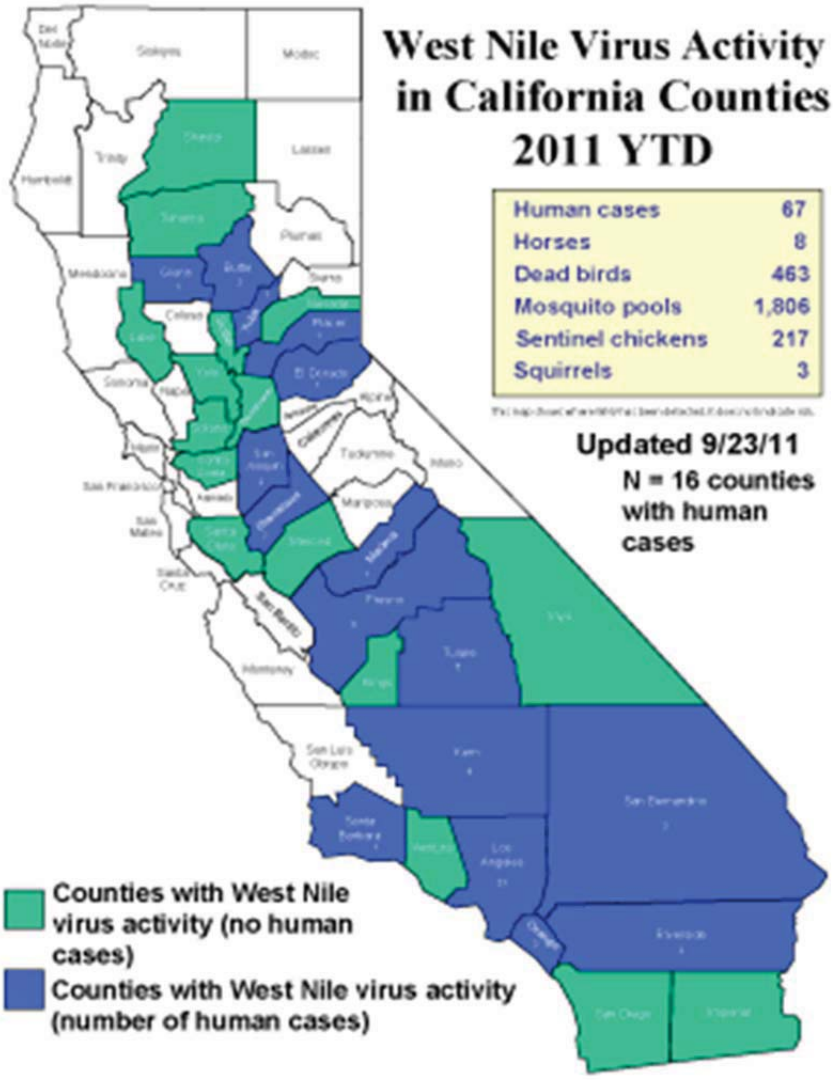
In 2009, Moreno Valley was impacted by the H1N1 influenza epidemic in which California proclaimed a State of Emergency (April 28, 2009). California Department of Public Health reported from April 23, 2009 to August 28, 2010, there were 116 severe cases, 108 intensive care unit cases and 41 deaths in Riverside County[89]. The public health emergency required the activation of the Moreno Valley Emergency Operations Center in order track the epidemic;

[87] http://en.wikipedia.org/wiki/Viral_outbreak Retrieved September 30, 2011
[88] http://en.wikipedia.org/wiki/1918_flu_pandemic Retrieved September 30, 2011
[89] http://www.cdph.ca.gov Retrieved September 25, 2011

provide daily statistics to Riverside County Public Health on the status of our employees; to participate in regular conference calls; and to outreach information about appropriate precautions as well as provide information about vaccination.

In September of 2011, the California Department of Public Health reported 3 human cases, 5 dead birds, 46 mosquito samples and 12 sentinel chickens that tested positive for West Nile in Riverside County (Figure 20-1).

Figure 20-1: West Nile Virus Activity in California 2011[90]



[90] http://westnile.ca.gov Retrieved September 25, 2011

Recent outbreaks of listeria have captured the attention of media throughout the United States. Listeria is more deadly than well-known pathogens like salmonella and E. coli. Twenty-one people died in an outbreak of listeria poisoning in 1998 traced to contaminated hot dogs and possibly deli meats. Another large listeria outbreak in 1985 killed 52 people and was linked to Mexican-style soft cheese.[91]

While no cases of listeria have been identified so far in the City of Moreno Valley, these, and other types of diseases have a potential to affect our City. Table 20-1 identifies recent disease outbreaks in the Moreno Valley area.

Table 20-1: Disease Outbreaks in the Moreno Valley Area[92]

Disease	Timeframe	Number of Cases
Influenza (H1N1)	May 2009 – April 2010	176
Pertussis	January 2010 – September 2011	51

20.1.2 Pandemic Flu/Disease Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

20.2 Pandemic Flu/Disease Vulnerability – Overview/Impact

The severity rating for this hazard is a 3, which means that there is a potential for critical damage, causing injuries and/or illnesses resulting in permanent disability, complete shutdown of critical facilities for two weeks and/or 25% to 49% of property is severely damaged.

Impact to Population and Structures: Due to the geographic extent of pandemic flu and/or disease, the entire population is vulnerable to injuries and casualties. There is no expected damage to structures; however there could be a quarantine which would prevent people from coming or going from a particular structure or area.

Impact to Essential Facilities/Historical Sites: Essential facilities and/or historical sites could be affected if there was a quarantine initiated by Public Health. Essential functions may be limited if a large percentage of the workforce was unable to report to work.

[91] http://www.foxnews.com/health/2011/09/27/death-toll-rises-to-13-in-listeria-outbreak-deadliest-in-decade/#ixzz1ZRoC4HSz Retrieved September 30, 2011
[92] Riverside County Department of Public Health

Impact to Infrastructure: Disease outbreak could impact water infrastructure; however, the impact is unknown. Travel could be restricted during a pandemic and/or disease outbreak.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted if there were disease outbreaks requiring special treatment of development areas prior to building. New development is shown in Appendix C.

20.2.1 Pandemic Flu/Disease Vulnerability – Potential Loss

If a pandemic flu or disease outbreak were to occur, it would be citywide. While it would not involve a loss to structures, there could be a significant loss of income and services if the workforce were unable to report to work. Transportation losses could occur if travel is limited. There are no repetitive loss properties.

PART 3

MITIGATION STRATEGY

Chapter 21: Mitigation Strategy

21.1 Introduction

Chapter 21 provides information about the City of Moreno Valley's mitigation strategy, which is the blueprint for reducing losses from the identified hazards that may affect the City. This chapter will provide an assessment of Moreno Valley's capabilities; identification of hazard mitigation goals, objectives, actions and status; analysis of mitigation actions; and National Flood Insurance Program compliance information.

21.2 Capability Assessment

The City of Moreno Valley capabilities for implementing mitigation strategies to reduce hazards that may affect the City of Moreno Valley include legal and regulatory capabilities, administrative and technical capabilities fiscal capabilities and outreach and other capabilities.

Legal and Regulatory Capabilities: Moreno Valley formally adopts, regularly reviews and updates regulatory policies such a general plan, along with implementing regulations such as zoning ordinances, subdivision ordinances, and specific plans. Table 21-1 is an example of regulatory capabilities that assist the City of Moreno Valley in its mitigation strategies.

Table 21-1: Example of Regulatory Capabilities

Regulatory Tool	Comments
General plan	Comprehensive General Plan for the City of Moreno Valley, 2006
Zoning ordinance	Municipal Code Chapter 9.02-14 Planning and Zoning
Subdivision ordinance	Municipal Code Chapter 9.14 Land Divisions
Site plan review requirements	Municipal Code Chapter 9.02.030
Growth management ordinance	
Floodplain ordinance	Municipal Code Chapter 8.12 includes flood damage prevention and implementation of national flood insurance program (NFIP)
Water conservation ordinance	Municipal Code Chapter 9.17 addresses water conservation
Stormwater ordinance	Municipal Code Chapter 8.10.010-200 Stormwater/urban runoff management and discharge controls

Wildfire ordinance	Municipal Code Chapter 6.04.010-130 Abatement of Public Nuisances
Building code	Utilize Approved California Building Codes
Fire department ISO rating	Rating: class 4 urban/9 rural
Erosion or sediment control program	Municipal Code Chapter 8.21.160 Erosion Control; Municipal Code Chapter 9.17.110 Erosion Control/Slope Planting
Riverside County Flood Control Master Drainage Plan	3 master drainage plans (Sunnymead Area, West End, Moreno)
Regional Water Quality Control Board Regulations	All proposed septic systems must comply; prevents groundwater contamination
Santa Ana Watershed Project Authority Water Resources Plan	Protects water quality in the Santa Ana watershed. Eastern Municipal Water District (which serves the City of Moreno Valley) is a part of the Santa Ana Watershed.
National Pollutant Discharge Elimination System	Protects water resources from pollutants in runoff.
Capital Improvements Plan	Capital improvements list updated annually
Economic Development Plan	2-year plan, 2011
Local Emergency Operations Plan	Emergency Operations Plan, March 2009
Specific Plan 208	Industrial Area Plan, March 2002

As shown in Table 21-1, several mitigation goals and objectives are included in the General Plan to assist with mitigation efforts. A good example is Goal 6.1, along with a few corresponding objectives and policies:

Goal 6.1: To achieve acceptable levels of protection from natural and man-made hazards to life, health, and property.

Objective 6.1: Minimize the potential for loss of life and protect residents, workers, and visitors to the City from physical injury and property damage due to seismic ground shaking and secondary effects.

Policies: 6.1.1 Reduce fault rupture and liquefaction hazards through the identification and recognition of potentially hazardous conditions and areas as they relate to the San Jacinto fault zone and the high and very high liquefaction hazard zones. During the review of future development projects, the City shall require geologic studies and mitigation for fault rupture hazards in accordance with the Alquist-Priolo Special Study Zones Act. Additionally, future geotechnical studies shall contain calculations for seismic settlement on all alluvial sites identified as having high or very high liquefaction potential. Should the calculations show a potential for liquefaction, appropriate mitigation shall be identified and implemented.

Objective 6.15: Ensure that property in or adjacent to wildland areas is reasonably protected from wildland fire hazard, consistent with the maintenance of a viable natural ecology.

Policies: 6.15.1 Encourage programs to minimize the fire hazard, including but not limited to the prevention of fuel build-up where wildland areas are adjacent to urban development.

Another example of regulatory capabilities is Moreno Valley Municipal Code, Chapter 9.17, which addresses water conservation and waste. Specifically, 9.17.160 Landscape Water Use Efficiency Enforcement, states that the City will coordinate with the local water purveyors and encourage landscape water use efficiency such as tiered water rate structure; allocation-based conservation water pricing structure; irrigation audits and/or irrigation surveys.

Administrative/Technical Capabilities: Table 21-1.1 gives an example of the personnel responsible for activities related to mitigation for the City of Moreno Valley.

Table 21-1.1: Example of Administrative and Technical Capabilities

Personnel Resources	Department/Position
Planner/Engineer with knowledge of land development/land management practices	Public Works Department/City Engineer
Engineer/Professional trained in construction practices related to buildings and/or infrastructure	Community and Economic Development/Building Official
Planner/Engineer with an understanding of natural hazards	Public Works Department /City Engineer
Floodplain manager	Public Works Department /City Engineer
Personnel skilled in GIS applications	Financial & Administrative Services Department/GIS Analyst
Building official	Community and Economic Development/Building Official
Scientist familiar with local natural hazards	No
Emergency Manager	Fire/Office of Emergency Management Program Manager
Grant writers	All Departments
Cost benefit/analysis staff	Financial and Administrative Services and Public Works Departments

Example of Fiscal Capabilities: Table 21-1.2 shows an example of financial tools and resources that the City could potentially use to help fund mitigation activities.

Table 21-1.2: Fiscal Mitigation Capabilities

Financial Resources	Comments
Community Development Block Grants	Requires council approval
Capital improvements project funding	Requires council approval
Authority to levy taxes for specific purposes	Requires voter approval
Fees for water, sewer, gas, or electric services	Utility tax; voter approval
Impact fees for new development	Requires council approval
Incur debt through general obligation bonds	Requires voter approval
Incur debt through special tax bonds	Requires voter approval
Mitigation and other grants	Apply regularly when available

An example of a successful grant mitigation award is a storm drain project the City applied for in as a result of a presidentially-declared winter storms disaster (DR-1731). The project is to install a storm drain system in the middle of the tract bounded by Redlands Boulevard and Merwin Street, from Alessandro Boulevard to Campbell Avenue, and connected to existing open channel on the southwest corner of Redlands Boulevard and Brodiea Avenue. The project could provide the Moreno Townsite area with 100-year storm level of protection. The lack of proper storm drain system in the neighborhood has resulted in flooding events in almost every storm. The project is scheduled for completion by April 2013.

Outreach and Other Capabilities

The City provides fire safety classes, through the Community Emergency Response Team (CERT) program to the community several times a year and partners with businesses and local agencies to provide information outreach during community events. The City also participates in regional mass care and shelter planning and incorporates planning for access and functional needs individuals. In addition, the City has designated a cooling center if needed during a heat emergency and a heating center for cold, winter days. The Police Department and the California Department of Transportation have a plan to divert traffic from Highway in the event of major traffic accidents.

21.3 Local Hazard Mitigation Goals, Actions and Progress

The next several pages will provide a summary of the mitigation goals, objectives and actions that were chosen as a strategy for reducing the potential losses identified in the hazard risk assessment. Each mitigation goal shows one or more objectives and actions as well as the priority ranking, responsible

department/division/program, timeframe, funding, cost and the status. In addition, the associated hazard(s) is identified for each mitigation measure. The Local Hazard Mitigation Plan (LHMP) overall goals were identified in the Executive Summary in the beginning of the plan. They are:

1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Priority Ranking: Several factors were considered to determine the mitigation priority ranking for each mitigation measure. The highest priority ranking was assigned to those mitigation measures that met three criteria: 1) greatest potential for protecting life and property; 2) greatest potential for maintaining critical City functions and operability following a disaster; and 3) achievability in terms of community support, and cost effectiveness. Each mitigation action is assigned a priority ranking as follows:

Critical: Most important goals/actions (may be short-term or long-term)
High: To be implemented in the short-term future
Moderate: To be implemented when funding/resources become available.

Benefit/Cost Review: The benefits of proposed projects were weighed against costs as a part of the project prioritization process to determine if the proposed project should be ranked critical, high or moderate. Where possible, an actual benefit/cost analysis ratio was provided.

Previous Mitigation Projects: There are three mitigation projects that were completed in 2010 and one that was completed in 2011. They are:

Hazard Mitigated = Flood
<u>Indian Basin and Ironwood Storm Drain Improvements</u>: The project was a part of the Ironwood Street Improvements project which constructed storm drain Line H along Ironwood Avenue from the Ironwood Avenue/Heacock Street intersection to the Davis Street/Ironwood Avenue intersection, then southerly in Davis Street to the Indian Detention Basin. The project also constructed missing portions of Storm Drain Line H-1A from the Davis Street/Ironwood Avenue intersection to the Indian Detention Basin. The construction of the storm drain and the detention basin is to provide 100-year storm level of protection for the area. The system is to collect and slow the flow of floodwaters to the surrounding areas. The project mitigates flooding hazards for the Heacock Street/Ironwood Avenue surrounding areas, which include flooding damages to private properties and public roads, closures of roadways, and disruptions of public services. The construction of the project was completed in July 2011. The cost was $5,605,000. Funding Sources included: 2007 RDA Tax Allocation Bonds, 2005

Lease Revenue Bonds, Developer Impact Fees Arterial Street, and EMWD Waterline Improvements Reimbursement.

Hazard Mitigated = Flood
Lasselle Street Storm Drain Improvements: The storm drain improvement was a part of the Lasselle Street Widening project from John F. Kennedy Drive to Alessandro Boulevard which included the installation of 2200 feet of 36-inch storm drain along Lasselle Street. The project provided the area with 10-year storm level of protection. The storm drain system was to convey the storm waters from the vicinity of Lasselle Street and surrounding areas. The project mitigates hazards that include flooding of Lasselle Street and properties along Lasselle Street, damages to properties, closures of roadway and disruptions of public services. The construction of the project was completed in July 2010. The cost was $3,200,000. Funding Sources included: 2005 Lease Revenue Bonds and Transportation Uniform Mitigation Fee (TUMF) Capital Projects.

Hazard Mitigated = Landslide/Slope stabilization
Lasselle Street Slope Stabilization Slope Stabilization: Was a part of the Lasselle Street Widening project from John F. Kennedy Drive to Alessandro Boulevard which included slope stabilization on the east side of Lasselle Street. The project helped to stabilize slope and improve safety to people and properties by the use of rock anchors and rockfall barrier (catch fence). The project installed these items along Lasselle Street to prevent rocks from falling onto vehicles, pedestrians, and homes, enhancing safety for community. The construction of the project was completed in July 2010. The cost was $3,200,000. Funding Sources included: 2005 Lease Revenue Bonds and TUMF Capital Projects.

Hazard Mitigated = Flood
Kitching Street Storm Drain Improvements at Alessandro Boulevard: The storm drain improvement was a part of the Kitching Street Improvements project which installed 200 feet of 48-inch storm drain line at the intersection of Kitching Street and Alessandro Boulevard. The project provided the area with 10-year storm level of protection. The storm drain is to convey storm waters from north side Alessandro Boulevard and discharge to existing channel on the west side of Kitching Street The project mitigates flooding hazards for the Kitching/Alessandro surrounding areas, which include damages to roadway and properties, closures of roadways, and disruptions of public services. The construction of the project was completed in December 2010. The cost was $3,068,000. Funding Sources included: 2005 Lease Revenue Bonds and Development Impact Fees for Traffic Signals.

Mitigation Goals, Objects, Actions and Status: Beginning on the next page is a summary of 10 goals, 18 objectives and 28 actions that serve to mitigate the hazards that may affect the City of Moreno Valley.

Goal 1: Plan for Continuity of Government Operations - Plan Goal(s) 3, 4

Objective 1.1: Provide emergency power to the Conference and Recreation Center (CRC) so that it serves as an Emergency Operations Center (EOC) Family Care Center and as a backup EOC

Action 1.1.1: Request approval from City Council to proceed with design and construction.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	October 25, 2011
Funding/Cost:	FY10 EOC grant & fund 501 $635K
Hazard(s):	**ALL Hazards**

Status: Consultant has completed study. Public Safety Subcommittee has reviewed presentation by staff and recommended to present to City Council for review and approval to proceed.

Action 1.1.2: Proceed with design and construction.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	By July 2013
Funding/Cost:	FY10 EOC grant & fund 501 $635K
Hazard(s):	**ALL Hazards**

Status: Pending approval from City Council.

Objective 1.2: Provide a satellite EOC traffic management center LED or LCD wall display and computers to better manage emergency operations from the EOC and provide a backup once the traffic management center is installed in the City.

Action 1.2.1: Determine needs, select products, order and install

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	July 2012
Funding/Cost:	FY10 EOC grant; $25K
Hazard(s):	**ALL Hazards**

Status: Met with Technology Services and other personnel to determine needs. Next, order equipment, install and test.

Goal 2: Create an Earthquake Resistant Community - Plan Goal(s) 1

Objective 2.1: Minimize the potential for loss of life and protect the community from the physical injury and property damage due to seismic ground shaking and secondary effects.

Action 2.1.1: Require all new developments, existing critical and essential facilities and structures to comply with the most recent Uniform Building Code seismic design standards.

Priority:	Critical
Responsible Dept:	Capital Projects, Planning
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Hazard(s):	**Earthquake**

Status: Continuing and ongoing.

Objective 2.2: Reduce fault rupture and liquefaction hazards through the identification and recognition of potentially hazardous conditions and areas as they relate to the San Jacinto fault zone and the high and very high liquefaction hazard zones.

Action 2.2.1: During review of future development projects, the City shall require geologic studies and mitigation for fault rupture hazards in accordance with the Alquist-Priolo Special Study Zones Act.

Priority:	Critical
Responsible Dept:	Capital Projects, Planning
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Hazard(s):	**Earthquake**

Status: Continuing and ongoing.

Goal 2: Create an Earthquake Resistant Community (Continued) **- Plan Goal(s) 1**

Objective 2.3: Replace the existing SR-60/Nason Street two-lane bridge with a four-lane bridge and complete the SR-60/Nason interchange improvements.

Action 2.3.1: Request council approval to proceed with design recommendations and complete construction.

Priority:	Critical
Responsible Dept:	Capital Projects
Timeframe:	February 2012 to August 2013 (tentative)
Funding/Cost:	Redevelopment Agency 2007 Tax Allocation Bonds and Stoneridge Center Fees; $16.4 million
Hazard(s):	**Earthquake**

Status: The project could provide a new Nason Street Overcrossing SR-60 bridge that meets current seismic standards/requirements. The project could mitigate earthquake hazards by providing a new bridge that meet current seismic standards/requirements. The project is currently under design phase.

Objective 2.4: Protect historic buildings from geologic hazards.

Action 2.4.1: Evaluate historic buildings relative to the need for mitigation of geologic hazards, while weighing their historical value against the potential hazard of their collapse.

Priority:	Moderate
Responsible Dept:	Planning
Timeframe:	Ongoing
Funding/Cost:	N/A
Hazard(s):	**Earthquake**

Status: Continuing and ongoing

Goal 3: Promote a Flood Safe Community - Plan Goal(s) 1

Objective 3.1: Permit only acceptable land use development in 100-year floodplain

Action 3.1.1: Review project proposals to ensure that they meet the accepted land use for the location.

Priority:	High
Responsible Dept:	Capital Projects, Planning
Timeframe:	Ongoing
Funding/Cost:	Current funding
Hazard(s):	**Flooding**

Status: Continuing and ongoing.

Objective 3.2: Locate critical facilities, such as hospitals, fire stations, police stations, public administration buildings and schools outside of flood hazard areas.

Action 3.2.1: Review land use and flood maps to ensure proposed critical facilities are not within flood prone areas.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	July 2012
Funding/Cost:	Current funding
Hazard(s):	**Flooding**

Status: Continuing and ongoing.

Objective 3.3: Design, construct and maintain street and storm drain flood control systems to accommodate 10 year and 100 year storm flows respectively.

Action 3.3.1: Determine potential projects to mitigate known flood areas due to inadequate storm drain and flood control channels.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	Ongoing
Funding/Cost:	To be determined
Hazard(s):	**Flooding**

Status: Continuing and ongoing.

Goal 3: Promote a Flood Safe Community (Continued) - Plan Goal(s) 1

Action 3.3.2: Improve/widen the existing 1.8 mile of incised earthen channel with concrete side walls and invert along Heacock Street from Cactus Avenue to Perris Valley Drain Lateral "A".

Priority:	High (priority #1 for flood projects)
Responsible Dept:	Capital Projects
Timeframe:	N/A
Funding/Cost:	No funding available; $17.5 million
Hazard(s):	**Flooding**

Status: The project could provide the area along Heacock Channel with 100-year storm level of protection. The existing channel currently cannot carry 10-year flood. Threat to residential areas and March Air Reserve Base properties. Flooding events threaten to undermine the road and underlying utilities, resulting in closures affecting ingress and egress of 700 residences and businesses and resulting in damages to March Air Reserve Base's pump house and transformer which interrupt their operations and emergency missions. A Flood Damage Reduction Study was completed in 2007 with a purpose of finding funding for the project.

Estimated Benefit-to-Cost Ratio*: 3.0

Action 3.3.3: Remove existing undersized storm drain bridge and construct a new bridge over the Perris Valley Storm Drain Lateral "A" at Heacock Street.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	February 2012 to December 2012
Funding/Cost:	Measure "A" and Highway Bridge Replacement and Rehabilitation Grant; $2.6 million
Hazard(s):	**Flooding and Earthquake**

Status: The project is to replace Heacock Street Bridge from existing 2-lane bridge to 4-lane bridge over the channel and provide the Heacock Channel with 100-year level of protection and bring the bridge to current seismic standards. In design phase.

*Benefit to cost ratio, which is an indicator, used in cost-benefit analysis.

Goal 3: Promote a Flood Safe Community (Continued) - Plan Goal(s) 1

Action 3.3.4: Improve/widen the existing 1.5 mile of incised earthen channel with concrete side walls and invert along Cactus Avenue from Elsworth Street to Heacock Street and connecting to Heacock Channel.

Priority: High
Responsible Dept: Capital Projects
Timeframe: N/A
Funding/Cost: No funding available; $7.5 million
Hazard(s): **Flooding**

Status: The project could provide the area along Cactus Channel with 100-year storm level of protection capacity. The existing channel currently cannot carry 10-year flood. The existing Cactus Channel has limited capacities which result in overtopping and flooding to residential areas and March ARB properties. Flooding events threaten to undermine the road and underlying utilities, result in closures affecting ingress and egress of businesses, and result in damages to March ARB's pump house and transformer which interrupt March ARB's operations and emergency missions. A Flood Damage Reduction Study was completed in 2007 with a purpose of finding funding for the project. This project was identified in 2004 multi-jurisdictional plan.

Action 3.3.5: Install storm drain system in the middle of the tract bounded by Redlands Boulevard and Merwin Street, from Alessandro Boulevard to Campbell Avenue, and connected to existing open channel on the southwest corner of Redlands Boulevard and Brodiea Avenue.

Priority: High
Responsible Dept: Capital Projects
Timeframe: July 2012 to April 2013; 2 million
Funding/Cost: Hazard Mitigation Grant (DR-1731) and Measure "A" for Local Match; $2 million
Hazard(s): **Flooding**

Status: The project could provide the Moreno Townsite area with 100-year storm level of protection. The lack of proper storm drain system in the neighborhood has resulted in flooding events in almost every storm season. The implementation of the project could mitigate flooding hazards to the Moreno Townsite area, including damages to roadway and properties, closures of roadways, health issues, disruptions of traffic and public services.

Estimated Benefit-to-Cost Ratio: 3.62

Goal 3: Promote a Flood Safe Community (Continued) - Plan Goal(s) 1

Action 3.3.6: Install storm drain system in the San Timoteo Foothill Neighborhood, running along Carrie Lane, from Locust Avenue to Kalmia Avenue, then west along Kalmia Avenue to Pettit Street and to be tied into existing storm drain on Pettit Street.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	N/A
Funding/Cost:	Hazard mitigation grant DR-1810; submitted to FEMA in September 2009, waiting approval; local match would be from Measure "A"; total cost $2 million
Hazard(s):	**Flooding**

Status: The project could provide the San Timoteo Foothill Neighborhood with 100-year storm level of protection. The lack of proper storm drain system in the neighborhood has resulted in flooding events in almost every storm season. The implementation of the project could mitigate flooding hazards to the San Timoteo Foothill Neighborhood, including damages to roadway and properties, closures of roadways, health issues, disruptions of traffic and public services.

Estimated Benefit-to-Cost Ratio: 6.26

Action 3.3.7: Install storm drain systems at two locations on Sunnymead Boulevard. One storm drain system is to be installed across Sunnymead Boulevard between Frederick Street and Graham Street. The other storm drain system is to be installed in the vicinity of Sunnymead Boulevard and Indian Street intersection.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	N/A
Funding/Cost:	Will apply for future hazard mitigation grant; Measure "A" for local match; total cost $4 million
Hazard(s):	**Flooding**

Status: The proposed project could provide the businesses, public and private properties along Sunnymead Boulevard with 100-year storm level of protection. The existing storm drain systems are inadequate which result in flooding events in almost every storm season. The preliminary engineering has been done for the project in the efforts of getting enough information for filling out future HMGP grant application when it becomes available.

Goal 3: Promote a Flood Safe Community (Continued) - Plan Goal(s) 1

Action 3.3.8: Install catch basins and connecting pipes to existing Lines F, I and J in Nason Street (part of the Nason Street Improvements from Iris Avenue to Cactus Avenue).

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	May 2012 to May 2013 (tentative)
Funding/Cost:	Redevelopment Agency tax increment fund, development impact fees, general fund, Measure "A" Fund and State-Local Partnership Program Grant; 20.7 million
Hazard(s):	**Flooding**

Status: The project could provide 100-year storm level of protection for roadways, business and residences along Nason Street. The implementation of the project could mitigate flooding hazards that include flooding of roadway, businesses and residents along Nason Street. The project is under design phase.

Action 3.3.9: Install 45-inch storm drain in the west end of the City, south of Dracaea Avenue and west of Edgemont Street (Line LL).

Priority:	High
Responsible Dept:	Riverside County Flood Control
Timeframe:	N/A
Funding/Cost:	$400K
Hazard(s):	**Flooding**

Status: The project could provide 100-year storm level of protection for the west end area on the City. The implementation of the project could mitigate flooding hazards that include flooding of roadway, businesses and residents for the west end area of the City. A West End Area Drainage Plan was adopted by City Council in 1992 and turned over to RCFC&WCD for it to design and construct the system. Construction date is not known at this point.

Goal 4: Promote a Fire Safe Community - Plan Goal(s) 1

Objective 4.1: Maintain the capacity to respond rapidly to emergency situations

Action 4.1.1: Construct a new fire station, No 99 at 13400 Morrison Street.

Priority:	High
Responsible Dept:	Capital Projects, Fire Department
Timeframe:	October 2011 to October 2012
Funding/Cost:	Redevelopment Tax Allocation Bonds; $5.9 million
Hazard(s):	**ALL Hazards**

Status: Groundbreaking ceremony held on October 13, 2011. Construction began the week of October 10, 2011.

Objective 4.2: Ensure that property in or adjacent to wildland areas is reasonably protected from wildland fire hazard, consistent with the maintenance of a viable natural ecology.

Action 4.2.1: Encourage programs to minimize the fire hazard, including but not limited to the prevention of fuel build-up where wildland areas are adjacent to urban development.

Priority:	High
Responsible Dept:	Fire Department
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Hazard(s):	**Fire**

Status: Continuing and ongoing.

Objective 4.3: Ensure that uses within urbanized areas are planned and designed consistent with accepted safety.

Action 4.3.1: Ensure that ordinances, resolutions and policies relating to urban development are consistent with the requirements of acceptable fire safety, including requirements for smoke detectors, emergency water supply and automatic fire sprinkler systems.

Priority:	High
Responsible Dept:	Fire Department
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Hazard(s):	**Fire**

Status: Continuing and ongoing.

Goal 5: Reduce the Chance of Hazardous Materials Incidents - Plan Goal(s) 1

Objective 5.1: Protect life and property from the potential short-term and long-term deleterious effects of the transportation, use, storage, treatment, disposal of hazardous materials and waste.

Action 5.1.1: Require all land use applications and approvals to be consistent with the siting criteria and other applicable provisions of the adopted Hazardous Waste Management Plan, which is also incorporated into and as part of the General Plan.

Priority:	High
Responsible Dept:	Fire Department
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Hazard(s):	**Fire**

Status: Continuing and ongoing.

Goal 6: Protect the Community from Airplane Crash Incidents - Plan Goal(s) 1

Objective 6.1: Protect life and property by limiting development in safety zones according to identified land uses.

Action 6.1.1: Within the safety zones (e.g. Air Crash Hazard Zones and Clear Zones), residential uses shall not be permitted, and business uses shall be restricted to low intensity uses as defined in the March Air Reserve Base Air Installation Compatible Use Zone Report, as amended from time to time.

Priority:	High
Responsible Dept:	Capital Projects, Planning
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Hazard(s):	**Fire**

Status: Continuing and ongoing.

Goal 7: Promote a Community Safe From Terrorism - Plan Goal(s) 1, 2, 4

Objective 7.1: Minimize opportunities for crime found in the present and future build environment, and by creating and maintaining a high level of community awareness and support of crime prevention.

Action 7.1.1: Promote the establishment of neighborhood and business watch programs to encourage community participation in the patrol of neighborhood areas, and increased awareness of any suspicious activity.

Priority:	High
Responsible Dept:	
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Hazard(s):	**Terrorism, Civil Unrest**

Status: Continuing and ongoing.

Goal 9: Promote a Pandemic/Disease Free Community - Plan Goal(s) 1, 2, 3, 4

Objective 9.1: Collaborate and coordinated with the Riverside County Public Health Department to support community awareness to prevention and protections from communicable disease and/or pandemic flu.

Action 9.1.1: Assist in providing information to the public regarding prevention and protection against communicable disease and/or pandemic flu.

Priority:	Moderate
Responsible Dept:	Office of Emergency Management
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Hazard(s):	**ALL Hazards**

Status: Continuing and ongoing.

Goal 10: Promote Disaster Preparedness and Public Participation - Plan
Goal(s) 1, 2, 4

Objective 10.1: Encourage public participation in the City's hazard mitigation update process.

Action 10.1.1: Encourage public participation by designating a Hazard Mitigation web page in the Emergency Section of the City website that is specific to the City of Moreno Valley Local Hazard Mitigation Plan.

Priority: High
Responsible Dept: Office of Emergency Management
Timeframe: Ongoing
Funding/Cost: Current funding; cost unknown
Hazard(s): **ALL Hazards**

Status: Continuing and ongoing.

Objective 10.2: Promote a greater community awareness and understanding of the effects of natural and man-made hazards.

Action 10.2.1: Provide FEMA Community Emergency Response Team Training regularly to the community.

Priority: High
Responsible Dept: Office of Emergency Management
Timeframe: Ongoing
Funding/Cost: Homeland Security Grant Program and General Fund
Hazard(s): **ALL Hazards**

Status: Continuing and ongoing. Office of Emergency Management has provided the 2 ½ day training to the community since 1998 and to date, has taught 926 members of the community and citizens, businesses, church members, school employees and others.

Action 10.2.2: Provide presentations to service clubs, homeowner's associations and other organizations to enhance preparedness.

Priority: Moderate
Responsible Dept: Office of Emergency Management
Timeframe: Ongoing
Funding/Cost:
Hazard(s): **ALL Hazards**

Status: Continuing and ongoing.

21.4 National Flood Insurance Program

The last component of the City's mitigation strategy is participation in the National Flood Insurance Program.

The City of Moreno Valley has participated in the National Flood Insurance Program (NFIP) since June 16, 1987. The function of the NFIP is to provide flood insurance to homes and businesses located in Special Flood Hazard Areas (SFHA) at a reasonable cost. In trade, the City of Moreno Valley would agree to regulate new development and substantial improvement to existing structures in the SFHA or to build safely above Base Flood Elevation (BFE) to reduce damage to new construction. The program is based upon mapping areas of flood risk, and requiring local implementation to reduce flood damage primarily requiring the elevation of structures above the BFE including revising the Flood Insurance Rate Maps by processing Letters of Map Revisions with FEMA prior to issuance of building permits. The City completes the NFIP Biennial Report and returns that information to FEMA in a timely manner. There have been no negative issues from participating in the NFIP.

In 2008, the City updated its Municipal Code, adopting the August 28, 2008, Flood Insurance Study (FIS), Flood Boundary and Floodway Maps (FBFMs) and attendant Flood Insurance Rate Maps (FIRMs). The FIS, FBFMs and FIRMs are on file at Community and Economic Development Department, Land Development Division.

The City of Moreno Valley requires Flood Plain Development Permits for all construction or other development, including manufactured homes, within any SFHA. Flood Insurance may be required in these zones as a condition of loan or grant assistance. Elevation Certificates are required as part of the Development Permit, issuance of a building permit and issuance of final occupancy. The Elevation Certificate is a form published by FEMA and required to be maintained and filed in Moreno Valley as a participating community in the NFIP. Discretionary projects located in a SFHA are required as a condition of approval to construct necessary storm drain improvements per the City's Master Drainage Plan and process a Letter of Map Revision prior to issuance of building permits, thus removing property from SFHA. The City has experienced a change (a shift so to speak) to the flood plain limits with the recently published FIRMs. The digital FIRMs graphically moved portions of the SFHAs onto properties and structures where FEMA approved Letter of Map Revisions (LOMR) were previously processed. This has created problems for FIRM interpretation by both insurers and City staff.

Repetitive Loss Properties: There are no repetitive loss properties.

Other Data Used to Regulate Flood Hazard Areas: The City of Moreno Valley utilizes past Hydrology/Hydraulic (H/H) studies prepared by the Riverside County

Flood Control and Water Conservation District, developers and others prepared in the past in areas known for shallow flooding within Zone X to determine finish floor elevations for proposed structures.

Community Rating System (CRS): The City of Moreno Valley is a member of the Community Rating System and is rated at a Class 8. The National Flood Insurance Program's (NFIP) Community Rating System is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS:

1. Reduce flood losses;
2. Facilitate accurate insurance rating; and
3. Promote the awareness of flood insurance.

APPENDIX A

ACRONYMS

Acronyms

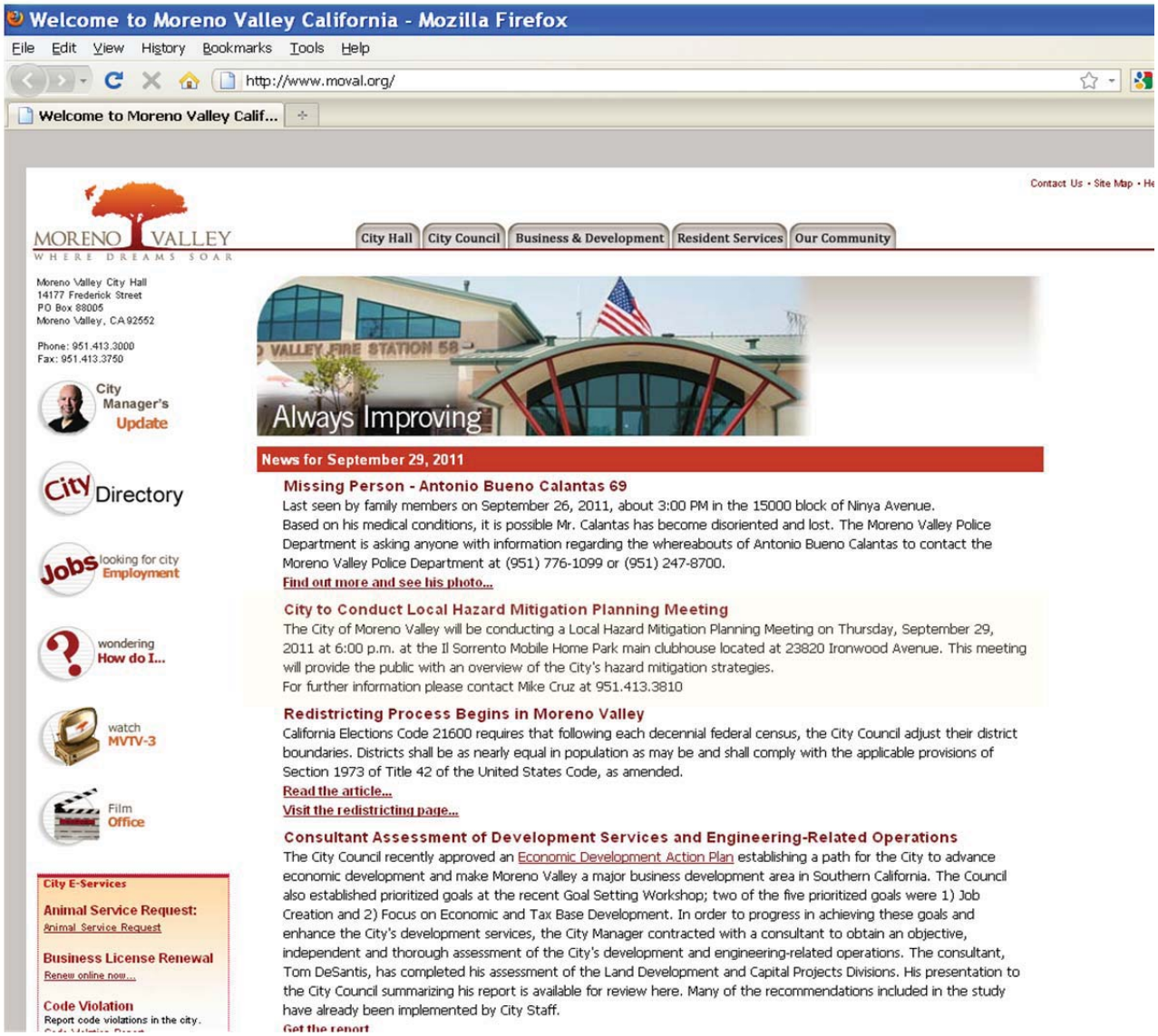
APZ	Accident Potential Zone
BFE	Base Flood Elevation
CERT	Community Emergency Response Team
CFR	Code of Federal Regulations
CRC	Community and Recreation Center
CRS	Community Rating System
DNA	Deoxyribonucleic Acid
DR	Disaster
EMWD	Easter Municipal Water Department
EOC	Emergency Operations Center
FMFM	Flood Boundary and Floodway Maps
FBI	Federal Bureau of Investigations
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
GIS	Geological Information Systems
H/H	Hydrology/Hydraulic
HIV	Human Immunodeficiency Virus
HMGP	Hazard Mitigation Grant Program
H.R.	House of Representatives
LHMP	Local Hazard Mitigation Plan
LOMR	Letter of Map Revisions
N/A	Not Available
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NWS	National Weather Service
OEM	Office of Emergency Management
RCC	Riverside Community College
RCFC	Riverside County Flood Control
RDA	Redevelopment Agency
RV	Recreational Vehicle
SBA	Small Business Administration
SFHA	Special Flood Hazard Area
SONGS	San Onofre Nuclear Generating System
SR	State Route
TUMF	Transportation Uniform Mitigation Fee
UP	Union Pacific
USGS	United States Geological Services
WCD	Wastewater Control District

APPENDIX B

PUBLIC MEETINGS DOCUMENTATION

Public Meeting Announcement
Posted on City of Moreno Valley Cable Channel 3

Public Meeting Announcement Posted on City of Moreno Valley Website



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MORENO VALLEY
WHERE DREAMS SOAR

City Hall | City Council | Business & Development | Resident Services | Our Community

Moreno Valley City Hall
14177 Frederick Street
PO Box 88005
Moreno Valley, CA 92552

Phone: 951.413.3000
Fax: 951.413.3750

City Manager's Update

City Directory

Jobs looking for city Employment

wondering How do I...

watch MVTV-3

Film Office

City E-Services

Animal Service Request:
Animal Service Request

Business License Renewal
Renew online now...

Code Violation
Report code violations in the city.

Always Improving

News for September 29, 2011

Missing Person - Antonio Bueno Calantas 69
Last seen by family members on September 26, 2011, about 3:00 PM in the 15000 block of Ninya Avenue. Based on his medical conditions, it is possible Mr. Calantas has become disoriented and lost. The Moreno Valley Police Department is asking anyone with information regarding the whereabouts of Antonio Bueno Calantas to contact the Moreno Valley Police Department at (951) 776-1099 or (951) 247-8700.
Find out more and see his photo...

City to Conduct Local Hazard Mitigation Planning Meeting
The City of Moreno Valley will be conducting a Local Hazard Mitigation Planning Meeting on Thursday, September 29, 2011 at 6:00 p.m. at the Il Sorrento Mobile Home Park main clubhouse located at 23820 Ironwood Avenue. This meeting will provide the public with an overview of the City's hazard mitigation strategies.
For further information please contact Mike Cruz at 951.413.3810

Redistricting Process Begins in Moreno Valley
California Elections Code 21600 requires that following each decennial federal census, the City Council adjust their district boundaries. Districts shall be as nearly equal in population as may be and shall comply with the applicable provisions of Section 1973 of Title 42 of the United States Code, as amended.
Read the article...
Visit the redistricting page...

Consultant Assessment of Development Services and Engineering-Related Operations
The City Council recently approved an Economic Development Action Plan establishing a path for the City to advance economic development and make Moreno Valley a major business development area in Southern California. The Council also established prioritized goals at the recent Goal Setting Workshop; two of the five prioritized goals were 1) Job Creation and 2) Focus on Economic and Tax Base Development. In order to progress in achieving these goals and enhance the City's development services, the City Manager contracted with a consultant to obtain an objective, independent and thorough assessment of the City's development and engineering-related operations. The consultant, Tom DeSantis, has completed his assessment of the Land Development and Capital Projects Divisions. His presentation to the City Council summarizing his report is available for review here. Many of the recommendations included in the study have already been implemented by City Staff.
Get the report

Public Meeting Agenda

Emergency Response Force

September 14, 2011

Agenda

I. Introductions.

II. Pager is monitored by _____ until next meeting.

III. Training CPR BLS here at the EOC for ERF members only

IV. Rig equipment update – Water mister/fan is operational.

V. CERT class is October, 21, 22, 23, 2011 at the Emergency Operations Center. (We will need CERT victims for the simulated drill on Sunday Oct. 23)

VI. MCI simulated drill at the corporate yard was postponed due to the multiple fires. This event may be held at the end of fall or in the winter. TBA.

VII. Local Multi-Hazard Mitigation Plan Presentation.

Recent Events:

YouthFest
September 10, 2011- Saturday 10 am – 3:00 pm
M V Community Park

Emergency Callouts:

August 19, 2011
Structure Fire – I fatality
7:15 pm – 1:30 am

Upcoming events:

October 8 & 9, 2011 Sears Safety Fair at the Moreno Valley Mall

APPENDIX C

CITY OF MORENO VALLEY FUTURE DEVELOPMENT

City of Moreno Valley Residential Development

As the national economy begins to rebound, the City of Moreno Valley is well positioned with a declining inventory of re-sale homes and many of new housing projects under construction or approved.

Single-Family: 8,259 Units

MAP NO.	TRACT	BUILDER	COUNT	MAP NO.	TRACT	BUILDER	COUNT
1	32834	Beazer Homes	205	30	31621	Victoria Homes	12
2	32836	Beazer Homes	129	31	30636	Pacific Communities	68
3	29920	Pacific Communities	247	32	32194	John Young	32
4	32715	Gardner Construction	36	33	31305	Richmond American Homes	87
5	31255	Stonewood Homes	17	34	31771	Peter Sanchez	25
6	31414	Steve Walker	30	35	34397	Winchester Associates	52
7	33626	Kincaid Development	25	36	32408	Sandstone, Inc.	80
8	31394	Pigeon Pass Ltd.	78	37	32645	Winchester Associates	54
9	32515	K Hovnanian -"Four Seasons"	174	38	32329	Sussex Capital Group	16
10	30268	Pacific Communities	86	39	31494	Winchester Associates	12
11	30268	MV Associates- "High Pointe	83	40	32505	DR Horton	72
12	34151	MV Property Investments, Inc.	37	41	33963	Rance Garatt	30
13	33810	David Boyle Engineering	16	42	33275	Ben Reininger	7
14	31442	Dong Lee	63	43	32978	Focus Estates	19
15	33024	TW Homes, LLC	8	44	32844	Winchester Associates	17
16	32716	Bob Rogers	56	45	34043	RM3 Building and Development	12
17	32005	Red Hill Village, LLC	214	46	35369	Tason Myers Property	8
18	31556	Empire Homes	68	47	32711	Isaac Genah	9
19	32460	Sussex Capital Group	58	48	22180	Young Homes	543
20	32459	Sussex Capital Group	11	49	31590	Winchester Associates	150
21	30411	Pacific Communities	24	50	32284	26th Corporation and Granite Capital	32
22	33962	Pacific Scene Homes	31	51	32548	Gabel, Cook and Associates	107
23	30998	Pacific Communities	47	52	32218	Doug Whitney	63
24	31517	Winchester Associates	83	53	35530	Moreno Gilman 650, LLC	1251
25	31297	Corporation Presiding Bishop of LD	7	54	35606	Kenney Kha	16
26	33436	Winchester Associates	105	55	35534	Leedco Engineers	12
27	28860	Winchester Associates	9	56	35823	Stowe Pasco Development	477
28	33388	Titan Records Management	16	57	32365	JW Capital	67
29	32126	Salvador Torres	35	58	35377	Michael Dillard	9
						Approved Specific Plans	
					33532	Aqua Bella:	2922
						Moreno Higlands	7700

Multi-Family: 3,134 Units

MAP NO.	TRACT NO.	BUILDER/ UNITS	TYPE	MAP NO.	TRACT NO.	BUILDER/ UNITS	TYPE
1	35414	Lincoln Property Co. / 240	Apartments	14	33417	Jimmy Lee/ 10	Condominiums
2	32215	Winchester Associates/ 194	Condominiums	15	34988	Stratus Commercial Properties/ 60	Condominiums
3	0	DG&D Cal. Property/ 360	Apartments	16	32756	CTK, Inc./ 241	Condominiums
4	34329	Granite Capital/ 90	Condominiums	17	34681	Perris Pacific Company/ 24	Condominiums
5	32917	Empire Land/ 227	Condominiums	18	33607	TL Group Corp/ 54	Condominiums
6	0	Adkan Engineers/ 72	Senior Condominiums	19	0	One Moreno Valley / 52	Condominiums
7	32835	Beazer Homes/ 247	Townhomes	20	34215	Empire Land/ 314	Apartments
8	31814	Moreno Valley Investors/ 60	Apartments	21	36038	Alessandro Village Plaza, LLC./288	Apartments
9	34216	Creative Design Associates/ 189	Senior Apartments	22	35663	Kenney Kha/ 112	Condominiums
10	33771	Creative Design Associates/ 40	Condominiums	23	35098	Microsun Design Group/ 96	Townhomes
11	0	Frederick Homes/ 12	Condominiums	24	0	Michael Chen/ 16	Condominiums
12	0	Travmatt Management/ 30	Apartments	25	4843	Granite Capital/ 42	Apartments
13	35304	Jimmy Lee/ 26	Apartments	26	0	Jim Nydam/ 15	Apartments

951.413.3460
EDTeam@moval.org

MORENO VALLEY
ECONOMIC DEVELOPMENT

Updated May 2010

City of Moreno Valley Commercial Development

The City of Moreno Valley has remained **among the fastest growing cities** in the Inland Empire of Southern California. Ranked 10th in population growth, Moreno Valley is the **third largest city** in the region. Savy developers and retailers continue to look at Moreno Valley opportunities for growth and success. Take a look at whats happening!

COMMERCIAL CENTERS

CENTER NAME	SIZE (in sq. ft.)	TRAFFIC COUNTS (ADT) E/W	N/S
TownGate Highlands	251,900	254,000	15,300
Moreno Valley Mall	1,300,000	233,000	28,400
Stoneridge Towne Centre	579,295	150,000	19,700
TownGate Center/Plaza	465,000	233,000	28,400
Moreno Beach Plaza	350,000	132,000	17,200
Moreno Valley Plaza	341,000	13,100	24,900
TownGate Crossing	237,000	254,000	36,600
TownGate Promenade	200,000	254,000	36,600
Moreno Beach Marketplace	175,000	4,100	15,900
Lakeside Plaza & Terrace	143,000	13,600	7,300
Lakeshore Village Marketplace	140,000	11,500	—
Alessandro & Lasselle	140,000	8,400	13,300
Moreno Marketplace	93,788	3,800	14,300
Iris Plaza	87,120	18,800	20,300
Alessandro & Moreno Beach	30,750	4,100	15,900
Elsworth Plaza	30,000	27,700	—
Cactus Commerce Center	16,000	36,100	—
Rancho Belago Plaza	14,000	3,800	14,300

HOSPITALITY DEVELOPMENT

MAP NO.	NAME	NO. GUEST ROOMS
	Centerpointe Hotels: Hawthorn Inn and	
1	Marriott TownePlace Suites	189
2	Hampton Inn & Suites	115
3	Ayres Suites	127
4	La Quinta Inn & Suites	58
5	Sleep Inn & Suites	74
6	Value Place	113

OFFICE

MAP NO.	NAME	SIZE (in sq. ft.)
1	Centerpointe Office Area	258,000
2	Olivewood Plaza	22,758
3	Moreno Valley Medical Plaza	217,000
4	TownGate Square	170,000
5	Moreno Valley Medical Campus	80,000

INDUSTRIAL AREAS/JOB CENTERS

AREAS	OCCUPIED (in sq. ft.)	AVAILABLE/ APPROVED (in sq. ft.)	PROPOSED (in sq. ft.)
Centerpointe Business Park	2,266,417	2,239,590	82,994
Moreno Valley Industrial Area	3,742,232	9,963,116	1,616,133
SR 60 Business Park Area (Highland Fairview Corporate Park)	1,812,107	787,893	3,168,219
Sycamore Canyon Business Park	6,500,000	1,198,929	—
Meridian Business Park	2,454,000	546,000	—

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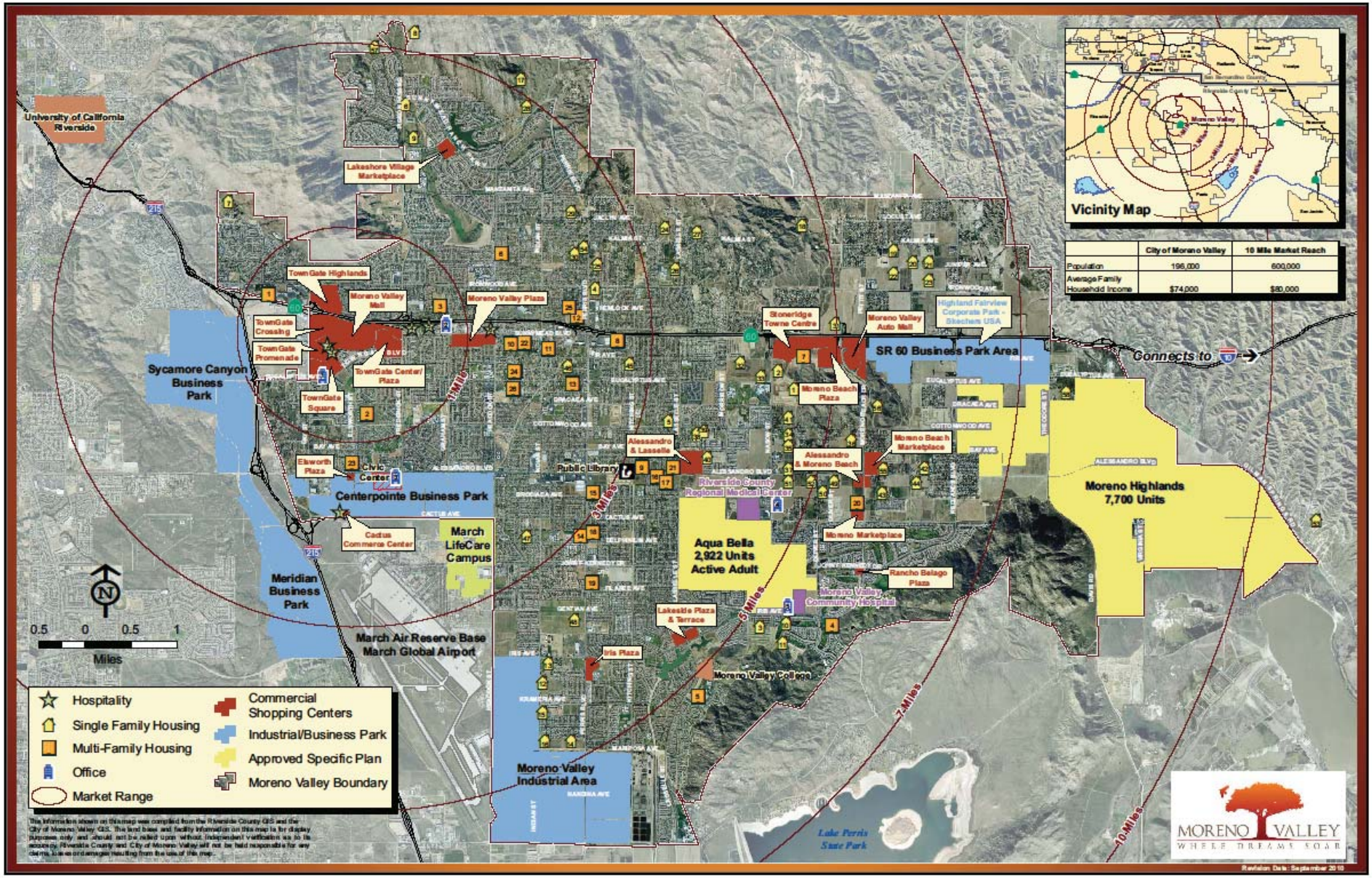
EDTeam@moval.org

MORENO VALLEY
ECONOMIC DEVELOPMENT

This information is intended to be a resource for the public, potential end-users, developers and investors. While every effort haas been made to ensure the accuracy of the data, it is subject to change due to the complex nature of the development industry. The City of Moreno Valley makes no guarantees as to the accuracy and assumes no liability for the use of the information.

Updated August 2009

New Projects Map with Commercial Development Activity, New Housing and Planned New Housing