City of Lomita

Local Hazard Mitigation Plan

October 2004

Prepared for the City of Lomita by:
Ralph Andersen & Associates
A Tradition of Excellence Since 1972

Item No. _____

CITY OF LOMITA
CITY COUNCIL REPORT

TO: City Council November 1, 2004

FROM: Gary Y. Sugano, Community Development Director

SUBJECT: Adoption of the Local Hazard Mitigation Plan

RECOMMENDATION
Staff recommends that the City Council hold a public hearing, approve a resolution adopting the Local Hazard Mitigation Plan for the City and authorize submittal of the plan to the Governor's Office of Emergency Services (OES) and FEMA.

BACKGROUND
The City is required to prepare and adopt a Local Hazard Mitigation Plan pursuant to the Disaster Mitigation Act of 2000 adopted by the United States Congress and signed into law by the President of the United States on October 10, 2000.

On March 15, 2004, the City Council held a public hearing to accept input on the proposed local hazard mitigation plan and to identify natural hazards to be discussed in the plan. On May 10, 2004, the Planning Commission also held a public hearing for that same purpose.

The purpose of the local hazard mitigation plan is to reduce risks from hazards by providing an assessment of those hazards, developing mitigation strategies and implementing and monitoring the plan after adoption. After City Council adoption of the plan, the State (Office of Emergency Management) and Federal (FEMA) will need to approve the plan. In addition, the plan would need to be updated every five years.

The City of Lomita will be required to have an adopted plan in order to qualify for disaster relief funding through the Hazard Mitigation Grant Program (HMGP).

The City has identified the following hazards that that are analyzed further in the plan:

- Earthquakes
- Landslides
- Localized Flooding
- High Winds

In addition to identifying hazards, the plan includes an extensive community profile of the City, summarizes City facilities and identifies goals and mitigation measures to reduce the impact of natural hazards should they occur in the future.

Recommended by:	Approved by:
_____	_____
GARY Y. SUGANO	TOM A. ODOM
COMMUNITY DEVELOPMENT DIRECTOR	CITY ADMINISTRATOR

Attachments:

a. Resolution
b. Local Hazard Mitigation Plan (under separate cover)

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LOMITA ADOPTING A LOCAL HAZARD MITIGATION PLAN PURSUANT TO THE DISASTER MITIGATION ACT OF 2000

WHEREAS, the Community Development Department has been designated the lead agency responsible for preparation of a local hazard mitigation plan for the City of Lomita; and

WHEREAS, on March 15, 2004, the City Council held a duly noticed public hearing to receive input on the preparation of a local hazard mitigation plan; and

WHEREAS, on May 10, 2004, the Planning Commission held a duly noticed public hearing to receive input on the preparation of a local hazard mitigation plan; and

WHEREAS, the City Council held a duly noticed public hearing to receive input on the adoption of a local hazard mitigation plan for the City; and

WHEREAS, Section 15308 (Class 8, Protection of the Environment) of the California Code of Regulations exempts the project from the requirements for the preparation of documents imposed by the California Environmental Quality Act; and

WHEREAS, Pursuant to the Federal Disaster Mitigation Act of 2000, there is a need to prepare a local hazard mitigation plan in order to be eligible for funding support for disaster preparedness and relief;

WHEREAS, the City of Lomita recognizes that public input is an important component in the preparation of a local hazard mitigation plan.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Lomita hereby adopts the local hazard mitigation plan for the City of Lomita. The decision of the City Council is final and conclusive as to all things involved in the matter.

PASSED and ADOPTED by the City Council of the City of Lomita on this 1st day of November, 2004 by the following vote:

AYES: Councilmembers:

NOES: Councilmembers:

ABSTAIN: Councilmembers:

_____
Susan Dever, MAYOR

ATTEST:_____
Dawn Tomita, CITY CLERK

Adopted on November 1, 2004 by the Lomita City Council

Susan Dever, Mayor

Ken Blackwood, Mayor Pro-Tem

Tin King, Councilmember

Don Suminaga, Councilmember

Mark Waronek, Councilmember

Special Thanks and Acknowledgements

Federal Emergency Management Agency

California Office of Emergency Services

Office of Disaster Management Area G

Southern California Edison

City of Los Angeles, Emergency Preparedness Department

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Part I – Mitigation Action Plan

Executive Summary

Five-Year Action Plan Matrix

The City of Lomita Natural Hazards Mitigation Action Plan includes resources and information to assist City employees, and others interested in participating in planning for natural hazard events. The mitigation plan provides a list of activities that may assist the City of Lomita in reducing risk and preventing loss from future natural hazard events. The action items address multi-hazard issues, as well as activities for earthquakes, flooding and severe weather occasions.

How is the Plan Organized?

The Mitigation Plan contains a five-year action plan matrix, background on the purpose and methodology used to develop the mitigation plan, a profile of the City of Lomita, sections on four natural hazards that occur within the City, and a number of appendices. All of the sections are described in detail in the plan introduction.

Who Participated in Developing the Plan?

The City of Lomita Natural Hazards Mitigation Action Plan is the result of a collaborative effort between the City of Lomita staff, public agencies, non-profit organizations, the private sector, and regional and state organizations. Public participation played a key role in the development of goals and action items. The public was invited for plan input and reviewed at two separate City Council Meetings and one Planning Commission Meeting. A City Hazard Mitigation Steering Committee guided the process of plan development.

The City of Lomita Hazard Mitigation Steering Committee was comprised of the following representatives:

- City of Lomita, Tom A. Odom, City Administrator
- City of Lomita, Dawn Tomita, City Clerk
- City of Lomita, Gary Sugano, Community Development Director
- City of Lomita, Greg McPherron, Community Services Director
- City of Lomita, Glen Kau, Public Works Director
- City of Lomita, Lori-Ann Farrell, Administrative Services Director

- City of Lomita, Cindy Blount, Parks and Recreation Director
- City of Lomita, Tracy Bonano, Management Analyst
- City of Lomita, Mike McDaniel, GIS Coordinator
- Lomita Chamber of Commerce, Chuck Taylor, Executive Director
- County of Los Angeles, Ed Acosta, Department of Public Works (Building and Safety)
- County of Los Angeles, Tony Wright, Fire Department
- County of Los Angeles, Sheriff's Department
- Office of Disaster Management, Area G

What is the Plan Mission?

The mission of the City of Lomita Natural Hazards Mitigation Plan is to promote sound public policy for the City of Lomita designed to protect citizens, critical facilities, infrastructure, and the environment from natural hazards. This can be achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the City towards building a safer, more sustainable environment.

What are the Plan Goals?

The plan goals describe the overall direction that the City of Lomita can take to work toward mitigation risk from natural hazards. The goals are stepping-stones between the broad direction of the mission statement and the specific recommendations outlined in the action items.

1) Protect Life and Property

- Implement activities that assist in protecting lives by making our infrastructure, critical support facilities, and other property more resistant to losses from natural hazards.
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.
- Improve hazard assessment information to make recommendations for discouraging new development in high hazard areas and encouraging preventative measures for existing development in areas vulnerable to natural hazards.

2) Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.

- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

3) Partnerships and Implementation

- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.

- Encourage leadership within public and private sector organizations to prioritize and implement local and regional hazard mitigation activities.

4) Emergency Services

- Establish policy to ensure mitigation projects for critical City facilities, services, and infrastructure.

- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.

- Coordinate and integrate natural hazard mitigation activities, where appropriate, with City emergency operations plans and procedures.

How Are The Action Items Organized?

The action items are listed as activities in which the City can use to reduce risk. Each action item includes an estimate of the time line for implementation. Short-term action items are activities that the City may implement with existing resources and authorities with one to two years. Long-term action items may require new or additional resources or authorities, and may take between one and five years (or more) to implement.

The action items are organized within the following matrix, which lists all of the multi-hazard and hazard-specific action items included in the mitigation plan. Data collection and research and public participation resulted in the development of these action items **(see Appendix B)**. The matrix includes the following information for each action item:

- **Coordinating Organization.** The coordinating organization is the City Administrative Department(s) with regulatory responsibility to address natural hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. Coordinating organizations may include Business Services, Facilities Maintenance & Operations and Public Safety that are capable of, or responsible for, implementing activities and programs.

- **Timeline.** Action items include both short- and long-term activities. Each action item includes an estimate of the timeline for implementation. Short-term action items are activities that the City is capable of implementing with existing resources and authorities

within one to two years. Long-term action items may require new or additional resources or authorities, and may take between one and five years (or more) to implement.

- **Ideas for Implementation.** Each action item includes ideas for implementation and potential resources, which may include grant programs or human resources. The matrix includes the page number within the mitigation plan where the information can be found.

- **Plan Goals Addressed.** The plan goals addressed by each action item are included as a way to monitor and evaluate how well the mitigation plan is achieving its goals once implementation begins. The plan goals are organized into the following five areas:

    1. Protect Life and Property
    2. Public Awareness
    3. Natural Systems
    4. Partnerships and Implementation
    5. Emergency Services

- **Partner Organizations.** The Partner Organizations are not listed with the individual action items or in the plan matrix. Partner Organizations are listed in ***Appendix A*** of this plan and are agencies or public/private sector organizations that may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization. The Partner Organizations listed in the Resource Directory of the City of Lomita Natural Hazards Mitigation Plan are potential partners recommended by the City's Hazard Mitigation Steering Committee, but may not have been contacted during the development of the Mitigation Plan. Partner Organizations should be contacted by the coordinating organization to establish commitment of time and resources to action items.

- **Constraints.** Constraints may apply to some of the action items. These constraints may be a lack of City staff, lack of funds, or vested property rights, which might expose the City to legal action as a result of adverse impacts on private property.

How Will the Plan be Implemented, Monitored and Evaluated?

The Plan Maintenance Section of this document details the formal process that will ensure that the City of Lomita Natural Hazards Mitigation Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years. This section describes how the City will integrate public participation throughout the plan maintenance process. Finally, this section includes an explanation of how the City of Lomita intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms such as Building & Safety Codes updates and improvements and remodernization projects.

Plan Adoption

Once the plan is completed, the City of Lomita City Council will be responsible for adopting the ***"City of Lomita Natural Hazards Mitigation Plan."*** The City Council has the responsibility and authority to promote sound public policy regarding natural hazards. The City Council may periodically need to re-adopt the plan as it is revised to meet changes in the natural hazard risks and exposures in the community. The approved Natural Hazard Mitigation Plan will be significant in the future growth and development of the City.

Coordinating Body

A City of Lomita Hazard Mitigation Steering Committee will be responsible for coordinating implementation of Plan action items and undertaking the formal review process.

Convener

The City of Lomita City Council will adopt the City of Lomita Natural Hazard Mitigation Plan, and the City's Hazard Mitigation Steering Committee will take responsibility for plan implementation. The head of Administration / Planning Director will serve as a convener to facilitate these meetings of the Committee. Plan implementation and evaluation will be a shared responsibility among all of the City's Hazard Mitigation Steering Committee Members.

Implementation Through Existing Programs

The City of Lomita addresses citywide planning goals and legislative requirements through its Capital Improvement Plans, and State Building & Safety Codes. The Natural Hazard Mitigation Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs. The City of Lomita will have the opportunity to implement recommended mitigation action items through existing programs and procedure.

Economic Analysis of Mitigation Projects

The Federal Emergency Management Agency's approach to identify costs and benefits associated with natural hazard mitigation strategies or projects fall into two general categories: benefit/cost analysis and cost-effectiveness analysis. Conducting benefit/cost analysis for a mitigation activity can assist the City in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating natural hazards can provide decision makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

Formal Review Process

The City of Lomita Natural Hazards Mitigation Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process includes a firm schedule and timeline, and identifies the local agencies and organizations participating in plan evaluation. The Convener will be responsible for contacting the City's Hazard Mitigation Steering Committee members and organizing the annual meeting. Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan.

Continued Public Involvement

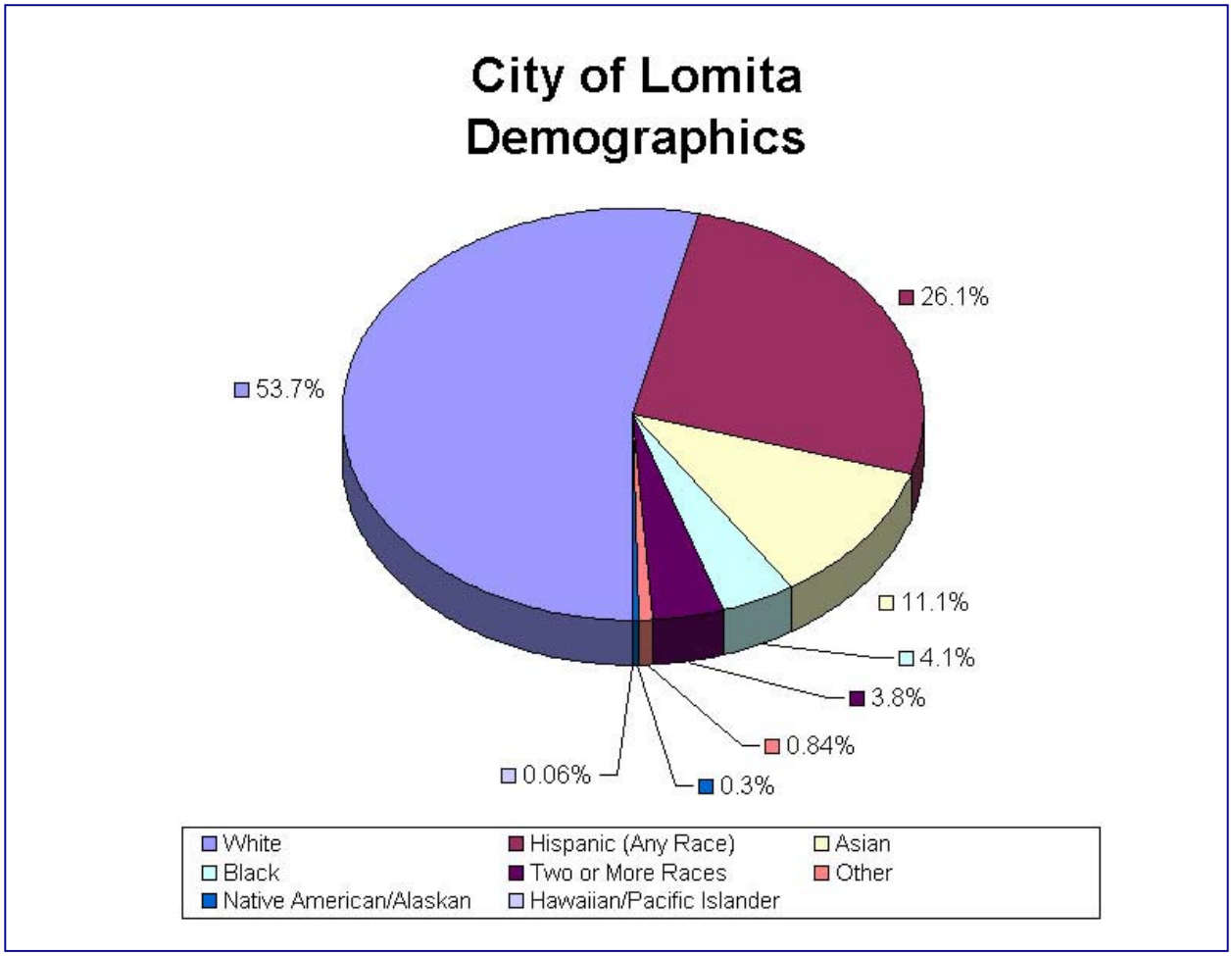
The City of Lomita is dedicated to involving the public directly in the continual review and updates of the Hazard Mitigation Plan. Copies of the plan will be made available at the City administrative office and at each City facility. In addition, copies of the Plan and any proposed changes will be posted on the City of Lomita website. This site will also contain an e-mail address and phone number to which people can direct their comments and concerns.

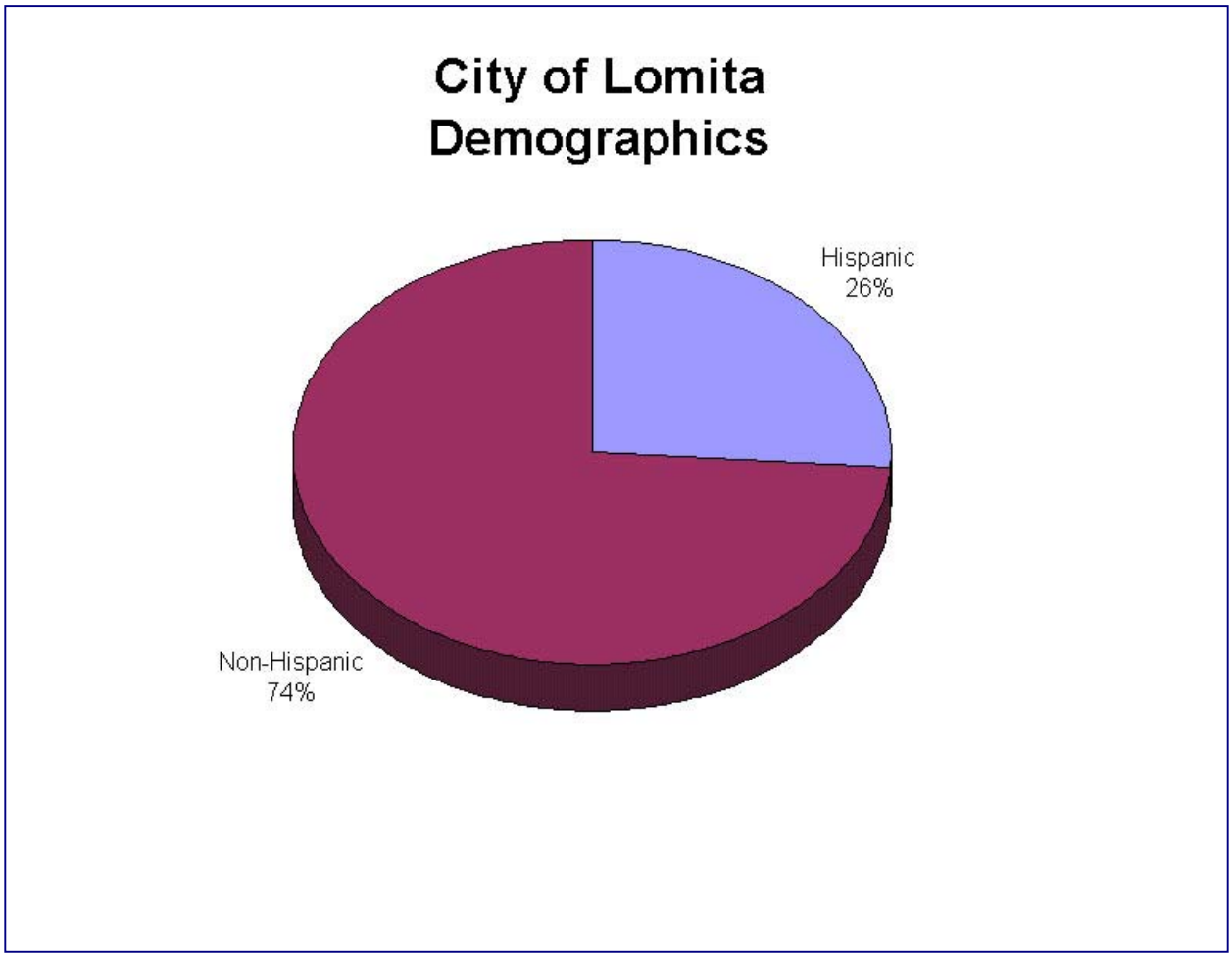
City Profile

The City of Lomita was incorporated on June 30, 1964. The City of Lomita is comprised of an area of approximately 1.97 square miles located approximately 26 miles south of the City of Los Angeles City Hall.

The City of Lomita has a population of over 20,000 (2000 Census Data). The City employs 49 full-time employees.

City demographics, as shown in the graphs below and on the following page, include: 0.3% American Indian and Alaska Native; 11.1% Asian; 4.1% Black or African American; 0.6% Native Hawaiian and Other; 53.7% White; 3.8% are two or more races. Hispanics (any race) comprise 26.1% of the population of the City.





The City of Lomita is comprised of a total of 8,015 households of which 5,033 (62.8%) are family households and 2,982 (37.2%) are non-family households.

Total housing units in the City total 8,295 with 8,015 (96.6%) are occupied housing units, 280 (3.4%) are vacant housing units. Of these total households, 3,739 (46.7%) are occupied by the homeowner and 4,276 (53.3%) are renter occupied.

Utilities
Southern California Edison

The Federal Emergency Management Agency's Hazard Mitigation Planning Program encourages integrated planning between utilities and the cities and counties they serve.

In order to meet the hazard mitigation planning needs of communities we serve, we have developed this document to provide an overview of our own hazard mitigation and planning process. You may use this document within your local planning process to affirm that we at Southern California Edison (SCE) have taken the necessary pre-disaster steps to mitigate threats to our electric system.

SCE is committed to providing reliable electric service to our customers. We have an emergency preparedness program in place to address pre- and post-disaster planning needs. Additionally, we have developed the necessary plans to allow SCE to communicate post-disaster with the jurisdictions we serve and, as necessary, to integrate our response activities with theirs. Finally, we have assessed the vulnerability of our equipment to hazards and have taken steps to mitigate that vulnerability.

Planning

The California Public Utilities Commission (PUC), which regulates SCE, has devoted considerable attention to disaster preparedness and system response. SCE has undertaken an all-hazards approach to planning for an emergency event. The plans are updated annually and employees are trained on these plans. Plan contents are specified by the PUC's General Order No. 166, Standards for Operations, Reliability, and Safety during Emergencies and Disasters. A summary of General Order No. 166 is attached.

SCE's Emergency Response & Recovery Plan provides a framework for coordinating and integrating the response and recovery for all of SCE's business units and departments during emergency situations, in order to meet our goal of providing safe and reliable electric service. As an event begins to develop and increase in magnitude, SCE takes the appropriate actions to increase its readiness. Actions taken during normal operations are elevated to respond to a more serious situation. These increased actions may include:

- Activation of Emergency Response & Recovery Plans
- Activation of the Emergency Information Coordination Center, Emergency Operation Center, or Mobile Command Center
- Mobilization of resources such as manpower and equipment

- Escalation of the amount of material and equipment on hand
- Communication of emergency and safety information to the public

Testing the Plans

SCE tests its plans annually through a corporate emergency preparedness exercise. Hundreds of employees from organizations across the company participate in these exercises. In addition to this annual exercise, the company also conducts "tabletop" exercises that provide an opportunity to discuss and walk through our plans for response to specific emergency events. Two examples of recent exercise scenarios are the introduction of a computer virus to our system and response to an emergency declared by the California Independent System Operator that resulted in rotating electric service outages. We conduct other drills of a smaller scale throughout the company to test and train on specific emergency response procedures.

SCE also conducts an annual test of our Outage Notification Communication (ONC) system which is used to notify cities and counties of rotating outages.

SCE is committed to the safety and welfare of our employees. We train our employees through an annual Drop, Cover, & Hold Drill combined with an Evacuation Drill. These drills allow us to test our processes. Conducted at every company facility, these drills ensure that we reach the maximum number of employees possible. As part of the drill, selected employees from our engineering and facilities staff are organized and trained to provide building damage assessment immediately after major emergency events. Employee volunteers from throughout the company are organized and trained in light urban search and rescue.

Mutual Assistance

If an outage is of such proportions that customers are projected to be without service for an extended period of time and additional resources will significantly reduce that restoration time, SCE may request mutual assistance from other utilities to supplement Southern California Edison (SCE) crews. To assist in service restoration, SCE has entered into agreements with neighboring utilities through the California Utilities Emergency Association's Mutual Assistance Agreement. During such emergencies, SCE management may request to have crews of qualified electrical workers from these utilities sent to supplement SCE crews. SCE will also utilize the resources of organizations whose primary business is to supplement the workforce of electrical utilities with contract labor.

External Coordination

SCE has a long-standing relationship with the counties we serve. We meet regularly to keep local officials informed of ongoing issues related to the electric industry within California. Should it be necessary, direct contact information has been provided to appropriate county agencies. Dur-

ing an actual emergency, designated SCE representatives will be stationed at the affected county's Emergency Operations Center.

SCE is an active member of several operational area Terrorism Early Warning Groups, the Police Officer's Association of Los Angeles County, and the Chief Special Agents, along with a host of other state and federal organizations whose purpose is to share intelligence information. We are an active member of the California Utilities Emergency Association, providing coordinated utility response to major events. We are a leader in the Business and Industry Council for Emergency Planning and Preparedness, an organization devoted to enhancing emergency preparedness and contingency planning. We are supportive of the Emergency Preparedness Commission for the County and Cities of Los Angeles. We are active members of the state and many local Fire Safe Councils and other organizations devoted to enhancing the response capabilities of fire agencies. We are also active in numerous other organizations at the state and federal level and supporting the activities of the counties we serve.

SCE also provides educational brochures to its customers and contacts regarding electrical safety, generator safety, power outages, and many programs the company offers. Samples of some of these brochures are included in this package.

Mitigation

SCE's service territory is an area of high seismic activity. The company has specifically acted to mitigate the impacts of a seismic event on our electrical system. Recognizing that the location, time and magnitude of an earthquake cannot be precisely predicted, we forecast the maximum magnitudes and approximate boundaries of earthquakes on a probability basis by reviewing:

- Geological data and studies of earthquake records
- Depth, direction, geologic formation, location and proximity of faults that can induce earthquakes
- Accumulation of energy on a specific fault since its last major eruption

Some of the activities we have undertaken to mitigate potential damage include:

- Reinforcement of existing equipment / structures
    - Shock absorbing capability was added at base of transformer bushings.
    - Anchorages were reinforced at base of transformers.
    - Braces were added at bottom of transformer radiators.
- Changes in equipment layouts to reduce interactions among substation equipment
    - Surge arrestors were relocated away from transformers to independent supports.

    - Extra length of conductors (cables) was provided between equipment.

- Adoption of seismic-safe models and new material
    - Live tank circuit breakers were replaced with dead tank circuit breakers at every opportunity to lower the center of gravity and reduce internal seismic loads.
    - Conventional porcelain insulators were replaced with polymer / silicon rubber insulators in selective applications to reduce seismic loads.
    - High-strength insulators are used more generously throughout the system.

Continuous upgrades to engineering design criteria based on the latest industrial progress, geotechnical findings, and Code revisions. For instance, Dynamic Shake Table Tests were recently made mandatory for certain equipment in addition to analytical design.

It is not economical, if even possible, to build an electric system which is impervious to earthquake damage. Instead, SCE focuses its efforts on mitigating earthquake damage within reasonable costs in order to minimize the loss of electric service when earthquake damage occurs. One such effort is an SCE program to utilize information related to equipment and locations of vulnerability in the electric system to make resources available to minimize the time needed to bring the system back to service.

We work closely with other utilities, organizations, research institutes, and manufacturers on earthquake-related tasks. Some of these activities are:

- Tri-Net earthquake monitoring system of the California Institute of Technology provides updated earthquake data and information electronically. We are then able to use this data to determine probable areas of damaged facilities.
- PEER (Pacific Earthquake Engineering Research), a joint effort of electric utilities on the west coast of the United States and Canada. This provides SCE:
- Channels to exchange technical information and experiences among utilities.
- Opportunities to influence the seismic design criteria used by substation equipment manufacturers through joint purchase power.
- As a member of IEEE (Institute of Electrical & Electronics Engineers) Subcommittee 693, SCE contributes to the development of IEEE's Recommendations and Standards of Substation Equipment Seismic Design.

Summary of General Order No. 166

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA
Standards for Operation, Reliability, and Safety
During Emergencies and Disasters
Adopted July 23, 1998. Effective July 23, 1998.
(D.98-07-097 in R.96-11-004)
Revised May 4, 2000 Effective May 4, 2000
(D.00-05-022 in R.96-11-004)

Applicability: This General Order applies to all electric utilities subject to the jurisdiction of the CPUC with regard to matters relating to electric service reliability and/or safety.

Purpose: The purpose of these standards is to insure that jurisdictional electric utilities are prepared for emergencies and disasters in order to minimize damage and inconvenience to the public which may occur as a result of electric system failures, major outages, or hazards posed by damage to electric distribution facilities. The standards will facilitate the Commission's investigations into the reasonableness of the utility's response to emergencies and major outages. Such investigations will be conducted following every major outage, pursuant to and consistent with Public Utilities Code Section 364(c) and Commission policy.

Summary: The following rules require each jurisdictional electric utility to:

- Prepare an emergency response plan and update the plan annually. Standard 1.
- Enter into mutual assistance agreements with other utilities. Standard 2.
- Conduct annual emergency training and exercises using the utilities emergency response plan. Standard 3.
- Develop a strategy for informing the public and relevant agencies of a major outage. Standard 4.
- Coordinate internal activities during a major outage in a timely manner. Standard 5.
- Notify relevant individuals and agencies of an emergency or major outage in a timely manner. Standard 6.
- Evaluate the need for mutual assistance during a major outage. Standard 7.
- Inform the public and relevant public safety agencies of the estimated time for restoring power during a major outage. Standard 8.
- Train additional personnel to assist with emergency activities. Standard 9.
- Coordinate emergency plans with state and local public safety agencies. Standard 10.

- File an annual report describing compliance with these standards. Standard 11.
- Be subject to a restoration performance benchmark for major outages. Standard 12.
- Be subject to a call center performance benchmark for major outages. Standard 13.

City of Lomita
Sites and Facilities

Site #1

Name of Building: **City Hall**
Physical Address: 24300 Narbonne Ave, Lomita, CA 90717
Date Built: 1964 Square Footage: 20,000
Purpose: City Hall – Conduct City Business
Type of Structure: Concrete Block
Roof Composition: Built Up Composite
Renovations (Qualifies as Seismic Retrofit? ❒ Yes ❒ No)

Details of Renovation	Date	Cost
#1		$
#2		$
#3		$

General Condition ❒ Excellent ❒ Good **X** Fair ❒ Poor
Comments:

Site #2

Name of Building: **Lomita Park – Tom Rico Recreation Center**

Physical Address: 24428 Eshelman Ave., Lomita, CA 90717

Date Built: 1964 Square Footage: 20,000

Purpose: Recreation Center and Gymnasium

Type of Structure: n/a

Roof Composition: n/a

Renovations (Qualifies as Seismic Retrofit? ❒ Yes ❒ No)

Details of Renovation	Date	Cost
#1		$
#2		$
#3		$

General Condition ❒ Excellent **X** Good ❒ Fair ❒ Poor

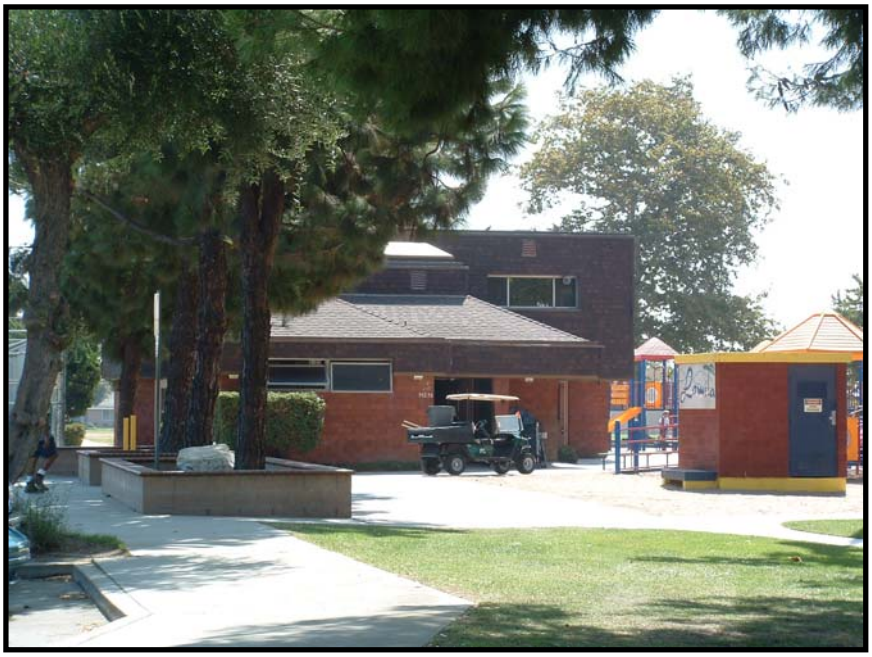
Comments:

Site #3

Name of Building: **Lomita Park – Stephenson Center**
Physical Address: 24428 Eshelman Avenue, Lomita, CA 90717
Date Built: 1964 Square Footage: 5,000
Purpose: Office and Recreation Support Building
Type of Structure: n/a
Roof Composition: Shingle
Renovations (Qualifies as Seismic Retrofit? ❒ Yes ❒ No)

Details of Renovation	Date	Cost
#1		$
#2		$
#3		$

General Condition ❒ Excellent ❒ Good **X** Fair ❒ Poor
Comments:



Site #4

Name of Building: **Cypress Reservoir**
Physical Address: 2275 West 262nd Street, Rolling Hills Estates, CA
Date Built: 1929 Square Footage: 8,841
Purpose: Water Reservoir
Type of Structure: n/a
Roof Composition: n/a
Renovations (Qualifies as Seismic Retrofit? ❒ Yes ❒ No)

Details of Renovation	Date	Cost
#1		$
#2		$
#3		$

General Condition ❒ Excellent ❒ Good **X** Fair ❒ Poor
Comments:

Site #5

Name of Building: **Public Works Building**
Physical Address: 24373 Walnut Avenue, Lomita, CA 90717
Date Built: 1964 Square Footage: 7,000
Purpose: Public Works Building/Storage
Type of Structure: Metal
Roof Composition: n/a
Renovations (Qualifies as Seismic Retrofit? ❒ Yes ❒ No)

Details of Renovation	Date	Cost
#1		$
#2		$
#3		$

General Condition ❒ Excellent ❒ Good **X** Fair ❒ Poor
Comments:

Site #6

Name of Building: **Lomita Manor**
Physical Address: 24925 Walnut Avenue
Date Built: 1985 Square Footage: 60,000
Purpose: 77-unit low-income senior project
Type of Structure: n/a
Roof Composition: Tile
Renovations (Qualifies as Seismic Retrofit? ❒ Yes ❒ No)

Details of Renovation	Date	Cost
#1		$
#2		$
#3		$

General Condition ❒ Excellent **X** Good ❒ Fair ❒ Poor
Comments:

Site #7

Name of Building: Lomita Railroad Museum
Physical Address: 2137 West 250th Street, Lomita, CA 90717
Date Built: 1966 Square Footage: 1,090
Purpose: Museum
Type of Structure: n/a
Roof Composition: Shingle
Renovations (Qualifies as Seismic Retrofit? ❒ Yes ❒ No)

Details of Renovation	Date	Cost
#1		$
#2		$
#3		$

General Condition ❒ Excellent **X** Good ❒ Fair ❒ Poor
Comments:

Site #8

Name of Building: **Pump Station**
Physical Address: 26255 Appian Way
Date Built: 1964 Square Footage: 1,000
Purpose: Water Pumping Station
Type of Structure: n/a
Roof Composition: Shingle
Renovations (Qualifies as Seismic Retrofit? ❒ Yes ❒ No)

Details of Renovation	Date	Cost
#1		$
#2		$
#3		$

General Condition ❒ Excellent **X** Good ❒ Fair ❒ Poor
Comments:

Section 1
Introduction

Throughout history, the residents of the City of Lomita have dealt with the various natural hazards affecting the area. Photos, journal entries, and newspapers from the 1800's show that the residents of the area dealt with earthquakes, flooding and severe weather occasions.

Although there were fewer people in the area, the natural hazards adversely affected the lives of those who depended on the land and climate conditions for food and welfare. As the population continues to increase, the exposure to natural hazards creates an even higher risk than previously experienced.

The City of Lomita is the 67th most populous city in Los Angeles County with an approximate population of 20,593[1], and offers the benefits of living in a Mediterranean climate. As stated in a 1927 City brochure "Lomita has an ideal climate. The warm sunshine of summer is fanned by the cool - ocean breeze and every day is made pleasant. In the winter a glorious sun casts its warmth over Lomita and produces a delightful and invigorating climate."[2] The City is characterized by the unique and attractive landscape that makes the area so popular. However, the potential impact of natural hazards associated with the terrain make the environment and population vulnerable to natural disaster situations.

The geographical area is subject to earthquakes, severe weather occasions, low risk for landslides and subject to localized flooding. It is impossible to predict exactly when these disasters will occur, or the extent to which they will affect the City. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the losses that can result from these natural disasters.

Why Develop a Mitigation Plan?

As the costs of damage from natural disasters continue to increase, the community realizes the importance of identifying effective ways to reduce vulnerability to disasters. Natural hazard mitigation plans assist communities in reducing risk from natural hazards by identifying resources, information, and strategies for risk reduction, while helping to guide and coordinate mitigation activities throughout the City.

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[1] 2000 U.S. Census Data.

[2] 1927 Lomita California brochure (see http://www.lomita.com/cityhall/about/1927brochure/index.html)

The plan provides a set of action items to reduce risk from natural hazards through education and outreach programs and to foster the development of partnerships, and implementation of preventative activities such as land use programs that restrict and control development in areas subject to damage from natural hazards.

The resources and information within the Mitigation Plan:

- Establish a basis for coordination and collaboration among agencies and the public in the City of Lomita.
- Identify and prioritize future mitigation projects; and
- Assist in meeting the requirements of federal assistance programs.

The mitigation plan works in conjunction with other existing plans, including the City of Lomita General Plan and SEMS Multi-hazard Functional Plan.

Whom Does the Mitigation Plan Affect?

The City of Lomita Natural Hazards Mitigation Plan affects the 1.97 square mile area that lies within the boundaries of the City.

Map 2 (Appendix E), shows major roads in the City of Lomita. This plan provides a framework for planning for natural hazards. The resources and background information in the plan are applicable throughout the City of Lomita.

Natural Hazard Land Use Policy in California

Planning for natural hazards should be an integral element of any city, district, or agency land-use planning program.

The continuing challenge faced by local officials and state government is to keep the network of local plans effective in responding to the changing conditions and needs of California's diverse communities, particularly in light of the very active seismic region in which we live.

This is particularly true in the case of planning for natural hazards where communities must balance development pressures with detailed information on the nature and extent of hazards.

Planning for natural hazards, calls for local plans to include inventories, policies, and ordinances to guide development in hazard areas. These inventories should include the compendium of hazards facing the City, the built environment at risk, the personal property that may be damaged by hazard events, and most of all, the people who live in the shadow of these hazards.

Support for Natural Hazard Mitigation

All mitigation is local, and the primary responsibility for development and implementation of risk reduction strategies and policies lies with local jurisdictions. Local jurisdictions, however, are not alone. Partners and resources exist at the regional, state and federal levels. Numerous California state agencies have a role in natural hazards and natural hazard mitigation. Some of the key agencies include:

- The Governor's Office of Emergency Services (OES) is responsible for disaster mitigation, preparedness, response, recovery, and the administration of federal funds after a major disaster declaration;

- The Southern California Earthquake Center (SCEC) gathers information about earthquakes, integrates this information on earthquake phenomena, and communicates it to end-users and the general public to increase earthquake awareness, reduce economic losses, and save lives.

- The California Division of Forestry (CDF) is responsible for all aspects of wildland fire protection on private and state land, and administers forest practices regulations, including landslide mitigation, on non-federal lands.

- The California Division of Mines and Geology (DMG) is responsible for geologic hazard characterization, public education, the development of partnerships aimed at reducing risk, and exceptions (based on science-based refinement of tsunami inundation zone delineation) to state mandated tsunami zone restrictions; and

- The California Division of Water Resources (DWR) plans, designs, constructs, operates, and maintains the State Water Project; regulates dams, provides flood protection and assists in emergency management. It also educates the public, and serves local water needs by providing technical assistance.

Plan Methodology

Information in the Mitigation Plan is based on research from a variety of sources. Staff from the City of Lomita conducted data research and analysis, facilitated Steering Committee meetings and public workshops, and developed the final mitigation plan. The research methods and various contributions to the plan include:

Input from the Steering Committee:

Prior to each Steering Committee meeting a core group of consultants, City administrative officials, and the City Manager, gathered together to assign research tasks and develop Steering Committee meeting agendas. The City of Lomita Hazard Mitigation Steering Committee convened about 7 weeks (a total of 7 meetings) to guide development of the Mitigation Plan. The Committee played an integral role in developing the mission, goals, and action items for the

mitigation plan. The Committee consisted of representatives of public and private agencies and organizations in the City of Lomita.

State and federal guidelines and requirements for mitigation plans:

Following are the federal requirements for approval of a Natural Hazard Mitigation Plan:

- Open public involvement, with public meetings that introduce the process and project requirements.
- The public must be afforded opportunities for involvement in: identifying and assessing risk, drafting a plan, and public involvement in approval stages of the plan.
- Community cooperation, with opportunity for other local government agencies, the business community, educational institutions, and non-profits to participate in the process.
- Incorporation of local documents, including a City Facility Master Plan, Building Codes, and other pertinent documents.

The following components must be part of the planning process:

- Complete documentation of the planning process;
- A detailed risk assessment on hazard exposures in the community;
- A comprehensive mitigation strategy, which describes the goals and objectives, including proposed strategies, programs and actions to avoid long-term vulnerabilities;
- A plan maintenance process, which describes the method and schedule of monitoring, evaluating and updating the plan and integration of the All Hazard Mitigation Plan into other planning mechanisms;
- Formal adoption by the City of Lomita City Council; and
- Plan Review by both State OES and FEMA.

These requirements are spelled out in greater detail in the following plan sections and supporting documentation.

A minimum of two public hearings (or other public forums) is recommended to meet the requirement for public participation, in addition to the inclusion of representatives from outside organizations on the planning committee itself. The timing and scheduling of the hearings may vary, but will generally be held during a City Council meeting.

City of Lomita staff examined existing mitigation plans from around the country, current FEMA hazard mitigation planning standards (386 series) and the State of California Natural Hazards Mitigation Plan Guidance.

Other reference materials consisted of county and city mitigation plans, including:

- Clackamas County (Oregon) Natural Hazards Mitigation Plan
- Six County (Utah) Association of Governments
- Upper Arkansas Area Risk Assessment and Hazard Mitigation Plan
- Urbandale-Polk County, Iowa Plan
- Hamilton County, Ohio Plan
- Baldwin Park Unified School District (California)
- Southern California Edison

Hazard specific research: City of Lomita staff collected data and compiled research on four (4) hazards: earthquakes, windstorms/adverse weather occasions, landslides, and localized flooding. Research materials came from state agencies including OES and FEMA. The City of Lomita staff conducted research by referencing historical local newspapers, researching the Internet and locating the City of Lomita information in historical documents.

The City of Lomita Hazard Mitigation Steering Committee identified current mitigation activities, resources and action items for those research materials.

Public Hearings

The City of Lomita staff facilitated three hearings to gather comments and ideas from citizens residing in the City of Lomita about mitigation planning and priorities for mitigation plan goals. Although the public hearing targeted citizens within the City, public notification welcomed any interested party to participate in the process. The public hearings were held March 15, 2004, May 10, 2004 and November 1, 2004.

The resources and information cited in the mitigation plan provide a strong local perspective and help identify strategies and activities to make the City of Lomita more disaster resilient.

How Is the Plan Used?

Each section of the mitigation plan provides information and resources to assist people in understanding the City of Lomita and the hazard-related issues facing citizens, businesses, and the environment. Combined, the sections of the plan work together to create a document that guides the mission to reduce risk and prevent loss from future natural hazard events.

The structure of the plan enables people to use a section of interest to them. It also allows City of Lomita staff to review and update sections when new data becomes available. The ability to update individual sections of the mitigation plan places less of a financial burden on the City of

Lomita. Decision-makers can allocate funding and staff resources to selected pieces in need of review, thereby avoiding a full update, which can be costly and time-consuming. New data can be easily incorporated, resulting in a natural hazards mitigation plan that remains current and relevant to the City of Lomita.

The mitigation plan is organized in three parts. Part 1 contains an executive summary, introduction, City profile, risk assessment and multi-hazard plan maintenance. Part II contains the four natural hazard sections and Part III includes the appendices. Each section of the plan is described below.

Executive Summary: Five-Year Action Plan

The Five-Year Action Plan provides an overview of the mitigation plan mission, goals, and action items. The plan action items are included in this section, and address multi-hazard issues, as well as hazard-specific activities that can be implemented to reduce risk and prevent loss from future natural hazard events.

Section 1: Introduction

The introduction describes the background and purpose of developing the mitigation plan for the City of Lomita.

Section 2: Community Profile

This section presents the history, geography, demographics, and socioeconomics of the City of Lomita. It serves as a tool to provide an historical perspective of natural hazards affecting the City and the communities it serves.

Section 3: Risk Assessment

This section provides information on hazard identification, vulnerability and risk associated with natural hazards in the City of Lomita.

Section 4: Multi-Hazard Goals and Action Items

This section provides information on the process used to develop goals and action items that cut across the four natural hazards addressed in the mitigation plan.

Section 5: Plan Maintenance

This section provides information on plan implementation, monitoring and evaluation.

Part II: Hazard Specific Information

Hazard Specific Information on four chronic hazards are addressed in this plan. Chronic hazards occur with some regularity and may be predicted through historic evidence and scientific methods. The chronic hazard addressed in the plan include:

- Section 2: Earthquakes
- Section 3: Windstorms/Adverse Weather Occasions
- Section 4: Localized Flooding
- Section 5: Landslides

Catastrophic hazards do not occur with the frequency of chronic hazards, but can have devastating impacts on life, property, and the environment. In Southern California, because of the geology and terrain, earthquake, earth movement, flooding and wildfire also have the potential to be catastrophic as well as chronic hazards. For the coastal areas of Southern California, tsunamis, while very rare, have the potential to calamitously devastate low-lying coastal areas. The City of Lomita is not threatened by the tsunamis.

Each of the hazard specific sections includes information on the history, hazard causes and characteristics, hazard assessment, goals and action items, and local, state, and national resources.

Part III: Resources

The plan appendices are designed to provide users of the City of Lomita Natural Hazards Mitigation Plan with additional information to assist them in understanding the contents of the mitigation plan, and potential resources to assist them with implementation.

Appendix A: Plan Resource Directory

The resource directory includes city, regional, state, and national resources and programs that may be of technical and/or financial assistance to the City of Lomita during plan implementation.

Appendix B: Public Participation Process

This appendix includes specific information on the various public processes used during development of the plan.

Appendix C: List of Acronyms

This section provides a list of acronyms for city, regional, state, and federal agencies and organizations that may be referred to within the City of Lomita Natural Hazards Mitigation Plan.

Appendix D: Glossary

This section provides a glossary of terms used throughout the plan.

Appendix E: List of Maps

This section provides all of the maps referenced throughout the plan.

Section 2
Community Profile

Why Plan for Natural Hazards in the City of Lomita

Natural hazards impact citizens, staff, and property of the City of Lomita. Earthquakes could expose City of Lomita citizens and staff to the financial and emotional costs of recovering after natural disasters. The risk associated with natural hazards increases as more people move to areas affected by natural hazards.

Even in those communities that are essentially “built-out”, i.e., have little or no vacant land remaining for development, population density continues to increase as low-density housing is replaced with medium and high-density development projects.

The City of Lomita consists of 1.97 square miles.

The inevitability of natural hazards, and growing population and activity within the City create an urgent need to develop strategies, coordinate resources, and increase public awareness to reduce the risk and prevent loss from future natural events. Identifying the risks posed by natural hazards, and developing strategies to reduce the impact of a hazard event can assist in protecting life and property within the City. The City’s residents and businesses can work together with the City to create a natural hazard plan that addresses the potential impacts of hazard events.

Geography and the Environment

The City of Lomita, a South Bay City, is located approximately 26 miles south of the City Los Angeles City Hall near Interstate 110 and Pacific Coast Highway (SR-1) and covers 1.97 square miles. The City of Lomita has an elevation between 55 and 340 feet. City Hall is approximately 85 feet above sea level.

City of Lomita Profile

The earliest known inhabitants of Southern California probably arrived before 9000BC, based on radiocarbon dates of artifacts found on the Channel Islands.

Evidence of the earliest known indigenous inhabitants of Lomita and environs, the Gabrielino Indians, has been found in a village they called Suangna, or "Place of the Rushes", near what is now the intersection of 230th Street and Utility Way in Carson. Remnants of this village remained even as late as the 1850s.

Lomita's part in the Spanish period of California's history begins in 1542, when Juan Rodriguez Cabrillo sailed into Bahia de los Humos, or Bay of Smoke as he called it, followed by Sebastian Viscaino in 1603, who renamed it San Pedro Harbor, after Saint Peter.

Things remained relatively quiet until 1784, when a Spanish soldier named Juan Jose Dominguez, a member of the Portola Expedition, requested and received permission to use 75,000 acres of land in Southern California from Don Pedro Fages, the Spanish Governor of California. Rancho San Pedro, the first land grant to be bestowed in California by King Charles III of Spain, stretched from the Los Angeles River to the Pacific Ocean and included what would become the cities of Carson, Torrance, Redondo Beach, Lomita, Wilmington, and parts of San Pedro.

At about the same time, the Sepulvedas established and started raising cattle on Rancho Los Palos Verdes, which caused quite a stir with the Dominguez family, as the Sepulvedas hadn't actually received a land grant. They quarreled often, present day Lomita laying at the boundary of their dispute, which they didn't resolve until 1841, when the Sepulvedas finally acquired grant of land including present day Lomita.

The rancheros flourished until the 1860s, when a series of natural disasters hit Southern California:

- Too much rain in 1861
- Too little in 1862
- A paralyzing small pox epidemic in 1862
- The ravaging of grazing lands by swarms of grasshoppers in 1863
- No rain in 1864
- The utter destruction of the region's cattle herds by 1865

The rancheros foundered. Due to delinquent taxes and mortgage foreclosures, Rancho Los Palos Verdes was divided up and sold to 17 different buyers in 1882. Most of the land that constitutes present day Lomita was sold to a farmer named Ben Weston and the Ranch Water Company, which sheep farmer Nathaniel Andrew Narbonne, who was born in Salem, Massachusetts. Narbonne received 3,500 acres.

Narbonne had moved to Lomita from Sacramento's gold rush country in 1852. He had initially worked with General Phineas Banning in Wilmington and later, with partner Ben Weston, grew wheat and raised sheep on Santa Catalina Island.

Municipal History of Lomita

Although there's no question that Lomita derives its name from the Spanish for "little hills," there is apparently some disagreement over just who originally bestowed the name.

One source claims Lomita was named by the early promoters of the district as they surveyed it from a hillside in Rancho Palos Verdes. Another source claims that "Lomita del Toro", or "little hills of the bull," appears on an early surveyor's map of Rancho San Pedro, just a few miles east of the present day city, implying that Lomita inherited its name from the local fauna.

In any case, probably the biggest event in Lomita's early municipal history occurred in 1907, when the W. I. Hollingsworth Company purchased a large tract of land just north of the Palos Verdes hills. The company intended to make the seven square mile subdivision a Dunkard colony after several of its clients, who were Dunkards, had expressed an interest in founding a settlement in the Los Angeles area.

Development began soon afterwards. J. H. Pickering, a grading contractor, was hired to plow the roads and A. L. McSwain, a well driller, was hired to sink four water wells. Both men ended up living on the land they helped develop.

Other notable early settlers of Lomita include farmer M. M. Eshelman, considered by his peers to be the pioneer of the colony, and J. A. Smith, a miner and budding realtor who, in 1909, bought up 160 acres of land in Lomita and sold it for a nice profit to all of his Arizona mining buddies.

A school, general store (including a post office), and other businesses quickly followed. In 1909, the first churches in Lomita were built.

In 1921, heirs of Nathaniel Narbonne donated a parcel of property to Los Angeles on which to build a school to be named after their ancestor, which is today Fleming Middle School at 25425 Walnut Street. In 1958, Narbonne High School moved from Walnut Street to 24300 South Western Avenue in Harbor City.

Just as Lomita has its share of players and pioneers, so it has its share of stories too.

In a scene reminiscent of the movie "The Two Jakes," the water pump attached to the first well A. L. McSwain sank kept failing sporadically. C. B. Hollingsworth and H. E. Covert, Hollingsworth's sales agents for Lomita, were called out to determine why. Covert took a seat near the water discharge pipe, musing. He lit a cigar and tossed the lit match near the pipe, which exploded in his face, nearly knocking him over. Little did he and the company realize at the time that that pocket of natural gas augured an oil boom that would change the face of Lomita forever.

Not that they weren't given a few bizarre hints along the way. Mrs. Carvill, a local Spiritualist dubiously associated with the company's principal, confided to him more than once that she had had visions of a "very black substance underneath the ground" on which McSwain was sinking the wells, and was worried that it might contaminate the water.

Notwithstanding premonitory explosions and Spiritualist visions, however, it took Hollingsworth and company sixteen years to figure it out. And even then they weren't the discoverers. That distinction goes to a local character named "Tuck" Eaton. In 1923, Eaton sank a couple test oil wells on local land owned by Albert G. Sepulveda. And proceeded to strike it rich.

Property values skyrocketed. Lots that had originally been purchased for $300 to $400 sold for as much as $35,000. McSwain sold the ten acres he'd received for his services sixteen years earlier to the Los Angeles Board of Education for $80,000. When all was said and done, about 500 acres of the original tract of Lomita was given over to the oil industry. And never a dry hole was sunk.

Modern History of Lomita

As Lomita emerged from the boom and bust of the 1920s and crept slowly into the 1930s, it soon acquired a new reputation as "Celery Capital of the World" (although some claim it could just as easily have acquired the title "Strawberry Capital of the World" as well). Truck farming of vegetables, fruits, and eggs became the prevailing occupation of Lomita residents in the 1930s.

In early 1935, a vaudevillian named Frank A. Gumm of Grand Rapids, Minnesota leased the Lomita Theater, which was located on Narbonne Avenue near 243rd Street, to present his singing and dancing daughters Mary Jane, Dorothy Virginia, and Judy, who would later change her name to Judy Garland.

Other than its involvement in World War II, Lomita remained relatively quiet during the early 1940s. That quiet was disturbed in January 1944, however, when Army Air Corps pilot Merl Ogden, returning from a test flight of his Lockheed P-38 Lightning to the Lomita Flight Strip, now known as Zamperini Field, Torrance Municipal Airport, discovered that he couldn't lower his landing gear. He subsequently ran out of fuel and crashed into Lomita's Victory Garden. He died instantly.

After World War II, Lomita's population exploded. As the 1950s progressed, adjacent cities, including the cities of Torrance and Rolling Hills, attempted to annex major portions of the original subdivision, Torrance succeeding.

By the early 1960s, only 1.97 square miles of the original 7 square mile subdivision remained. And Torrance wanted more.

On June 30, 1964, after a couple of unsuccessful attempts, Lomita was incorporated as a city. In addition to halting annexation, incorporating was intended to curtail the development and construction of high-rise apartments, a serious concern at the time. As one long time resident put it, "there was a definite feeling that this should be kept a small town and not just a subsidiary for a big city. Most of the people who came here have in mind family situations. If they come here, they don't want a lot of swingers in apartments."

The 70s and 80s passed without much incident. In 1989, 1993, and again in 1999, Lomita tried unsuccessfully to withdraw from the Los Angeles Unified School District, claiming it wanted more control and better management of its schools' curriculum and spending. In 1990, the City had better luck with the County of Los Angeles, seceded from the water district, and assumed complete control and operation of Water District 13.

Although it's shrunk from its original 7 square miles to a meager 1.97 square miles, Lomita has managed not only to survive, but to mature. Boundary disputes, land divisions, natural disasters,

civil wars, world wars, and cold wars, oil booms, stock market busts, and even annexation to surrounding communities couldn't consume little Lomita.

From a simple ranch house and a few out-buildings on the Narbonne property, a sleepy narrow gauge electric railroad stop on Western Avenue, and a handful of dirt roads named after trees and fruits, Lomita has grown into a small city and, in spite of that growth, managed to maintain its rustic, small-town flavor.

Geography

The City of Lomita is located 26 miles south of downtown Los Angeles and is bounded by the City of Torrance on the north and west; the City of Los Angeles to the east; and the City of Rolling Hills Estates on the southwest. Southeast of Lomita is the City of Rancho Palos Verdes and unincorporated County land. The City's total land area is 1,261 acres or 1.97 square miles.

Freeway access to the City is provided indirectly by Pacific Coast Highway (SR-1) which runs in an east-west direction through the City's southern section. Pacific Coast Highway connects to the Harbor Freeway (SR-110) approximately 3.5 miles to the east. Crenshaw Boulevard and Western Avenue are major arterial roadways along the western and eastern borders of the City of Lomita and provide connections to the San Diego Freeway (I-405) approximately 8 miles to the north.

The City is almost completely developed and the remaining vacant land is limited to scattered parcels. Existing development in the City is characterized by residential neighborhoods at varying densities, with commercial uses concentrated along Pacific Coast Highway, Lomita Boulevard, Crenshaw Boulevard, Narbonne Avenue and Western Avenue.

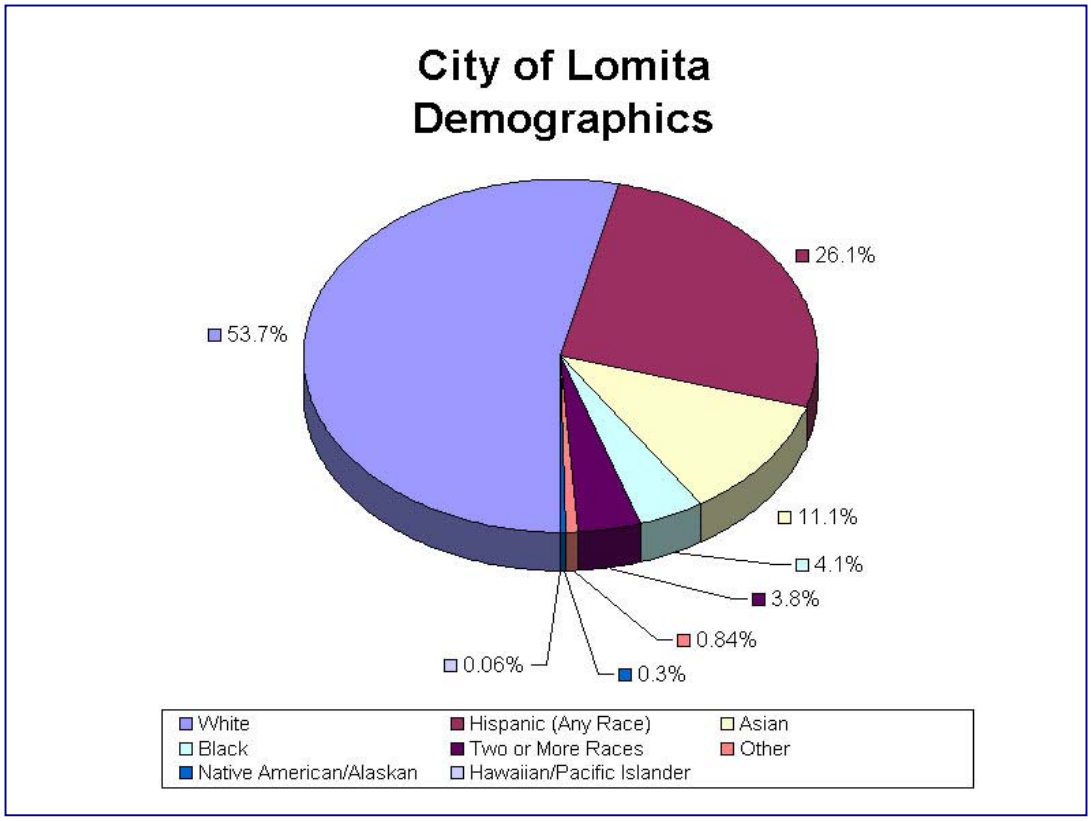
Population

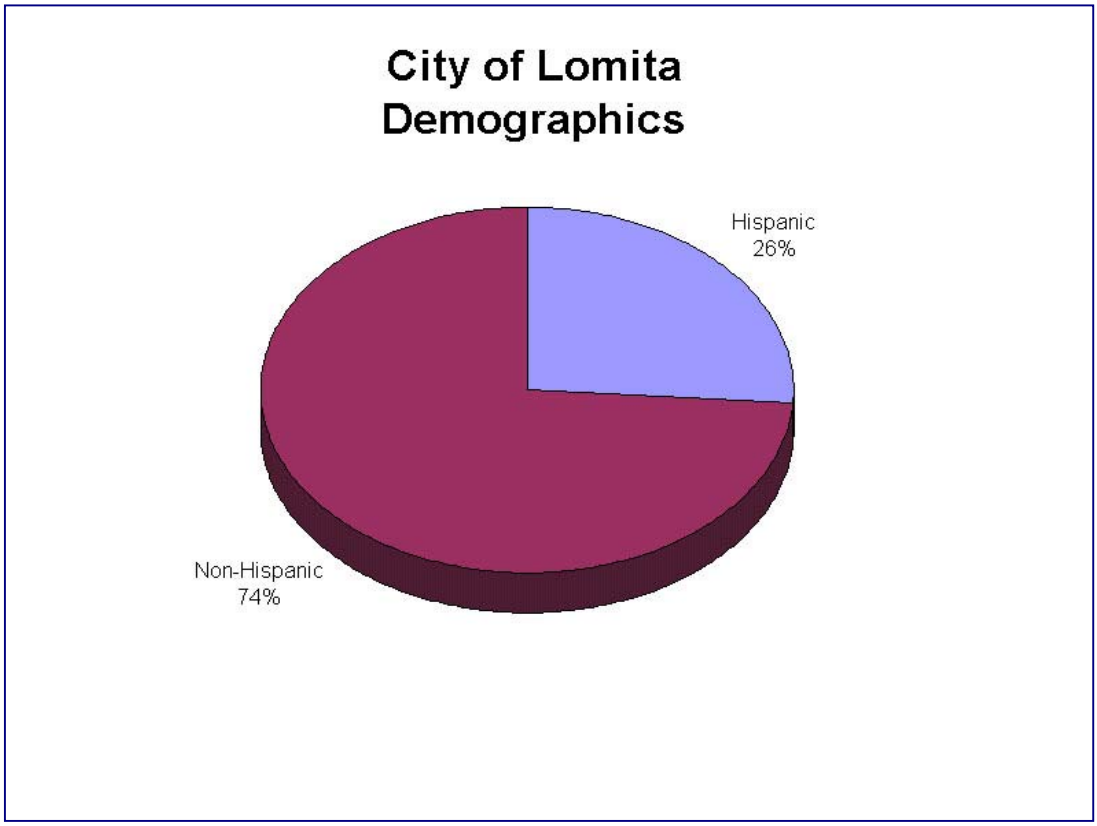
The City of Lomita has a population of 20,046 (2000 Census Data). The City employs 49 full-time employees.

City demographics, as shown in the graphs on the following page, include: 0.3% American Indian and Alaska Native; 11.1% Asian; 4.1% Black or African American; 0.6% Native Hawaiian and Other; 53.7% White; 3.8% are two or more races. Hispanics (any race) comprise 26.1% of the population of the City.

The City of Lomita is comprised of a total of 8,015 households of which 5,033 (62.8%) are family households and 2,982 (37.2%) are non-family households.

Total housing units in the City total 8,295 with 8,015 (96.6%) are occupied housing units, 280 (3.4%) are vacant housing units. Of these total households, 3,739 (46.7%) are occupied by the homeowner and 4,276 (53.3%) are renter occupied.


City of Lomita
Demographics
26.1%
53.7%
11.1%
4.1%
3.8%
0.84%
0.06%
0.3%
White
Hispanic (Any Race)
Asian
Black
Two or More Races
Other
Native American/Alaskan
Hawaiian/Pacific Islander


City of Lomita
Demographics
Hispanic
26%
Non-Hispanic
74%

The increase of people living in the area of the City of Lomita creates more community exposure and changes how the City prepares for and responds to natural hazards. In the 1987 publication, Fire Following Earthquakes, issued by the All Industry Research Advisory Council, Charles Scawthorn explains how a post-earthquake urban conflagration would develop. The conflagration would be started by fires resulting from earthquake damage, but would be made much worse by the loss of pressure in the fire mains, caused by lack of electricity to power water pumps, and/or loss of water pressure resulting from broken fire mains.

Increased density can affect risk. For example, narrower streets are more difficult for emergency service vehicles to navigate, the higher ratio of residents to emergency responders affects response times, and homes located closer together increase the chances of fires spreading.

The anticipated growth in population density over the next few years will create greater service loads on the built infrastructure, including roads, water supply, sewer services, and storm drains.

Natural hazards do not discriminate, but the impacts in terms of vulnerability and the ability to recover vary greatly among the population. According to Peggy Stahl of the Federal Emergency Management Agency (FEMA) Preparedness, Training, and Exercise Directorate, 80% of the disaster burden falls on the public. Within that number, a disproportionate burden is placed upon special needs groups: women, children, minorities, and the poor.

The ethnic and cultural diversity suggests a need to address multi-cultural needs and services.

The number of people that live at or below the poverty level in the City is approximately 9.3% of the population.

Vulnerable populations, including seniors, disabled citizens, women, and children, as well as those people living in poverty, may disproportionately be impacted by natural hazards.

Examining the reach of hazard mitigation policies to special needs populations may assist in the increasing access to services and programs. FEMA's Office of Equal Rights addresses this need by suggesting that agencies and organizations planning for natural disasters identify special needs populations, make recovery centers more accessible, and review practices and procedures to remedy any discrimination in relief application or assistance.

The cost of natural hazards recovery can place an unequal financial responsibility on the general population when only a small proportion may benefit from governmental funds used to rebuild private structures. Discussions about natural hazards that include local citizen groups, insurance companies, and other public and private sector organizations can help ensure that all members of the population are a part of the decision-making processes.

Based on Census records since the City was incorporated in 1964, the total population has remained relatively constant. The population from the 2000 Census was 20,046 persons. The following tables show population figures since 1970 and a breakdown of population by age:

Table 2.1 – Census Population 1970 – 2000				
Year	**1970**	**1980**	**1990**	**2000**
Population	19,784	18,807	19,382	20,046

The City of Lomita is primarily built out with the exception of a few scattered infill parcels. The population is expected to remain constant.

Table 2.2 – Total Population by Age							
Age	**Number**			**Percent**			**Males per 100 females**
	Both sexes	**Male**	**Female**	**Both sexes**	**Male**	**Female**	
Total population	**20,046**	**9,616**	**10,430**	**100.0**	**100.0**	**100.0**	**92.2**
Under 5 years	1,577	815	762	7.9	8.5	7.3	107.0
5 to 9 years	1,647	835	812	8.2	8.7	7.8	102.8
10 to 14 years	1,286	685	601	6.4	7.1	5.8	114.0
15 to 19 years	1,012	508	504	5.0	5.3	4.8	100.8
20 to 24 years	1,114	544	570	5.6	5.7	5.5	95.4
25 to 29 years	1,465	687	778	7.3	7.1	7.5	88.3
30 to 34 years	1,728	860	868	8.6	8.9	8.3	99.1
35 to 39 years	1,815	861	954	9.1	9.0	9.1	90.3
40 to 44 years	1,838	942	896	9.2	9.8	8.6	105.1
45 to 49 years	1,455	670	785	7.3	7.0	7.5	85.4
50 to 54 years	1,250	569	681	6.2	5.9	6.5	83.6
55 to 59 years	933	432	501	4.7	4.5	4.8	86.2
60 to 64 years	746	340	406	3.7	3.5	3.9	83.7
65 to 69 years	612	290	322	3.1	3.0	3.1	90.1
70 to 74 years	523	223	300	2.6	2.3	2.9	74.3
75 to 79 years	469	185	284	2.3	1.9	2.7	65.1
80 to 84 years	320	107	213	1.6	1.1	2.0	50.2
85 to 89 years	173	45	128	0.9	0.5	1.2	35.2
90 years and over	83	18	65	0.4	0.2	0.6	27.7

Table 2.2 – Total Population by Age							
Age	**Number**			**Percent**			**Males per 100 females**
	Both sexes	**Male**	**Female**	**Both sexes**	**Male**	**Female**	
Under 18 years	5,113	2,636	2,477	25.5	27.4	23.7	106.4
18 to 64 years	12,753	6,112	6,641	63.6	63.6	63.7	92.0
18 to 24 years	1,523	751	772	7.6	7.8	7.4	97.3
25 to 44 years	6,846	3,350	3,496	34.2	34.8	33.5	95.8
25 to 34 years	3,193	1,547	1,646	15.9	16.1	15.8	94.0
35 to 44 years	3,653	1,803	1,850	18.2	18.8	17.7	97.5
45 to 64 years	4,384	2,011	2,373	21.9	20.9	22.8	84.7
45 to 54 years	2,705	1,239	1,466	13.5	12.9	14.1	84.5
55 to 64 years	1,679	772	907	8.4	8.0	8.7	85.1
65 years and over	2,180	868	1,312	10.9	9.0	12.6	66.2
65 to 74 years	1,135	513	622	5.7	5.3	6.0	82.5
75 to 84 years	789	292	497	3.9	3.0	4.8	58.8
85 years and over	256	63	193	1.3	0.7	1.9	32.6
16 years and over	15,335	7,175	8,160	76.5	74.6	78.2	87.9
18 years and over	14,933	6,980	7,953	74.5	72.6	76.3	87.8
21 years and over	14,327	6,674	7,653	71.5	69.4	73.4	87.2
60 years and over	2,926	1,208	1,718	14.6	12.6	16.5	70.3
62 years and over	2,596	1,054	1,542	13.0	11.0	14.8	68.4
67 years and over	1,914	751	1,163	9.5	7.8	11.2	64.6
75 years and over	1,045	355	690	5.2	3.7	6.6	51.4
Median age (years)	35.5	34.2	36.5	(X)	(X)	(X)	(X)

Rail System

A Burlington Northern Santa Fe Railroad (BNSF) line is located approximately ½ mile northeast of the city limits in the City of Torrance. They are cargo haulers of agricultural products, coal, industrial products, etc.

About BNSF from the BNSF Website

While its predecessors number more than 330 and date back as early as 1849, Burlington Northern Railroad (BN) was created on March 2, 1970, by the merger of four primary railroads: Chicago, Burlington & Quincy Railroad Co. (CB&Q); Northern Pacific Railway Co. (NP); Great Northern Railway Co. (GN); and the Spokane, Portland and Seattle Railway Co. (SP&S). It is interesting to note that GN's first president, James J. Hill, attempted to merge GN and NP in 1893, only to have the merger denied by the U.S. government. In 1901, Hill again tried to merge the two railroads, this time with the CB&Q, but was turned down a second time. In fact, these railroads tried to merge four times (1893, 1901, 1927, 1961) before finally receiving ICC approval. Later, in 1980, the St. Louis-San Francisco Railway Co. (Frisco) was acquired and merged into BN. Each of BN's predecessor railroads played an important role in developing the American west and each has its own rich heritage. Hundreds of books have been published chronicling the colorful history of a number of these railroads, and some of the highlights are presented here.[3]

Air Travel

The City of Lomita is within a short drive of the Ontario (58.06 miles, a 60 minute drive), Burbank (36.49 miles, a 42 minute drive), Long Beach (10 miles, 17 minute drive) and Los Angeles (15.38 miles, a 25 minute drive) Airports.

Bus Transportation

The City of Lomita receives bus service from the Metropolitan Transit Authority (M.T.A.), which is the hub for bus transportation to and from Los Angeles. Routes that serve the City are T5, T9, 232, LX448, and GA2.

Major Rivers

No major rivers are adjacent to the City of Lomita. The City is within 9 miles of the Pacific Ocean.

[3] http://www.bnsf.com/about_bnsf/html/history.html

Climate

The climate in the City of Lomita is mild and dry with an average maximum summer temperature of 78 degrees and average minimum winter low of 45 degrees. The following tables illustrate monthly averages for temperature and precipitation (for the adjacent City of Torrance which has the closest monitoring station):

Table 2.3 – Monthly Average Maximum and Minimum Temperatures (Fahrenheit)

Avg. Temp	Jan	Feb	Mar	Apr	May	Jun
Max.	66.1	67.2	67.6	70.2	71.8	74.5
Min.	44.8	46.3	47.4	50.1	53.9	57.0
Avg. Temp	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Max.	78.2	79.4	78.7	76.4	71.6	67.3
Min.	60.5	61.5	60.1	56.0	49.6	45.3

Table 2.4 – Monthly Average Total Precipitation (Inches)

Jan	Feb	Mar	Apr	May	Jun	
3.41	2.82	2.18	0.87	0.19	0.06	**Annual**
July	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**13.51**
0.02	0.08	0.18	0.31	1.51	1.87	

http://www.losangelesalmanac.com/topics/Weather/we02.htm

The climate in the immediate area can be characterized as a Mediterranean climate. Temperatures can vary over a wide range, particularly when there is a Santa Ana wind condition. These winds will produce higher temperatures and very low humidity. During 2003, the highest temperature was recorded in August at 97 degrees and the lowest in December at 38 degrees.

The rainfall for the area averages 14.6 inches per year. The total for 2003 was slightly below average at 13.51 inches. However the term “average annual rainfall” can be misleading because over recorded history the area has had in excess of six inches of rainfall in a 24-hour period during El Nino. In the mid 1800’s the area experienced as much as 38 inches of annual rainfall.

Actual rainfall in Southern California tends to fall in large amounts during sporadic and often heavy rainstorms rather than consistently over storms at somewhat regular intervals. In short, rainfall in Southern California might be characterized as “feast or famine” within a single year.

Because the metropolitan basin is largely built out, water originating in higher elevation communities can have a sudden impact on adjoining communities that have a lower elevation.

Minerals and Soil

The City of Lomita is located on the gently rolling plain at the northeastern foot of the Palos Verdes Hills. The City is generally overlain with shallow deposits of alluvial materials. Ground elevations within the City range from 55 feet above mean sea level at the eastern section of Lomita to 134 feet above mean sea level at Pacific Coast Highway. At the southern section of the City, where the Palos Verdes Hills begin, the land is underlain by bedrock materials associated with the Palos Verdes Peninsula. Ground elevations within this area range from 100 to 310 feet above mean sea level.

The National Resources Conservation Service of the U.S. Department of Agriculture has classified soils in Lomita according to soil limitations and soil suitability. A soil association is a group of soils that have the same profile, arrangement, sequence of layers, or other characteristics. The City of Lomita is overlain by four soil associations; Oceano Association, Ramona-Placentia Association, five percent to nine percent slopes; Ramona-Placentia Association, two percent to five percent slopes; and Diablo-Altamont Association.

The Oceano Association is generally found in undulating dune-like areas at elevations below 100 feet above mean sea level. Natural drainage is excessive and soil permeability is rapid. Oceano soils consist primarily of grayish-brown sand layers underlain by light brownish-gray sand subsoils. They have moderate to high potential for wind erosion. Inherent fertility is low. These soils are found on the northern end of Lomita.

The Ramona-Placentia Association is found on gently rolling terraces and consists of 80 percent Ramona soils, fifteen percent Placentia soils, and five percent Hanford soils.

Ramona soils are brown to reddish-brown, heavy loam or sandy loam on the surface, with dense clay loam or clay subsoils. Some areas have 60 percent by volumes of stones and cobbles. Placentia soils are brown to reddish-brown loam or sandy loam on the surface, with dense dark reddish-brown clay loam in the subsoils. Some subsoils consist mainly of gravel.

Natural drainage is moderately good and soil permeability is slow to very slow for the Ramona-Placentia Association. Erosion hazard is slight to moderate and inherent fertility is low to moderate. The Ramona-Placentia Association, five percent to nine percent slopes, is found on the southeast section of the City and the Ramona-Placentia Association, two percent to five percent slopes, is found on the eastern section of the City.

The Diablo-Altamont Association consists of 60 percent Diablo soils and 30 percent Altamont soils. This association is found on gently sloping to rolling foothills, as found in the southern section of Lomita. Diablo soils have dark gray, neutral, clay surface layers with dark grayish-brown

clay subsoils. Outcrops of shale may be found in some places. Altamont soils are dark brown clay surface layers with brown clay subsoils.

The Diablo-Altamont Association is well-drained and soil permeability is slow. This association has a slight erosion hazard and inherent fertility is high. This soil association is present on the western section of Lomita.

Appendix E shows the distribution of these soil associations and the following table summarizes the characteristics of each association. Shrink-swell potential refers to the soils ability to change volume with a change in moisture content. This characteristic is influenced by the amount of moisture in the soil and the amount and kind of clay present. Soil pressure refers to the soil's ability to withstand pressure created by foundations, equivalent to as much as 1,000 pounds per square foot. Runoff potential refers to the soil's infiltration rate when thoroughly wetted. Soils that have a high rate of water transmission would result in a low runoff potential.

Table 2.5 – Soils Associations

Association	Shrink Swell	Soil Pressure	Runoff
Oceano Association	Low	Severe	Very Slow
Ramona-Placentia Association, 2% to 5% slopes	High	Moderate	Slow
Ramona-Placentia Association, 5% to 9% slopes	High	Moderate	Slow
Diablo-Altamont Association	High	Moderate	Medium

Source: Report and General Plan Soil Map, Los Angeles County, 1969

* Less than 1,000 lbs/sf

** More than 30% clay

The characteristics of the minerals and soils present in the area that encompasses the City of Lomita indicate the potential types of hazards that may occur. Rock hardness and soil characteristics can determine whether or not an area will be prone to geologic hazards such as earthquakes, landslides and liquefaction resulting from a significant seismic event.

The Department of Mines and Geology completed a study for the Torrance Quadrangle. This is an area south of Los Angeles that is approximately 60 square miles. This area includes the City of Lomita, City of Torrance as well as other surrounding communities. The study encompasses the entire area that comprises the City of Lomita.

Liquefaction-induced ground failure has historically been a major cause of earthquake damage in Southern California. During the 1971 San Fernando and 1994 Northridge earthquakes, significant damage was done to roads, utility pipelines, buildings and other structures in the Los Angeles area was caused by liquefaction-induced ground displacement. Although some damage that was realized by the City of Lomita, liquefaction did not occur during these events in the Torrance Quadrangle.

Localities most susceptible to liquefaction-induced damage are underlain by loose, water-saturated, granular sediment within 40 feet of the ground surface. These conditions do not exist for the City of Lomita.

The City of Lomita exists in a 1.97 square mile area that is made up of loose sandy soil, gravel, sediment, and silt layers. The area also has a shallow water table (within 40 feet of the surface).

Landslides can also be induced by seismic activity and the City of Lomita has a small area where landslides could present a hazard to the City.

Other Significant Geological Features

The City of Lomita, like most areas in the Los Angeles Basin, lie over or near the area of one or more known earthquake faults, and potentially many more unknown faults, particularly so-called lateral or blind thrust faults.

There are many faults that can affect the Los Angeles Basin. These and other faults may also affect the City of Lomita. The following is a list of faults gathered from the Department of Mines and Geology that could impact the City:

- San Andreas
- San Gabriel
- San Jacinto
- Newport Inglewood
- Palos Verdes
- Whittier
- Santa Monica
- Sierra Madre
- San Jose
- Clamshell-Sawpit
- Puente Hills Blind Thrust
- Raymond Hill
- Workman Hill

The Los Angeles Basin has a history of powerful and relatively frequent earthquakes, dating back to the powerful 8.0+ San Andreas earthquake of 1857 that did substantial damage to the relatively few buildings that existed at the time. Paleoseismological research indicates that large (8.0+) earthquakes occur on the San Andreas Fault at intervals between 45 and 322 years, with an average interval of 140 years. Other lesser faults have also caused very damaging earthquakes

since 1857. Notable earthquakes include the Long Beach earthquake of 1933, the San Fernando Earthquake of 1971, the 1987 Whittier Earthquake, and the 1994 Northridge Earthquake.

Water Resources

Groundwater resources in Lomita consist of aquifers and aquicludes, as found in the Los Angeles groundwater basin within the Los Angeles coastal plain. The City of Lomita is located on the southern end of the Torrance plain which is underlain by water-bearing sediments that form a complex system of interlayered aquifers and aquicludes. The City is within the West Coast groundwater basin which is bounded by the Newport-Inglewood fault zone on the northeast. Groundwater resources in the West Coast basin generally consist of an upper layer of shallow, unconfined and semi-perched water: a principal body of fresh water underneath, and a salt water layer under the freshwater resources. Water movement is generally from points of recharge (percolation areas. spreading grounds, streams) to points of discharge (groundwater wells, ocean, springs) because of differences in pressure between these points.

Aquifers underlying the Los Angeles coastal plain resulted from the historical development of the topography for more than 100 million years. The deposition of sand, gravel, silt, clay and rock has resulted in a highly complex geologic and groundwater structure. Water-bearing deposits are unconsolidated and semi-consolidated alluvial sediments from recent times (15,000 years ago). These deposits hold water and allow water to pass through, and are referred to as aquifers. Nonwater-bearing deposits consist of consolidated rocks and ground layers which provide limited water. They form the boundaries between aquifers.

Most of the groundwater resources in the basin are found in recent (Holocene) and Pleistocene age deposits. These deposits are generally less consolidated and have been subject to less deformation by historic folding and faulting.

The Pleistocene period (up to 1,000,000 years ago) resulted in the deposition of several ground layers including Older Dune Sand, the Lakewood Formation and the San Pedro Formation. The Lakewood Formation includes terrace deposits, Palos Verdes sand and other unnamed deposits. It is generally characterized by variable particle size in the upper layer and a lower layer of gravel and coarse sands. Sand and gravel are interspersed by discontinuous lenses of sandy silt and clay.

The Lakewood Formation contains the Exposition, Gage, and Gardena aquifers and aquicludes (fine sand, silt and clay that transmit water slowly). The Exposition and Gardena aquifers are not found underneath the site. The Gage Aquifer lies approximately 100 feet below mean sea level near the City of Lomita and is approximately 75 to 100 feet thick. This aquifer has fine to medium sand, with varying amounts of coarse yellow sand, sandy silt, clay and gravel. The Gage Aquifer yields large amounts of water.

The San Pedro Formation contains deposits of lower Pleistocene age, containing San Pedro sand, Timms Point, silt and Lomita Marl. This formation contains five major aquifers with fine-grained layers interbedded within. These aquifers include the Hollydale, Jefferson, Lynwood,

Silverado and Sunnyside Aquifers. They are the principal aquifers used for domestic water in the Los Angeles area.

The Lynwood Aquifer is made up of yellow, brown. and red coarse gravel, sand, silt and clay. This aquifer has a thickness of 50 to 1,000 feet. The Lynwood aquifer is a major producer of water with a yield ranging from 200 to 2,100 gallons per minute. This aquifer is found approximately 275 feet below mean sea level in the City. The Lynwood Aquifer merges with the Silverado Aquifer to the west. The Silverado Aquifer has yellow to brown coarse to fine sands and gravel interbedded with yellow to brown silts and clays. This aquifer has a maximum thickness of 500 feet and is found approximately 425 feet below mean sea level in Lomita to a maximum depth of 1,200 feet below sea level. This aquifer has also been considerably offset by all faults in the region. The Silverado Aquifer is a major water producer with a maximum yield of 4,700 gallons per minute.

Aquifers beyond the Pleistocene age are not known because of limited well log data. They are also too deep to be economically tapped by groundwater wells. The storage capacity of the coastal plain is approximately 22 million acre feet, with 6.5 million acre-feet of capacity within the West Coast basin alone.

The groundwater is estimated by the Los Angeles County Safety Element to be approximately 30 feet from the ground level at the City and the surrounding area. This indicates that the area is conducive to perched water conditions.

Surface Waters

The City is located within the Dominguez watershed where storm waters drain into the Los Angeles Harbor. Machado Lake is located southeast of the City of Lomita. This lake serves as a flood retention basin for the surrounding area.

The lake was historically a shallow depression that filled up during rains and emptied into the seas.

Machado Lake has always been a low-lying area and seashell beds and salt-encrusted soils found at its banks suggest it was nearer the sea than it is today. The lake holds 210 acre-feet of water and covers approximately 42 acres. It has an average width of 150 feet, with a maximum width of 1,000 feet and a maximum length of 3,000 feet. Approximately 60 percent of the water comes from the Wilmington Drain which drains a 20-square mile area north of the lake.

Waters at Machado Lake are highly dependent on rainfall and storm runoff that enter the lake through several county and city storm drains. The upper lake often has seven feet of water before it overflows into the lower lake where waters are two to three feet deep. The lower lake and wetland area is dry during summer and fall, but has water in the spring. Water is sometimes added to the upper lake during the dry season. From the lake, water flows seasonally into Los Angeles Harbors West Basin through a one-mile underground aqueduct. The lake currently has problems with street runoff introducing extensive debris into the area; intensive public use which degrades the water environment; and area industries which generate soil, water and air pollutants.

Water quality at the lake is poor and is rich in dissolved nutrients from urban runoff and organic waste. High levels of phosphorus from fertilizer runoff has also stimulated algae growth, leading to the depletion of dissolved oxygen. The lack of oxygen leads to fish kills. The aeration system that was constructed in the 1980's is not in operation. Total dissolved solids is often high due to runoff from urban areas around the park. Trace organic materials, pesticides, and trace metals (copper and lead) have been detected in water and fish at the lake since 1983.

Natural Resources

Land in the City of Lomita was historically used for agricultural production and some oil drilling prior to the City's urbanization. Areas zoned for agricultural use (A-1) are developed with large rural residential lots with limited animals. No commercial agricultural production remains in the City.

The City of Lomita is known to have deposits of sand and gravel, feldspar and diatomite (as found at the Palos Verdes Hills) though these resources have not been actively extracted in the City.

Feldspar consists of aluminum silicate minerals containing potassium, sodium, or calcium. Feldspars constitute nearly 60 percent of igneous rocks and are found in granites, and beach. sands. Grain size ranges from less than 1/4 inch to an inch or more. Feldspar is used for the production of glass and ceramics. Diatomite consists of fine-grained particles of an inert form of silica, similar to mineral opal. Diatomite is formed from fossils of diatoms (one-cell floating organisms). Each particle is flat and perforated, and loosely packed. Diatomite is used for filtration and as fillers, insulation, absorbents, abrasives, ceramics, pesticides, and other uses. Feldspar and diatomite are not found in commercial quantities that warrant extraction in Lomita.

The San Pedro Sandstone is a Pleistocene marine deposit found in outcrops along the northern and northeastern edges of the Palos Verdes Hills. The San Pedro Sandstone consists of poorly consolidated, coarse and uncemented quartz and feldspathic sands, with some pebbly gravel. The San Pedro Sandstone is believed to have been deposited within a coldwater marine environment during maximum glaciation. Regional tectonic uplift of the Peninsula led to the elevation of these deposits hundreds of feet above sea level. Historic mining activities have occurred along this area within the City of Rolling Hills Estates. The surrounding area also contains San Pedro Sandstone, including the City of Lomita.

Under the Surface Mining and Reclamation Act (SMARA), the California Division of Mines and Geology (CDMG) has identified the presence of sand and gravel resources in the State and classified areas of regionally significant aggregate resources. The Chandler (Quarry) Landfill, within the City of Rolling Hills Estates and just south of Lomita, is classified by CDMG as Mineral Resource Zone 2, (MRZ-2 - an area containing significant mineral deposits or where there is a high probability of their existence). This area was previously mined for sand and gravel though now serves as a landfill. The Lomita area is designated as MRZ-3 (areas containing mineral deposits whose significance cannot be evaluated from available data). While the San Pedro Sandstone is found in Lomita, the lack of past or current mining activities in the Lomita area prevents their

classification as MRZ-2. Exhibit 2.2 shows the classification of aggregate resources in Lomita and the surrounding area.

Parks/Recreation

Recreational facilities in the City of Lomita include four city parks and a multipurpose center. These facilities occupy approximately 9.4 acres. The following table lists these parks and the following map shows their locations.

Table 2.6 – City Parks

Park	Address	Acres	Facilities
Lomita Park/Rec Ctr	24428 Eshelman Avenue	8.0	Gym, MPC, baseball diamond, tennis, tot lot, picnic area
Hathaway Park	25600 Pennsylvania Avenue	1.0	Basketball court, volleyball court and tot lot
Railroad Museum and Annex	2135 250th Street	0.2	Museum and picnic area
Veterans Memorial Park	Walnut and 257th Street	0.1	Passive open space
Metro Park	26339 Oak Street	0.1	Passive open space

In addition to City parks, school playgrounds are also available for public use after school hours. These schools provide open fields for baseball, soccer and football, basketball courts, tot lots, and other game courts for public use.

The City charges a park and recreation facilities tax for the acquisition, improvement, expansion and maintenance of public park, playground and/or recreation facilities. Every dwelling unit created by new construction, modification of existing structures, replacement or relocation is subject to a fee of $300.00 per unit. In addition, the Quimby Act allows cities to require the dedication of open space or parkland from new residential subdivision developments or to pay an in-lieu fee for the provision of recreational facilities to serve the project.

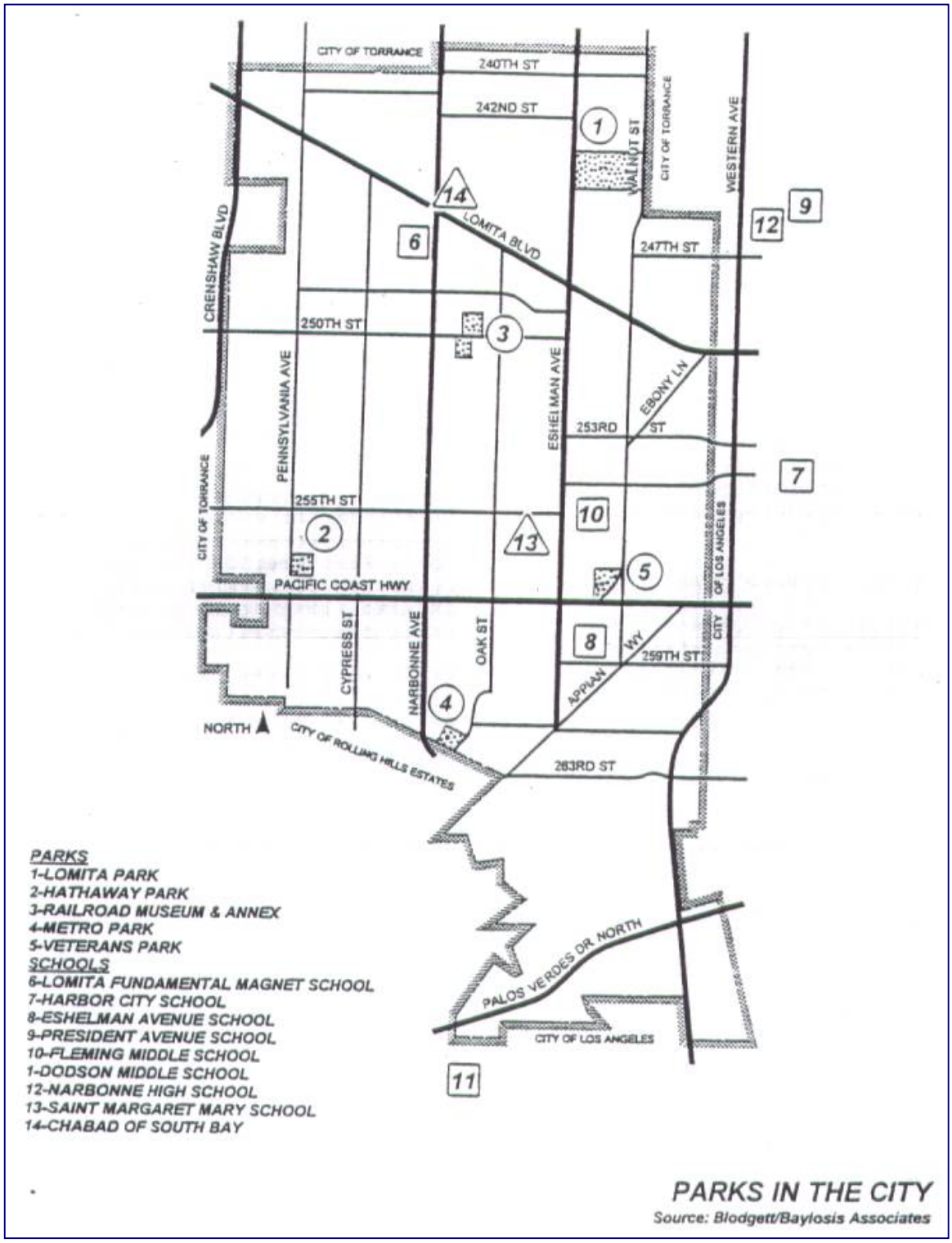
Residential

The City's General Plan Map identifies four residential land use categories, residential (agricultural), low-density residential, medium density residential and high density residential within the City.

Agricultural

This designation applies to areas which are lower density in character and where the keeping of animals is permitted. This land use designation corresponds to those areas zoned A-1. Development intensities of up to 8.7 units per acre are permitted. The maximum population density is 22 persons per net acre. Any new land division or subdivision must reflect the Low Density Residential intensity standards if the lot sizes for individual units are less than 10,000 square feet.

Parks Map


CITY OF TORRANCE
240TH ST
242ND ST
WALNUT ST
CITY OF TORRANCE
WESTERN AVE
CRENSHAW BLVD
LOMITA BLVD
247TH ST
250TH ST
PENNSYLVANIA AVE
ESHELMAN AVE
EBONY LN
253RD ST
CITY OF TORRANCE
255TH ST
PACIFIC COAST HWY
CYPRESS ST
NARBONNE AVE
OAK ST
APPIAN WY
259TH ST
CITY OF LOS ANGELES
NORTH
CITY OF ROLLING HILLS ESTATES
263RD ST
PALOS VERDES DR. NORTH
CITY OF LOS ANGELES
PARKS
1-LOMITA PARK
2-HATHAWAY PARK
3-RAILROAD MUSEUM & ANNEX
4-METRO PARK
5-VETERANS PARK
SCHOOLS
6-LOMITA FUNDAMENTAL MAGNET SCHOOL
7-HARBOR CITY SCHOOL
8-ESHELMAN AVENUE SCHOOL
9-PRESIDENT AVENUE SCHOOL
10-FLEMING MIDDLE SCHOOL
1-DODSON MIDDLE SCHOOL
12-NARBONNE HIGH SCHOOL
13-SAINT MARGARET MARY SCHOOL
14-CHABAD OF SOUTH BAY
PARKS IN THE CITY
Source: Blodgett/Baylosis Associates

Low Density Residential

This designation applies to areas of the City which are developed with single family residential land uses. The allowable development intensity is 5.8 to 8.7 units per net acre. The maximum population density is 22 persons per net acre.

Medium Density Residential

This designation applies to section of the City which are developed with multi-family residential land uses and trailer parks. The allowable development intensity for this category is 8.72 to 79.8 units per net acre. The maximum population density is 50 persons per net acre.

High Density Residential

This designation applies to sections of the City which are developed with multi-family residential land uses and trailer parks. The allowable development intensity for this category is 19.8 to 43.6 units per net acre. The maximum population density is 110 persons per net acre.

The City's Zoning Map identifies four zoning districts, A-1 (single family), R-1 (single family), R-1-P (Single Family Parking) and RVD (Residential Variable Density).

A-1 Zone

Zone A-1 is established to provide for residential areas to be developed exclusively for one family dwellings and additional uses, necessary and incidental to single-family development, including the keeping of farm pets.

R-1 Zone

Zone R-1 is established to provide for residential areas to be developed exclusively for one family dwellings, and additional uses, necessary and incidental to single-family development.

Zone R-1-P

Zone R-1-P is an R-1 zone with a Parking Overlay (P). These properties are generally located adjacent to commercial properties and allow for overflow commercial parking in addition to uses permitted in the R-1 zone.

Zone RVD

Zone RVD is established in order to create variable density, limited height, multiple residential areas with provisions to support the community services appurtenant thereto.

Additional Housing Information

The following table shows the total number of existing housing units by tenure, household size, age by owner/renter occupied status:

Table 2.7 – Housing Units by Tenure, Household Size and Age of Occupant

Subject	Number	Percent
TENURE		
Occupied housing units	**8,015**	**100.0**
Owner-occupied housing units	3,739	46.7
Renter-occupied housing units	4,276	53.3
TENURE BY HOUSEHOLD SIZE		
Owner-occupied housing units	**3,739**	**100.0**
1-person household	1,083	29.0
2-person household	1,193	31.9
3-person household	616	16.5
4-person household	492	13.2
5-person household	231	6.2
6-person household	69	1.8
7-or-more-person household	55	1.5
Renter-occupied housing units	**4,276**	**100.0**
1-person household	1,369	32.0
2-person household	1,138	26.6
3-person household	783	18.3
4-person household	579	13.5
5-person household	236	5.5

Subject	Number	Percent
6-person household	106	2.5
7-or-more-person household	65	1.5
TENURE BY AGE OF HOUSEHOLDER		
Owner-occupied housing units	**3,739**	**100.0**
15 to 24 years	30	0.8
25 to 34 years	308	8.2
35 to 44 years	847	22.7
45 to 54 years	875	23.4
55 to 64 years	674	18.0
65 years and over	1,005	26.9
65 to 74 years	528	14.1
75 to 84 years	366	9.8
85 years and over	111	3.0
Renter-occupied housing units	**4,276**	**100.0**
15 to 24 years	251	5.9
25 to 34 years	1,147	26.8
35 to 44 years	1,237	28.9
45 to 54 years	765	17.9
55 to 64 years	426	10.0
65 years and over	450	10.5
65 to 74 years	220	5.1
75 to 84 years	180	4.2
85 years and over	50	1.2

Based on the 2000 Census data, the City has 8,015 residential units, an average household size of 2.50 and an occupancy rate of 96.6%.

Commercial and Industrial

The City's main commercial areas are located primarily along Lomita Boulevard, Pacific Coast Highway and portions of Western Avenue and Narbonne Avenue. A small industrially zoned area is along the south side of Lomita Boulevard between Oak Street and Ebony Lane.

Public Infrastructure

There are approximately 55 miles of roadways in the City Roadway rights-of-way cover 27.3 percent of the City's land area, or 282 acres. The street system is defined by major north-south streets such as Crenshaw Boulevard, Narbonne Avenue, Eshelman Avenue and Western Avenue and east-west streets such as Pacific Coast Highway, Lomita Boulevard and Palos Verdes Drive North. Other local residential streets generally form an uneven grid at varying intervals, reflective of the subdivision of large rural lots into smaller parcels Streets within the southern hilly area are more curve-linear and follow the local terrain. A portion of the Palos Verdes Drive North right-of-way on both sides of Western Avenue has been vacated and the east side developed with a mini-mail.

Most roadways in the City consist of two travel lanes, with major streets having four travel lanes. Some residential streets have rights of way of 50 feet or less. This does not permit two travel lanes and on-street parking. Expansion to 60 feet (a desirable width) is often not possible due to the nature and extent of existing development.

Hospitals

There are no hospitals located within the City of Lomita. The following table lists hospitals located within 4 miles of the City.

Table 2.8 - Hospitals

Name	Address	Distance from City	Number of Beds
Torrance Memorial Hospital	3330 Lomita Blvd. Torrance, CA	2 miles	377
Little Company of Mary	4101 Torrance Blvd. Torrance, CA	3.8 miles	317
Kaiser Permanente	25825 S. Vermont Ave. Harbor City, CA	1.2 miles	225
Del Amo Hospital	23700 Camino Del Sol Torrance, CA	1.9 miles	166 bed private psychiatric hospital

Public Safety – Police

The City of Lomita contracts police services to the Los Angeles County Sheriff's Department. According to the City's adopted 2003-2004 budget, $1,970,377 was allocated to these services.

Los Angeles County Sheriff's Department

The Los Angeles Sheriff's Department is the largest sheriff's department in the world. In addition to specialized services, such as the Sheriff's Youth Foundation, International Liaison and Employee Support Services, the Department is divided into ten divisions, each headed by a Division Chief. There are three patrol divisions (Field Operations Regions I, II and III), Custody Operations Division, Correctional Services Division, Detective Division, Court Services Division, Technical Services Division, Office of Homeland Security, Administrative Services Division, and Leadership and Training Division.

Lomita Station

The local sheriff's station is located at 26123 Narbonne Avenue in the City of Lomita. The local station is managed by a Police Captain. The City of Lomita is within Region II, units within Field Operations Region II are primarily responsible for providing basic police services to the contract cities and unincorporated county areas which fall within the geographical boundaries of this Division. The Region is comprised of the following Sheriff's stations: Carson, Century, Compton, Lennox, Lawndale, Lomita, Marina Del Rey, West Hollywood and Universal Citywalk.

Lomita Station provides services to the contract cities of Lomita, Rancho Palos Verdes, Rolling Hills, and Rolling Hills Estates and to the citizens of our unincorporated County areas of La Rambla, Westfield and The Estates. The Station's jurisdiction includes most of the Palos Verdes Peninsula overlooking the Pacific Ocean, and some of the surrounding southwest corner of the County.

The Following table shows the police services that are provided by the Sheriff's Department:

Table 2.9 – Police Deployment

Shift	Number of Vehicles	# of Deputies	Days per Week
Early Morning	1 vehicle	2	7 days
Day Shift	2 vehicle 1 vehicle	1 for each vehicle 1 (traffic enforcement)	7 days
PM Shift	2 vehicles 1 vehicle	1 for each vehicle 1 (traffic enforcement)	7 days

There is also a special assignment officer and a portion of the Surveillance Apprehension Team that is funded by the City.

Public Safety – Fire Protection

The City of Lomita contracts fire services to the Los Angeles County Fire Department.

Los Angeles County Fire Department

The history of the Los Angeles County Fire Department started in the early 1900s with the formation of two separate departments. The County Forester, in charge of protecting forest lands and responsible for planting and maintaining the landscape, and the County Fish and Game Warden, who was assigned the additional position of County Fire Warden.

In 1919, over 135,000 acres of wildland fires blackened the County of Los Angeles prompting the merging of these two separate departments and resulting in a greater emphasis on fire suppression. Between September 1923 and 1925, 31 separate fire districts were formed; the first two being in Signal Hill and Santa Monica Canyon.

In 1956, the late Fire Chief Emeritus Keith E. Klinger created the visionary Lakewood Plan, allowing incorporated cities within the County to contract with the Department for fire protection services. Today, 57 cities contract with the Los Angeles County Fire Department which staffs a total of 163 engine companies, 31 truck companies, 79 paramedic units, and numerous other pieces of specialized apparatus.

The Los Angeles County Fire Department is credited with the creation of the nation's second Fire Fighter Paramedic Program and the nation's first 911 Emergency Calling System. Throughout its history, the Department has emerged as a leader in the fire service on local, regional and national levels, growing to become the nation's second largest fire protection agency.

Operating 9 divisions, 20 battalions, 157 fire stations and 11 fire suppression camps, the Los Angeles County Fire Department answers over 234,000 emergency calls annually. Additionally, the Department has Lifeguard, Forestry and Health Hazardous Materials Divisions which provide valuable services to the more than 3.5 million people who reside in the 1.1 million housing units located throughout the Department's 2,278 square mile area.

Lomita Fire Station

There is 1 fire station located within the City of Lomita at 25517 Narbonne Avenue. Fire Station No. 6 is part of Battalion 14 which consists of 8 other fire stations. Fire Station No. 6 is staffed by 5 personnel per shift, captain, engineer and 3 firefighter/paramedics. The personnel work from three 24-hour shifts (A-C). The station has 1 basic fire engine and 1 paramedic squad. Table 2.9 lists all fire stations within Battalion 14. The Battalion headquarters is located at Fire Station No. 106 in Rolling Hills.

Table 2.10 – Battalion 14 Fire Stations

FS 2	340 Palos Verdes Drive West Palos Verdes Estates 0274-1226
FS 6	25517 S. Narbonne Ave., Lomita 90717-2511
FS 53	6124 Palos Verdes Drive South Rancho Palos Verdes 90275-5935
FS 55	P. 0. Box 663, Avalon 90704-0663 945 Avalon Canyon Road
FS 56	12 Crest Road West, Rolling Hills 90274-5058
FS 83	83 Miraleste Plaza Rancho Palos Verdes 90275-6586
FS 106 (Bn. HQ)	27413 Indian Peak Road Rolling Hills, 90275-7136
FS 155 (PFF)	P.O. Box 5011, Two Harbors 90704

Public Works

Water

Water service to Lomita was historically provided by the Los Angeles County Waterworks District No.1 3 until 1985 when the City acquired the Water District. Water service is now provided by the Lomita Water Department, except for a small portion of 211 homes on the southern portion of the City which is served by the California Water Service Company.

The water supply of the Lomita Water Department comes from two connections with the Metropolitan Water District (MWD) located at 2275 W. 262nd Street and at 26255 Appian Way. Approximately 2,635 acre-feet of water is used in the City annually, with demand increasing at about two percent to three percent per year. One acre-foot is equivalent to 326,000 gallons. Emergency connections are available with the City of Torrance water system at 240th Street and Narbonne Avenue and with the MWD Palos Verdes Reservoir at Palos Verdes Drive East and Palos Verdes Drive North. The City also has one standby well for emergency purposes beside the Cypress Street reservoir.

The Lomita Water Department has two reservoirs with a total storage capacity of 140,000 gallons per day. The City is served by two pumps, one booster station, and approximately 30 miles of water lines. Peak monthly demand is approximately 260 acre-feet and minimum demand is 155 acre-feet. Average monthly use is approximately 220 acre-feet. The Cypress Street reservoir is currently only carrying half-capacity, but is planned for replacement with a five million gallon reservoir within the next five years. A treatment plant for the water well at this reservoir site is also planned, so that the City may use its 1,360 acre-feet allotment of groundwater. Replacement of older and smaller water lines is ongoing at approximately 1,600 feet of water lines per year. Approximately ten miles of older lines remain in the City's plans for replacement and upgrade.

The California Water Service Company also derives its water supply from the Metropolitan Water District (MWD). The water is stored at the Palos Verdes reservoir, which has a capacity of 1,108 acre feet or 361.1 million gallons. Major water lines are located on Palos Verdes Drive

North, Palos Verdes Drive East and Palos Verdes Drive West to serve the Palos Verdes Peninsula, including the 211 homes on the hillside areas of Lomita, off Palos Verdes Drive North. The company stated that there are no known deficiencies in water supply or system capacity to serve this area.

The MWD obtains its water supply from the Colorado River Aqueduct and the Sacramento River/San Joaquin Delta through the State Water Project. The MWD sells water wholesale to the West Coast Basin MWD, which in turn provides the water supply to the City of Lomita. Imported water is directed to treatment plants in the San Fernando and San Gabriel Valleys, and in Yorba Linda. Main lines of the MWD connect to the Palos Verdes Reservoir, passing through the City of Lomita, as shown in Exhibit 2.4.

Storm Drainage

Stormwater drainage in the Lomita area generally flows from west to east in roadway gutters and county storm drains as shown in Exhibit 2.5. The area north of Pacific Coast Highway drains into the Lomita Drain which runs along 250th Street in Lomita. At the City's eastern boundary, the Lomita Drain is located in Lomita Boulevard and is connected to the Wilmington Drain, which in turn runs south into Harbor Park and Machado Lake. The area south of Pacific Coast Highway drains into the line in 259th Street which turns south just east of Normandie Avenue and then east into Harbor Park and Machado Lake. There are debris retention basins at these storm drain ends to reduce silt and sediments that enter Machado Lake. Also, a pump located north of Pacific Coast Highway near the Wilmington drain prevents silt from entering the lake. Stormwater runoff that enters the lake is ponded at the upper lake. When water levels reach seven feet or higher, the water flows over the dam and spillway and goes into the lower lake. Water at the lower lake flows into the Harbor outflow, which goes from the lower lake, south into the West Basin of the Los Angeles Harbor at John Gibson Boulevard.

A number of deficiencies in the storm drain system, as evidenced by historic street flooding, have been identified in the City.

Solid Waste Disposal

Solid waste disposal services are provided by the Metropolitan Waste Company for residential customers and private haulers provide service to commercial and industrial users. Solid wastes are brought to the Long Beach Waste-to-Energy Plant and recyclables are brought to Potential Industries in Wilmington.

In accordance with AB 939, the City of Lomita has developed a variety of source reduction and recycling programs designed to reduce solid waste disposal needs by 50% by 2000. These programs include the ongoing residential curbside recycling program by Metropolitan Waste, mandatory recycling areas for non-residential uses, and green waste recycling programs.

Wastewater Treatment

Sewer service in Lomita is provided by the Los Angeles County Sanitation District No. 5. Sewage from the City is conveyed in sewer lines maintained by the County Department of Public Works, which in turn, is directed into sewer mains located in Lomita Boulevard, Narbonne Avenue, Western Avenue and Crenshaw toward the Joint Water Pollution Control Plant (JWPCP) in the City of Carson. See Exhibit 2.6 for major sewer lines and the location of the JWPCP. The JWPCP has a design capacity of 385 million gallons per day (mgd) and currently processes approximately 330 mgd. Treated wastewater is disposed into an outfall at the Pacific Ocean located two miles offshore and 200 feet below the sea. Sludge from the JWPCP is composted on-site or transported to the Puente Hills Landfill.

Schools

Students (K-12) generated within the City of Lomita go to schools managed by the Los Angeles Unified School District. There are four elementary schools (two within the city limits), one middle school (one within the city limits) and one high school (just outside the city limits) that serve students from the City. There are also two private schools (two within the city limits), including the St. Margaret Mary School and Chabad of South Bay. The following table lists these schools, addresses and their current enrollment.

Table 2.11 – Public and Private Schools and Enrollment

School	Address	Enrollment	Grades
Lomita Fundamental Magnet	2211 W. 247th Street	1104	K-5
Eshelman Avenue School	25902 Eshelman Avenue	767	K-5
Harbor City School	1508 W. 254th Street	765	K-5
President Avenue School*	1465 W. 243rd Street	499	K-5
Fleming Middle School	25425 Walnut Avenue	1775	6-8
Dodson Middle School*	28014 Montereina Dr., RPV	513	6-8
Narbonne High School	24300 S. Western Avenue	3047	9-12
Saint Margaret Mary School	25515 Eshelman Avenue	315	K-8
Chabad of South Bay	24412 Narbonne Avenue	20	K-4
Advanced Education	25533 Narbonne Avenue	146	K-8
Nishiyamato Academy	2458 Lomita Blvd.	168	K-9

** Not within the city limits*

Other Government Offices

Public facilities are defined as land in public ownership, excluding parks. There are approximately 42 acres of public facilities in Lomita, including Civic Center, the Lomita Community Center, the Lomita Post Office, schools, and local churches. The Post Office is located on land leased from a private property owner. The Lomita Civic Center includes the City Hall, the

Lomita Library and the Los Angeles County offices and is located at the northern edge of the City on Narbonne Avenue. This Civic Center was constructed in 1975. The Post Office is located at 25131 Narbonne Avenue, between 250th and 254th Streets. There is a jet fuel storage tank farm located on Western Avenue, south of Palos Verdes Drive North at the City's southeastern corner.

This facility is owned by the U.S. Navy. Institutional land uses such as public and private schools and local churches are scattered throughout the City. Institutional uses within the City occupy approximately 19 acres including the sheriff's and fire station.

Other Utilities

Cable TV

The City has an agreement with Comcast Cable to provide the public with alerting and notification of various disaster situations. The estimated subscriber rate is 45%. This system includes break in to all TV's that are a part of this cable system. The City's Cable Channel 26 will provide directions to the citizens via scrolled information. This includes a "leader" that will scroll across any TV station that is turned on directing viewers to tune to their local cable channel for more information.

Gas

Natural gas service is provided by the Southern California Gas Company.

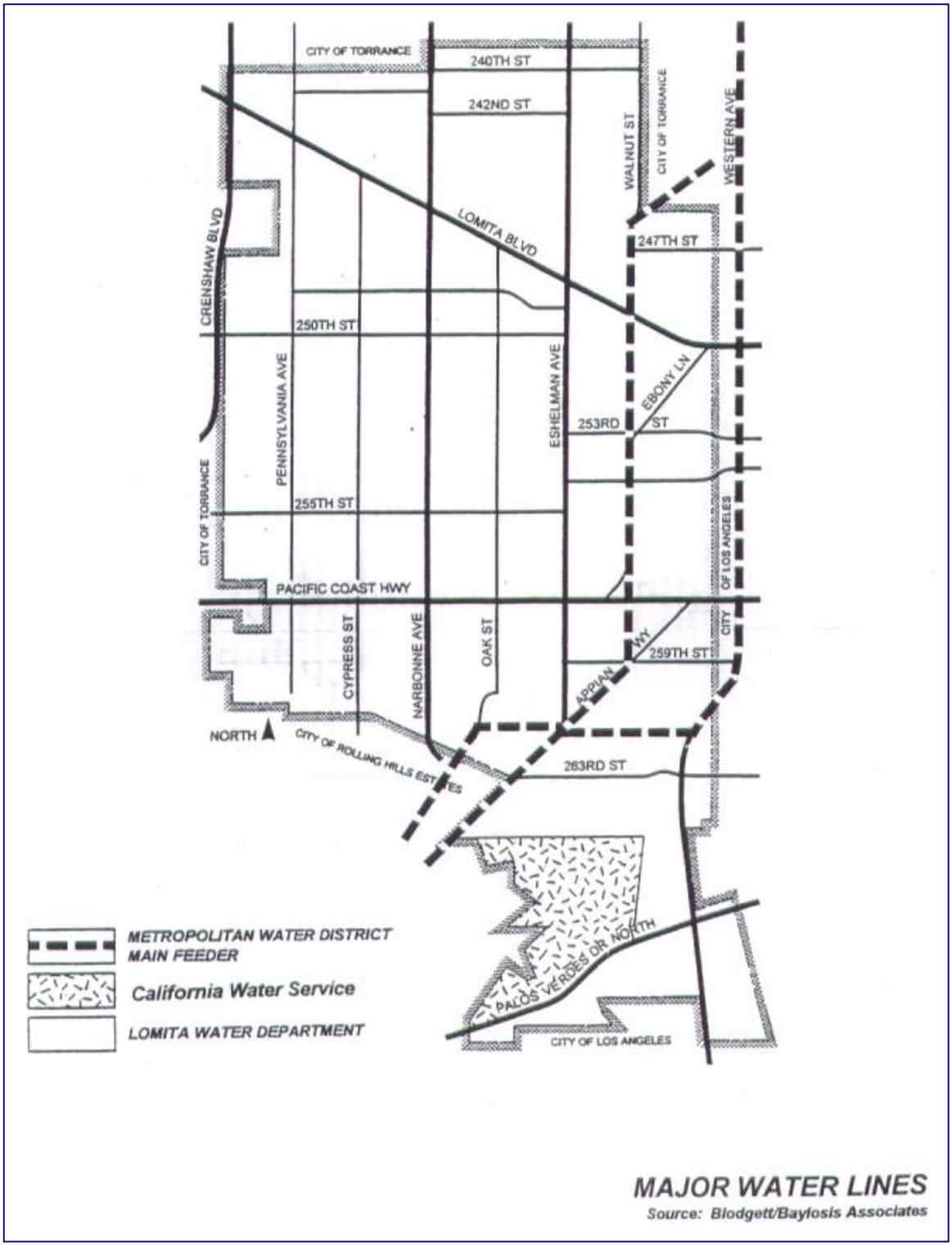
The Gas Company's roots trace back to the 1800s when new settlers arrived in Los Angeles in search of a new frontier. Back then, the city (with its burgeoning population of 5,000 people) became a refuge for villains and gamblers.

In 1867, Los Angeles Gas Company, the forerunner of today's Southern California Gas Company, installed 43 new gas lamps along Main Street, making the city safer at night and renewing hopes for the city's future.

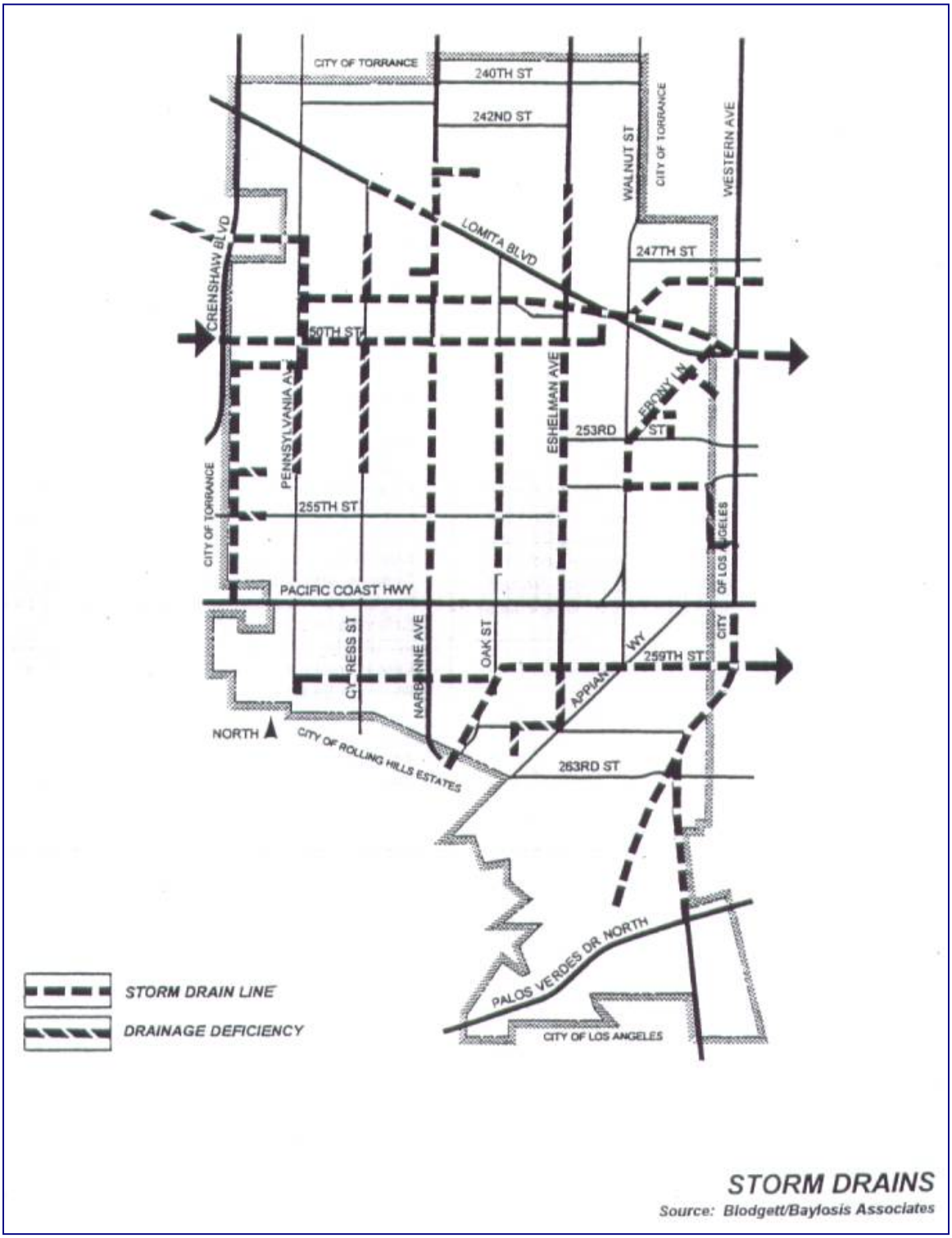
The gas lighting business was run by five entrepreneurs who manufactured the gas from asphalt, a tar-like substance, and later from oil.

The Company was enjoying modest success until Thomas Edison introduced his new electric light in 1879. With the future of the gas lamp business uncertain, the Company began looking for other uses for gas and Los Angeles soon had its first gas stove and heater.

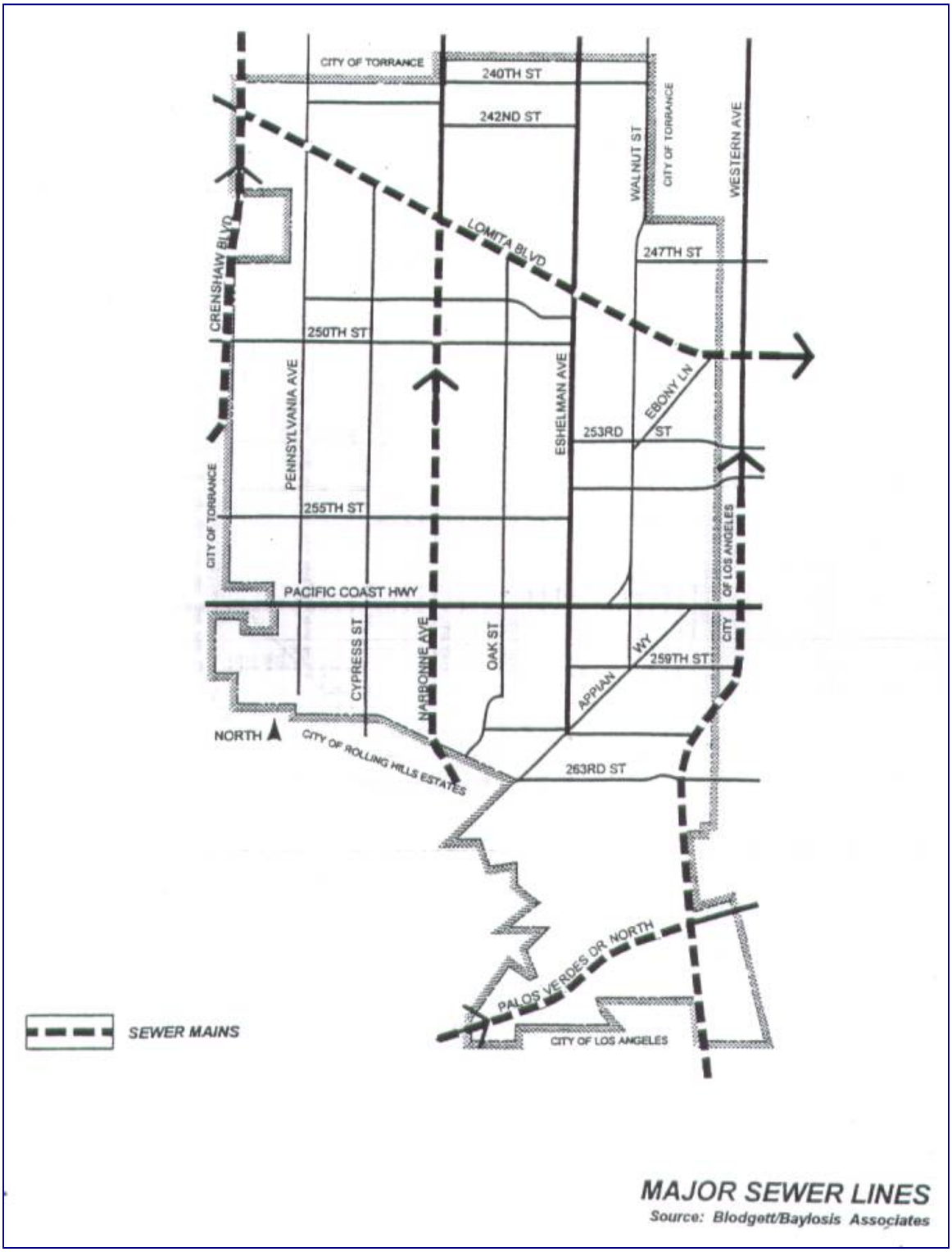
Water Lines Map



Storm Drain Lines Map



Sewer Lines Map



Meanwhile, Pacific Enterprises, a predecessor of the parent company, Sempra Energy, was looking to expand its gas business.

Founded in San Francisco in 1886 as Pacific Lighting, the Company bought several small gas manufacturing and distribution companies in the area, including the Los Angeles Gas Company in 1890. These companies ultimately became Southern California Gas Company.

By the early 20th century, natural gas – a colorless, odorless gas found in association with oil underground – was starting to gain attention. The breakthrough came when a huge field of natural gas was discovered near Taft, CA, in 1909.

Since natural gas had twice the heating value of manufactured gas, the SCGC took the step to convert its system to natural gas and build pipelines throughout the state.

Natural gas was soon found throughout the country, and demand for the fuel was rapidly growing. To meet customer demand, the SCGC began storing gas in large holding tanks.

Today, the SCGC is the nation's largest natural gas distribution utility, serving 19 million people through 5.4 million gas meters in more than 530 communities. Headquartered in Los Angeles, SCGC is a subsidiary of Sempra Energy (NYSE:SRE), a Fortune 500 company based in San Diego.

The service area encompasses 23,000 square miles of diverse terrain throughout most of Central and Southern California, from Visalia to the Mexican border.

They fuel about half of all the energy use in its service area (non-transportation-related). In total, they deliver nearly 1 trillion cubic feet of gas annually, or about 5% of all the natural gas delivered in the U.S.

Each year...

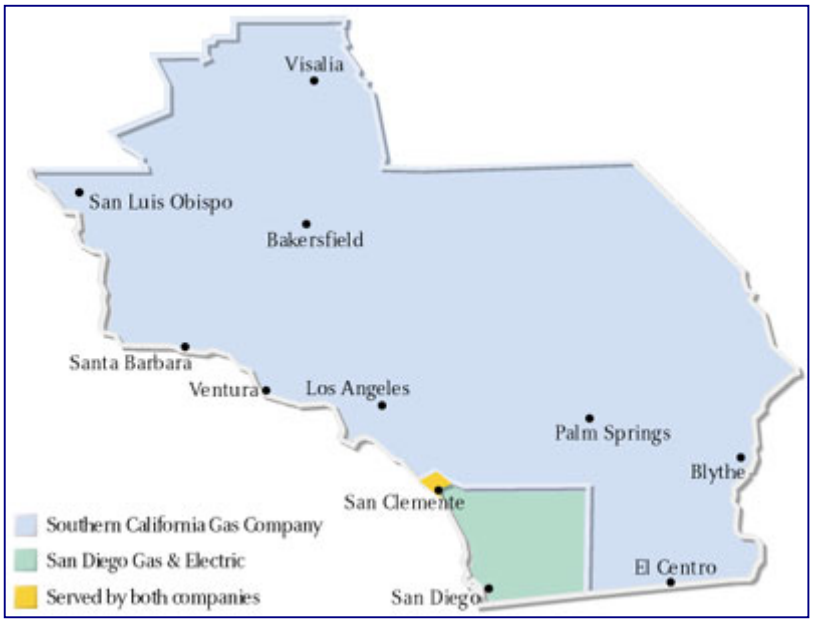
- Its field technicians complete approximately 4 million service orders;
- Its call center representatives answer 10 million phone calls in multiple languages;
- And the meter readers walk over 933,000 miles.

Like other investor-owned utilities in the state, Southern California Gas Company’s operations are regulated by the California Public Utilities Commission.

Electricity

Electrical service is provided by Southern California Edison (SCE). Southern California Edison is one of the largest electric utilities in the U.S., and the largest subsidiary of Edison International.

SCG Service Area Map



On an average day, SCE provides power for 11 million individuals, 427 communities and cities, 5,000 large businesses, and 280,000 small businesses in Central and Southern California. Delivering that power takes 16 utility interconnections, 4,900 transmission and distribution circuits, 365 transmission and distribution crews, the days and nights of 12,642 employees, and over a century of experience.

Land and Development

Development in Southern California from the earliest days was a cycle of boom or bust. The Second World War however dramatically changed the cycle. Military personnel and defense workers came to Southern California to fill the logistical needs created by the war effort. The available housing was rapidly exhausted and existing commercial centers proved inadequate for the influx of people. Immediately after the war, construction began on the freeway system, and the face of Southern California was forever changed. Home developments and shopping centers sprung up everywhere and within a few decades the central basin of Los Angeles County was virtually built out. This pushed new development further and further away from the urban center.

The environment of most Los Angeles County cities is nearly identical with that of their immediate neighbors and the transition from an incorporated municipality to another is seamless to most people. Seamless too are the exposures to the natural hazards that affect all of Southern California.

Section 3
Risk Assessment

What is a Risk Assessment?

Conducting a risk assessment can provide information: on the location of hazards, the value of existing land and property in hazard locations, and an analysis of risk of life, property, and the environment that may result from natural hazard events. Specifically, the three levels of a risk assessment are as follows:

1) Hazard Identification

This is the description of the geographic extent, potential intensity and the probability of occurrence of a given hazard. Maps are frequently used to display hazard identification data. The City of Lomita identified four major hazards that affect this geographic area. These hazards are:

- Earthquakes
- Windstorms/Adverse Weather Occasions
- Localized Flooding
- Landslides

The above hazards were identified through an extensive process that utilized input from the Hazard Mitigation Steering Committee. The geographic extent for the identified hazards has been identified by the City of Lomita, the California Department of Conservation, and the U.S. Army Corps of Engineers using the best available data, and is illustrated by the charts/maps listed in *Table 3-1*.

2) Profiling Hazard Events

This process describes the causes and characteristics of each hazard, how it has affected the City of Lomita in the past, and what part of the City's population, infrastructure, and environment has historically been vulnerable to each specific hazard. A profile of each hazard discussed in this plan is provided in each hazard section. For a full description of the history of hazard specific events, please see the appropriate hazard chapter.

3) Vulnerability Assessment/Inventorying Assets

This is a combination of hazard identification with an inventory of the existing (or planned) property development(s) and population(s) exposed to a hazard. Critical facilities are of particu-

lar concern because these entities provide essential products and services to the general public that are necessary to preserve the welfare and quality of life in the region and fulfill important public safety, emergency response, and/or disaster recovery functions.

4) Risk Analysis

Estimating potential losses involves assessing the damage, injuries, and financial costs likely to be sustained in a geographic area over a given period of time. This level of analysis involves using mathematical models. The two measurable components of risk analysis are magnitude of the harm that may result and the likelihood of the harm occurring. Describing vulnerability in terms of dollar losses provides the community and the state with a common framework in which to measure the effects of hazards on assets.

5) Assessing Vulnerability/Analyzing Development Trends

This step provides a general description of land uses and development trends within the community so that mitigation options can be considered in land use planning and future land use decisions. This plan provides a description of the character of the City of Lomita in the Community Profile. This description includes the geography and environment, population and demographics, land use and development, and housing and community development. Analyzing these components of the City of Lomita can help in identifying potential problem areas and can serve as a guide for incorporating the goals and ideas contained in this mitigation plan into other community development plans.

Table 3-1 – List of Hazard Mitigation Plan Charts/Maps

Map #	Type of Map	Section of the Plan
1	City of Lomita Location	Appendix E – Map 1
2	City of Lomita City Map	Appendix E – Map 2
3	City of Lomita Evacuation Routes	Appendix E – Map 3
4	Liquefaction Zone Torrance Quadrangle	Appendix E – Map 4
5	City of Lomita – Seismic Landslide Zone	Appendix E – Map 5
6	City of Lomita – Vicinity Hazards	Appendix E – Map 6
7	City of Lomita – Parks Map	Part I Section 2
8	City of Lomita – Water Lines	Part I Section 2
9	City of Lomita – Storm Basin Lines	Part I Section 2
10	City of Lomita – Sewer Lines	Part I Section 2
11	City of Lomita – SCG Service Area Map	Part I Section 2`
12	Fault/Fault Zones (Earthquake Hazard)	Part II Section 2

Note: *The information on the maps in this plan was derived from a variety of resources found in Appendix A. Care was taken in the creation of these maps, but is provided "as is" City of Lomita cannot accept any responsibility for any errors, omissions or positional accuracy, and therefore, there are no warranties that accompany these produces (the maps). Although information from land surveys may have been used in the creation of these products, in no way does this product*

represent or constitute a land survey. Users are cautioned to field verify information on this product before making any decisions.

Hazard assessments are subject to the availability of hazard-specific data. Gathering data for a hazard assessment requires a commitment of resources on the part of participating organizations and agencies. Each hazard-specific section of the plan includes a section on hazard identification using data and information from city, county or state agency sources.

Regardless of the data available for hazard assessments, there are numerous strategies the City can take to reduce risk. These strategies are described in the action items detailed in each hazard section of this Plan. Mitigation strategies can further reduce disruption to critical services, reduce the risk to human life, and alleviate damage to personal and public property and infrastructure. Action items throughout the hazard sections provide recommendations to collect further data to map hazard locations and conduct hazard assessments.

Federal Requirements for Risk Assessment

Recent federal regulations for hazard mitigation plans outlined in FEMA Interim Final Rule 44 CFR Part 201 include a requirement for risk assessment. This risk assessment requirement is intended to provide information that will help communities to identify and prioritize mitigation activities that will reduce losses from the identified hazards. There is one hazard profiled in the mitigation plan, *earthquakes.* The Federal criteria for risk assessment and information on how the City of Lomita Natural Hazard Mitigation Plan meets those criteria is outlined in *Table 3-2* below.

Table 3-2 – Federal Criteria for Risk Assessment

Section 322 Plan Requirement	How is this addressed?
Identifying Hazards	Each hazard section includes an inventory of the best available data sources that identify hazard areas. To the extent GIS data are available, the District developed maps identifying the location of the hazards. The Executive Summary and the Risk Assessment sections of the plan include a list of the hazard maps.
Profiling Hazard Events	Each hazard section includes documentation of the history, and causes and characteristics of the hazard.
Assessing Vulnerability: Identifying Assets	Where data is available, the vulnerability assessment for each hazard addressed in the mitigation plan includes an inventory of all publicly owned land within hazardous areas. Each hazard section provides information on vulnerable areas in the Community Issues section. Each hazard section also identifies potential mitigation strategies.
Assessing Vulnerability: Estimating Potential Losses	The Risk Assessment Section of this mitigation plan identifies key critical facilities and lifelines and includes a map of these facilities. Vulnerability assessments have been completed for the hazards addressed in the plan, and quantitative estimates were made for each hazard where data was available.
Assessing Vulnerability: Analyzing Development Trends	The City of Lomita Profile Section of this plan provided a description of the development trends in the area, including the geography and environment, population and demographics, land use and development, housing and community development, employment and industry, and transportation and commuting patterns.

Critical Facilities and Infrastructure

Facilities critical to the City and government response and recovery activities (i.e., life safety and property and environmental protection) include: emergency operations centers, police and fire stations, public works facilities, communications centers, sewer and water facilities, hospitals and roads. Facilities that, if damaged, could cause serious secondary impacts may also be considered "critical."

Critical and essential facilities are those facilities that are vital to the continued delivery of key government services or that may significantly impact the public's ability to recover from the emergency. These facilities may include other public facilities such as the City's water pumping station, public and private schools, recreation centers and temporary shelters.

Section 2, Community Profile, provides a summary of these critical and essential facilities.

Summary

The City of Lomita has to rely on the fact that the infrastructure of surrounding cities are intact as the infrastructure will be necessary to provide support. This includes natural hazards mitigation strategies that can reduce the impacts concentrated at large employment and industrial centers, public infrastructure, and critical facilities. Natural hazard mitigation for industries and employers may include developing relationships with emergency management services and their employees before disaster strikes, and establishing mitigation strategies together. Collaboration among the public and private sector to create mitigation plans and actions can reduce the impacts of natural hazards.

Section 4
Multi-Hazard Goals and Action Items

This section provides information on the process used to develop goals and action items that pertain to the natural hazards addressed in the mitigation plan. It also describes the framework that focuses the plan on developing successful mitigation strategies. The framework is made up of there parts: the Mission, Goals and Action Items.

Mission

The mission of the City of Lomita's Natural Hazards Mitigation Plan is to promote sound City policy designed to protect citizens and staff, infrastructure, critical support facilities, and the environment from natural hazards. This can be achieved by increasing awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the City towards building a safer and more sustainable City.

Goals

The plan goals describe the overall direction that the City of Lomita can take to minimize the impacts of natural hazards. These goals are stepping-stones between the broad direction of the mission statement and the specific requirements that are outline in the action items.

Action Items

The action items are a listing of activities in which the City can be engaged to reduce risk. Each action item includes an estimate of the time line for implementation. Short-term action items are activities that the City may implement with existing resources and authorities within one to two years. Long-term action items may require new or additional resources or authorities, and may take between one and five years (or more) to implement.

Mitigation Plan Goals and Public Participation

The Plan goals help to guide direction of future activities aimed at reducing risk and preventing loss from natural hazards. The goals listed here serve as checkpoints as agencies and organizations begin implementing mitigation action items.

Protect Life and Property

- Implement activities that assist in protecting lives by making our support facilities and other property more resistant to natural hazards.
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.
- Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventative measures for existing development in areas vulnerable to natural hazards.

Public Awareness

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

Partnerships and Implementation

- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.

Emergency Services

- Establish a policy to ensure mitigation projects for critical facilities, services, and infrastructure.
- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.
- Coordinate and integrate natural hazard mitigation activities, where appropriate, with current City emergency operations plans and procedures.

Public Participation

- Public input during development of the mitigation plan assisted in creating plan goals. Meetings with the project Core Group and Steering Committee, served as methods to obtain input and identify priorities in developing goals for reducing risk and preventing loss from natural hazards in the City of Lomita.

Natural Hazard Mitigation Plan Action Items

The mitigation plan identifies short- and long-term action items developed through data collection and research, and the public participation process. Mitigation plan activities may be considered for funding through Federal and State grant programs, and when other funds are made available through the city. Action items address multi-hazard (MH) and hazard specific issues. To help ensure activity implementation, each action item includes information on the timeline and coordinating organizations. Upon implementation, the coordinating organizations may look to partner organizations for resources and technical assistance.

Coordinating Organization

The coordinating organization is the organization that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation. For the City of Lomita, the Administrative staff and Hazard Mitigation Steering Committee will be the main coordinating organization. Additional coordinating organizations may include local or regional agencies that are capable of or responsible for implementing further activities and programs.

Priority

The Hazard Mitigation Steering Committee has established a priority for each short- and long-term activity based on time line, plan goals addressed and constraints. These priority levels have been set at high, medium and low. High priority activities are those that have the significant importance with the most achievable time line, contain significant plan goals that would be addressed and/or limited constraints. Medium priority activities are those that may have some importance with potential difficulties in time line, plan goals and/or constraints. Low priority activities may have more significant obstacles in time line, plan goals and/or constraints.

Time Line

Action items include both short- and long-term activities. Each action item includes an estimate of the time line for implementation. Short-term action items are activities that city agencies may implement with existing resources and authorities within one to two years. Long-term action items may require new or additional resources or authorities, and may take between one and five year (or more) to implement.

Ideas for Implementation

Each action item includes ideas for implementation and potential resources, which may include grant programs or human resources.

Plan Goals Addressed

The plan goals addressed by each action item are included as a way to monitor and evaluate how well the mitigation plan is achieving its goals once implementation begins.

Constraints

Constraints may apply to some of the City's action items. These constraints unfortunately result from decreased or lack of state and federal funds, increased insurance costs, and a general poor health of the California economy.

Project Evaluation

The Hazard Mitigation Steering Committee has reviewed two documents that comprise the City's Capital Improvement Plan. The first document is an evaluation of City infrastructure that includes all improvements necessary for mitigation purposes. The second document is the Implementation Plan that prioritizes each need for each site. The process of prioritizing was based on need and available funding. After review the Hazard Mitigation Steering Committee supported the Capital Improvement Plan that also addresses mitigation needs.

Multi-Hazard Action Items

Multi-hazard action items are those activities that pertain to two or more of the three hazards in the mitigation plan: flood, severe weather occasions and earthquakes. There are six short-term and three long-term multi-hazard action items described below.

SHORT TERM ACTIVITY – MULTI HAZARD #1: Integrate the goals and action items from the City of Lomita Natural Hazard Mitigation Plan into existing regulatory documents and programs, where appropriate.

Ideas for Implementation:

- Partner with other organizations and agencies with similar goals to promote Building & Safety Codes that are more disaster resistant at the state level.

Coordinating Organization:	Hazard Mitigation Steering Committee
Priority:	High
Time Line:	Ongoing
Plan Goals Addressed:	Partnerships and Implementation
Constraints:	Limited to time available from City staff.

SHORT TERM ACTIVITY – MULTI HAZARD #2: Identify and pursue funding opportunities to develop and implement City mitigation activities.

Ideas for Implementation:

- Allocate City, county, and state resources and assistance to mitigation projects when possible; and
- Partner with other organizations and agencies in the City of Lomita to identify grant programs and foundations that may support mitigation activities.

Coordinating Organization:	City Administration/Steering Committee
Priority:	Medium
Time Line:	Ongoing
Plan Goals Addressed:	Partnerships and Implementation
Constraints:	Limited to time available from City staff

SHORT TERM ACTIVITY – MULTI HAZARD #3: Establish a formal role for the City of Lomita Natural Hazards Mitigation Steering Committee to develop a sustainable process for implementing, monitoring, and evaluating City mitigation activities.

Ideas for Implementation:

- Establish clear roles for participants, meeting regularly to pursue and evaluate implementation of mitigation strategies.
- Oversee implementation of the mitigation plan.
- Establish measurable standards to evaluate mitigation policies and programs and provide a mechanism to update and revise the mitigation plan.
- Monitor hazard mitigation implementation by City infrastructure through surveys and other reporting methods.
- Develop updates for the Natural Hazards Mitigation Action Plan when presented with new information.
- Conduct a full review of the Natural Hazards Mitigation Action Plan every five (5) years by evaluating mitigation successes, failures, and areas that were not addressed.
- Provide training for Committee members to remain current on developing issues in the nature hazard loss reduction field.

Coordinating Organization:	Hazard Mitigation Steering Committee
Priority:	High
Time Line:	Ongoing

Plan Goals Addressed: Implementation
Constraints: Limited to time available from City staff.

SHORT TERM ACTIVITY – MULTI HAZARD #4: Develop public and private partnerships to foster natural hazard mitigation program coordination and collaboration in the City of Lomita.

Ideas for Implementation:

- Identify all organizations within the City of Lomita that have programs or interests in natural hazards mitigation.

Coordinating Organization: Hazard Mitigation Steering Committee
Priority: Medium
Time Line: Ongoing
Plan Goals Addressed: Partnerships and Implementation
Constraints: Limited to time available from City staff

SHORT TERM ACTIVITY – MULTI HAZARD #5: Develop inventories of at-risk City buildings and facilities and prioritize mitigation projects that will reduce risk, facilitate recovery and resumption to prevent the loss of City funding.

Ideas for Implementation:

- Identify critical facilities at risk from natural hazards events.
- Develop strategies to mitigate risk to these facilities, or to utilize alternative facilities should natural hazards events cause damages to the facilities in question.

Coordinating Organization: Public Works Department
Priority: Medium/Low
Time Line: 2-4 years
Plan Goals Addressed: Protect Life and Property
Constraints: May be budgetary limits than can prolong the length of the project

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SHORT TERM ACTIVITY – MULTI HAZARD #6: Improve internal facility non-structural resistance to damage and injury due to earthquakes. Non-structural components include furnishings, equipment, electrical and mechanical fixtures, and architectural features such as partitions, cabinets, and shelves.

Ideas for Implementation:

- Maintain safe and clear exit ways to access buildings and provide secure evacuation routes in response to emergency situations and events.

- Reduce the potential for chemical spills, fires, and gas leaks.
- Secure all items to prevent movement due to seismic activity – **Refer to Appendix F – City Site Non-Structural Action Item List.**

Coordinating Organization:	City Maintenance & Operations Department
Priority:	Medium
Time Line:	1-2 years
Plan Goals Addressed:	Protect Life and Property
Constraints:	Available employees to complete action items at all sites.

SHORT TERM ACTIVITY – MULTI HAZARD #7: Strengthen emergency services preparedness and response by linking with natural hazard mitigation programs, and enhancing community education throughout the City.

Ideas for Implementation:

- Encourage individual and family preparedness through public education projects.
- Coordinate with neighboring jurisdictions to monitor maintenance of emergency transportation routes, alternate routes and potential future changes.
- Coordinate with neighboring jurisdictions to monitor the status of their respective infrastructures that could potentially impact the City, such as storm drain systems.
- Coordinate with neighboring jurisdictions to identify available resources should any significant part of a jurisdiction's infrastructure be overwhelmed or fail that could impact the City.
- Identify opportunities for partnering with citizens, private contractors, and other jurisdictions to increase availability of equipment and manpower for efficiency of response efforts.
- Work with neighborhood groups to establish community response teams.
- Familiarize public officials of requirements regarding public assistance for disaster response.

Coordinating Organization:	City Administration/Steering Committee
Priority:	Medium/Low
Time Line:	Ongoing
Plan Goals Addressed:	Emergency Services
Constraints:	Limited to time available from City staff.

SHORT TERM ACTIVITY – MULTI HAZARD #8: Continue to maintain City street trees.

Ideas for Implementation:

- Maintain new and existing street trees to minimize potential of falling limbs.
- Remove diseased trees to minimize potential of falls.

Coordinating Organization:	Public Works Department
Priority:	High
Time Line:	Ongoing
Plan Goals Addressed:	Protect Life and Property
Constraints:	Limited to time available from City staff.

LONG TERM ACTIVITY – MULTI HAZARD – MH #1: Develop, enhance, and implement education programs aimed at mitigating natural hazards, and reducing the risk to employees and citizens residing near or within the City.

Ideas for Implementation:

Multi Hazard Action Items

- Make the City of Lomita Natural Hazards Mitigation Plan available to the public by publishing the plan electronically on the City web site.
- Develop and complete a baseline survey to gather perceptions of private citizens, employees, and any interested party regarding natural hazard risks and identify mitigation needs. Repeat the survey in five years to monitor successes and failures of natural hazard mitigation programs.
- Education: Conduct natural hazards awareness programs for employees and citizens residing in or near the City.
- Develop outreach materials for mitigation, preparedness, response and recovery that will educate and prepare citizens and employees for all disasters.

Coordinating Organization:	Hazard Mitigation Steering Committee
Priority:	Medium
Time Line:	Ongoing
Plan Goals Addressed:	Public Awareness, Protect Life and Property
Constraints:	Limited to time available from City staff

LONG TERM ACTIVITY – MULTI HAZARD – MH #2: Develop and implement disaster response training for all employees.

Ideas for Implementation:

Multi Hazard Action Item

- Provide training to all employees on the City's Standardized Emergency Management System Multi Hazard Plan.
- Provide training to update first aid and CPR skills for all employees.
- Provide training to employees to handle manageable situations, such as extinguishing small fires and search and rescue efforts.
- Prepare employees to operate city sites as a sheltering facility for displaced population.
- Exercise the response plan through tabletop and practical exercises.

Coordinating Organization:	City Administration/Steering Committee
Priority:	High
Time Line:	Ongoing
Plan Goals Addressed:	Education and awareness, protect life and property
Constraints:	Limited to available employee and staff time

LONG TERM ACTIVITY – MULTI HAZARD – MH #3: Complete all work needed/listed in the City's Capital Improvement Plan that reduces hazards to employees and protects facilities.

Ideas for Implementation:

Multi Hazard Action Item

- Replace, repair and/or upgrade all utility systems identified in the Capital Improvement Plan.
- Replace, repair and/or upgrade all site drain systems identified in the Capital Improvement Plan.
- Remove and replace, or upgrade, any structures that do not meet seismic standards.
- Insure that all new construction meets or exceeds standards set by the State Office of the Architect.
- Research and seek out funding sources to meet any identified short fall to complete all projects identified in the Capital Improvement Plan.

Coordinating Organization: Hazard Mitigation Steering Committee
Priority: Medium
Time Line: On going
Plan Goals Addressed: Protect Life and Property
Constraints: Lack of funding to complete all identified projects

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LONG TERM ACTIVITY – MULTI HAZARD – MH #4: Complete work to upgrade and replace the City's Cypress Reservoir.

Ideas for Implementation:

Multi Hazard Action Item

- Replace the existing water reservoir with a new seismic safe water reservoir.
- Upgrade existing on-site drainage.
- Remove and replace, or upgrade, any structures that do not meet seismic standards.
- Insure that all new construction meets or exceeds standards set the governing Uniform Building Code.
- Research and seek out funding sources to meet any identified short fall to complete the project.

Coordinating Organization: City Administration/Public Works Department
Priority: High
Time Line: On going
Plan Goals Addressed: Protect Life and Property
Constraints: Lack of funding to complete project

LONG TERM ACTIVITY – MULTI HAZARD – MH #6: Complete development of the City's Emergency Operations Center.

Ideas for Implementation:

Multi Hazard Action Item

- Develop an on-site Emergency Operations Center (EOC) within the City Hall building to serve as a command center during hazard incidents.
- Research and seek out funding sources to meet any identified short fall to complete the project.

Coordinating Organization: City Administration/Community Services Department
Priority: High
Time Line: On going
Plan Goals Addressed: Protect Life and Property, Emergency Services
Constraints: Lack of funding to complete project

LONG TERM ACTIVITY – MULTI HAZARD – MH #7: Continue to upgrade and replace the City's water and sewer infrastructure

Ideas for Implementation:

Multi Hazard Action Item

- Continue to replace the existing water infrastructure.
- Work with the County of Los Angeles, Public Works Department to continue replacement of sewer infrastructure.
- Research and seek out funding sources to meet any identified short fall to complete the project.

Coordinating Organization: Public Works Department
Priority: High/Medium
Time Line: On going
Plan Goals Addressed: Protect Life and Property
Constraints: Lack of funding to complete projects

LONG TERM ACTIVITY – MULTI HAZARD – MH #8: Assess localized flooding improvements.

Ideas for Implementation:

Multi Hazard Action Item

- Conduct a study of areas within the City affected by localized flooding.
- Determine priority for implementation through a cost-benefit analysis.
- Research and seek out funding sources to meet any identified short fall to complete the project.

Coordinating Organization: Public Works Department
Priority: Low
Time Line: On going
Plan Goals Addressed: Protect Life and Property
Constraints: Lack of funding to complete project

LONG TERM ACTIVITY – MULTI HAZARD – MH #9: General Plan and Zoning Ordinance Updates

Ideas for Implementation:

Multi Hazard Action Item

- Updates to the general plan and zoning ordinance should integrate policies from the Local Hazard Mitigation Plan.

Coordinating Organization:	Community Development Department
Priority:	Medium
Time Line:	On going
Plan Goals Addressed:	Protect Life and Property, Education and Awareness
Constraints:	None

Section 5
Plan Maintenance

The plan maintenance section of this document details the formal process that will ensure that the City of Lomita Natural Hazards Mitigation Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years. This section describes how the City will integrate public participation throughout the plan maintenance process. Finally, this section includes an explanation of how the City of Lomita intends to incorporate the mitigation strategies outlined in this plan into existing planning mechanisms such as Lomita City's General Plan, District Capital Improvement Plans, and Building and Safety Codes.

Monitoring and Implementing the Plan

Plan Adoption

The City of Lomita City Council will be responsible for adopting the City of Lomita Natural Hazards Mitigation Plan. This governing body has the authority to promote sound public policy regarding natural hazards. Once the Plan has been adopted, the Director of Planning will be responsible for submitting it to the State Hazard Mitigation Officer at The Governor's Office of Emergency Services and the Federal Emergency Management Agency (FEMA) for review. This review will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, the City of Lomita will gain eligibility for Hazard Mitigation Grant Program funds.

Coordinating Body

The City of Lomita Administration and Hazard Mitigation Steering Committee will be responsible for coordinating implementation of Plan action items and undertaking the formal review process.

The Hazard Mitigation Steering Committee will meet no less than quarterly. Meeting dates will be scheduled once the final Hazard Mitigation Steering Committee has been established. These meetings will provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan.

Convener

The City of Lomita City Council will adopt the City of Lomita Natural Hazard Mitigation Plan, and the Hazard Mitigation Steering Committee will take responsibility for Plan implementation.

The Director of Planning will serve as a convener to facilitate the Hazard Mitigation Steering Committee meetings, and will assign tasks such as updating and presenting the Plan to the members of the Committee. Plan implementation and evaluation will be a shared responsibility among all of the Natural Hazard Steering Committee Members.

Implementation through Existing Programs

The City of Lomita addresses statewide planning goals and legislative requirements through the City of Lomita's General Plan, Department of State Architects, and City Building and Safety Codes. The natural Hazard Mitigation Plan provides a series of recommendations – many of which are closely related to the goals and objectives of existing planning programs. The City of Lomita will have the opportunity to implement recommended mitigation action items through existing programs and procedures.

The City of Lomita Community Development Department is responsible for administering the governing Building & Safety Codes. In addition, the Community Development Department will work with other agencies at the state level to review, develop and ensure Building & Safety Codes that are adequate to mitigate or present damage by natural hazards. This is to ensure that life-safety criteria are met for new construction.

Within six months of formal adoption of the mitigation plan, the recommendations listed above will be incorporated into the process of existing planning mechanisms throughout the City. The meetings of the Hazard Mitigation Steering Committee will provide an opportunity for committee members to report back on the progress made on the integration of mitigation planning elements, documents and procedures.

Economic Analysis of Mitigation Projects

FEMA's approaches to identify the costs and benefits associated with natural hazard mitigation strategies, measures, or projects fall into two general categories: benefit/cost analysis and cost-effectiveness analysis.

Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later.

Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating natural hazards can provide decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

Given federal funding, the Hazard Mitigation Steering Committee may use a FEMA-approved benefit/cost analysis approach to identify and prioritize mitigation action items. For other projects and funding sources, the Hazard Mitigation Steering Committee will use other approaches to understand the costs and benefits of each action item and develop a prioritized list.

Evaluating and Updating the Plan

Formal Review Process

The City of Lomita Natural Hazards Mitigation Plan will be evaluated on an annual basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process includes a firm schedule and time line, and identifies the local agencies and organizations participating in plan evaluation. The convener or designee will be responsible for contacting the Hazard Mitigation Steering Committee members and organizing the annual meeting.

Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan. The Committee will review the goals and action items to determine their relevance to changing situations in the City, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. The Committee will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. The coordinating organizations responsible for the various action items will report on the status of their projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised.

The Convener will assign the duty of updating the plan to one or more of the Committee members. The designated committee members will have three months to make appropriate changes to the Plan before submitting it to the Committee members. Every five years the updated plan will be submitted to the State Hazard Mitigation Officer and the Federal Emergency Management Agency for review.

Continued Public Involvement

The City of Lomita is dedicated to involving the public directly in review and updates of the Hazard Mitigation Plan. The Hazard Mitigation Steering Committee members are responsible for the annual review and update of the plan.

The public will also have the opportunity to provide feedback about the Plan. Copies of the Plan will be kept at all City sites and the Administrative Office. In addition, copies of the Plan and any proposed changes will be posted on the City's website. This site will also contain an email address and phone number to which people can direct their comments and concerns.

A public hearing will also be held after each annual evaluation or when deemed necessary by the Hazard Mitigation Steering Committee. The meetings will provide the public a forum for which they can express its concerns, opinions, or ideas about the Plan.

Part II – Specific Natural Hazards

Section 1
Specific Natural Hazards

Identification and Prioritizing Natural Hazards

The process used to identify and prioritize threats to the City was to have the Core Group research the history of events, their potential threat, and overall impact to the City. The information gathered was presented to the Steering Committee for review, input, and recommendations.

The Core Group and Steering Committee reviewed a general list of natural threats. Both the Group and Committee agreed on two potential natural threats to the City. These threats are earthquakes and severe weather conditions.

The Core Group and Steering Committee used the criteria of frequency, intensity, and resulting injury and damage generated by a single event.

1. **Earthquake**

   Earthquakes do not have the frequency rate of other natural events. However, history shows the results of an event of significant magnitude is responsible for the loss of life, injuries, destruction of property, and a threat to the environment. Earthquakes can trigger other events, such as the loss of containment for a hazardous material, train derailment, and igniting fires. The faults and fault zones near and around the City have the potential to generate an earthquake event of significant magnitude. Earthquakes can cause not only injury and property destruction but can financially impact the City by loss of Average Daily Attendance (ADA) funding. Recovery and resumption from a major event can be lengthy and costly.

2. **Severe Weather Occasions**

   The Southern California, and City, climate is generally mild and is characterized as Mediterranean. The Group and Committee reviewed history which includes erratic, unpredictable, and unexpected shifts in weather patterns. With the exception of high winds during Santa Ana conditions and heavy rains during an El Nino condition there has not been a significant event that has impacted the City.

3. **Localized Flooding**

   The Group and Committee considered flooding as the next significant natural hazard. Flooding has a history dating back to the 1850's however, a wide range of county projects were completed dating from the 1930's to the mid 1990's. These projects include

several dams, a flood control channel system, and extensive spreading grounds. Dam failure is considered remote, overflowing levees is considered remote, and the only significant threat would be urban flooding. During the last El Nino condition that resulted in some flooding, the City was not impacted. There is a future potential for flooding due to the City planning higher density housing projects increasing rapid water run off during heavy rains. This risk, however, is considered to be low.

4. Landslides

The Group and Committee considered landslides as the next significant natural hazard. A landslide is defined as the movement of a mass of rock, debris, or earth down a slope. Landslides are a type of "mass wasting" which denotes any downslope movement of soil and rock under the direct influence of gravity. Failure of a slope occurs when the force that is pulling the slope downward (gravity) exceeds the strength of the earth materials that compose the slope. They can move slowly, (millimeters per year) or quickly and disastrously, as is the case with debris flows. California has had a significant number of locations impacted by landslides, attributable to a variety of conditions present in the state: seismic activity, heavy seasonal participation, rapid development, and varied topography. This risk, however, is considered to be low for the City of Lomita.

Non-Threatening Hazards

The Core Group and Steering Committee reviewed the following natural hazards and found that they do not represent a threat to the City.

- Avalanche – No impact. The City is not located in a mountainous region.
- Coastal Erosion – No impact. The City is not located near a coastal region.
- Coastal Storms – No impact. The City is not located near a coastal region.
- Dam Failure – No impact.
- Drought – No impact. There is no history in the City and local water districts consider supplies adequate for the next 10 years.
- Expansive Soils – No impact. This is not a threat to the City with the exception of a seismic that causes liquefaction – covered in earthquake hazard.
- Tsunami – No impact. The City is not located in or near a coastal region.
- Volcano – No impact. The general area in and around the City has no history of, or future potential for, volcanic activity.
- Wildfire – No impact. The City is not near any urban/rural interface.

Section 2
Earthquakes

Why Are Earthquakes a Threat to the City of Lomita?

The most recent significant earthquake event affecting Southern California was the January 17th 1994 Northridge Earthquake. At 4:31 a.m. on Monday, January 17, a moderate but very damaging earthquake with a magnitude of 6.7 struck the San Fernando Valley. In the following days and weeks, thousands of aftershocks occurred, causing additional damage to affected structures.

Fifty-seven (57) people were killed and more than 1,500 people seriously injured. For days afterward, thousands of homes and businesses were without electricity; tens of thousands had no gas; and nearly 50,000 had little or no water. Approximately 15,000 structures were moderately to severely damaged, which left thousands of people temporarily homeless. Sixty-six thousand five hundred (66,500) buildings were inspected. Nearly 4,000 were severely damaged and over 11,000 were moderately damaged. Several collapsed bridges and overpasses created commuter havoc on the freeway system. Extensive damage was caused by ground shaking, but earthquake triggered liquefaction and dozens of fires also caused additional severe damage. This extremely strong ground motion in large portions of Los Angeles County resulted in record economic losses.

However, the earthquake occurred early in the morning on a holiday. This circumstance considerably reduced the potential effects. Many collapsed buildings were unoccupied, and most businesses were not yet open. The direct and indirect economic losses ran into the tens of billions of dollars.

Historical and geological records show that California has a long history of seismic events. Southern California is probably best known for the San Andreas Fault, a 400 mile long fault running from the Mexican border to a point offshore, west of San Francisco. "Geologic studies show that over the past 1,400 to 1,500 years large earthquakes have occurred at about 130 year intervals on the southern San Andreas fault. As the last large earthquake on the southern San Andreas occurred in 1857, that section of the fault is considered a likely location for an earthquake within the next few decades."[1]

But San Andreas is only one of dozens of known earthquake faults that criss-cross Southern California. Some of the better known faults include the Newport-Inglewood, Whittier, Chatsworth, Elsinore, Hollywood, Los Alamitos, and Palos Verdes faults. Beyond the known faults,

[1] http://pubs.usgs.gov/gip/earthq3/when.html

there are a potentially large number of "blind" faults that underlie the surface of Southern California. Once such blind fault was involved in the Whittier Narrows earthquake in October 1987.

Although the most famous of the faults, the San Andreas, is capable of producing an earthquake with a magnitude of 8+ on the Richter scale, some of the "lesser" faults have the potential to inflict greater damage on the urban core of the Los Angeles Basin. Seismologists believe that a 6.0 earthquake on the Newport-Inglewood would result in far more death and destruction than a "great" quake on the San Andreas, because the San Andreas is relatively remote from the urban centers of Southern California.

For decades, partnerships have flourished between the USGS, Cal Tech, the California Geological Survey and universities to share research and educational efforts with Californians. Tremendous earthquake mapping and mitigation efforts have been made in California in the past two decades, and public awareness has risen remarkably during this time. Major federal, state, and local government agencies and private organizations support earthquake risk reduction, and have made significant contributions in reducing the adverse impacts of earthquakes. Despite the progress, the majority of California communities remain unprepared because there is a general risk of understanding regarding earthquake hazards among Californians.

Table 2-1 – Earthquake Events in the Southern California Region

1769	Los Angeles Basin	1916	Tejon Pass Region
1800	San Diego Region	1918	San Jacinto
1812	Wrightwood	1923	San Bernardino Region
1812	Santa Barbara Channel	1925	Santa Barbara
1827	Los Angeles Region	1933	Long Beach
1855	Los Angeles Region	1941	Carpenteria
1857	Great Fort Tejon Earthquake	1952	Kern County
1858	San Bernardino Region	1954	W. of Wheeler Ridge
1862	San Diego Region	1971	San Fernando
1892	San Jacinto or Elsinore Fault	1973	Point Magu
1893	Pico Canyon	1986	North Palm Springs
1894	Lytle Creek Region	1987	Whittier Narrows
1894	E. of San Diego	1992	Landers
1899	Lytle Creek Region	1992	Big Bear
1899	San Jacinto and Hemet	1994	Northridge
1907	San Bernardino Region	1999	Hector Mine
1910	Glen Ivy Hot Springs		

Source:
http://geology.about.com/gi/dynamic/offsite.htm?site=http%3A%2F%2Fpasadena.wr.usgs.gov%2Finfo%2Fcahistegs.html

To better understand the earthquake hazard, the scientific community has looked at historical records and accelerated research on those faults that are the sources of the earthquakes occurring in the Southern California region. Historical earthquake records can generally be divided into records of the pre-instrumental period and the instrumental period. In the absence of instrumentation, the detection of earthquakes is based on observations and felt reports, and is dependent upon population density and distribution. Since California was sparsely populated in the 1800s, the detection of pre-instrumental earthquakes is relatively difficult. However, two very large earthquakes, the Fort Tejon in 1857 (7.9) and the Owens Valley (7.6) are evidence of the tremendously damaging potential of earthquakes in Southern California. In more recent times two 7.3 earthquakes struck Southern California, in Kern County (1952) and Landers (1992). The damage from these four large earthquakes was limited because they occurred in areas which were sparsely populated at the time they happened. The seismic risk is much more severe today than in the past because the population at risk is in the millions, rather than a few hundred or a few thousand persons.

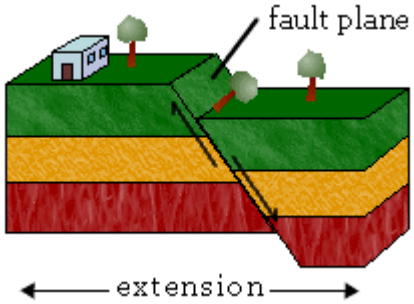
History of Earthquake Events in Southern California

Since seismologist started recording and measuring earthquakes, there have been tens of thousands of recorded earthquakes in Southern California, most with a magnitude below three. No community in Southern California is beyond the reach of a damaging earthquake. Table 2-1 describes the historical earthquake events that have affected Southern California.

Table 2-2 – Causes and Characteristics of Earthquakes in Southern California

Earthquake Faults

In a normal fault, the block above the fault moves down relative to the block below the fault. This fault motion is caused by tensional forces and results in extension. (other names: normal-slip fault, tensional fault or gravity fault)



Strike-Slip

In a strike-slip fault, the movement of blocks along a fault is horizontal. If the block on the far side of the fault moves to the left, as shown to the right, the fault is called left-lateral. If the block on the far side moves to the right, the fault is called right-lateral. The fault motion of a strike-slip fault is caused by shearing forces. (other names: transcurrent fault, lateral fault, tear fault, or wrench fault)

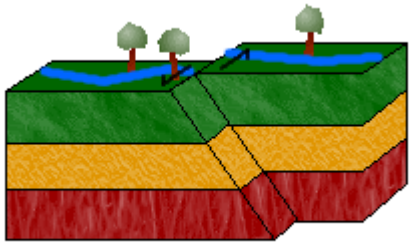
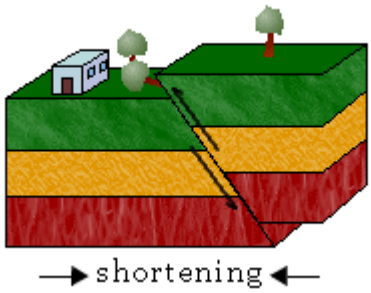


Table 2-2 – Causes and Characteristics of Earthquakes in Southern California

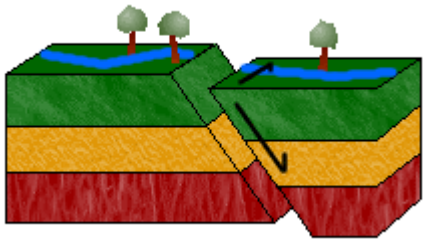
Dip-Slip

In a reverse (dip-slip) fault, the block above the fault moves up relative to the block below the fault. This fault motion is caused by compressional forces and results in shortening. A reverse fault is called a thrust fault if the dip of the fault plane is small. (other names: thrust fault, reverse-slip fault or compressional fault)



Oblique-Slip Fault

Oblique-slip faulting suggests both dip-slip faulting and strike-slip faulting. It is caused by a combination of shearing and tension of compressional forces.

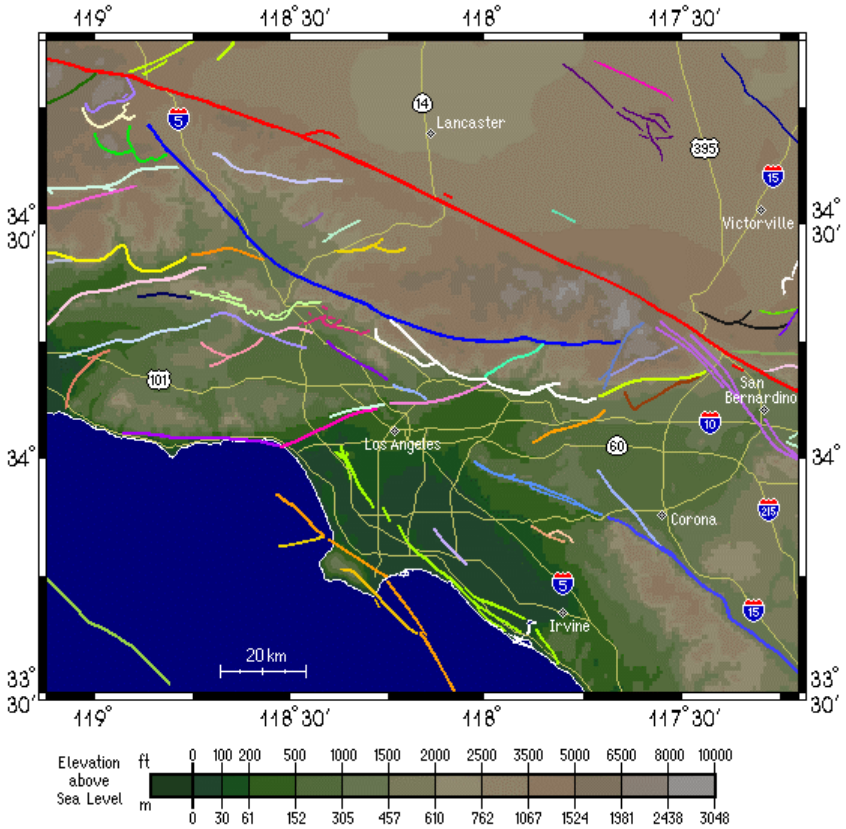


Faults of Southern California

Los Angeles Region

This map (on the next page) covers most of the Los Angeles metropolitan area. Within this map area, most every kind of fault type can be found. Indeed, since these maps show only surface traces of faults, some potentially damaging faults – namely, blind thrust faults, like the one which caused the Northridge Earthquake of 1994 – are not shown. Some of the faults which are shown may never rupture again. This map is not meant to be used as a zoning guide, nor for risk assessment. For these purposes, please see the documents prepared by the California Geological Survey.

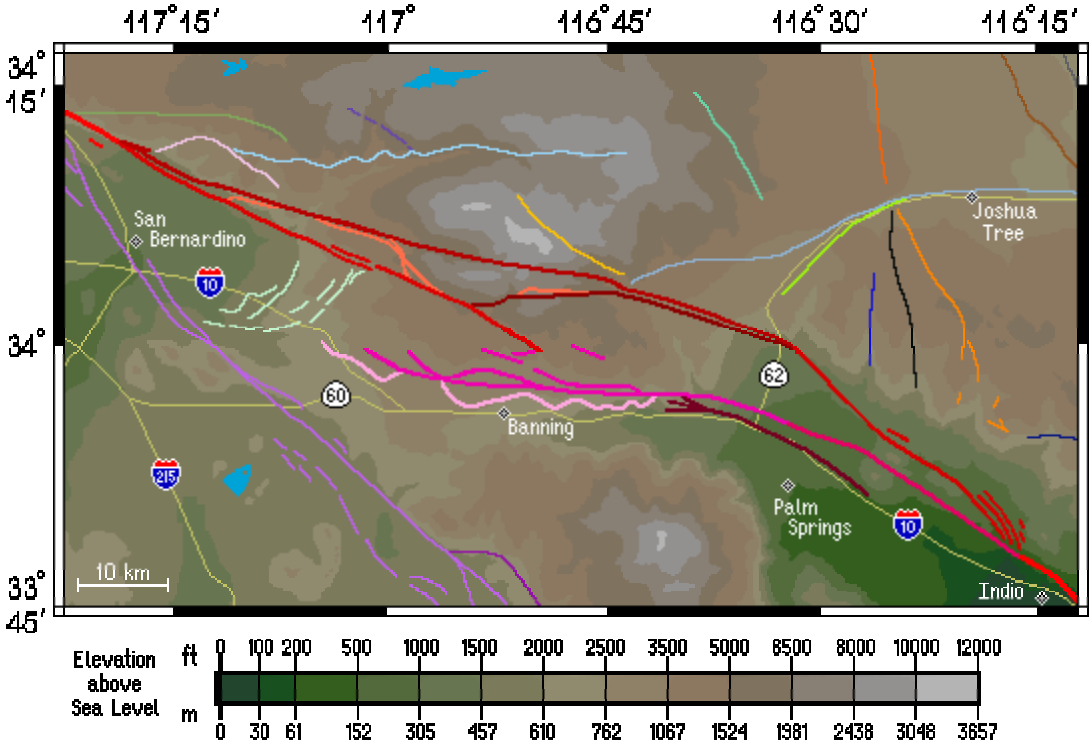
<u>San Andreas Fault Zone</u>
Type of Fault: Right-Lateral Strike-Slip
Length: 1200 km. 550 km south from Parkfield; 650km northward
Nearby Community: Parkfield, Frazier Park, Palmdale, Wrightwood, San Bernardino, Banning, Indio
Last Major Rupture: January 9, 1857 (Mojave segment); April 18, 1906 (Northern segment)
Slip Rate: about 20 to 35 mm per year
Interval Between Major Ruptures: average of about 140 years on the Mojave segment; recurrence interval varies greatly – from under 20 years (at Parkfield only) to over 300 years.
Probable Magnitudes: M_W6.8 – 8.0



San Andreas Fault Zone – San Gorgonia Pass Area:

The San Gorgonio Pass are is fairly complex, geologically speaking. Here the San Andreas fault interacts with other faults (most notably the San Jacinto fault zone and the Pinto Mountain fault) and thereby becomes somewhat fractured, over the distance extending from just north of San Bernardino to just north of Indio, some 110 kilometers (70 miles). Because this deformation has been going on for well over a million years, ancient and inactive strands of the San Andreas fault can be found here. Other faults in this area are have been "reawakened" recently after being dormant for hundreds of thousands of years. There is even evidence to suggest that there is no active, continuous main trace of the San Andreas fault going all the way through the pass, not even at depth – implying that the San Andreas fault may currently be in the process of creating a new fault path through this area! This could also mean that a single continuous rupture from Cajon Pass to the Salton Sea (a stretch of the San Andreas that has not ruptured in historical times) is unlikely to occur. Fault rupture mechanics are still not well understood, however, and the discontinuity could prove to have little effect on tempering a major earthquake on this southern stretch of the San Andreas fault zone.

Below is a map of the San Gorgonio Pass area, similar to the other clickable maps within these pages; clicking on the survey of the trace of a fault will take you to a file detailing some of the features of that fault. Cities and towns are shown as diamonds, lakes are shown in light blue, and highways are shown in yellow. It should be noted that due to the complexity of this area, many researchers have used different nomenclature for the local faults, and placed the dividing lines between certain named fault segments in varying places. This naturally makes it difficult to decide upon one standard for labeling maps such as this. When possible, these differences will be noted within the fault files, but keep in mind that the system used here represents only one of many ways of characterizing this intriguing and complex geologic region.



Dr. Kerry Sieh of Cal Tech has investigated the San Andreas fault at Pallett Creek. "The record at Pallett Creek shows that rupture has recurred about every 130 years, on average, over the past 1,500 years. But actual intervals have varied greatly, from less than 50 years to more than 300. The physical cause of such irregular recurrence remains unknown."[2] Damage from a great quake on the San Andreas would be widespread throughout Southern California.

The following details are presented on faults in the local geographic area:

<u>Whittier Fault</u>
Type of Faulting: right-lateral strike-slip with some reverse slip
Length: about 40 km
Nearby Communities: Yorba Linda, Hacienda Heights, Whittier
Most Recent Surface Rupture: Holocene
Slip Rate: between 2.5 and 3.0 mm/year
Interval Between Major Ruptures: unknown
Probable Magnitudes: M_W6.0 – 7.2
Other Notes: The Whittier fault dips toward the northeast

<u>San Jose Fault</u>
Type of Faulting: left-lateral strike-slip; minor reverse component possible
Length: about 18 km

[2] http://www.gps.caltech.edu/~sieh/home.html

Nearby Communities: Claremont, La Verne, Pomona
Last Significant Quake: Feb. 28, 1990; M_I5.4. No surface rupture
Most Recent Surface Rupture: Late Quaternary
Slip Rate: between 0.2 and 2.0 mm/year
Interval Between Major Ruptures: unknown
Probable Magnitudes: M_L6.0 – 6.5
Other Notes: The San Jose fault dips steeply to the north.

Newport-Inglewood Fault Zone
Type of Faulting: Right-lateral; local reverse slip associated with fault steps.
Length: 75 km
Nearest Communities: Culver City, Inglewood, Gardena, Compton, Signal Hill, Long Beach, Seal Beach, Huntington Beach, Newport Beach, Costa Mesa
Most Recent Major Rupture: March 10, 1933, M_W6.4 (but no surface rupture)
Slip Rate: 0.6 mm/year
Interval Between Major Ruptures: Unknown
Probable Magnitudes: M_W6.0 – 7.4
Other Notes: Surface trace is discontinuous in the Los Angeles Basin, but the fault zone can easily be noted there by the existence of a chain of low hills extending from Culver City to Signal Hill. South of Signal Hill, it roughly parallels the coastline until just south of Newport Bay, where it heads offshore, and becomes the Newport-Inglewood – Rose Canyon fault zone.

The Newport-Inglewood Fault Zone (NIFZ) is located about 51 miles northeast of the City of Lomita at is closest point. An earthquake resulting from movement of the NIFZ may have effects on the City greater than those of other zones. An earthquake on the Newport-Inglewood fault will result in very high ground accelerations in Lomita because the fault is so close to the City. Earthquakes that historically have had the most effect on the City of Lomita have been results of movement on the Newport-Inglewood fault zone. It is the potential risk due to the fault's proximity that forms a major basis of the City's building design codes. They provide mitigation of the strictest order because the NIFZ is of this very high risk, according to the Uniform Building Code. The stringency of the code is also attributed to the San Andreas fault, because of the very high magnitude potential of that fault.

In 1989, T.R. Toppozada and others delineated a planning scenario for a major earthquake on the Newport-Inglewood fault zone (California Division of Mines and Geology, Special Publication 99, pp. 1-4) in which they stated a belief that a magnitude 7 earthquake along the NIFZ would cause greater damage in the metropolitan Los Angeles-Orange county area than a magnitude 8.3 earthquake along the more distance San Andreas fault, although there is no evidence that such an earthquake will occur in the near future. Therefore, they express the opinion that the City should develop and emergency response plan based on a worst-case scenario for this fault zone.

Los Alamitos Fault
Type of Faulting: Uncertain
Length: 11 km
Nearby Communities: Los Alamitos, Lakewood, Bellflower
Most Recent Surface Rupture: Late Quaternary

Other Notes: Age uncertain; fault indistinct. May be part of a larger fault system – the Compton-Los Alamitos fault.

Santa Monica Fault
Type of Faulting: Left-reverse
Length: 24 km
Nearby Communities: Pacific Palisades, Westwood, Beverly Hills, Santa Monica
Most Recent Surface Rupture: Late Quaternary
Slip Rate: Between 0.27 and 0.39 mm/year
Interval Between Major Ruptures: Unknown
Probable Magnitudes: M_W6.0 – 7.0 (?)
Other Notes: This is a north-dipping fault. Its slip rate may be greatest at is western end.

Raymond Fault
Type of Faulting: Left-lateral; only minor reverse slip
Length: 26 km
Nearest Communities: San Marino, Arcadia, South Pasadena
Most Recent Major Rupture: Holocene
Slip Rate: Between 0.10 and 0.22 mm/year
Interval Between Major Ruptures: Roughly 4,500 years (?)
Probable Magnitudes: M_W6.0 – 7.0

This fault dips at about 75 degrees to the north. There is evidence that at least eight surface-rupturing events have occurred along this fault in the last 36,000 years.

The exact nature of the slip along the Raymond fault has been a subject of debate for quite some time. The fault produces a very obvious south-facing scarp along much of its length, and this has made many favor reverse-slip as the predominant sense of fault motion. However, there are also places along this scarp where left-lateral stream offsets of several hundred meters can be seen.

The matter will not be conclusively resolved until the Raymond fault ruptures at the surface, but some new light was shed on the debate in late 1988, when the Pasadena Earthquake occurred. Apparently located on the Raymond fault, the motion of this quake was predominately left-lateral, with a reverse component only about 1/15th the size of the lateral component. Curiously enough, this corresponds very well with a scarp height of about 30 meters (reverse slip) versus a left-lateral stream offset of about 400 meters (lateral slip), which are found along the scarp of the Raymond fault south of Pasadena.

If the Raymond fault is indeed primarily a left-lateral fault, it could be responsible for transferring slip southward from the Sierra Madre fault zone to other fault systems.

Sierra Madre Fault Zone
Type of Faulting: Reverse
Length: the zone is about 55 km long; total length of main fault segments is about 75 km, with each segment measuring roughly 15 km long
Nearby Communities: Sunland, Altadena, Sierra Madre, Monrovia, Duarte, Glendora
Most Recent Surface Rupture: Holocene
Slip Rate: between 00.36 and 4 mm/year
Interval Between Surface Ruptures: several thousand years (?)

Probable Magnitudes: M_W6.0 – 7.0 (?)
Other Notes: This fault zone dips to the north. It was not the fault responsible for the 1991 Sierra Madre earthquake.

The Sierra Madre fault zone is often divided into five main segments, labeled with the letters A through E, to more easily characterize this fairly complex system. The map to the right shows these segments.

These five divisions, while simpler than the entire fault zone, should not be thought of as individual faults, however – some of these segments are themselves complex systems of parallel and branching faults. It has been suggested that differing fault geometries in this zone keep each lettered segment separate during rupture events – thus, neighboring segments should not rupture simultaneously. Others, however, suggest that the fault zone may rupture both in single-segment and multi-segment breaks.

The most recent surface ruptures are seen on the B and D segments. The lease active segment, at least in surface appearance, is the A segment, also know as the Vasquez Creek fault, which runs between the San Gabriel fault, which runs between the San Gabriel fault and the intersection of the B and C segments of the Sierra Madre fault zone. At the junction of the C and D segments, the Clamshell – Sawpit Canyon fault splays off from the fault zone, toward the northeast (shown in sea green on the map above). It was this fault, not the Sierra Madre fault zone itself, that ruptured to produce the Sierra Madre earthquake of 1991 (named for the nearby community of Sierra Madre).

One of the strands that make up Segment D is known as the Duarte fault, because of its location near that community. Segment E represents the easternmost part of this fault zone, and at is eastern end, it meets up with several other faults in a complex zone northwest of the town of Upland, near the epicenter of the 1990 Upland earthquake. The general trend of the Sierra Madre fault zone continues eastward from this point along the base of the San Gabriel Mountains, but this eastern continuation is known as the Cucamonga fault zone. The Cucamonga fault zone seems to be more active (has a higher slip rate) than the Sierra Madre fault zone.

While rupture on the Sierra Madre fault zone (theoretically) could be limited to one segment at a time, it has recently been suggested that a large event on the San Andreas fault to the north (like that of 1857) could cause simultaneous rupture on reverse faults south of the San Gabriel Mountains – the Sierra Madre fault zone being a prime example of such. Whether this could rupture multiple Sierra Madre fault zone segments simultaneously is unknown.

<u>San Gabriel Fault Zone</u>
Type of Faulting: Primarily right-lateral strike-slip
Length: Roughly 140 km
Nearby Communities: Castaic, Saugus, Sunland
Most Recent Surface Rupture: Late Quaternary west of intersection with the Sierra Madre fault zone; Quaternary east of that intersection; Holocene only between Saugus and Castaic
Slip Rate: 1 mm/year to 5 mm/year
Interval Between Major Ruptures: Unknown

Other Notes: Slip rate and recurrence interval probably vary significantly along the length of the San Gabriel fault zone. The western half is probably much more active than the eastern half. Dip is generally steep and to the north.

Clamshell-Sawpit Canyon Fault
Type of Faulting: Reverse
Length: 18 km
Nearest Communities: Sierra Madre, Monrovia
Most Recent Surface Rupture: Late Quaternary
Other Notes: This fault dips to the north at about 40 (at the surface) to 50 (at depth) degrees.

The Sierra Madre earthquake of 1991 probably originated on the Clamshell – Sawpit Canyon fault. Though a sizable earthquake, the depth of this quake prevented the rupture from reaching the surface.

Cucamonga Fault Zone
Type of Faulting: Thrust
Length: About 30 km
Nearest Communities: Claremont, Upland, Cucamonga
Slip Rate: Between 5 and 14 mm/year
Interval Between Major Ruptures: Estimated at roughly 600-700 years
Probable Magnitudes: M_W6.0 – 7.0
Most Recent Rupture: Very recent Holocene
Other Notes: Typical ground rupture per major event estimated at 2 meters. Slip rate (and thus recurrence interval) is somewhat disputed. If fastest slip rate is assumed, surface rupture interval may be as short as 150-200 years. This zone of faulting dips to the north.

The Cucamonga fault zone is part of the same fault system, marking the southern boundary of the San Gabriel Mountains, as the Sierra Madre fault zone. Sometimes it is included as part of the Sierra Madre fault zone, as is the San Fernando fault zone far to the west; here we refer to each as separate fault zones, as it is not clear that rupture may progress from one to another. Perhaps the best way to rectify the difference in nomenclature is to refer to the Cucamonga fault zone, Sierra Madre fault zone, and the San Fernando fault zone as the Sierra Madre fault system.

San Fernando Fault Zone
Type of Faulting: Thrust
Length: 17 km
Nearest Communities: San Fernando, Sunland
Last Major Rupture: February 9, 1971, M_W6.6
Slip Rate: 5 mm/year (?)
Interval Between Major Ruptures: Roughly 200 years
Probable Magnitudes: M_W6.0 – 6.8
Other Notes: Dip is to the north. The slip rate is not well known, but trenching studies indicate recurrence interval as between 100 and 300 years.

Santa Susana Fault Zone
Type of Faulting: Thrust
Length: 38 km

Nearby Communities: Piru, Sylmar, San Fernando
Most Recent Surface Rupture: Late Quaternary, except for a short segment which ruptured slightly during the 1971 San Fernando earthquake
Slip Rate: Between 5 and 7 mm/year
Interval Between Major Ruptures: Uncertain
Probable Magnitudes: M_W6.5 – 7.3
Other Notes: The faults in this complex zone primarily dip to the north.

Palos Verdes Fault Zone
Type of Faulting: Right-reverse (?)
Length: Roughly 80 km
Nearby Communities: San Pedro, Palos Verdes Estates, Torrance, Redondo Beach
Most Recent Surface Rupture: Holocene, offshore; Late Quaternary, onshore
Slip Rate: Between 0.1 and 3.0 mm/year
Interval Between Major Ruptures: Unknown
Probable Magnitudes: M_W6.0 – 7.0 (or greater?); fault geometries may allow only partial rupture at any one time.
Other Notes: Has two main branches (see below). Continues southward as the Palos Verdes – Coronado Bank fault zone.

The Palos Verdes Fault Zone (PVFZ) is a zone of faulting and intense folding about 1.24 miles (two kilometers) in width and about 49.7 miles (80 km) total in length. It cuts diagonally through the southern part of the city and extends offshore northwest and southeast. The Palos Verdes Fault Zone consists of separate segments, one onshore and two offshore (Ziony and Yerkes, 1985). The segment lying onshore is of interest in the context of this element. It is important to that that the seismic histories of offshore faults are still not very well known.

This onshore segment, which traverses the southern part of Torrance, is classified as "potentially active" because no known direct onshore evidence is present to justify "active" classification at this time. The California Division of Mines and Geology evaluated this fault in 1978 (D. Smith, 5-26-78, Fault Evaluation Report No. 43), to determine if it were significant enough to be included for special study under the provisions of the Alquist-Priolo Act, which established Alquist-Priolo Special Seismic Studies zones. The criteria for placement on the Alquist-Priolo Zone are: (1) the fault must be "sufficiently active", and (2) it must be "well defined" so that it can be readily recognized in the field by a trained geologist (Hart, 1988). The fault did not meet either of these criteria of activity or definition.

The legislative act which created the Alquist-Priolo zones does not restrict local jurisdictions to investigating only those faults within an Alquist-Priolo zone, and prudent planning would require that consultants and City staff consider the entire length of the Palos Verdes fault as active for planning purposes. Thus, the scope of any seismic investigation should include locating surface fault ruptures when the proposed location of a high occupancy and/or essential structure (school, hospital, high-rise structure, police station, fire station, etc.) is near this fault.

Palos Verdes-Coronado Bank Fault Zone
Type of Faulting: Right-Lateral and Normal Faulting (?)
Length: At least 90 km; with the Palos Verdes – Coronado Bank Fault Zone: at least 180 km
Nearest Community: San Diego (20 km offshore)
Most Recent Surface Rupture: Holocene

Slip Rate: Roughly 2.0 mm/year
Other Notes: Essentially continuous with the Palos Verdes fault zone. Rupture extending from one named section across to another section might be possible.

Cabrillo Fault
Type of Faulting: Right-normal (?)
Length: 20 km
Nearby Communities: Rancho Palos Verdes, Rolling Hills Estates, San Pedro
Most Recent Surface Rupture: Holocene, offshore; Late Quaternary, onshore
Slip Rate: Uncertain
Interval Between Major Ruptures: Unknown
Probable Magnitudes: M_W6.0 – 6.8
Other Notes: Dips to the north.

The Cabrillo fault is classified as active, also based on offset Holocene (younger than 11,000 years) sediments along its offshore segments, and on scattered micro-earthquakes. A maximum credible earthquake on this fault would generate peak horizontal ground accelerations of up to 0.5 to 0.6g in the City.

Redondo Canyon Fault
Type of Faulting: Right-reverse (?)
Length: 11 km
Nearby Communities: Palos Verdes Estates, Redondo Beach
Most Recent Surface Rupture: Holocene
Slip Rate: Uncertain
Interval Between Major Ruptures: Unknown
Probable Magnitudes: M_W5.8 – 6.5

Malibu Coast Fault Zone
Type of Faulting: Reverse
Length: 34 km; has several parallel strands
Nearest Communities: Malibu, pacific Palisades
Most Recent Surface Rupture: Holocene, in part; otherwise Late Quaternary
Slip Rate: Roughly 0.3 mm/year
Interval Between Major Ruptures: Uncertain
Other Notes: This is a north-dipping fault. The slip rate may be higher at its eastern end, where it meets the Santa Monica fault, and develops left-reverse motion.

Chino Fault
Type of Faulting: Right-reverse
Length: 21 km
Nearest Communities: Corona, Chino
Most Recent Surface Rupture: Late Quaternary
Slip Rate: About 1.0 mm/year
Interval Between Major Ruptures; Unknown
Probable Magnitudes: M_W6.0 – 7.0
Other Notes: The dip of this fault is to the southwest.

Los Alamitos Fault
Type of Faulting: Uncertain
Length: 11 km
Nearby Communities: Los Alamitos, Lakewood, Bellflower
Most Recent Surface Rupture: Late Quaternary
Other Notes: Age uncertain; fault indistinct. May be part of a larger fault system – the Compton-Los Alamitos fault.

Red Hill Fault (Also Etiwanda Avenue Fault)
Type of Faulting: Thrust
Length: About 25 km
Nearest Communities: Etiwanda, Alta Loma, Upland
Slip Rate: Uncertain
Interval Between Major Ruptures: Unknown
Probable Magnitudes: M_W6.0 – 7.0
Most Recent Surface Rupture: Holocene at eastern end; otherwise, Lat Quaternary
Other Notes: This fault dips to the north. The eastern 9 kilometers of the Red Hill-Etiwanda Avenue fault is often considered to be a part of the Cucamonga fault zone, as it shows surface rupture more similar to that of the Cucamonga fault zone than to that of the rest of the Red Hill fault.

Hollywood Fault
Type of Faulting: Left-reverse
Length: 15 km
Nearby Communities: Hollywood, Beverly Hills, Glendale
Most Recent Surface Rupture: Holocene
Slip Rate: Between 0.33 mm/year and 0.75 mm/year
Interval Between Major Ruptures: 1600 years (?)
Probable Magnitudes: M_W5.8 – 6.5, alone; larger if rupture is simultaneous with an adjacent fault
Other Notes: Could be considered a westward extension of the Raymond fault. Roughly parallel to the Santa Monica fault.

San Antonio Fault
Type of Faulting: Left-lateral strike-slip
Length: 20 km
Nearby Communities: Mt. Baldy, Alta Loma
Most Recent Surface Rupture: Late Quaternary
Other Notes: The small branch to the west near the southern end of the San Antonio fault is known as the Evey Canyon fault. The San Antonio fault probably cuts and offsets the Stoddard Canyon fault.

Stoddard Canyon Fault
Type of Faulting: Left-lateral strike-slip
Length: 18 km
Nearby Communities: Alta Loma, Lytle Creek
Most Recent Surface Rupture: Quaternary

Other Notes: Also called the South San Antonio fault, this north-dipping fault is one of the many in a complex system of branching faults north of the Cucamonga fault zone, none of which appear to have been active in Holocene times. The largest of these is the Icehouse Canyon fault, which branches off to the north of the Stoddard Canyon fault. The Stoddard Canyon fault is probably cut and offset by the San Antonio fault to the west, but the intersection of these two faults is buried, and the exact relation is unclear.

San Jacinto Fault Zone
Type of Faulting: Right-lateral strike-slip; minor right-reverse
Length: 210 km, including coyote Creek fault
Nearby Communities: Lytle Creek, San Bernardino, Loma Linda, San Jacinto, Hemet, Anza, Borrego Springs, Ocotillo Wells
Most Recent Surface Rupture: Within the last few centuries; April 9, 1968, M_W6.5 on Coyote Creek segment
Slip Rate: Typically between 7 and 17 mm/year
Interval Between Surface Ruptures: Between 100 and 300 years, per segment
Probable Magnitudes: M_W6.5 – 7.5

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 and depth of the earthquake, the type of fault, and distance from the epicenter (where the earthquake originates). Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

Earthquake Induced Landslides

Earthquake induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy the 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.

Liquefaction

Liquefaction occurs when ground-shaking causes wet granular soils to change from a solid state to a liquid state. 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.

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.[3] Amplification can also occur in areas deep sediment filled basins and on ridge tops.

Earthquake Hazard Assessment

Hazard Identification

In California, many agencies are focused on seismic safety issues: the State's Seismic Safety Commission, the Applied Technology Council, Governor's Office of Emergency Services, United States Geological Survey, Cal Tec, the California Geological Survey as well as a number of universities and private foundations.

These organizations, in partnership with other state and federal agencies, have undertaken a rigorous program in California to identify seismic hazards and risks including active fault identification, bedrock shaking, tsunami inundation zones, ground motion amplification, liquefaction, and earthquake induced landslides. Seismic hazard maps have been published and are available for many communities in California through the State Division of Mines and Geology.

In California, each earthquake is followed by revisions and improvements in the Building Codes. The 1933 Long Beach resulted in the Field Act, affecting school construction. The 1971 Sylmar earthquake brought another set of increased structural standards. Similar re-evaluations occurred after the 1989 Loma Prieta and 1994 Northridge earthquakes. These code changes have resulted in stronger and more earthquake resistant structures.

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. This state law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. Surface rupture is the most easily avoided seismic hazard.[4]

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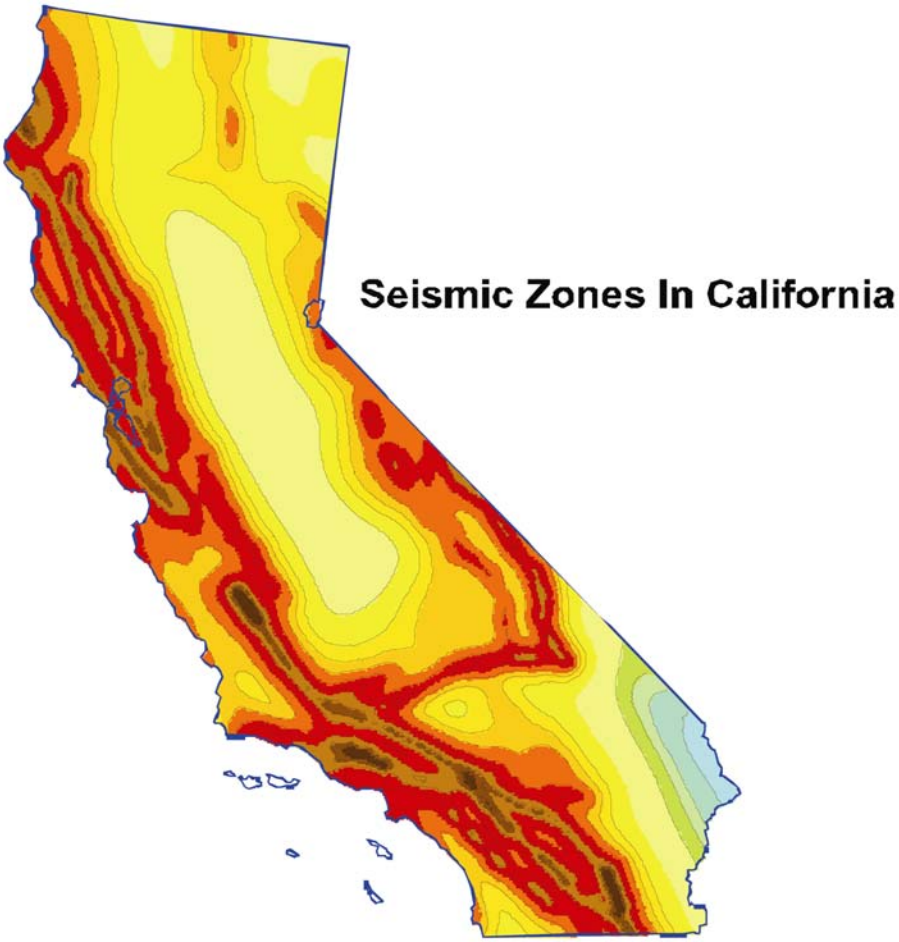
[3] Planning for Natural Hazards: The California Technical Resource Guide, Department of Land Conservation and Development (July 2000)

[4] http://www.data.scec.org/fault_index/newping.html

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides.[5] The State Department of Conservation operates the Seismic Mapping Program for California. Extensive information is available at their website: http://gmw.consrv.ca.gov/shmp/index.htm.



Darker Shaded Areas indicate Greater Potential Shaking

Source: USGS Website

Vulnerability Assessment

The effects of earthquakes span a large area, and large earthquakes occurring in many parts of the Southern California region would probably be felt throughout the region. However, the degree to which the earthquakes are felt, and the damages associated with them may vary. At risk

[5] http://pubs.usgs.gov/gip/earthq3/when.html

from earthquake damage are large stocks of old buildings and bridges; many high tech and hazardous materials facilities; extensive sewer, water and natural gas pipelines; earth dams; petroleum pipelines; and other critical facilities and private property located in the county. 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 California Geological Survey has identified areas most vulnerable to liquefaction. Liquefaction occurs when ground-shaking causes wet granular soils to change from a solid state to a liquid state. 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. **Map 4** identifies areas (shaded in Green) that have soils vulnerable to liquefaction.

Risk Analysis

Risk analysis is the third phase of a hazard assessment. Risk analysis involves estimating the damage and cost likely to be experienced in a geographic area over a period of time.[6] Factors included in assessing earthquake risk include population and property distribution in the hazard area, the frequency of earthquake events, landslide susceptibility, buildings, infrastructure, and disaster preparedness of the region. This type of analysis can generate estimates of the damages to the region due to an earthquake vent in a specific location. FEMA's software program, HAZUS, uses mathematical formulas and information about building stock, local geology and the location and size of potential earthquakes, economic data, and other information to estimate losses from a potential earthquake.[7]

For greater Southern California there are multiple worst case scenarios, depending on which fault might rupture, and which communities are in proximity to the fault. But damage will not necessarily be limited to immediately adjoining communities. Depending on the hypocenter of the earthquake, seismic waves may be transmitted through the ground to unsuspecting communities. In the Northridge 1994 earthquake, Santa Monica suffered extensive damage, even though there was a range of mountains between it and the origin of the earthquake.

Damages from a large earthquake almost anywhere in Southern California are likely to run into the billions of dollars. Although building codes are some of the most stringent in the world, ten's of thousands of older existing buildings were built under much less rigid codes. California has laws affecting unreinforced masonry buildings (URM's) and although many building owners have retrofitted their buildings, hundreds of pre-1933 building still have not been brought up to current standards.

Non-structural bracing of equipment and contents is often the most cost-effective type of seismic mitigation. Inexpensive bracing and anchoring may be the most cost effective way to protect ex-

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[6] http://www.gps.caltech.edu/~sieh/home.html

[7] Planning for Natural Hazards: The California Technical Resource Guide, Department of Land Conservation and Development (July 2000)

pensive equipment. Non-structural bracing of equipment and furnishings will also reduce the chance of injury for the occupants of a building.

Community Earthquake Issues

What is susceptible to earthquakes?

Earthquake damage occurs because humans have built structures that cannot withstand severe shaking. Buildings, airports, schools, and lifelines (highways and utility lines) suffer damage in earthquakes and can cause death or injury to humans. The welfare of homes, major businesses, and public infrastructure is very important. Addressing the reliability of buildings, critical facilities, and infrastructure, and understanding the potential costs to government, businesses, and individuals as a result of an earthquake, are challenges faced by the city.

Dams

There are a total of 103 dams in Los Angeles County, owned by 23 agencies or organizations, ranging from the Federal Government to Home Owner Associations.[8] These dams hold billions of gallons of water in reservoirs. Releases of water form the major reservoirs are designed to protect Southern California from floodwaters and to store domestic water. Seismic activity can compromise the dam structures, and the resultant flooding could cause catastrophic flooding. Following the 1971 Sylmar earthquake the Lower Van Norman Dam showed signs of structural compromise, and tens of thousands of persons had to be evacuated until the dam could be drained. The dam has never been refilled. Dam failure is not considered a threat to the City of Lomita.

Buildings

The built environment is susceptible to damage from earthquakes. Buildings that collapse can trap and bury people. Lives are at risk and the cost to clean up the damages is great. In most California communities, including the City of Lomita, many buildings were built before 1993 when building codes were not as strict. In addition, retrofitting is not required except under certain conditions which can be expensive. Therefore, the number of buildings at risk remains high. The California Seismic Safety Commission makes annual reports on the progress of the retrofitting of unreinforced masonry buildings.

Infrastructure and Communication

Residents in the Community of Lomita commute frequently by automobiles, and public transportation such as buses and light rail. An earthquake can greatly damage bridges and roads, hampering emergency response efforts and the normal movement of people and goods. Damaged infra-

[8] http://www.consrv.ca.gov/CGS/rghm/ap/

structure strongly affects the economy of the community because it disconnects people from work, school, food supply, and leisure activities, and separates businesses from their customers and suppliers.

Bridge Damage

Even modern bridges can sustain damage during earthquakes, leaving them unsafe for use. Some bridges have failed completely due to strong ground motion. Bridges are a vital transportation link with even minor damages making some areas inaccessible. Because bridges vary in size, materials used, location and design, any given earthquake will affect them differently. Bridges built before the mid-1970's have a significantly higher risk of suffering structural damage during a moderate to large earthquake compared to those built after 1980 when design improvements were made.

Much of the interstate highway system was built in the mid to late 1960's. The City of Lomita has no bridges within the City limits. Cal Trans has retrofitted most bridges on the freeway systems; however, there are still some county maintained bridges that are not retrofitted. The FHWA requires that bridges on the National Bridge Inventory be inspected every two years. CalTrans checks when the bridges are inspected because they administer the Federal funds for bridge projects.

Damage to Lifelines

Lifelines are the connections between communities and outside services. They include water and gas lines, transportation systems, electric delivery systems and communication networks. Ground shaking and amplification can cause pipes to break open, power lines to fall, roads and railways to crack or move, and radio and telephone communication to cease. Disruption to transportation makes it especially difficult to bring in supplies or services. Lifelines need to be usable after earthquakes to allow for rescue, recovery, and rebuilding efforts and to relay important information to the public.

Disruption of Critical Services

Critical facilities include police stations, fire stations, hospitals, shelters, and other facilities that provide important services to the community. These facilities and their services need to be functional after an earthquake event.

Businesses

Seismic activity can cause great loss to businesses, both large-scale corporations and small retail shops. When a company is forced to stop production for a day, the economic loss can be tremendous, especially when its market is at a national or global level. Seismic activity can create economic loss that presents a burden to large and small shop owners who may have difficulty recovering from their losses.

Forty percent of businesses do not reopen after a disaster and another twenty-five percent fail within one year according to the Federal Emergency Management Agency (FEMA). Similar statistics from the United States Small Business Administration indicate that over ninety percent of businesses fail within two years after being struck by a disaster.[9]

Individual Preparedness

Because the potential for earthquake occurrences and earthquake related property damage is relatively high in the Community of Lomita increasing individual preparedness is a significant need. Strapping down heavy furniture, water heaters, and expensive personal property, as well as being earthquake insured, and anchoring buildings to foundations are just a few steps individuals can take to prepare for an earthquake.

Death and Injury

Death and injury can occur both inside and outside of buildings due to collapsed buildings, falling equipment, furniture, debris, and structural materials. Downed power lines and broken water and gas lines can also endanger human life.

Fire

Downed power lines or broken gas mains can trigger fires. Please refer to Part I *Utilities – Southern California Edison.* When fire stations suffer building or lifeline damage, quick response to extinguish fires is less likely. Furthermore, major incidents will demand a larger share of resources, and initially smaller fires and problems will receive little or insufficient resources in the initial hours after a major earthquake event. Loss of electricity may cause a loss of water pressure in some communities, further hampering fire fighting ability.

Existing Mitigation Activities

Existing mitigation activities include current mitigation programs and activities that are being implemented by county, regional, state, or federal agencies or organizations.

City of Lomita Codes

Implementation of earthquake mitigation policy most often takes place at the local government level. The City of Lomita Community Development Department enforces building codes pertaining to earthquake hazards.

The City of Lomita Community Development Department enforces the zoning and land use regulations relating to earthquake hazards.

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[9] Ibid

Generally, these codes seek to discourage development in areas that could be prone to flooding, landslide, wildfire and/or seismic hazards; and where development is permitted, that the applicable construction standards are met. Developers in hazard-prone areas may be required to retain a qualified professional engineer to evaluate level of risk on the site and recommend appropriate mitigation measures.

California Earthquake Mitigation Legislation

California is painfully aware of the threats it faces from earthquakes. Dating back to the 19th Century, Californians have been killed, injured, and lost property as a result of earthquakes. As the State's population continues to grow, and urban areas become even more densely built up, the risk will continue to increase. For decades the Legislature has passed laws to strengthen the built environment and protect the citizens. Table 2-3 provides a sampling of some of the 200 plus laws in the State's codes.

Table 2-3 – Partial List of the Over 200 California Laws on Earthquake Safety

Government Code Section 8870-8870.95	Creates Seismic Safety Commission
Government Code Section 8876.1-8876.10	Established the California Center for Earthquake Engineering Research
Public Resources Code Section 2800-2804.6	Authorized a prototype earthquake prediction system along the central San Andreas fault near the City of Parkfield.
Public Resources Code Section 2810-2815	Continued the Southern California Earthquake Preparedness Project and the Bay Area Regional Earthquake Preparedness Project.
Health and Safety Code Section 16100-16110	The Seismic Safety Commission and State Architect, will develop a state policy on acceptable levels of earthquake risk for new and existing state-owned buildings.
Government Code Section 8871-8871.5	Established the California Earthquake Hazards Reduction Act of 1986.
Health and Safety Code Section 130000-130025	Defined earthquake performance standards for hospitals.
Public Resources Code Section 2805-2808	Established the California Earthquake Education Project.
Government Code Section 8899.10-8899.16	Established the Earthquake Research Evaluation Conference.
Public Resources Code Section 2621-2630 2621	Established the Alquist-Priolo Earthquake Fault Zoning Act.
Government Code Section 8878.50-8878.52 8878.50	Created the Earthquake Safety and Public Buildings Rehabilitation Bond Act of 1990.
Education Code Section 35295-35297 35295	Established emergency procedure systems in kindergarten through grade 12 in all the public or private schools.
Health and Safety Code Section 19160-19169	Established standards for seismic retrofitting of unreinforced masonry buildings.
Health and Safety Code Section 1596.80-1596.879	Required all child day care facilities to include an Earthquake Preparedness Checklist as an attachment to their disaster plan.
Source: http://www.leginfo.ca.gov/calaw.html	

Earthquake Education

Earthquake research and education activities are conducted at several major universities in the Southern California region, including Cal Tech, USC, UCLA, UCSD, and UCI. The local clearinghouse for earthquake information is the Southern California Earthquake Center located at the University of Southern California, Los Angeles, California 90089, telephone (213) 740-5843, fax (213) 740-0011, e-mail SCEinfo@usc.edu, website http://www.scec.org. The Southern California Earthquake Center (SCED) is a community of scientists and specialists who actively coordinate research on earthquake hazards at nine core institutions, and communicate earthquake information to the public. SCEC is a National Science Foundation (NSF) Science and Technology Center and is co-funded by the United States Geological Survey (USGS).

Earthquake Mitigation Action Items

The earthquake mitigation action items provide guidance on suggesting specific activities that the City of Lomita can undertake to reduce risk and prevent loss from earthquake events. Each action item is followed by ideas for implementation, which can be used by the Steering Committee and City Administration in pursuing strategies for implementation.

Mitigation Goal #1

Minimize losses to existing and future City of Lomita buildings and structures.

Objective

Improve internal facility resistance to damage from earthquakes. The City of Lomita has identified the following potential earthquake hazards associated with non-structural components of city buildings. Non-structural components include furnishings and equipment, electrical and mechanical fixtures, and architectural features such as partitions, cabinets and shelves. Securing these components and building contents will improve safety at the City's sites by:

- Reducing the potential for fatalities and injuries;
- Helping to maintain safe and clear exit ways to access buildings and provide secure evacuation routes in times of emergencies;
- Reduce the potential for chemical spills, fires and gas leaks; and
- Improving the probability of using our critical facilities as a shelter following an earthquake.

Mitigation Goal #2

Educate City of Lomita employees and citizens on understanding and making an ongoing commitment to Hazard Mitigation and Disaster Preparedness.

Objective

Utilize the City's Safety and Disaster Preparedness Committees.

Actions for Implementation

- Coordinate training activities, drills and safety in-services at City sites to address Emergency response.
- Develop newsletters or bulletins to inform staff about the latest information on Hazard Mitigation and Disaster Preparedness in the City.

Objective

Provide adoption of policies or practices going to mitigating effects of hazards.

Actions for Implementation

- This will include activities that lead to building and/or sustaining public/private hazard mitigation partnerships.
- Explore using the American Red Cross Community Disaster Education curriculum titled "Masters of Disasters" to educate staff on natural hazards like floods and earthquakes.
- Explore using the American Red Cross Community Disaster Education curriculum title "Together We Prepare" to teach preparedness at home.

Objective

Utilize staff meetings as avenues for informing staff on hazard Mitigation and Disaster Preparedness.

Actions for Implementation

- Provide dedicated time during staff meetings to present information on natural hazards and how staff can prepare and protect themselves and their families.
- Utilize the Los Angeles Fire Department to conduct fire and earthquake safety talks to employees during special staff meetings.

Objective

Develop alternative means to educate the community on Hazard Mitigation and Disaster Preparedness in which the City of Lomita serves.

Actions for Implementation

- Utilize the City's website to provide updated activities and information regarding the City's Hazard Mitigation and Disaster Preparedness plans.
- Updates will be done on a quarterly basis or whenever new informaiton becomes available.

Objective

Assess the readiness of the City to survive a disaster.

Actions for Implementation

- Keep a copy of the City's Disaster Response Plan, with current site maps, in the City Manager's office at each City site. In addition, mainain one master copy of each site plan at the City Administration office.
- Continue to provide training for all City staff that have been assigned emergency response duties per the City Disaster Response Plan.
- Conduct City-wide disaster drills that train the staff on various contingencies and response activities such as, evacuation, traffic control and search and rescue.

Mitigation Goal #3

Improve coordination of planning with local municipalities and support agencies

Objective

Share all plans related to Disaster Response.

Actions for Implementation

- Provide the Cities of Torrance, Los Angeles, Rolling Hills Estates, and Rancho Palos Verdes with current Emergency Response and Hazard Mitigation plans.

Objective

Deepen the City's commitment to communication with local communities.

Actions for Implementation

- Include plans for sheltering-in-place or evacuation by local Sheriff's Department, and the Los Angeles County Fire Department.
- Provide updated site maps of all City facilities to these departments.

Objective

Understand what assistance may be available from local public agencies in preventing or limiting water damage to City facilities.

Actions for Implementation

- Have the City facilitate a meeting with the adjoining municipalities (the Cities of Torrance, Los Angeles, Rolling Hills Estates, and Rancho Palos Verdes) to look at what capital improvement plans and stormwater management ordinances or amendments may have been developed that impact City facilities.

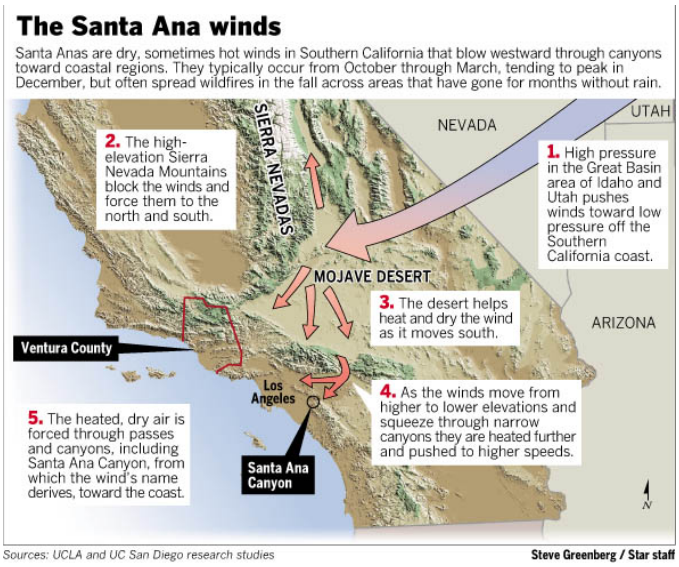
Section 3
Windstorms/Adverse Weather Occasions

Windstorms

Historically, high wind conditions have caused injury, death, property damage, and fanned wild fires before becoming a firestorm. Windstorms with significant intensity have been responsible for the sinking of watercraft and the downing of aircraft resulting in the loss of life. The most common wind condition is a Santa Ana Wind. This condition has generated winds that have exceeded 100 mph. As recently as 1996, a wind velocity of 111 mph was recorded at Fremont Canyon and 92 mph at Rialto generated from the same Santa Ana wind, resulting in the loss of life due to flying debris. The high wind velocities caused by this condition has brought about the temporary closure of highways (I-15 and 215) due to the hazard to vehicle travel. The City is not located near passes where the highest velocities are generated. However, the City can still experience high winds from a Santa Ana condition.

Santa Ana Wind Condition

Santa Ana winds are generally defined as warm, dry winds that blow from the East or northeast (offshore). These winds occur below passes and canyons of the coastal ranges of Southern California and in the Los Angeles basin. Santa Ana winds often blow with exceptional speed in the Santa Ana Canyon (the canyon from which it derives its name). Forecasters at the NWS in Oxnard and San Diego usually place speed minimums on these winds and reserve the use of "Santa Ana" for winds greater than 25 knots.



The complex topography of Southern California, combined with various atmospheric conditions, creates numerous scenarios that can cause widespread or isolated Santa Ana events. Commonly, Santa Ana winds develop when a region of high pressure builds over the Great Basin (the high plateau east of the Sierra mountains and west of the Rocky mountains including most of Nevada and Utah). Clockwise circulation around the center of a high pressure area forces air down the slope form the high plateau. The air warms as it descends toward the California coast at the rate of 5° F per 1000 feet due to heating of the air caused by compression. This heating of the air as it is compressed provides the primary source of warming. The air is dry since it originated in the desert, and it moisture will continue to dissipate as it is heated.

Santa Ana winds commonly occur between October and February with December having the highest frequency of events. Summer events are rare. Wind speeds are typically north to east at 35 knots through and below passes and canyons with gusts to 50 knots. Stronger Santa Ana winds can have gusts greater than 60 knots over widespread areas and gusts greater than 100 knots in favored areas. Frequently, the strongest winds in the basin occur during the night and morning hours due to the absence of a sea breeze. The sea breeze that typically blows onshore daily, can moderate the Santa Ana winds during the late morning and afternoon hours.

Santa Ana winds are an important forecast challenge because of the high fire danger associated with them. Also, unusually high surf conditions on the northeast side of the Channel Islands normally accompany a Santa Ana event. Other hazards include: wind damage to property, turbulence, low-level wind shear for aircraft, and high seas and wind conditions which is a danger for boaters.

Severe Weather

A variety of weather related events have occurred in Southern California in recent and past years that would seem unusual for the region due to the fact that these events do not occur with great frequency, but do occur. Some of these weather events have occurred in other parts of the country on a larger scale with sever intensity that has resulted in wide scale destruction, injury, and loss of life.

Tornados, Funnel Clouds, and Waterspouts

These weather events are considered rare for Southern California and historically have not impacted the City; however, these events are not predictable as to time of the event or location. Funnel clouds and waterspouts are related to coastal areas and have been responsible for damage and injuries.

Several tornados have been recorded in the Southern California area. Tornados have caused damage to property, caused power outages, injuries, and responsible for the loss of life when a tornado touched down in Santa Monica in 1952. Meteorologists can identify weather conditions that would be conducive to forming a tornado but this does mean that the tornado will form. If a tornado forms the exact location, size and intensity are not predictable.

Thunderstorms and Hail

Thunderstorms occur annually in Southern California but their impact is usually limited to power outages in urban areas. Ground strikes have been responsible for fires in rural and wooded areas. It is rare that a person is truck by lighting but loss of life has resulted.

Hail is rare but when it occurs it is usually in conjunction with windy conditions. The intensity of a driving wind and hail stone as large as a golf ball have caused significant damage.

High and Low Temperatures

Generally California, especially Southern California, is considered to have a Mediterranean type of climate. The area has experienced both very high and significantly low temperatures. High temperatures have exceeded 110 degrees and resulted in loss of crops, livestock, workers sent home, and the temporary closure of schools. Very high temperatures in August 1997 contributed to five deaths. During, what is referred to as California's fire season, high temperatures have hampered firefighting efforts.

Southern California has experienced low temperatures but this situation is usually short in duration. The most significant impact is the loss of crops.

Objective

- Reduce the hazard of falling trees and tree limbs during high wind conditions.

Actions for Implementation

- Perform regular assessments of all major trees and their health status throughout the City.
- Remove trees that are diseased or may have the potential to fall and are deemed hazardous to life and property.

Section 4
Localized Flooding

Introduction

Flooding has not been a serious hazard to Lomita in several decades, and the risk of disastrous flooding in the City is considered relatively small when compared to the potential for earthquake or wildfire damage to the City. Lomita does not lie within a 100- or 500- year floodplain, as delineated by the Federal Emergency Management Agency (FEMA). However, the potential for a flood event still exists within Lomita, and it is an important hazard to be addressed in the City's Local Hazard Mitigation Plan.

Hazard Profile

Flooding hazards are directly related to precipitation (rainfall) intensity and duration. Topography, type and extent of vegetation coverage, amount of impermeable surfaces, local slope characteristics, and available drainage facilities all factor into an area's ability to divert precipitation runoff. However, a key element in safely managing runoff volume is the extent of urbanized area. Urbanization increases the volume and velocity of runoff water via two main processes:

- Areas that would normally absorb rainfall (e.g., soils) have been replaced by impermeable surfaces (e.g., streets, houses); and

- The channelization and accumulation of runoff water adds to the collective whole, resulting in increased volumes and velocity.

The size, or magnitude, of a flood is described by a termed called a "recurrence interval." By studying a long period of flow records for a stream, it is possible to estimate the size of a flood that would have a five-year recurrence interval (also called a five-year flood or five-year flood event). A five-year flood is one that would occur, on the average, once every five years (or has 20 percent of occurring during any year). Although a 100-year flood is expected to happen only once in a century, there is a one-percent chance that a flood of that size could happen during any year. The magnitude of flood events could be altered if changes are made to a drainage basin, such as in increase in the amount of impervious (i.e., urbanized) surfaces.

FEMA, as part of its statutory responsibilities to carry out the National Flood Insurance Program, has mapped most of the flood risk areas within the United States. In fact, most communities with a one percent chance of a flood occurring in any given year (100-year flood) have a floodway depicted on a Flood Insurance Rate Map (FIRM). However, according to FEMA, Lomita is designated as Flood Zone D, which is an area with "undetermined possible flood hazards".

Historic Events

The City of Lomita is not within a flood plain but is subject to localized flooding from plugged storm drainage. Storm related flooding is a natural disaster that poses a comparatively minor inconvenience to the residents of Lomita.

Hazard Location and Extent

Although Lomita does not lie within a designated floodplain management area, flooding is still a potential hazard to the community due to storm drain blockage during heavy rains.

Storm Related Flooding

Although the City has not experienced large-scale storm-related flooding since the construction of flood control infrastructure, localized inundation remains a concern for Lomita residents. Members of the community have indicated that heavy rainfall results in highly localized areas of minor flooding. Although exact locations of recorded flood damage were unavailable at the time of publication of this plan, known locations with flooding issues include low-lying locations with deficiencies in the storm drainage system. Specific locations of concern are listed below:

- Along Pennsylvania Avenue between 250th Street and 254th Street
- Along Cypress Street between 250th Street and 254th Street
- Along Cypress Street between 248th Street and 246th Place
- Along Eshelman Avenue north of Lomita Boulevard
- Along Eshelman Avenue south of Pacific Coast Highway
- Along 262nd Street west of Eshelman Avenue
- Along 254th Street to the western border of the City

While localized flooding does impede traffic flow, the extent of the flooding hazard in Lomita does not overwhelm the City's resources or result in significant adverse impacts.

Probability of Future Events

It is unlikely that the City of Lomita will experience significant storm-related flooding in the future, comparable to the scale of floods that took place in its early history. The considerable flood control infrastructure that was developed mid-century has been effective in preventing large-scale flood events. On the other hand, it is anticipated that localized flooding will continue to occur in the City in the absence of appropriate mitigation measures.

Vulnerability Assessment Overview

The City of Lomita has a low vulnerability to flood hazards. Current flood control measures effectively prevent the types of damaging floods that were experienced in the 1860s. Current flood issues are restricted to localized street inundation during heavy storm events. Although localized flooding occurs seasonally, it has minimal impacts on the City due to its limited location and extent.

Identifying Vulnerabilities

The City of Lomita is quite resilient to storm-related flooding. Due to the limited scope of the hazard, no structures are considered directly vulnerable to flood damage.

The greatest impact caused by storm-related flooding is impediments to the circulation of traffic. Motorists are required to make detours when flooding renders streets impassible. This is typically nothing more than an inconvenience.

Existing Flood Mitigation Activities

Flood mitigation activities listed here include current mitigation programs and activities that are implemented by the City of Lomita.

Stormwater Systems

Lomita has an extensive storm drainage network to prevent flooding by conveying water off the streets and into drainage channels. Its existing drainage system is an urban network that generally consists of curbside catch basins, inlet structures, and manholes connected by reinforced concrete laterals and main lines, draining into storm drain channels. These facilities are maintained by the County of Los Angeles, Department of Public Works. The City has 42 catch basins that are maintained by the City. The City has approximately 55 miles of streets that are designed to withstand a 100-year storm event.

Mitigation Goal

Localized Flood Control Improvements – While the City has an effective flood control system, several localized areas continue to be subject to storm-related flooding.

Objective

Ensure that areas susceptible to flooding on City property are addressed to reduce or eliminate the hazard that exists.

Actions for Implementation

- Conduct a study of these localized flooding hazards and identify needed improvements.
- Determine priority for implementation in part with cost-effectiveness analysis.
- Once the improvements are identified, consider options for requiring construction of the improvements as part of development projects if appropriate and feasible.

Section 5
Landslides

Landslides are a serious geologic hazard in almost every state in America. Nationally, landslides cause 25 to 50 deaths each year.[10] The best estimate of direct and indirect costs of landslide damage in the United States range between $1 and $2 billion annually.[11] Some landslides result in private property damage, while other landslides impact transportation corridors, fuel and energy conduits, and communication facilities. They can also pose a serious threat to human life. California has had a significant number of locations impacted by landslides, attributable to a variety of conditions present in the state: seismic activity, heavy seasonal precipitation, rapid development, and varied topography. Landslides resulting from these types of conditions are discussed in this section, while earthquakes-induced landslides are addressed in Section 2 – Earthquakes.

Hazard Description

A landslide is defined as the movement of a mass of rock, debris, or earth down a slope. Landslides are a type of "mass wasting" which denotes any downslope movement of soil and rock under the direct influence of gravity. Failure of a slope occurs when the force that is pulling the slope downward (gravity) exceeds the strength of the earth materials that compose the slope. They can move slowly, (millimeters per year) or quickly and disastrously, as is the case with debris flows.

The term "landslide" encompasses events such as rock falls, topples, slides, spreads, and flows. Landslides can be initiated by rainfall, earthquakes, volcanic activity, changes in groundwater, disturbance and change of a slope by man-made construction activities, or any combination of these factors. Landslides can also occur underwater, causing tidal waves and damage to coastal areas. These landslides are called submarine landslides.[12]

The size of a landslide usually depends on the geology and the initial cause of the landslide. Landslides vary greatly in their volume of rock and soil, the length, width, and depth of the area affected, frequency of occurrence, and speed of movement. Some characteristics that determine

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[10] Mileti, Dennis, Disasters by Design: A Reassessment of Natural hazards in the United States (1999) Joseph Henry Press, Washington, DC

[11] Brabb, E.E., and B.L. Harrod. (Eds) *Landslides: Extent and Economic Significance. Proceedings of the 28th International Geological Congress Symposium on Landslides.* (1989) Washington DC. Rotterdam: Balkema.

[12] Landslide Hazards, U.S. Geological Survey Fact sheet 0071-00, Version 1.0, U.S. Department of the Interior – U.S. Geological Survey, http://pubs.usgs.gov/fs/fs-0071-00/

the type of landslide are slope of the hillside, moisture content, and the nature of the underlying materials. Landslides are given different names, depending on the type of failure and their composition and characteristics.

Landslides can be broken down into two categories: (1) rapidly moving – generally known as debris flows – and (2) slow moving. Rapidly moving debris flows present the greatest risk to human life, and people living in or traveling through areas prone to rapidly moving landslides are at increased risk of serious injury. Due to their sluggish rate of movement, slow moving landslides typically do not result in loss of life, but can cause widespread property damage over time.

Debris Flows

A debris flow – also known as a mudflow – is a semi-fluid mass of rock, earth, vegetation, and other materials that is saturated with water. This high percentage of water gives the debris flow a very rapid rate of movement down a slope. Although debris flows can travel down a hillside of speeds up to 200 miles per hour speeds more commonly range 30 – 50 miles per hour. Travel rates depend on the slope angle, water content, and type of earth and debris in the flow.

This high rate of speed makes debris flows extremely dangerous to people and property in its path. Earthquakes often trigger debris flows, as discussed in Section 2 – Earthquakes. These flows are also initiated by heavy, usually sustained, period of rainfall, but sometimes can happen as a result of short bursts of concentrated rainfall in susceptible areas. Burned areas charred by wildfires are particularly susceptible to debris flows, given certain soil characteristics and slope conditions.[13]

Slow Moving Landslides

Landslides move in contact with the underlying surface. These movements include rotational slides where sliding material moves along a curved surface, and translational slides where movement occurs along a flat surface. These types of slides are generally slow moving and can be deep. Slumps are small rotational slides that are generally shallow. Slow-moving landslides can occur on relatively gentle slopes and can cause significant property damage over time, but are far less likely to result in serious injuries than rapidly moving landslides.[14] The best-known example of a slow moving landslide in Southern California is the Portuguese Bend translational landslide. This event was initially triggered in the late 1950s due to road construction and continues to move even today.[15] This landslide and other historic occurrences are discussed in more detail in the following section.

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[13] Ibid.

[14] Interagency Hazard Mitigation Team, State Hazard Mitigation Plan (2000) Oregon Emergency Management.

[15] Portuguese Bend Regional Open Space Park website:
http://www.pvplc.org/land/portuguesebend/projectoverview.htm

Historic Events

The City of Lomita has never experienced a large-scale, damaging landslide. There are portions of the City, however, that are susceptible to landslides and should be mitigated accordingly. The City of Lomita has no history of landslides within the City limits.

The following examples of historic events in the Southern California region provide baseline information to help understand the types of vulnerabilities and potential damage associated with landslides.[16]

1928: St. Francis Dam Failure Los Angeles County. Built atop the site of an ancient landslide, the dam gave way on March 12, 1928. Its waters swept through the Santa Clara Valley toward the Pacific Ocean, about 54 miles away. Sixty-five miles of the valley were devastated, and over 500 people were killed. Damages were estimated at $672.1 million (year 2000 dollars).

1956: Portuguese Bend Palos Verdes Peninsula. Land use on the Palos Verdes The Portuguese Bend landslide began its modern movement in August 1956, when displacement was noticed at its northeast margin. Movement gradually extended downslope so that the entire eastern edge of the slide mass was moving within 6 weeks. By the summer of 1957, the entire slide mass was sliding towards the sea. This slow moving landslide continues its movement in the area even today, continuing to threaten the residential community that exists there. The estimated cost thus far is $14.6 million (2000 dollars).

1969: Glendora Los Angeles County. 175 houses damaged, mainly by debris flows. Estimated cost: $26.9 million (2000 dollars).

1969: Seventh Avenue, Los Angeles County. Damage to California Highway 60. Estimated cost: $14.6 million (2000 dollars).

1970: Princess Park California Highway 14, 10 miles north of Newhall, near Saugus, northern Los Angeles County, Estimated cost: $29.1 million (2000 dollars).

1977-1980: Monterey Park, Repetto Hills, Los Angeles County. 100 houses damaged in 1980 due to debris flows. Estimated cost: $14.6 million (2000 dollars).

1978: Bluebird Canyon, Orange County. 60 houses destroyed or damaged. Unusually heavy rains in March of 1978 may have contributed to initiation of the landslide. Although the 1978 slide area was approximately 3.5 acres, it is suspected to be a portion of a larger, ancient landslide. Estimated cost: $52.7 million (2000 dollars).

1979: Big Rock, California, Los Angeles County. California Highway 1 rockslide. Estimated cost: approximately $1.08 billion (2000 dollars).

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[16] Highland, L.M., and Schuster, R.L., *Significant Landslide Events in the United States*, USGS, Washington, DC, http://landslides.usgs.gov/html_files/pubs/report1/Landslides_pass_508.pdf (No Date).

1980: Southern California. Estimated cost: $1.1 billion in damage (2000 dollars). Heavy winter rainfall in 1979-90 caused damage in six Southern California counties. In 1980, the rainstorm started on February 8. A sequence of 5 days of continuous rain and 7 inches of precipitation had occurred by February 14. Slope failures were beginning to develop by February 15 and then very high-intensity rainfall occurred on February 16. As much as 8 inches of rain fell in a 6-hour period in many locations. Records and personal observations in the field on February 16 and 17 showed that the mountains and slopes literally fell apart on those 2 days. Estimated cost: $1.1 billion in damage (2000 dollars).

1983: San Clemente, California, Orange County, California Highway 1. Litigation at that time involved approximately $43.7 million (2000 dollars). Estimated cost: $65 million (2000 dollars).

1978-1980: San Diego County. Experienced major damage from storms in 1978, 1979, and 1979-80, as did neighboring areas of Los Angeles and Orange County, California. One hundred and twenty landslides were reported to have occurred in San Diego County during these 2 years. Rainfall for the rainy seasons of 78-79 and 79-80 was 14.82 and 15.61 inches (37.6 and 39.6 cm) respectively, compared to a 125-year average (1850-1975) of 9.71 inches (24.7 cm). Significant landslides occurred in the Friars Formation, a unit that was noted as slide-prone in the Seismic Safety Study for the city of San Diego. Of the nine landslides that caused damage in excess of $1 million, seven occurred in the Friars Formation, and two in the Santiago Formation in the northern part of San Diego County.

March 1995: Los Angeles and Ventura Counties. Above normal rainfall triggered damaging debris flows, deep-seated landslides, and flooding. Several deep-seated landslides were triggered by the storms, the most notable was the La Conchita landslide, which in combination with a local debris flow, destroyed or badly damaged 11 to 12 homes in the small town of La Conchita, about 20 km west of Ventura. There was also widespread debris flow and flood damage to homes, commercial buildings, and roads and highways in areas along the Malibu coast that had been devastated by wildfire two years before.

Hazard Location and Extent

Most of Lomita is located on relatively flat land, and therefore not subject to landslide hazards. However, a small portion of hillside area in the southern part of the City is considered susceptible to landslides and could sustain loss of life and property from this natural hazard.

The landslide maps produced by USGS are an invaluable asset to the City in identifying hazards and preparing mitigation measures. However, these maps were not prepared specifically for Lomita and may not provide the level of detail needed to identify all potential hazardous areas. Additionally, changing local conditions associated with development may increase the potential for landslides to occur, and this dynamic nature of the hazard is not reflected in these published maps.

An awareness of the conditions that give rise to landslides will assist City officials in making prudent decision about mitigation measures, and regulating future development in areas at-risk to

landslides. In general, locations at risk from landslides or debris flows include areas with one or more of the following conditions:

- On or close to steep hills;
- Steep road-cuts or excavations;
- Existing landslides or places of known historic landslides (such sites often have tilted power lines, trees tilted in various directions, cracks in the ground, and irregular-surfaced ground);
- Steep areas where surface runoff is channeled, such as below culverts, V-shaped valleys, canyon bottoms, and steep stream channels;
- Fan-shaped areas of sediment and boulder accumulation at the outlets of canyons; or
- Canyon areas below hillside and mountains that have recently (within one to six years) been subjected to a wildland fire.

Impacts of Development

Although landslides are a natural occurrence, human impacts can substantially affect the potential for landslide failures. The increasing scarcity of developable land, particularly in urban areas, increases the tendency to build on geologically marginal land. Additionally, hillside housing development in Southern California are prized for the views that they provide. Given the demand for such amenities, and the hazards that are present when building in areas of potential landslides, it is essential to exercise proper planning and geotechnical engineering to reduce the threat of safety of people, property, and infrastructure.

Excavation and Grading

Slope excavation is common in the development of home sites or roads on sloping terrain. Grading these slopes can result in some slopes that are steeper than the pre-existing natural slopes. Since slope steepness is a major factor in landslides, these steeper slopes can be at an increased risk for landslides. The added weight of fill placed on slopes can also result in an increased landslide hazard. Small landslides can be fairly common along roads, in either the road cut or the road fill. Landslides occurring below new construction sites are indicators of the potential impacts stemming from excavation.

Drainage and Groundwater Alterations

Water flowing through or above ground is often the trigger for landslides. Any activity that increases the amount of water flowing into landslide-prone slopes can increase landslide hazards. Broken or leaking water or sewer lines can be especially problematic, as can water retention facilities that direct water onto slopes. However, even excessive lawn irrigation in landslide prone locations can result in damaging landslides. Ineffective storm water management and excess runoff can also cause erosion and increase the risk of land-

slide hazards. Development that results in an increase in impervious surface impairs the ability of the land to absorb water and may redirect water to other areas. Channels, streams, ponding, and erosion on slopes all indicate potential slope problems.

Road and driveway drains, gutters, downspouts, and other constructed drainage facilities can concentrate and accelerate flow. Grown saturation and concentrated velocity flow are major causes of slope problems and may trigger landslides.[17]

Changes in Vegetation

Removing vegetation from very steep slopes can increase landslide hazards. Areas that experience wildfire and land clearing for development may have long periods of increased landslide hazard. Also, certain types of ground cover have a much greater need for constant watering to remain green. Changing away from native ground cover plants may increase the risk of landslide.

The geographic extent of landslide hazards in Lomita is relatively small, comprising only a small percentage of the total area of the City. Additionally, the communities present in this area have some of the lower housing densities in the City; the number of people that would be directly impacted by a landslide is estimated to be very low.

Probability of Future Events

The City of Lomita has never experienced a landslide event that caused significant property damage or loss of life. This does not mean, however, that such an event cannot happen in the future. Given the susceptibility of certain areas of the City to landslides, it is reasonable to assume that damaging landslides could occur within Lomita in the future.

Vulnerability Assessment – Overview

The City of Lomita has a low vulnerability to landslides. Areas where landslides could occur comprise a small portion of the city, but the presence of lifeline routes and many residences in these areas augment the risk of significant damage to the City and its inhabitants. Development in these areas increases the risks in locations that are naturally prone to landslides, and where ancient landslides have occurred in the past.[18]

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[17] Homeowners Guide for Landslide Control, Hillside Flooding, Debris Flows, Soil Erosion. (March 1997).

[18] Department of Conservation, Division of Mines and Geology. Seismic Hazard Evaluation of the San Dimas 7.5-Minute Quadrangle, Los Angeles County, California. 1998.

Identifying Vulnerabilities

Landslides can affect structures, utility services, transportation lifelines, and critical facilities. Communities may suffer immediate damages and loss of service. Disruption of infrastructure, roads, and critical facilities may also have a long-term effect on the economy. Utilities, including potable water, wastewater, telecommunications, natural gas, and electric power are all essential to service community needs. Loss of electricity has the most widespread impact on other utilities and on the whole community. Natural gas pipes may also be at risk of breakage from landslide movements as small as an inch or two.

Lifelines and Critical Facilities

No critical facilities are located within areas susceptible to landslides. However, disruption of a major transportation lifeline could impair access to facilities in the City. To the greatest extent possible, lifelines and critical facilities should remain accessible during a natural hazard event. The impact of closed transportation arteries may be increased if the closed road is critical for hospitals and other emergency facilities. Therefore, inspection and repair of critical transportation facilities and routes is essential and should receive high priority. Although debris that damaged or obstructed these routes would certainly have negative impacts on the flow of traffic, it would not be extremely adverse, as there are alternative corridors available should these become compromised.

Vulnerable Development Patterns

Fortunately, the majority of landslide-prone locations that have been mapped occur in areas affecting approximately 15 residential units within the Rolling Ranchos tract. This community is largely developed, and any new development in these areas should be carefully evaluated to help avoid activities that increase landslide vulnerability.

Estimating Potential Losses

Factors included in assessing landslide vulnerability include population and property distribution in the hazard area, the frequency of landslide or debris flow occurrences, slope steepness, soil characteristics, and precipitation intensity. This type of analysis could generate dollar estimates of the damages to the City due to a specific landslide or debris flow event. At the time of publication of this plan, data was insufficient to conduct a risk analysis and the software needed to conduct this type of analysis was not available.

Landslide Mitigation Action Items

The landslide mitigation action items provide guidance on suggesting specific activities that the City of Lomita can undertake to reduce risk and prevent loss from landslide events. Each action

item is followed by ideas for implementation, which can be used by the Steering Committee and City Administration in pursuing strategies for implementation.

Objective

- Landslide prevention.

Actions for Implementation

- Prioritize routine maintenance and repairs of water, sewer, and irrigation lines in and aournd landslide prone areas, to avoid long-term leaks that saturate and de-stablize earth materials to point of dangerous and destructive landslides.

Part III – Resources

Appendix A
Plan Resource Directory

Plan Resource Directory

The Plan Resource Directory provides contact information for local, regional, state, and federal programs that are currently involved in hazard mitigation activities. The City of Lomita Hazard Mitigation Steering Committee may look to the organizations on the following pages for resources and technical assistance. The Resource Directory provides a foundation for potential partners in action item implementation.

The City of Lomita Hazard Mitigation Steering Committee will continue to add contact information for organizations currently engaged in hazard mitigation activities. This section may be used by various community members interested in hazard mitigation information and projects.

American Public Works Association (APWA)			
Level: National	Hazard: Multi	http://www.apwa.net	
2345 Grand Boulevard		Suite 500	
Kansas City, MO 64104-2641		Ph: 816/472-6100	Fx: 816/472-1610
Notes: The American Public Works Association is an international educational and professional association of public agencies, private sector companies, and individuals dedicated to providing high quality public works goods and services.			
Association of State Floodplain Managers			
Level: Federal	Hazard: Flood	www.floods.org	
2809 Fish Hatchery Road			
Madison, WI 53713		Ph: 608/274-0123	Fx: 608/274-0696
Note: The Association of State Floodplain Managers is an organization of professionals involved in floodplain management, flood hazard mitigation, the National Flood Insurance Program, and flood preparedness, warning and recovery.			
Building Seismic Safety Council (BSSC)			
Level: National	Hazard: Earthquake	www.bssconline.org	
1090 Vermont Avenue, NW		Suite 700	
Washington, DC 20005		Ph: 202/289-7800	Fx: 202/289-1092
Notes: The Building Seismic Safety Council (BSSC) develops and promotes building earthquake risk mitigation regulatory provisions for the nation.			

California Department of Transportation (CalTrans)			
Level: State	Hazard: Multi	http://www.dot.ca.gov	
120 S. Spring Street			
Los Angeles, CA 90012		Ph: 213/897-3656	Fx: 213/897-3836
Notes: CalTrans is responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as that portion of the Interstate Highway System within the state's boundaries. Alone and in partnership with Amtrack, CalTrans, is also involved in the support of intercity passenger rail service in California.			
California Resources Agency			
Level: State	Hazard: Multi	http://resources.ca.gov/	
1416 Ninth Street		Suite 1311	
Sacramento, CA 95814		Ph: 916/653-5656	Fx: 916/653-8102
Notes: The California Resources Agency restores, protects and manages the state's natural, historical and cultural resources for current and future generations using solutions based on science, collaboration and respect for all the communities and interests involved.			
California Division of Mines and Geology (DMG)			
Level: State	Hazard: Milti	www.consrv.ca.gov/cgs/index.htm	
801 K Street		MS 12-30	
Sacramento, CA 95814		Ph: 916/445-1825	Fx: 916/445-5718
Notes: The California Geological Survey develops and disseminates technical information and advice on California's geology, geologic hazards, and mineral resources.			
California Environmental Resources Evaluation System (CERES)			
Level: State	Hazard: Multi	http://ceres.ca.gov	
900 N Street		Suite 250	
Sacramento, CA 95814		Ph: 916/653-2238	Fx: 916/653-8102
Notes: CERES is an excellent website for access to environmental information and websites.			
California Department of Water Resources (DWR)			
Level: State	Hazard: Flood	http://www.dwr.water.ca.gov	
1416 9th Street			
Sacramento, CA 95814		Ph: 916/653-6192	Fx: 916/653-4684
Notes: The Department of Water Resources manages the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments.			

California Department of Conservation: Southern California Regional Office			
Level: State	Hazard: Multi	www.consrv.ca.gov	
655 S. Hope Street		#700	
Los Angeles, CA 90017-2321		Ph: 213/239-0878	Fx: 213/239-0984
Notes: The Department of Conservation provides services and information that promote environmental health, economic vitality, informed land-use decisions and sound management of our state's natural resources.			
Federal Emergency Management Agency, Mitigation Division			
Level: Federal	Hazard: Multi	www.fema.gov/fima/planhowto.shtm	
500 C Street, SW			
Washington, DC 20472		Ph: 202/646-2781	Fx: 202/646-7970
Notes: The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has a number of programs and activities of which provide citizens Protection with flood insurance; Prevention with mitigation measures, and partnerships with communities throughout the country.			
Floodplain Management Association			
Level: Federal	Hazard: Flood	www.floodplain.org	
P.O. Box 50891			
Sparks, NV 89435-0891		Ph: 775/626-6389	Fx: 775/626-6389
Notes: The Floodplain Management Association is a nonprofit educational association. It was established in 1990 to promote the reduction of flood losses and to encourage the protection and enhancement of natural floodplain values. Members include representatives of federal, state and local government agencies as well as private firms.			

Governor's Office of Emergency Services (OES)			
Level: State	Hazard: Multi	www.oes.ca.gov	
P.O. Box 419047			
Rancho Cordova, CA 95741-9047		Ph: 916/845-8911	Fx: 916/845-8910
Notes: The Governor's Office of Emergency Services coordinates overall state agency response to major disasters in support of local government. The office is responsible for assuring the state's readiness to respond to and recover from natural, manmade, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response and recovery efforts.			
Los Angeles County Economic Development Corporation (LAEDC)			
Level: Regional	Hazard: Multi	www.laedc.org	
444 S. Flower Street		34th Floor	
Los Angeles, CA 90071		Ph: 213/236-4813	Fx: 213/623-0281
Notes: The LAEDC is a private, non-profit 501(c)3 organization established in 1981 with the mission to attract, retain and grow businesses and jobs in the Los Angeles region. The LAEDC is widely relied upon for its Southern California Economic Forecasts and Industry Trend Reports. Lead by the renowned Jack Kyser (Sr. Vice President, Chief Economist) his team of researchers produces numerous publications to help business, media and government navigate the LA region's diverse economy.			
Los Angeles County Public Works Department			
Level: County	Hazard: Multi	http://ladpw.org	
900 S. Fremont Avenue			
Alhambra, CA 91803		Ph: 626/458-5100	Fx:
Notes: The Los Angeles County Department of Public Works protects property and promotes public safety through Flood Control, Water Conservation, Road Maintenance, Bridges, Buses and Bicycle Trails, Building and Safety, Land Development, Waterworks, Sewers, Engineering, Capital Projects and Airports.			
National Resources Conservation Service (NRCS)			
Level: Federal	Hazard: Multi	http://www.nrcs.usda.gov/	
14th and Independence Avenue, SW		Room 5105-A	
Washington, DC 20250		Ph: 202/720-7246	Fx: 202/720-7690
Notes: NRCS assists owners of America's private land with conserving their soil, water, and other natural resources, by delivering technical assistance based on sound science and suited to a customer's specific needs. Cost shares and financial incentives are available in some cases.			

National Fire Protection Association (NFPA)			
Level: National	Hazard: Wildfire	http://www.nfpa.org/catalog/home/index.asp	
1 Batterymarch Park			
Quincy, MA 02169-7471		Ph: 617/770-3000	Fx: 617/770-0700
Notes: The mission of the international nonprofit NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating scientifically-based consensus codes and standards, research, training and education.			
National Floodplain Insurance Program (NFIP)			
Level: Federal	Hazard: Flood	www.fema.gov/nfip/	
500 C Street, SW			
Washington, SC 20472		Ph: 202/566-1600	Fx:
Notes: The Mitigation Division manages the National Flood Insurance Program and oversees FEMA's mitigation programs. It has a number of programs and activities which provide citizens protection with flood insurance; prevention with mitigation measures, and partnerships with communities throughout the country.			
National Oceanic/Atmospheric Administration (NOAA)			
Level: Federal	Hazard: Multi	www.noaa.gov	
14th Street & Constitution Avenue NW		Room 6013	
Washington, DC 20230		Ph: 202/482-6090	Fx: 202/482-3154
Notes: NOAA's historical role has been to predict environmental changes, protect life and property, provide decision makers with reliable scientific information, and foster global environmental stewardship.			
National Weather Service			
Level: Federal	Hazard: Multi	http://www.nws.noaa.gov/	
520 North Elevar Street			
Oxnard, CA 93030		Ph: 805/988-6615	Fx: 805/988-6613
Notes: The National Weather Service is responsible for providing weather service to the nation. It is charged with the responsibility of observing and reporting the weather and with issuing forecasts and warnings of weather and floods in the interest of national safety and economy. Briefly, the priorities for service to the nation are: 1) protection of life, 2) protection of property, and 3) promotion of the nation's welfare and economy.			

San Gabriel Valley Economic Partnership			
Level: Regional	Hazard: Multi	www.valleynet.org	
4900 Rivergrade Road		Suite A310	
Irwindale, CA 91706		Ph: 626/856-3400	Fx: 626/856-5115
Notes: The San Gabriel Valley Economic Partnership is a non-profit corporation representing both public and private sectors. The Partnership is the exclusive source for San Gabriel Valley – specific information, expertise, consulting, products, services, and events. It is the single organization in the Valley with the mission to sustain and build the regional economy for the mutual benefit of all thirty cities, chambers of commerce, academic institutions, businesses and residents.			
Sanitation Districts of Los Angeles County			
Level: County	Hazard: Flood	http://www.lacsd.org/	
1955 Workman Mill Road			
Whittier, CA 90607		Ph: 562/699-7411 x2301	Fx: 562/699-5422
Notes: The Sanitation Districts provide wastewater and solid waste management for over half the population of Los Angeles County and turn waste products into resources such as reclaimed water, energy and recyclable materials.			
South Coast Air Quality Management District (AQMD)			
Level: Regional	Hazard: Multi	www.aqmd.gov	
21865 E. Copley Drive			
Diamond Bar, CA 91765		Ph: 800/CUT-SMOG	Fx:
Notes: AQMD is a regional government agency that seeks to achieve and maintain healthful air quality through a comprehensive program of research, regulations, enforcement, and communication. The AQMD covers Los Angeles and Orange Counties and parts of Riverside and San Bernardino Counties.			
Southern California Earthquake Center (SCEC)			
Level: Regional	Hazard: Earthquake	www.scec.org	
3651 Trousdale Parkway		Suite 169	
Los Angeles, CA 90089-0742		Ph: 213/740-5843	Fx: 213/740-0011
Notes: The Southern California Earthquake Center (SCEC) gathers new information about earthquakes in Southern California, integrates this information into a comprehensive and predictive understanding of earthquake phenomena, and communicates this understanding to end-users and the general public in order to increase earthquake awareness, reduce economic losses, and save lives.			

Southern California Association of Governments (SCAG)			
Level: Regional	Hazard: Multi	www.scag.ca.gov	
818 W. Seventh Street		12th Floor	
Los Angeles, CA 90017		Ph: 213/236-1800	Fx: 213/236-1825
Notes: The Southern California Association of Governments functions as the Metropolitan Planning Organization for six counties: Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. As the designated Metropolitan Planning Organization, the Association of Governments is mandated by the federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality.			
State Fire Marshal (SFM)			
Level: State	Hazard: Wildfire	http://osfm.fire.ca.gov	
1131 "S" Street			
Sacramento, CA 95814		Ph: 916/445-8200	Fx: 916/445-8509
Notes: The Office of the State Fire Marshal (SFM) supports the mission of the California Department of Forestry and Fire Protection (CDF) by focusing on fire prevention. SFM regulates buildings in which people live, controls substances which may cause injuries, death and destruction by fire; provides statewide direction for fire prevention within wildland areas; regulates hazardous liquid pipelines; reviews regulations and building standards; and trains and educates in fire protection methods and responsibilities.			
The Community Rating Systems (CRS)			
Level: Federal	Hazard: Flood	http://www.fema.gov/nfip/crs.shtm	
500 C Street SW			
Washington, DC 20472		Ph: 202/566-1600	Fx:
Notes: The Community Rating System (CRS) recognizes community floodplain management efforts that go beyond the minimum requirements of the NFIP. Property owners within the County would receive reduced NFIP flood insurance premiums if the County implements floodplain management practices that qualify it for a CRS rating. For further information on the CRS, visit FEMA's website.			
United States Geological Survey (USGS)			
Level: Federal	Hazard: Multi	http://www.usgs.gov/	
345 Middlefield Road			
Menlo Park, CA 94025		Ph: 650/853-8300	
Notes: The USGS provides reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.			

US Army Corps of Engineers			
Level: Federal	Hazard: Multi	http://www.usace.army.mil	
P.O. Box 532711			
Los Angeles, CA 90053-2325		Ph: 213/452-3921	Fx: 213/452-4209
Notes: The United States Army Corps of Engineers work in engineering and environmental matters. A workforce of biologists, engineers, geologists, hydrologists, natural resource managers and other professionals provide engineering services to the nation including planning, designing, building and operating water resources and other civil works projects.			
USGS Water Resources			
Level: Federal	Hazard: Multi	www.water.usgs.gov	
6000 J Street		Placer hall	
Sacramento, CA 95819-6129		Ph: 916/278-3000	Fx: 916/278-3070
Notes: The USGS Water Resources mission is to provide water information that benefits the Nation's citizens: publications, data, maps, and applications software.			
Western States Seismic Policy Council (WSSPC)			
Level: Regional	Hazard: Earthquake	www.wsspc.org/home.html	
125 California Avenue		Suite D201, #1	
Palo Alto, CA 94306		Ph: 650/330-1101	Fx: 650/326-1769
Notes: WSSPC is a regional earthquake consortium funded mainly by FEMA. Its website is a great resource, with information clearly categorized – from policy to engineering to education.			

Appendix B
The Public Participation Process

The Public Participation Process

Public participation is a key component to the strategic planning process. Community participation offers citizens the chance to voice their ideas, interests, and opinions. The Federal Emergency Management Agency also requires public input during the development of mitigation plans.

The City of Lomita Local Hazard Mitigation Plan integrates a cross-section of citizen input throughout the planning process. To accomplish this goal, the City of Lomita Hazard Mitigation Steering Committee developed a public participation process through these components: (1) developing a Steering Committee comprised of knowledgeable individuals representative of the District and the Community; (2) create a Core Group from the Steering Committee to conduct research and plan development; and (3) conduct two public hearings to identify common concerns and ideas regarding hazard mitigation and to discuss specific goals and actions of the mitigation plan.

Integrating public participation during the development of the City of Lomita Local Hazard Mitigation Plan has ultimately resulted in increased public awareness. Through citizen involvement, the mitigation plan reflects Community issues, concerns, and new ideas and perspectives on mitigation opportunities and plan action items.

Steering Committee

Hazard mitigation at the City of Lomita is overseen by the City of Lomita Hazard Mitigation Steering Committee, which consists of representatives from various city agencies, representatives from local business and Community organizations and the public. Steering Committee members have an understanding of how the Community is structured and how City staff, Community, and the environment may be affected by natural hazard events. The Steering Committee guided the development of the plan, and assisted in developing plan goals and action items, in addition to sharing local expertise to create a more comprehensive plan.

Table B-1 lists the various people and organizations that participated on the City of Lomita Hazard Mitigation Steering Committee.

Table B-1 – City of Lomita Hazard Mitigation Steering Committee
City Administrator, Tom Odom
City Clerk, Dawn Tomita
Community Development Director, Gary Sugano
Community Services Director, Greg McPherron

Table B-1 – City of Lomita Hazard Mitigation Steering Committee
Public Works Director, Glen Kau
Administrative Services Director, Lori-Ann Farrell
Parks and Recreation Director, Cindy Blount
Management Analyst, Tracy Bonano
GIS Coordinator, Mike McDaniel
Lomita Chamber of Commerce, Chuck Taylor, Executive Director
County of Los Angeles, Department of Public Works (Building and Safety), Ed Acosta
County of Los Angeles, Fire Department, Tony Wright
County of Los Angeles, Sheriff's Department, Richard Johnson
Office of Disaster Management, Area G, Mike Martinet, Executive Director

Meeting #1: March 15, 2004 – Core Group

This was the first meeting of the Core Group. The Core Group was formed to facilitate the planning process through research, forming of a Steering Committee, schedule meetings and public hearings, and present material to the Steering Committee for review and approval.

An invitation list for the Steering Committee was developed with the purpose of creating a diverse cross section of the City that would allow for a wide range of input and opinion. The following is the invitation list created by the Core Group:

- City Council Member
- City Manager
- Department Head
- Citizen at large
- Los Angeles Unified School District
- Los Angeles County Fire Department
- Los Angeles County Office of Disaster Management – Area G

The City's Disaster Preparedness Consultant would schedule and facilitate the meetings throughout the planning process along with attending public hearings and updating the City

Council. Guided by the Core Group, the Steering Committee would meet each month or on an as needed basis.

The Core Group felt that the first Steering Committee meeting should be an orientation to DMA 2000 so the planning process was understood along with an approximate time frame to complete the process. It was agreed that the Steering Committee would meet once a month or more frequently if necessary to complete the final DMA2K plan. The first meeting in April 2004 would be an orientation to DMA 2000 with all subsequent meetings as actual work/planning sessions.

It was also determined that research should commence immediately on threat analysis, vulnerabilities, and City history and profile. This information would be ready for presentation at the second meeting in April.

Public Hearing #1: City Council Meeting - March 15, 2004

The following is an excerpt from the minutes of the Planning Commission Meeting of March 15, 2004.

Community Development Coordinator Sugano presented a PowerPoint presentation dealing with the Disaster Mitigation Act of 2000 and the Local Hazard Mitigation Plan. The purpose of the plan is to reduce risks from hazards by providing an assessment of those hazards, developing mitigation strategies and implementing and monitoring the plan after adoption. The City is required to have an adopted plan by November 1, 2004 in order to qualify for disaster relief funding through the Hazard Mitigation Grant Program. He reviewed the purposes of the public hearing.

The public hearing was declared open. There being no one wishing to speak, the public hearing was closed.

Councilmember Blackwood stated that he serves on the County Participation Committee and stated that the city must act in a timely manner.

A number was assigned to:

> RESOLUTION NO 2004-11
>
> A RESOLUTION OF THE CITY COUNCIL OF THE
> CITY OF LOMITA IN SUPPORT OF THE PREPARATION OF A
> LOCAL HAZARD MITIGATION PLAN PURSUANT TO THE
> DISASTER MITIGATION ACT OF 2000

Councilmember Blackwood moved to approve Resolution No 2004-11. Councilmember Waronek seconded the motion, which carried unanimously.

Public Hearing # 2 – Planning Commission Meeting - May 10, 2004

The following is an excerpt from the minutes of the Planning Commission Meeting of May 10, 2004.

Local Hazard Mitigation Plan

Staff recommends that the Planning Commission hold a public hearing to accept input on the Disaster Mitigation Act of 2000 and the Local Hazard Mitigation Plan. Staff also recommends that the Planning Commission adopt a resolution of support for the preparation of the Local Hazard Mitigation Plan for the City.

Community Development Director Gary Sugano presented the staff report.

The purpose of the local hazard mitigation plan is to reduce risks from hazards by providing an assessment of those hazards, developing mitigation strategies and implementing and monitoring the plan after adoption. After the City Council adopts the plan, the State (Office of Emergency Management) and Federal (FEMA) would need to approve it. The plan would need to be updated every five years.

The City of Lomita will be required to have an adopted plan by November 1, 2004 in order to qualify for disaster relief funding through the Hazard Mitigation Grant Program (HMGP).

The purpose of this public hearing is to identify hazards to be assessed with the plan. The City has identified the following hazards that may be analyzed in the plan:

Earthquakes	Aircraft hazards
Liquefaction	Landslides and slope instability
Flooding	Land subsidence
Fires	High winds
Unreinforced structures	Drought
Hazardous material release	Groundwater contamination
Terrorist-related incidents	

Staff recommends that the Planning Commission adopt a resolution of support for the preparation of the Local Hazard Mitigation Plan for the City.

The public hearing was opened.

Commissioner Campbell asked for a definition of hazards. Mr. Sugano replied the Disaster Mitigation Act requires cities consider the impact of earthquakes, liquefaction, flooding and other types of natural hazards to determine how credible are the threats and what can be done to mitigate them. For instance, if unreinforced masonry buildings within the City are identified, the City could develop a program to eliminate them. That would reduce the risk of injury within those structures during an earthquake.

Commissioner Campbell asked if terrorist attacks would be part of this consideration.

Mr. Sugano will look into that although it is not required by the Disaster Mitigation Act of 2000.

In the event of a natural disaster, Commissioner Campbell asked about the ability for vehicles to get through the City streets considering parking and traffic issues. Will access to major thoroughfares be addressed?

Mr. Sugano said the City's General Plan does have evacuation routes.

Commissioner Servino asked staff how the list was prioritized. To him, the only ones that seem a significant risk were earthquakes, aircraft hazard and hazardous material release – the other items on the list are not issues.

Commissioner Kaneen pointed out that liquefaction along Palos Verdes hills would cause landslides and slope instability.

Commissioner Kaneen asked if this proposal would really cover some kind of mandate for an emergency response plan.

The City is planning on adopting an emergency operation plan. There will be a lot of overlap between that plan and this plan. We want to avoid a duplication of efforts.

Commissioner Kaneen asked if there was a present survey for unreinforced masonry buildings.

Mr. Sugano believes there is something but is not sure what year it was done.

Commissioner Waite said he has seen Lomita's and believe it was done by the person who did Carson's plan.

Mr. Sugano has started looking at old files to help put the plan together rather than recreating everything from scratch.

Commissioner Campbell asked if the City plan would overlap the County's. Mr. Sugano has talked to the County agencies to get background information although they are required to submit a separate plan.

Meeting #1: April 12, 2004 – Steering Committee

The Steering Committee met for the first time and it started with self-introductions, including background.

The City's Disaster Preparedness Consultant prepared an agenda and executive summary overview of the DMA 2000 planning process. The Steering Committee was given information on their role in the planning process. This included the role of the Core Group that would be developing information through research and implementing the information into a draft plan for Committee review and input.

Proposed plan maintenance was discussed which incorporates an annual review by the Steering Committee and a five year review by California Governors Office of Emergency Services and the Federal Emergency Management Agency. The Committee agreed the plan should be reviewed annually.

The City's Disaster Preparedness Consultant discussed public involvement and public hearings. A public hearing was proposed before the Planning Commission on May 10, 2004 with a final public hearing upon the completion of the DMA planning process. The final public hearing will be the forum to adopt the Hazard Mitigation Plan by passing a City resolution.

The Committee approved a public notification process that included posting of each public hearing notice in the community. The announcement explained that further public hearing announcements would be published on the City of Lomita website.

The Steering Committee was given a schedule of project tasks. The Committee was asked to meet on a monthly basis or as necessary to complete the planning process.

Meeting #2: June 14, 2004 – Steering Committee

The City's Consultant initiated an in depth discussion on how City facilities and building contents were insured. The Consultant provided an overview on the importance of accurately identifying all replacement values of existing buildings and their contents along with the condition of the buildings and previous steps taken to mitigate against identified vulnerabilities such as earthquakes.

Through participative discussion the Steering Committee in conjunction with the Core Group determined that employee training including disaster management, first aid, CPR, search and rescue, and managing small fires through fire extinguisher training were the City of Lomita's top training priorities. It was unanimously agreed that employee training should be a mitigation strategy.

Hazard analysis was reviewed. Earthquake was considered the number one hazard and potentially the only significant one.

The Committee was provided with the FEMA Crosswalk so they would have an understanding of how the plan is rated and the components that are required in an approved plan.

Meeting #3: July 12, 2004 – Steering Committee

The Steering Committee reviewed the first draft of plan and suggested minor revisions. The second draft will be presented for review and approval at the next Steering Committee meeting in the second week of September 2004. After revisions and modifications were completed the information would be presented at the second public hearing.

Meeting minutes were discussed along with the importance and need to gather the information from recorded meetings and maintain documentation of the planning process.

The time line was established by the Steering Committee that identified a November 2004 meeting and public hearing for final review and adoption. By the last meeting in August the draft should be completed and ready for review by the Committee and adoption by the City Council at the November public hearing.

The Committee reviewed the final draft of Part I, and Part II, which as presented by the City's Disaster Preparedness Consultant. The Core Group reviewed the hazards discussed including earthquake and adverse weather to establish mitigation strategies and action items. A mitigation strategy was developed to deal with loose and hazards items in public buildings.

The strategies reviewed will be prepared for the September Steering Committee meeting. This includes threat reduction action, building standards, employee training, and the City's Capital Improvement Plan that includes mitigation measures.

Meeting #4: August 16, 2004

The City's Hazard Mitigation Plan was placed on the agenda for City Council review and public comment.

The City's Disaster Preparedness Consultant provided an update on changes in the mitigation planning process, which included a letter of intent for OES and changes in the FEMA crosswalk.

Meeting #5: September 13, 2004 – Steering Committee

Letter of intent was reviewed. The City's Disaster Preparedness Consultant had directed questions to OES regarding FEMA. Prior to adoption have City Council review the final draft plan.

Crosswalk – Basic information and rating system that will be completed. Documentation will be included in the plan when it is submitted.

Discussion in regards to multi-jurisdictional efforts were expanded and the decision to continue on with our Plan and submit to the State and FEMA simultaneously.

Public Hearing #3: November 1, 2004

Hearing held on September 13, 2004 at the City Council Meeting. No questions were asked however, the Committee did get positive feedback from the City Council members in keeping the public informed and also keeping the City Council up to date on the project.

A public hearing was held on November 1, 2004. The Committee members were welcomed and acknowledged for all their hard work and perseverance in developing the City's plan.

This is the last Steering Committee meeting. After Council approval, the plan will be submitted to the State OES and FEMA for review and approval.

Once the City of Lomita City Council adopts the plan, a hard copy, electronic copy, and a cover letter will be provided in advance of the City's submittal to California's OES and FEMA for review and approval.

A completed Local Hazard Mitigation Plan for the City of Lomita was presented to the City Council for review and approval. The plan was approved and adopted by the Council.

There were no public comments or questions regarding the plan.

Item No. _____

CITY OF LOMITA
CITY COUNCIL REPORT

TO: City Council March 15, 2004

FROM: Gary Y. Sugano, Community Development Director

SUBJECT: Public Hearing Seeking Input on the Disaster Mitigation Act of 2000 and the Local Hazard Mitigation Plan

RECOMMENDATION

Staff recommends that the City Council hold a public hearing accepting input on the Disaster Mitigation Act of 2000 and the Local Hazard Mitigation Plan. Staff also recommends that the City Council adopt a resolution of support for the preparation of the Local Hazard Mitigation Plan for the City.

BACKGROUND

The City is inviting public comments on the City's proposed Local Hazard Mitigation Plan pursuant to the Disaster Mitigation Act of 2000 adopted by the United States Congress and signed into law by the President of the United States on October 10, 2000.

The purpose of the local hazard mitigation plan is to reduce risks from hazards by providing an assessment of those hazards, developing mitigation strategies and implementing and monitoring the plan after adoption. After City Council adoption of the plan, the State (Office of Emergency Management) and Federal (FEMA) would need to approve the plan. In addition, the plan would need to be updated every five years.

The City of Lomita will be required to have an adopted plan by November 1, 2004 in order to qualify for disaster relief funding through the Hazard Mitigation Grant Program (HMGP).

The purpose of this public hearing is to identify hazards to be assessed within the plan. The City has identified the following hazards that may be analyzed in the plan:

- Earthquakes
- Liquefaction
- Flooding
- Fires

- Unreinforced masonry structures
- Hazardous material release
- Terrorist-related incidents
- Aircraft hazards
- Landslides and slope instability
- Land subsidence
- High winds
- Drought
- Groundwater contamination

A timeline is also attached to this staff report (Attachment B) for your reference.

Recommended by:	Approved by:
_____	_____
GARY Y. SUGANO COMMUNITY DEVELOPMENT DIRECTOR	TOM A. ODOM CITY ADMINISTRATOR

Attachments:

a. Resolution

b. Timeline – Local Hazard Mitigation Plan

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LOMITA IN SUPPORT OF THE PREPARATION OF A LOCAL HAZARD MITIGATION PLAN PURSUANT TO THE DISASTER MITIGATION ACT OF 2000

WHEREAS, the Community Development Department has been designated the lead agency responsible for preparation of a local hazard mitigation plan for the City of Lomita; and

WHEREAS, the City Council held a duly noticed public hearing to receive input on the preparation of a local hazard mitigation plan; and

WHEREAS, Section 15308 (Class 8, Protection of the Environment) of the California Code of Regulations exempts the project from the requirements for the preparation of documents imposed by the California Environmental Quality Act; and

WHEREAS, Pursuant to the Federal Disaster Mitigation Act of 2000, there is a need to prepare a local hazard mitigation plan in order to be eligible for funding support for disaster preparedness and relief;

WHEREAS, the City of Lomita recognizes that public input is an important component in the preparation of a local hazard mitigation plan.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Lomita hereby supports the preparation and implementation of a local hazard mitigation plan. The decision of the City Council is final and conclusive as to all things involved in the matter.

PASSED and ADOPTED by the City Council of the City of Lomita on this 15th day of March, 2004 by the following vote:

AYES: Councilmembers:

NOES: Councilmembers:

ABSTAIN: Councilmembers:

_____
Susan Dever, MAYOR

ATTEST:_____
Dawn Tomita, CITY CLERK

CITY OF LOMITA

PLANNING COMMISSION REPORT

TO: Planning Commission May 10, 2004

FROM: Gary Y. Sugano, Community Development Director

SUBJECT: Local Hazard Mitigation Plan

BACKGROUND
The City is inviting public comments on the City's proposed Local Hazard Mitigation Plan pursuant to the Disaster Mitigation Act of 2000 adopted by the United States Congress and signed into law by the President of the United States on October 10, 2000.

The purpose of the local hazard mitigation plan is to reduce risks from hazards by providing an assessment of those hazards, developing mitigation strategies and implementing and monitoring the plan after adoption. After City Council adoption of the plan, the State (Office of Emergency Management) and Federal (FEMA) would need to approve the plan. In addition, the plan would need to be updated every five years.

The City of Lomita will be required to have an adopted plan by November 1, 2004 in order to qualify for disaster relief funding through the Hazard Mitigation Grant Program (HMGP).

The purpose of this public hearing is to identify hazards to be assessed within the plan. The City has identified the following hazards that may be analyzed in the plan:

- Earthquakes
- Liquefaction
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- Fires
- Unreinforced masonry structures
- Hazardous material release
- Terrorist-related incidents
- Aircraft hazards
- Landslides and slope instability
- Land subsidence
- High winds
- Drought
- Groundwater contamination

A timeline is also attached to this staff report (Attachment B) for your reference.

RECOMMENDATION
Staff recommends that the Planning Commission hold a public hearing accepting input on the Disaster Mitigation Act of 2000 and the Local Hazard Mitigation Plan. Staff also recommends that the Planning Commission adopt a resolution of support for the preparation of the Local Hazard Mitigation Plan for the City.

Recommended by:

_____
Gary Y. Sugano
Community Development Director

Exhibits
Resolution
Timeline – Local Hazard Mitigation Plan

RESOLUTION NO. 2004-30

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF LOMITA IN SUPPORT OF THE PREPARATION OF A LOCAL HAZARD MITIGATION PLAN PURSUANT TO THE DISASTER MITIGATION ACT OF 2000

WHEREAS, the Community Development Department has been designated the lead agency responsible for preparation of a local hazard mitigation plan for the City of Lomita; and

WHEREAS, the Planning Commission held a duly noticed public hearing to receive input on the preparation of a local hazard mitigation plan; and

WHEREAS, Section 15308 (Class 8, Protection of the Environment) of the California Code of Regulations exempts the project from the requirements for the preparation of documents imposed by the California Environmental Quality Act; and

WHEREAS, Pursuant to the Federal Disaster Mitigation Act of 2000, there is a need to prepare a local hazard mitigation plan in order to be eligible for funding support for disaster preparedness and relief;

WHEREAS, the City of Lomita recognizes that public input is an important component in the preparation of a local hazard mitigation plan.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of the City of Lomita hereby supports the preparation and implementation of a local hazard mitigation plan. The decision of the City Council is final and conclusive as to all things involved in the matter.

PASSED and ADOPTED by the Planning Commission of the City of Lomita on this 10th day of May 2004 by the following vote:

AYES: Commissioners: Kaneen, Colbary, Waite, Servino, Campbell, Scully

NOES: Commissioners:

ABSENT: Commissioners: Savidan

_____
Sean Scully, Chairperson

ATTEST:_____
Gary Y. Sugano
Community Development Director

Appendix C
Acronyms

Federal Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ATC	Applied Technology Council
b/ca	Benefit/Cost Analysis
BFE	Base Flood Evaluation
BLM	Bureau of Land Management
BSSC	Building Seismic Safety Council
CDBG	Community Development Block Grant
CFR	Code of Federal Regulations
CRS	Community Rating System
EDA	Economic Development Administration
EPA	Environmental Protection Agency
ER	Emergency Relief
EWP	Emergency Watershed Protection (NRCS Program)
FAS	Federal Aid System
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance (FEMA Program)
FTE	Full Time Equivalent
GIS	Geographic Information System
GNS	Institute of Geological and Nuclear Sciences (International)
GSA	General Services Administration
HAZUS	Hazards U.S.

HMGP	Hazard Mitigation Grant Program
HMST	Hazard Mitigation Survey Team
HUD	Housing and Urban Development (United States, Department of)
IBHS	Institute of Business and Home Safety
ICC	Increased Cost of Compliance
IHMT	Interagency Hazard Mitigation Team
NCDC	National Climate Data Center
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NHMP	Natural Hazard Mitigation Plan (also known as “409 Plan”)
NIBS	National Institute of Building Sciences
NIFC	National Interagency Fire Center
NMFS	National Marine Fisheries Services
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
SBA	Small Business Administration
SEAO	Structural Engineers Association of Oregon
SHMO	State Hazard Mitigation Officer
TOR	Transfer of Development Rights
UGB	Urban Growth Boundary
URM	Unreinforced Masonry
USACE	Unites States Army Corps of Engineers
USBR	United States Bureau of Reclamation

USDA	United States Department of Agriculture
USFA	United States Fire Administration
USFS	United States Forest Service
USGS	United States Geological Survey
WSSPC	Western States Seismic Policy Council

California Acronyms

A&W	Alert and Warning
AA	Administering Areas
AAR	After Action Report
ARC	American Red Cross
ARP	Accidental Risk Prevention
ATC20	Applied Technology Council 20
ATC21	Applied Technology Council 21
BCP	Budget Change Proposal
BSA	California Bureau of State Audits
CAER	Community Awareness & Emergency Response
CalARP	California Accidental Release Prevention
CalBO	California Building Officials
CalEPA	California Environmental Protection Agency
CalREP	California Radiological Emergency Plan
CALSTARS	California State Accounting Reporting System
CalTRANS	California Department of Transportation
CBO	Community Based Organization
CD	Civil Defense
CDF	California Department of Forestry and Fire Protection
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEPEC	California Earthquake Prediction Evaluation Council

CESRS	California Emergency Services Radio System
CHIP	California Hazardous Identification Program
CHMIRS	California Hazardous Materials Incident Reporting System
CHP	California Highway Patrol
CLETS	California Law Enforcement Telecommunications System
CSTI	California Specialized Training Institute
CUEA	California Utilities Emergency Association
CUPA	Certified Unified Program Agency
DAD	Disaster Assistance Division (of the state Office of Emergency Services)
DFO	Disaster Field Office
DGS	California Department of General Services
DHSRHB	California Department of Health Services, Radiological Health Branch
DO	Duty Officer
DOC	Department Operations Center
DOE	Department of Energy (U.S.)
DOF	California Department of Finance
DOJ	California Department of Justice
DPA	California Department of Personnel Administration
DPIG	Disaster Preparedness Improvement Grant
DR	Disaster Response
DSA	Division of the State Architect
DSR	Damage Survey Report
DSW	Disaster Service Worker
DWR	California Department of Water Resources
EAS	Emergency Alerting System

EDIS	Emergency Digital Information System
EERI	Earthquake Engineering Research Institute
EMA	Emergency Management Assistance
EMI	Emergency Management Institute
EMMA	Emergency Managers Mutual Aid
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency (U.S.)
EPEDAT	Early Post Earthquake Damage Assessment Tool
EPI	Emergency Public Information
EPIC	Emergency Public Information Council
ESC	Emergency Services Coordinator
FAY	Federal Award Year
FDAA	Federal Disaster Assistance Administration
FEAT	Governor's Flood Emergency Action Team
FEMA	Federal Emergency Management Agency
FFY	Federal Fiscal Year
FIR	Final Inspection Reports
FIRESCOPE	Firefighting Resources of Southern California Organized for Potential Emergencies
FMA	Flood Management Assistance
FSR	Feasibility Study Report
FY	Fiscal Year
GIS	Geographical Information System

HAZMAT	Hazardous Materials
HASMIT	Hazardous Mitigation
HAZUS	Hazards United States (an earthquake damage assessment prediction tool)
HAD	Housing and Community Development
HEICS	Hospital Emergency Incident Command System
HEPG	Hospital Emergency Planning Guidance
HIA	Hazard Identification and Analysis Unit
HMEP	Hazardous Materials Emergency Preparedness
HMGP	Hazard Mitigation Grant Program
IDE	Initial Damage Estimate
IA	Individual Assistance
IFG	Incident Response Geographic Information System
IPA	Information and Public Affairs (of state Office of Emergency Services)
LAN	Local Area Network
LEMMA	Law Enforcement Master Mutual Aid
LEPC	Local Emergency Planning Committee
MARAC	Mutual Aid Regional Advisory Council
MHID	Multihazad Identification
MOU	Memorandum of Understanding
NBC	Nuclear, Biological, Chemical
NEMA	National Emergency Management Agency
NEMIS	National Emergency Management Information System
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Association
NPP	Nuclear Power Plant

NSF	National Science Foundation
NWS	National Weather Service
OA	Operational Area
OASIS	Operational Area Satellite Information System
OCC	Operations Coordination Center
OCD	Office of Civil Defense
OEP	Office of Emergency Planning
OES	California Governor's Office of Emergency Services
OSHPD	Office of Statewide Health Planning and Development
OSPR	Oil Spill Prevention and Response
PA	Public Assistance
PC	Personal Computer
PDA	Preliminary Damage Assessment
PIO	Public Information Office
POST	Police Officer Standards and Training
PPA/CA	Performance Partnership Agreement/Cooperative Agreement (FEMA)
PSA	Public Service Announcement
PTAB	Planning and Technological Assistance Branch
PTR	Project Time Report
RA	Regional Administrator (OES)
RADEF	Radiological Defense (program)
RAMP	Regional Assessment of Mitigation Priorities
RAPID	Railroad Accident Prevention & Immediate Deployment
RDO	Radiological Defense Officer
RDMHC	Regional Disaster Medical Health Coordinator

REOC	Regional Emergency Operations Center
REPI	Reserve Emergency Public Information
RES	Regional Emergency Staff
RIMS	Response Information Management System
RMP	Risk Management Plan
RPU	Radiological Preparedness Unit (OES)
RRT	Regional Response Team
SAM	State Administrative Manual
SARA	Superfund Amendments & Reauthorization Act
SAVP	Safety Assessment Volunteer Program
SBA	Small Business Administration
SCO	California State Controller's Office
SEMS	Standardized Emergency Management System
SEPIC	State Emergency Public Information Committee
SLA	State and Local Assistance
SONGS	San Onofre Nuclear Generating Station
SOP	Standard Operating Procedure
SWEPC	Statewide Emergency Planning Committee
TEC	Travel Expense Claim
TRU	Transuranic
TTT	Train the Trainer
UPA	Unified Program Account
UPS	Uninterrupted Power Source
USAR	Urban Search and Rescue
USGS	United States Geological Survey

WC	California State Warning Center
WAN	Wide Area Network
WIPP	Waste Isolation Pilot Project

Appendix D
Glossary

Glossary

Acceleration	The rate of change of velocity with respect to time. Acceleration due to gravity at the earth's surface is 9.8 meters per second squared. That means that every second that something falls toward the surface of earth its velocity increases by 9.8 meters per second.
Asset	Any manmade or natural feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.
Base Flood	Flood that has a one percent probability of being equaled or exceeded in any given year. Also known as the 100-year flood.
Base Flood Elevation (BFE)	Elevation of the base flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929. The Base Flood Elevation is used as the standard for the National Flood Insurance Program.
Bedrock	The solid rock that underlies loose material, such as soil, sand, clay, or gravel.
Building	A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.
Coastal High Hazard Area	Area, usually along an open coast, bay, or inlet that is subject to inundation by storm surge and, in some instances, wave action caused by storms or seismic sources.
Coastal Zones	The area along the shore where the ocean meets the land as the surface of the land rises above the ocean. This land/water interface includes barrier islands, estuaries, beaches, coastal wetlands, and land areas having direct drainage to the ocean.
Community Rating System (CRS)	An NFIP program that provides incentives for NFIP communities to complete activities that reduce flood hazard risk. When the community completes specified activities, the insurance premiums of policyholders in these communities are reduced.

Computer-Aided Design and Drafting (CADD)	A computerized system enabling quick and accurate electronic 2-D and 3-D drawings, topographic mapping, site plans, and profile/cross-section drawings.
Contour	A line of equal ground elevation on a topographic (contour) map.
Critical Facility	Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals.
Debris	The scattered remains of assets broken or destroyed in a hazard event. Debris caused by a wind or water hazard event can cause additional damage t other assets.
Digitize	To convert electronically points, lines, and area boundaries shown on maps into x, y coordinates (e.g., latitude and longitude, universal transverse mercator (UTM), or table coordinates) for use in computer applications.
Displacement Time	The average time (in days) which the building's occupants typically must operate from a temporary location while repairs are made to the original building due to damages resulting from a hazard event.
Duration	How long a hazard event lasts.
Earthquake	A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates.
Erosion	Wearing away of the land surface by detachment and movement of soil and rock fragments, during a flood or storm or over a period of years, through the action of wind, water, or other geologic processes.
Erosion Hazard Area	Area anticipated being lost to shoreline retreat over a given period of time. The projected inland extent of the area is measured by multiplying the average annual long-term recession rate by the number of years desired.
Essential Facility	Elements that are important to ensure a full recovery of a community or state following a hazard event. These would include: government functions, major employers, banks, schools, and certain commercial establishments, such as grocery stores, hardware stores, and gas stations.
Extent	The size of an area affected by a hazard or hazard event.

Extratropical Cyclone	Cyclonic storm events like Nor'easters and severe winter low-pressure systems. Both West and East coasts can experience these non-tropical storms that produce gale-force winds and precipitation in the form of heavy rain or snow. These cyclonic storms, commonly called Nor'easters on the East Coast because of the direction of the storm winds, and last for several days and can be very large – 1,000-mile wide storms are not uncommon.
Fault	A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent surfaces are differentially parallel to the plane of fracture.
Federal Emergency Management Agency (FEMA)	Independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery.
Fire Potential Index (FPI)	Developed by USGS and USFS to assess and map fire hazard potential over broad areas. Based on such geographic information, national policy makers and on-the-ground fire managers established priorities for prevention activities in the defined area to reduce the risk of managed and wildfire ignition and spread. Prediction of fire hazard shortens the time between fire ignition and initial attack by enabling fire managers to pre-allocate and stage suppression forces to high fire risk areas.
Flash Flood	A flood event occurring with little or no warning where water levels rise at an extremely fast rate.
Flood	A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface water from any source, or (3) mudflows or the sudden collapse of shoreline land.
Flood Depth	Height of the flood water surface above the ground surface.
Flood Elevation	Elevation of the water surface above an established datum, e.g., National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988, or Mean Sea Level.
Flood Hazard Area	The area shown to be inundated by a flood of a given magnitude on a map.
Flood Insurance Rate Map (FIRM)	Map of a community, prepared by the Federal Emergency Management Agency that shows both the special flood hazard areas and the risk premium zones applicable to the community.

Flood Insurance Study (FIS)	A study that provides an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations in a community or communities.
Floodplain	Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.
Frequency	A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a one percent chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.
Fujita Scale of Tornado Intensity	Rates tornadoes with numeric values from F0 to F5 based on tornado wind speed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while an F5 indicated severe damage sustained.
Functional Downtown	The average time (in days) during which a function (business or service) is unable to provide its services due to a hazard event.
Geographic Area Impacted	The physical area in which the effects of the hazard are experienced.
Geographic Information Systems (GIS)	A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.
Ground Motion	The vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter, but soft soils can further amplify ground motions.
Hazard	A source of potential danger or adverse condition. Hazards in this how to series will include naturally occurring events such as floods, earthquakes, tornadoes, tsunami, coastal storms, landslides, and wildfires that strike populated areas. A natural event is a hazard when it has the potential to harm people or property.
Hazard Event	A specific occurrence of a particular type of hazard.
Hazard Identification	The process of identifying hazards that threaten an area.

Hazard Mitigation	Sustained actions taken to reduce or eliminate long-term risk from hazards and their effects.
Hazard Profile	A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.
HAZUS (Hazards U.S.)	A GIS-based nationally standardized earthquake loss estimation tool developed by FEMA.
Hurricane	An intense tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74-miles-per-hour or more and blow in a large spiral around a relatively calm center or "eye." Hurricanes develop over the north Atlantic Ocean, northeast Pacific Ocean, or the South Pacific Ocean east of 160°E longitude. Hurricane circulation is counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
Hydrology	The science of dealing with the waters of the earth. A flood discharge is developed by a hydrologic study.
Infrastructure	Refers to the public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines or Internet access, vital services such as public water supplies and sewer treatment facilities, and includes an area's transportation system such as airports, heliports; highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots; and waterways, canals, locks, seaports, ferries, harbors, dry-docks, piers and regional dams.
Intensity	A measure of the effects of a hazard event at a particular place.
Landslide	Downward movement of a slope and materials under the force of gravity.
Lateral Spreads	Develop on gentle slopes and entail the sidelong movement of large masses of soil as an underlying layer liquefies in a seismic event. The phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength.
Liquefaction	Results when the soil supporting structures liquefies. This can cause structures to tip and topple.
Lowest Floor	Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure.

Magnitude	A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.
Mitigation Plan	A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the state and includes a description of actions to minimize future vulnerability to hazards.
National Flood Insurance Program (NFIP)	Federal program created by Congress in 1968 that makes flood insurance available in communities that enact minimum floodplain management regulations in FEMA Interim Final Rule 44 CFR §60.3.
National Geodetic Vertical Datum of 1929 (NGVD)	Datum established in 1929 and used in the NFIP as a basis for measuring flood, ground, and structural elevations, previously referred to as Sea Level Datum or Mean Sea Level. The Base Flood Elevations shown on most of the Flood Insurance Rate Maps issued by the Federal Emergency Management Agency are referenced to NGVD.
National Weather Service (NWS)	Prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to federal and state entities in preparing weather and flood warning plans.
Nor'easter	An extra-tropical cyclone producing gale-force winds and precipitation in the form of heavy snow or rain.
Outflow	Follows water inundation creating strong currents that rip at structures and pound them with debris, and erode beaches and coastal structures.
Planimetric	Describes maps that indicate only man-made features like buildings.
Planning	The act or process of making or carrying out plans; the establishment of goals, policies and procedures for a social or economic unit.
Probability	A statistical measure of the likelihood that a hazard event will occur.
Recurrence Interval	The time between hazard events of similar size in a given location. It is based on the probability that the given event will be equaled or exceeded in any given year.
Repetitive Loss Property	A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least $1,000 each have been paid within any 10-year period since 1978.
Replacement Value	The cost of rebuilding a structure. This is usually expressed in terms of cost per square foot, and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality.

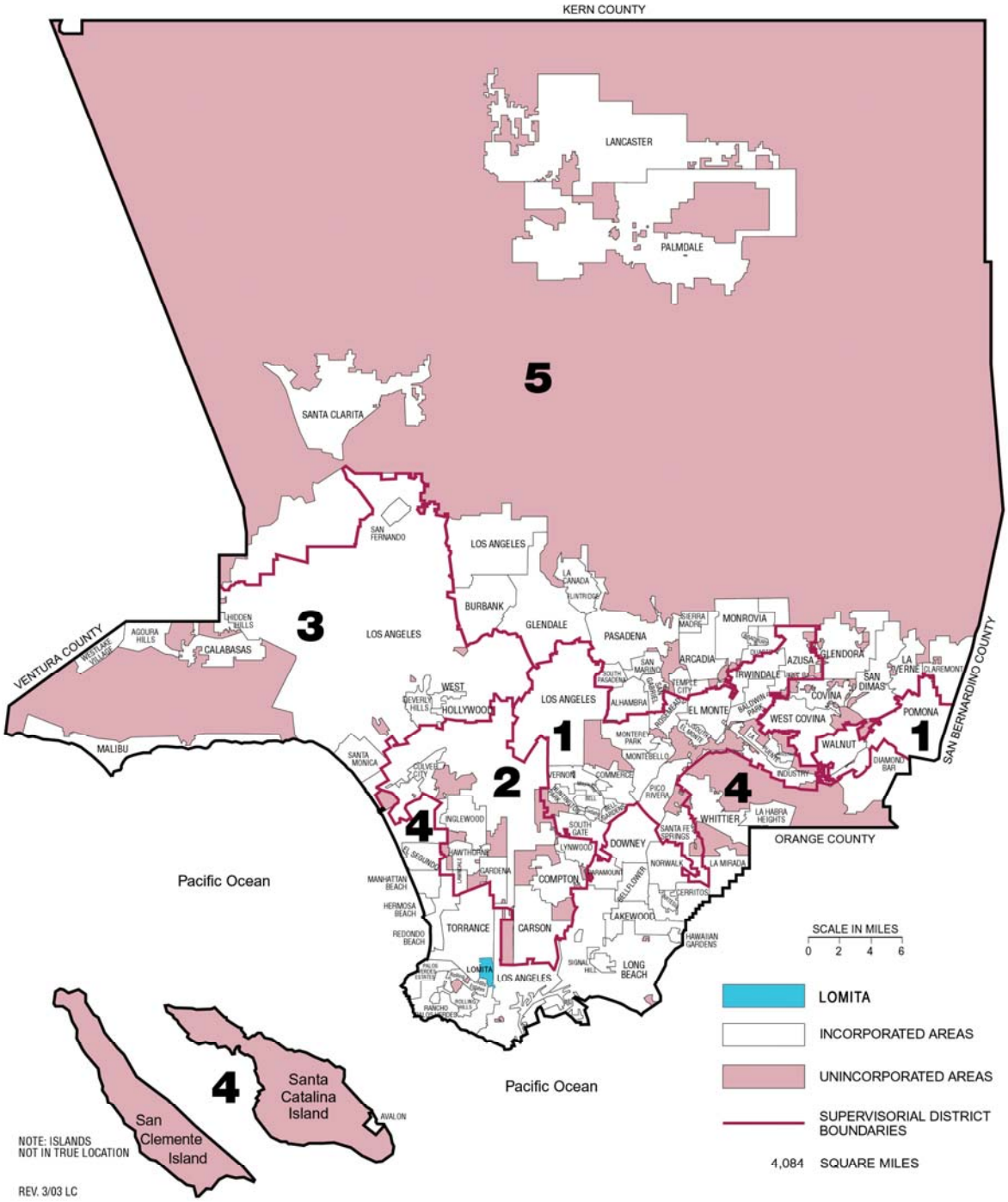
Richter Scale	A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935.
Risk	The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.
Riverine	Of or produced by a river.
Scale	A proportion used in determining a dimensional relationship; the ratio of the distance between two points on a map and the actual distance between the two points on he earth's surface.
Scarp	A steep slope.
Scour	Removal of soil or fill material by the flow of flood waters. The term is frequently used to describe storm-induced, localized conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence.
Seismicity	Describes the likelihood of an area being subject to earthquakes.
Special Flood Hazard Area (SFHA)	An area within a floodplain having a one percent or greater chance of flood occurrence in any given year (100-year floodplain); represented on Flood Insurance Rate Maps by darkly shaded areas with zone designations that include the latter A or V.
Stafford Act	The Robert T. Stafford Disaster Relief and Emergency Assistant Act, PL 100-107 was signed into Law November 23, 1988 and amended the Disaster Relief Act of 1974, PL 93-288. The Stafford Act is the statutory authority for most Federal disaster response activities, especially as they pertain to FEMA and its programs.
State Hazard Mitigation Officer (SHMO)	The representative of state government who is the primary point of contact with FEMA, other state and Federal agencies, and local unit of government in the planning and implementation of pre- and post-disaster mitigation activities.
Storm Surge	Rise in the water surface above normal water level on the open coast due to the action of wind stress and atmospheric pressure on the water surface.
Structure	Something constructed. (See also Building)

Substantial Damage	Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceed fifty percent (50%) of the market value of the structure before the damage.
Super Typhoon	A typhoon with maximum sustained winds of 150 mph or more.
Surface Faulting	The differential movement of two sides of a fracture – in other words, the location where the ground breaks apart. The length, width, and displacement of the ground characterize surface faults.
Tectonic Plate	Torsionally rigid, thin segments of the earth's lithosphere that may be assumed to move horizontally and adjoin other plates. It is the friction between plate boundaries that cause seismic activity.
Topographic	Characterizes maps that show natural features and indicate the physical shape of the land using contour lines. These maps may also include man-made features.
Tornado	A violently rotating column of air extending from a thunderstorm to the ground.
Tropical Cyclone	A generic term for a cyclonic, low-pressure system over tropical or subtropical waters.
Tropical Depression	A tropical cyclone with maximum sustained winds of less than 39 mph.
Tropical Storm	A tropical cyclone with maximum sustained winds greater than 39 mph and less than 74 mph.
Tsunami	Great sea wave produced by submarine earth movement or volcanic eruption.
Typhoon	A special category of tropical cyclone peculiar to the western North Pacific Basin, frequently affecting areas in the vicinity of Guam and the North Mariana Islands. Typhoons whose maximum sustained winds attain or exceed 150 mph are called super typhoons.

Vulnerability	Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct ones.
Vulnerability Assessment	The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment.
Water Displacement	When a large mass of earth on the ocean bottom sinks or uplifts, the column of water directly above it is displaced, forming the tsunami wave. The rate of displacement, motion of the ocean floor at the epicenter, the amount of displacement of the rupture zone, and the depth of water above the rupture zone all contribute to the intensity of the tsunami.
Wave Run-up	The height that the wave extends up to on steep shorelines, measured above a reference level (the normal height of the sea, corrected to the state of the tide at the time of wave arrival).
Wildfire	An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.
Zone	A geographical area shown on a Flood Insurance Rate Map (FIRM) that reflects the severity or type of flooding in the area.

Appendix E
List of Maps

Map 1
City of Lomita
Location Map


KERN COUNTY
LANCASTER
PALMDALE
5
SANTA CLARITA
SAN FERNANDO
LOS ANGELES
BURBANK
GLENDALE
PASADENA
MONROVIA
ARCADIA
AZUSA
GLENDORA
LA VERNE
CLAREMONT
SAN DIMAS
COVINA
IRWINDALE
WEST COVINA
POMONA
WALNUT
DIAMOND BAR
INDUSTRY
EL MONTE
ALHAMBRA
SOUTH PASADENA
SAN MARINO
TEMPLE CITY
BALDWIN PARK
MONTEREY PARK
MONTEBELLO
COMMERCE
VERNON
PICO RIVERA
WHITTIER
LA HABRA HEIGHTS
SANTA FE SPRINGS
LA MIRADA
NORWALK
DOWNEY
SOUTH GATE
LYNWOOD
PARAMOUNT
BELLFLOWER
CERRITOS
LAKEWOOD
HAWAIIAN GARDENS
LONG BEACH
SIGNAL HILL
COMPTON
CARSON
TORRANCE
LOMITA
REDONDO BEACH
HERMOSA BEACH
MANHATTAN BEACH
EL SEGUNDO
GARDENA
HAWTHORNE
INGLEWOOD
WEST HOLLYWOOD
BEVERLY HILLS
SANTA MONICA
CULVER CITY
MALIBU
CALABASAS
HIDDEN HILLS
AGOURA HILLS
WESTLAKE VILLAGE
VENTURA COUNTY
SAN BERNARDINO COUNTY
ORANGE COUNTY
Pacific Ocean
Pacific Ocean
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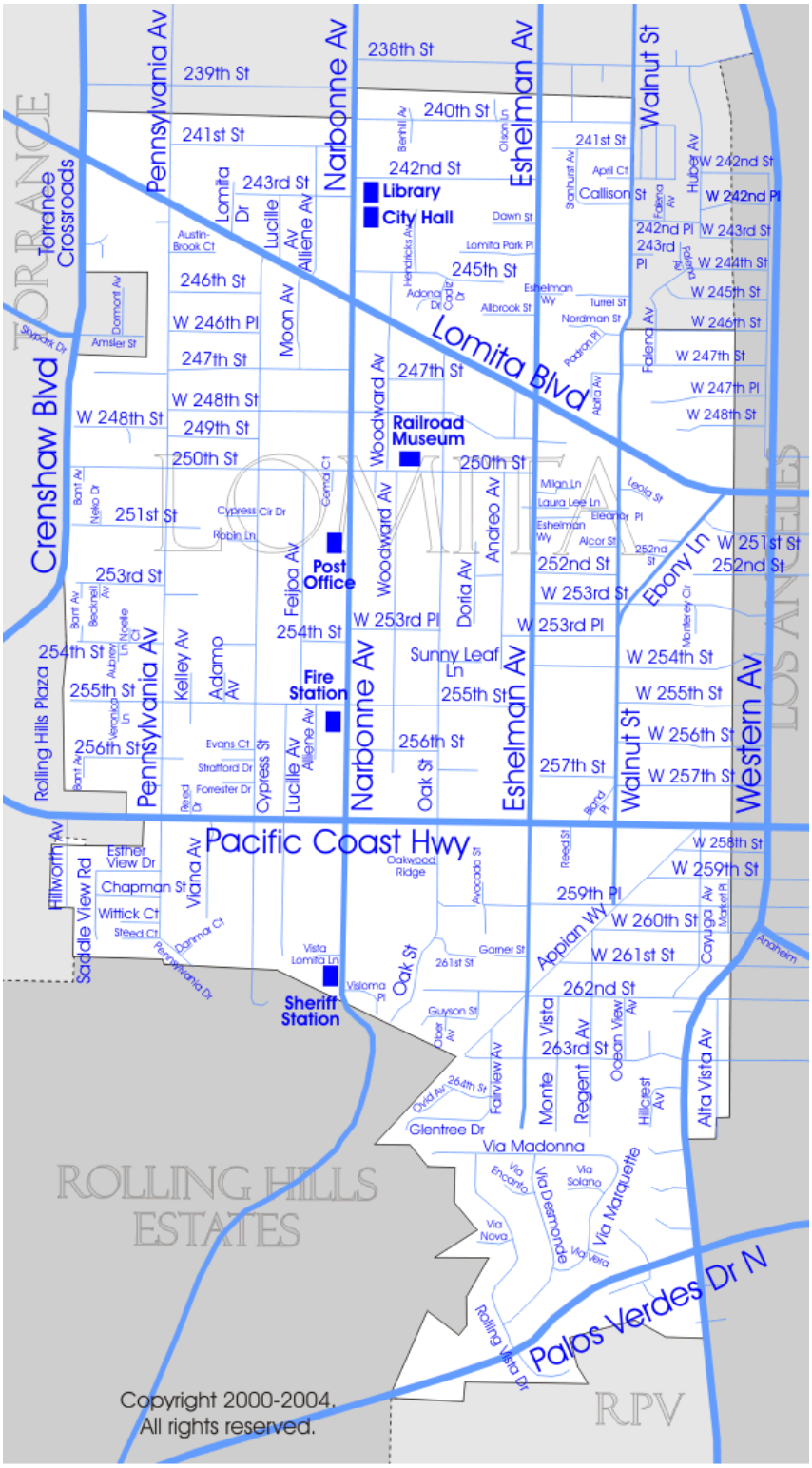
2
3
4
4
4
Santa Catalina Island
AVALON
San Clemente Island
NOTE: ISLANDS NOT IN TRUE LOCATION
REV. 3/03 LC
SCALE IN MILES
0 2 4 6
LOMITA
INCORPORATED AREAS
UNINCORPORATED AREAS
SUPERVISORIAL DISTRICT BOUNDARIES
4,084 SQUARE MILES

Map 2
City of Lomita
City Map


Library
City Hall
Railroad Museum
Post Office
Fire Station
Sheriff Station
Lomita Blvd
Pacific Coast Hwy
Palos Verdes Dr N
Crenshaw Blvd
Pennsylvania Av
Narbonne Av
Eshelman Av
Walnut St
Western Av
Lomita
Torrance
Rolling Hills Estates
RPV
Torrance Crossroads
Rolling Hills Plaza
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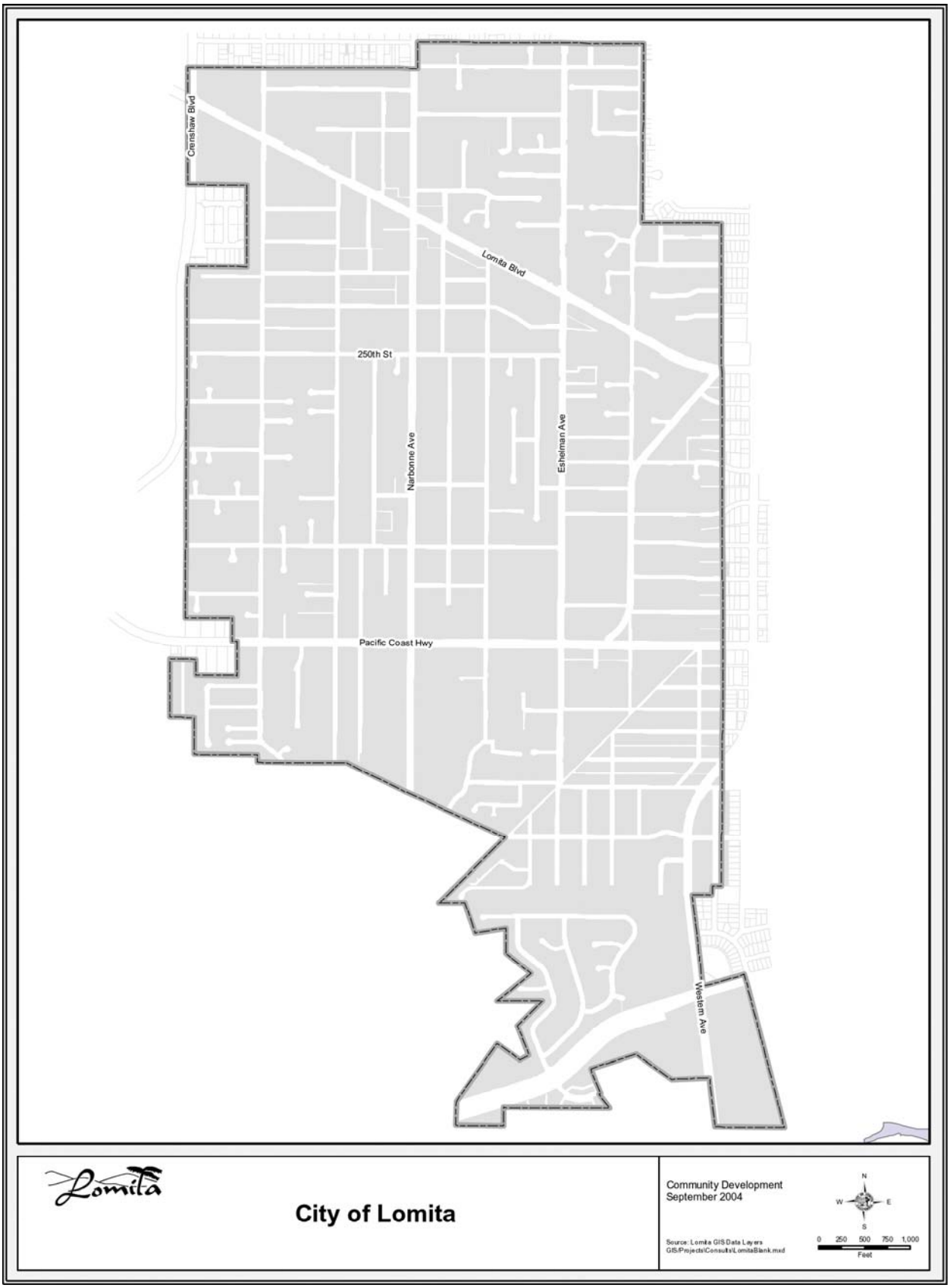
Crenshaw Blvd
Lomita Blvd
250th St
Narbonne Ave
Eshelman Ave
Pacific Coast Hwy
Western Ave
Lomita
City of Lomita
Community Development
September 2004
Source: Lomita GIS Data Layers
GIS/Projects/Consults/LomitaBlank.mxd
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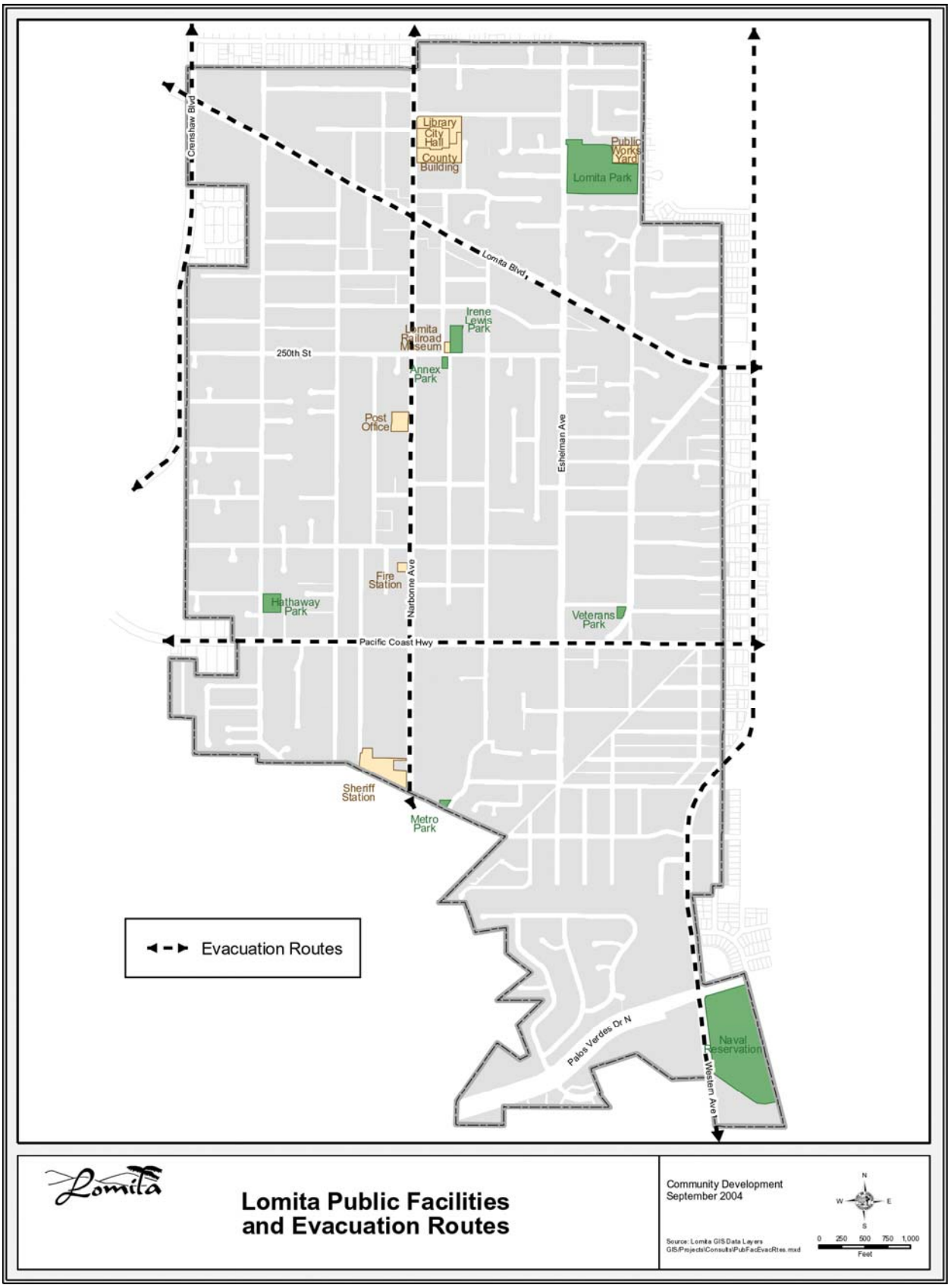
Map 3
City of Lomita
Evacuation Routes


Crenshaw Blvd
Library
City Hall
County Building
Public Works Yard
Lomita Park
Lomita Blvd
Irene Lewis Park
Lomita Railroad Museum
250th St
Annex Park
Post Office
Eshelman Ave
Fire Station
Narbonne Ave
Hathaway Park
Veterans Park
Pacific Coast Hwy
Sheriff Station
Metro Park
Evacuation Routes
Palos Verdes Dr N
Naval Reservation
Western Ave
Lomita
Lomita Public Facilities and Evacuation Routes
Community Development
September 2004
Source: Lomita GIS Data Layers
GIS/Projects/Consults/PubFacEvacRtes.mxd
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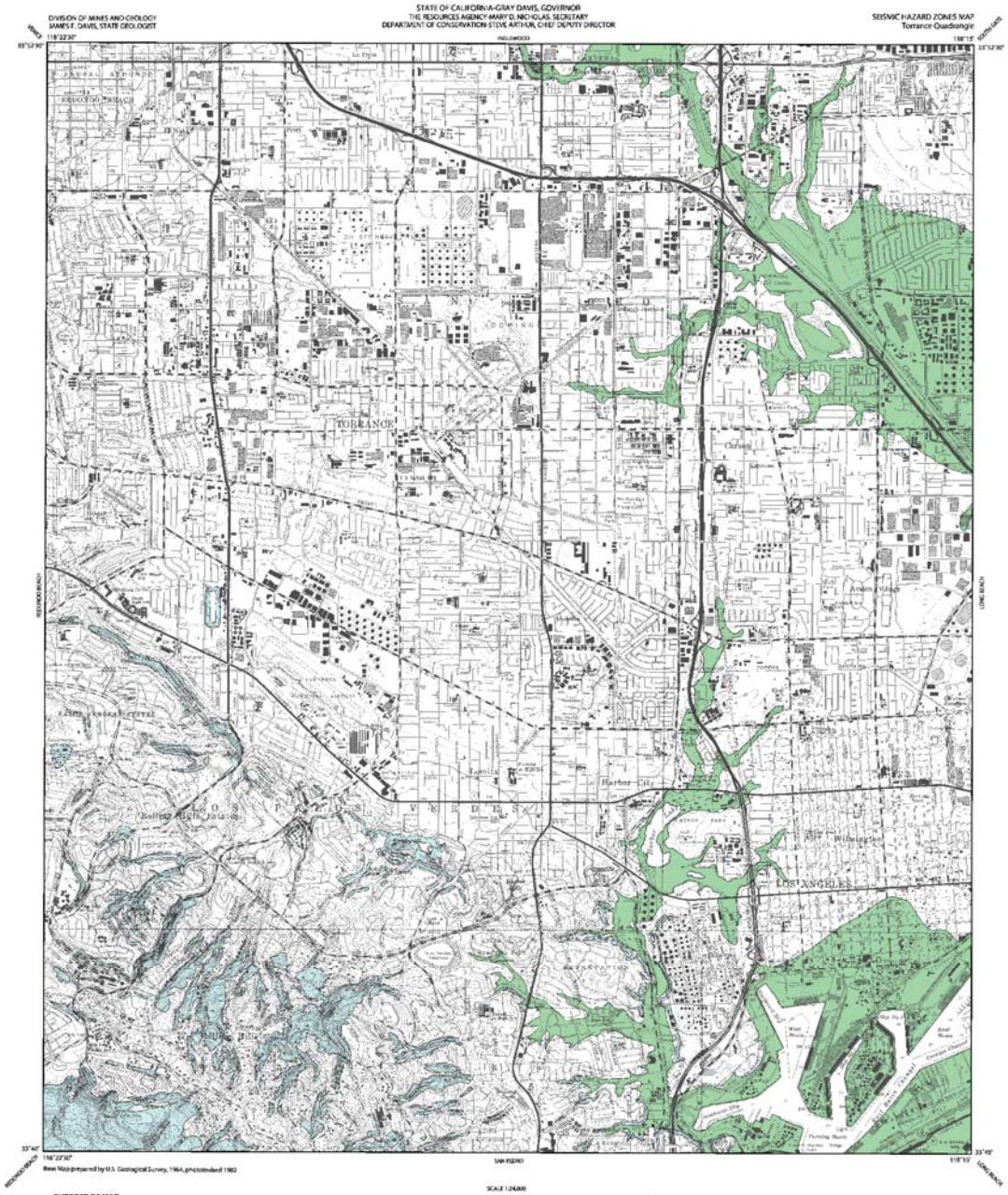
Feet

Map 4
Liquefaction Zone
Torrance Quadrangle



PURPOSE OF MAP

This map will assist cities and counties in fulfilling their responsibilities for protecting the public safety from the effects of earthquake-triggered ground failure as required by the Seismic Hazards Mapping Act (Public Resources Code Sections 2690-2699.6).

For information regarding the scope and recommended methods to be used in conducting the required site investigations, see DMG Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California.

For a general description of the Seismic Hazards Mapping Program, the Seismic Hazards Mapping Act and regulations, and related information, please refer to the draft User's Guide (see http://www.consrv.ca.gov/dmg/shezp/usergu/index).

Production of this map was funded by the Federal Emergency Management Agency's Hazard Mitigation Program and the Department of Conservation in cooperation with the Governor's Office of Emergency Services.

IMPORTANT - PLEASE NOTE

1) This map may not show all areas that have the potential for liquefaction, landsliding, strong earthquake ground shaking or other earthquake and geologic hazards. Also, a single earthquake capable of causing liquefaction or triggering landslide failure will not uniformly affect the entire area zoned.

2) Liquefaction zones may also contain areas susceptible to the effects of earthquake-induced landslides. This situation typically exists at or near the toe of existing landslides, downslope from landfill or debris flow source areas, or adjacent to steep stream banks.

3) This map does not show Alquist-Priolo earthquake fault zones, if any, that may exist in this area. Please refer to the latest official map of earthquake fault zones for delineations and other actions that are required by the Alquist-Priolo Earthquake Fault Zoning Act. For more information on this subject and an index to available maps, see DMG Special Publication 42.

4) Landslide zones on this map were determined, in part, by adapting methods first developed by the U.S. Geological Survey (USGS). A new generation of landslide hazard maps being prepared by the USGS (Jibson and Harp, in preparation) uses an experimental approach designed to explore new methods to assess earthquake-induced landslide hazards. Although aspects of this new methodology may be incorporated in future seismic hazard zone maps, the experimental USGS maps should not be used as substitutes for these official earthquake-induced landslide zone maps.

5) U.S. Geological Survey base map standards provide that 90 percent of cultural features be located within 40 feet (horizontal accuracy) at the scale of this map. The identification and location of liquefaction and earthquake-induced landslide zones are based on available data. However, the quality of data used is varied. The zone boundaries depicted have been drawn as accurately as possible at this scale.

6) Information on this map is not sufficient to serve as a substitute for the geologic and geotechnical site investigations required under Chapters 7.5 and 7.8 of Division 2 of the Public Resources Code.

7) DISCLAIMER: The State of California and the Department of Conservation make no representations or warranties regarding the accuracy of the data from which these maps were derived. Neither the State nor the Department shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.

SCALE 1:24,000

STATE OF CALIFORNIA

SEISMIC HAZARD ZONES

Delineated in compliance with
Chapter 7.8, Division 2 of the California Public Resources Code
(Seismic Hazards Mapping Act)

TORRANCE QUADRANGLE

OFFICIAL MAP

Released: March 25, 1999

STATE GEOLOGIST

MAP EXPLANATION

Zones of Required Investigation:

Liquefaction

Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides

Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

DATA AND METHODOLOGY USED TO DEVELOP THIS MAP ARE PRESENTED IN THE FOLLOWING:

Seismic Hazard Evaluation of the Torrance 7.5 Minute quadrangle, Los Angeles County, California: California Division of Mines and Geology, Open-File Report 98-26.

For additional information on seismic hazards in this map area, the rationale used for zoning, and additional references compiled, refer to DMG's World Wide Web site (http://www.consrv.ca.gov/dmg/).

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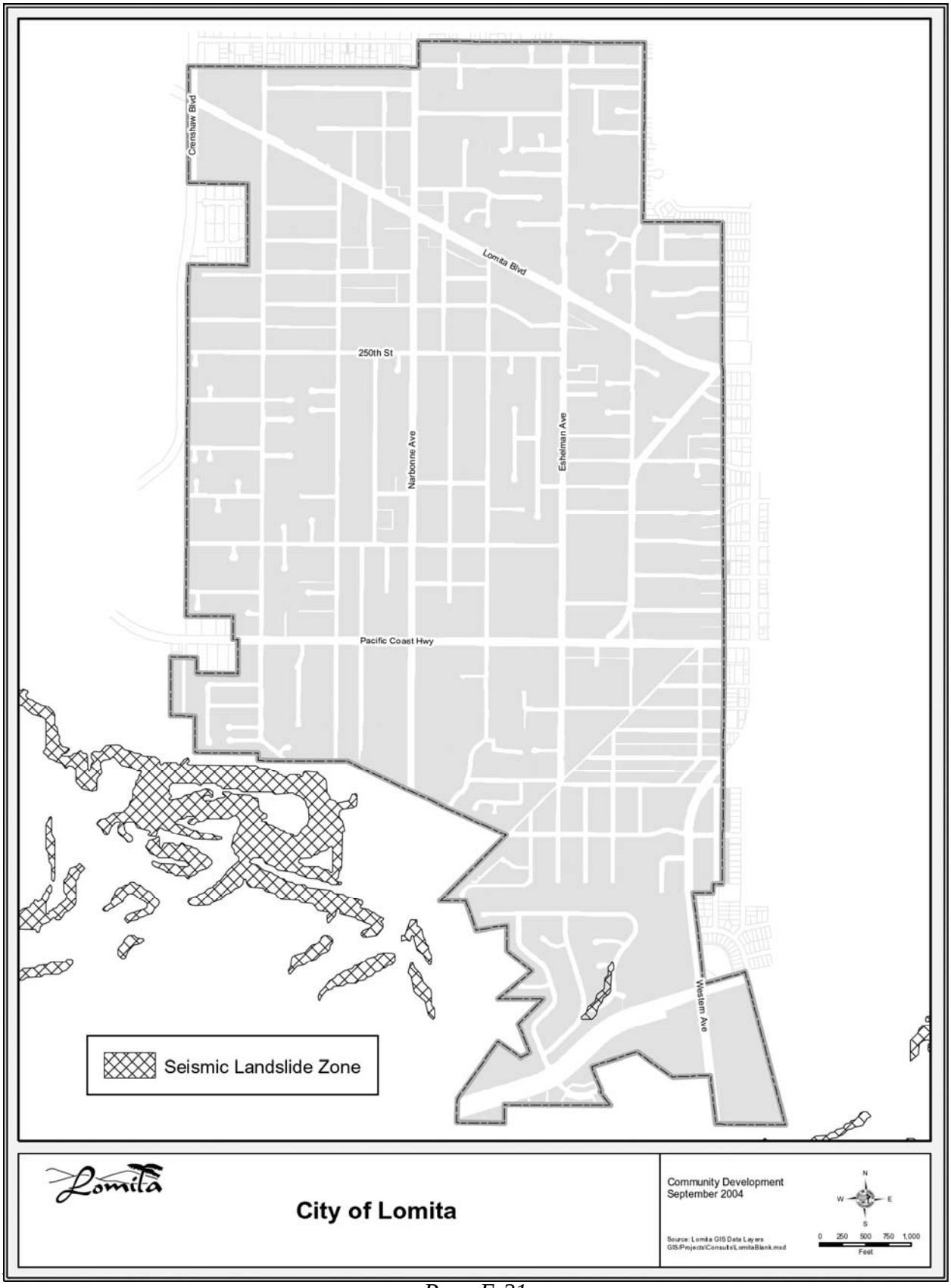
Map 5
City of Lomita
Seismic Landslide Zone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Lomita Blvd
250th St
Narbonne Ave
Eshelman Ave
Pacific Coast Hwy
Western Ave
Seismic Landslide Zone
Lomita
City of Lomita
Community Development
September 2004
Source: Lomita GIS Data Layers
GIS/Projects/Consults/LomitaBlank.mxd
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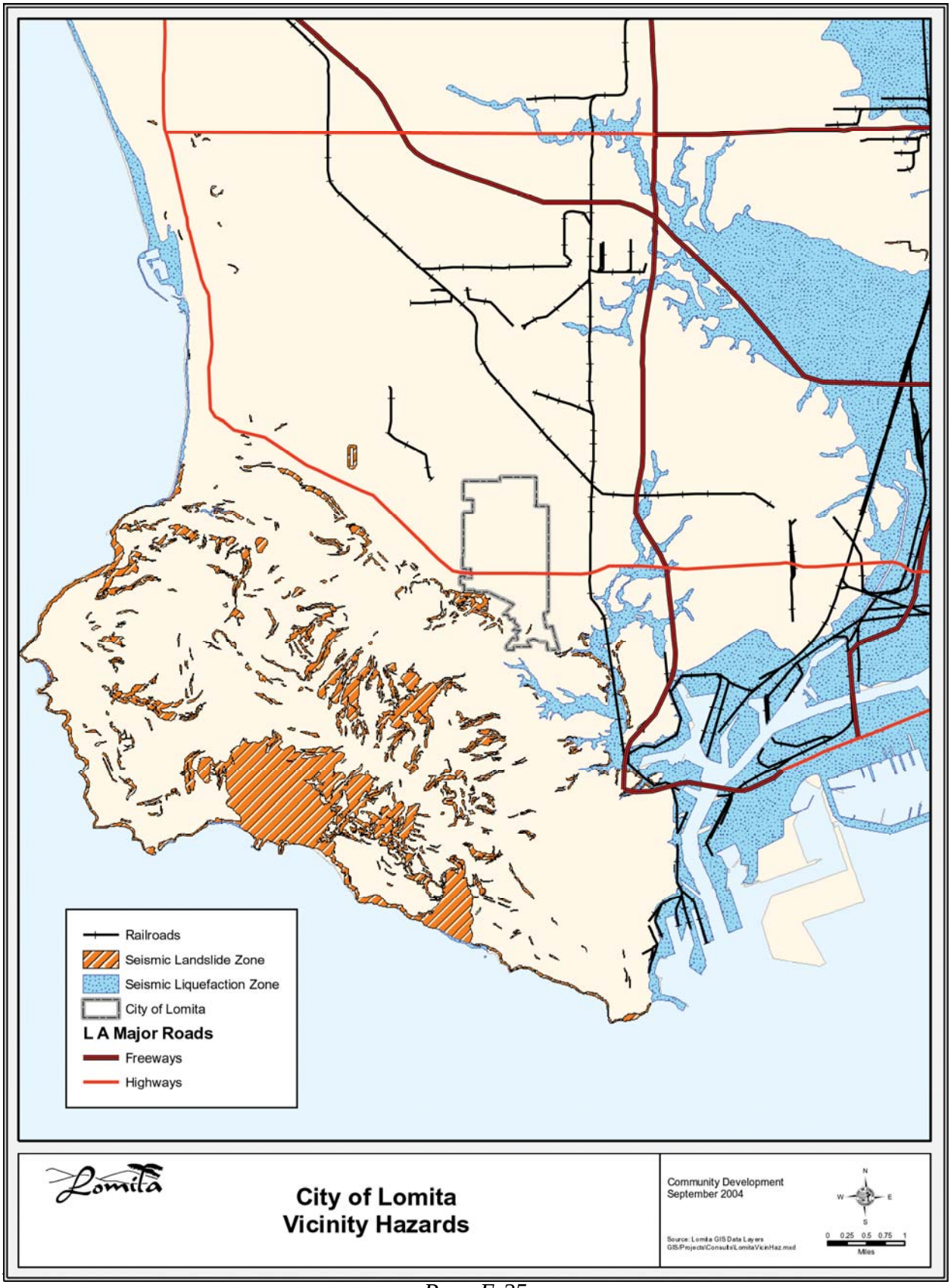
Feet

Map 6
City of Lomita
Vicinity Hazards


Railroads
Seismic Landslide Zone
Seismic Liquefaction Zone
City of Lomita
L A Major Roads
Freeways
Highways
Lomita
City of Lomita
Vicinity Hazards
Community Development
September 2004
Source: Lomita GIS Data Layers
GIS/Projects/Consults/LomitaVicinHaz.mxd
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Miles

Appendix F
City Site Non-Structural
Action Item List

IDENTIFIED HAZARD #1	**Unsecured contents may fall off shelves used to store chemicals**
WHAT COULD HAPPEN	• Contents could strike nearby occupants • Contents could release dangerous chemicals or cause a hazardous reaction to occur.
ACTION TO BE TAKEN	• Install wood or Plexiglas strips across open face of shelves. • Shelves must be secured. • Install shelf with a lip to prevent objects from falling. • Relocate heavy items or volatile chemicals to floor mounted cabinets when possible.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #2	**Unsecured wall-mounted cabinets, lockers and metal storage cabinets.**
WHAT COULD HAPPEN	• Contents could strike nearby occupants. • Contents could block hallways and exit areas.
ACTION TO BE TAKEN	• For single unit, secure each unit to wall studs or blocking with screws. • For multiple units, fasten each unit to a clip angle with metal screws. Fasten clip angle to wall studs or blocking with screws. • Relocate cabinets, lockers, or metal storage cabinets away from hallways and exit ways.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #3	**Unsecured aquariums or terrariums.**
WHAT COULD HAPPEN	• Aquariums or terrariums could fall striking nearby occupants. • Aquariums or terrariums could fall and block hallways and exit areas.
ACTION TO BE TAKEN	• Fasten clip angle to tabletop against each side of the unit. • Locate these units away from doors and exit ways.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #4	**Unsecured ceiling-height interior walls.**
WHAT COULD HAPPEN	• Damage pipes and electrical wiring. • Wall may fall and could strike nearby occupants. • Wall may fall and could block hallways and exit areas.
ACTION TO BE TAKEN	• Secure ceiling-height walls with diagonal bracing. • Consult a qualified architect or structural engineer for seismic requirements. • Walls are usually not fire-rated.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #5	**Unsecured TV monitors or speakers.**
WHAT COULD HAPPEN	• Units may fall off the mounting brackets, striking occupants below. • Units could block exit ways for evacuation during an emergency. • A fallen unit may damage electrical wirings, exposing nearby occupants to electrical shock or start a fire.
ACTION TO BE TAKEN	• Secure each TV or monitor to mounting bracket with adjustable straps. • Follow the recommendation provided by the manufacturer for mounting bracket for TV, monitors or speakers. • Locate units mounting brackets away from doors or exit ways. • Consider using a pre-approved mounting bracket from the Office of Statewide Health Planning and Development (OSHPD). • Consult a qualified architect or structural engineer for seismic bracing requirements.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #6	**Unsecured wall hung items such as pictures, decorations or signs.**
WHAT COULD HAPPEN	• Contents could strike nearby occupants. • Contents could block hallways and exit areas.
ACTION TO BE TAKEN	• Install hook into wall stud. Close hook with pliers after hanging item. • Alternatively, use hook with closed loop or spring-back retention bar. • Use specialized earthquake hooks (Hook™ brand) that retain wire hung items. • Do not hang an item that weighs more than recommended by the hook manufacturer.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #7	**Unsecured fire extinguishers.**
WHAT COULD HAPPEN	• Unit may fall off wall and damage the shut-off valve or hose, releasing its content. • Unit could strike nearby occupants. • A damaged fire extinguisher may not be functional in an emergency.
ACTION TO BE TAKEN	• Secure fire extinguisher mounting bracket or cabinet to wall framing. • Retention straps can be used for further security. • Cabinets must be accessible either through breakable glass or latched door.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #8	**Glass windows and doors at entryways.**
WHAT COULD HAPPEN	• Glass may fall or shatter injuring nearby occupants. • Fallen glass could block doors and exits during an emergency.
ACTION TO BE TAKEN	• Replace glass on door and glass surrounding the door with safety glazing (glass) or safety film. • Safety glass has permanent identification label etched or ceramic fired on the glass and readable from the inside of the building.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #9	**Unsecured free standing and cubical partitions.**
WHAT COULD HAPPEN	• Cubical partitions could strike nearby occupants. • Fallen cubical partitions could block hallways and exit areas.
ACTION TO BE TAKEN	• Screw clip angle to intermediate and end panels at each end. • Secure clip angle to concrete floor with concrete drill-in anchor bolt at each leg. Lag bolt must be installed into floor joists or blocking. • Clip angle must be screwed into the metal frame portion of the cubical partition. • Maximum distance between intermediate or end panels is 10 feet. • Panel joint must be rigid. • If panels are hinged together or joints were not rigid, reinforce the top with steel flat plate across the joint and secure the bottom with clip angle.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #10	**Unsecured file cabinets.**
WHAT COULD HAPPEN	• File cabinets could fall over striking nearby occupants. • Contents could block hallways and exit areas.
ACTION TO BE TAKEN	• When the cabinet depth or width is less than two-thirds the height, the cabinet should be secured to an adjacent wall or fastened to adjacent cabinets. • Cabinets should have latching drawers. • Heavier contents should be stored in lower drawers of a file cabinet. • Locate cabinets away from exits and hallways. • Metal clips should be provided for attachments at cabinets and at walls. • Metal clip attachments at the wall should utilize screws that are properly installed into wall studs or blocking.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #11	**Unsecured bookcases 6 feet or more in height.**
WHAT COULD HAPPEN	• Bookcases could fall over striking nearby occupants. • Bookcases could block hallways and exit areas.
ACTION TO BE TAKEN	• Install cross bracing in back of bookcases. Use cable or metal strap for bracing. • If bookcases were located back-to-back, tie them together with steel plates. • Secure bookcases to wall or floor using clip angles. • Alternatively, secure bookcases with anti-tip struts at top. • For bookcases standing next to a wall, secure them to wall framing with clip angles. • Relocate heavy books to lower levels.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #12	**Unsecured bookcases less than 6 feet in height.**
WHAT COULD HAPPEN	• Bookcases could fall over striking nearby occupants. • Bookcases could block hallways and exit areas.
ACTION TO BE TAKEN	• Tie back-to-back bookcases together with clips and bolts or screws. • Fasten bookcases to floor if the length or combined width is less than two-thirds the height to prevent tipping over. • Fasten isolated bookcases to floor or wall. • Relocate heavy books to lower levels.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #13	**Unsecured desktop/countertop equipment.**
WHAT COULD HAPPEN	• Equipment could fall off desk or countertop striking nearby occupants. • Fallen desktop equipment may damage electric wiring, causing power interruption, electrical shock to nearby occupants or fire.
ACTION TO BE TAKEN	• Secure with heavy-duty hook-and-loop fasteners. Attach self-adhering hook-and-loop pads to base of desktop equipment case and the matting pads to desktop. • Secure with cable with self-adhering anchor pads to equipment and desktop. • Relocate desktop to heavy equipment away from doors and exit ways. • Consult a qualified structural engineer or architect for heavy countertop equipment.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #14	**Unsecured equipment on carts.**
WHAT COULD HAPPEN	• Equipment may fall off cart or topple cart striking nearby occupants.
ACTION TO BE TAKEN	• Secure equipment to cart with adjustable straps. Tighten strap to remove any slack. • Relocate carts away from doors and exit ways. • Cart should have locking wheels or casters. • If the height of the cart exceeds two-thirds the depth or width of the cart, secure the cart to the wall with rope, chain or cable. Rope, chain or cable should be attached to eyebolts or other closed loop fasteners, which should be installed into wall studs or blocking.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #15	**Unsecured display cases/art objects.**
WHAT COULD HAPPEN	• Awards, trophies and art objects could fall striking nearby occupants. • Awards, trophies and art objects could fall and block hall-ways and exit areas.
ACTION TO BE TAKEN	• Secure display case to floor. Shelves in display case must also be secured. • Use angle bracket if needed. • Secure contents to shelves using hook-and-loop or museum was or a combination of both. • Consult a qualified structural engineer or architect for heavy countertop equipment.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #16	**Unsecured equipment on wheels.**
WHAT COULD HAPPEN	• Wheel-mounted furniture may roll or fall striking nearby occupants. • Wheel-mounted furniture may roll or fall blocking doors and exit ways for evacuation during an emergency.
ACTION TO BE TAKEN	• Install eyescrews to wall and secure furniture to eyescrews with cable, chain or rope. • Replace free rolling wheels with lockable wheels. • If wheels are not lockable, install eyescrews to floor and secure furniture to eyescrews with cable, chain or rope. • Eyescrews must be installed into wall studs or blocking.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #17	**Unsecured office equipment.**
WHAT COULD HAPPEN	• Office equipment may fall striking nearby occupants. • Fallen office equipment may damage electric wiring, exposing occupants to electrical shock or start a fire.
ACTION TO BE TAKEN	• Secure office equipment to the floor. • Use concrete drill-in anchor bolts for concrete floor. • Use lag bolts for wood floor. Install them into floor beams or blocking. • Bolts must be installed through metal framing of office equipment. Do not install through thin gauge housing panels. • If clip angles are used, attach clip angle to metal framing of the equipment. Do not attach to thin gauge housing panels.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #18	**Unsecured refrigerators and vending machines.**
WHAT COULD HAPPEN	• Refrigerators and vending machines may fall striking nearby occupants. • Refrigerators and vending machines may damage electric wiring, exposing occupants to electrical shock or start a fire. • Refrigerators and vending machines could fall and block hallways and exit areas.
ACTION TO BE TAKEN	• Secure refrigerators and vending machines to floor with slotted z-clips or clip angles. • Slotted z-clip must have a minimum of two bolts to the floor. • Relocate refrigerators and vending machines away from doors and exit ways.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #19	**Unsecured shop equipment.**
WHAT COULD HAPPEN	• Shop equipment may fall striking nearby occupants. • Shop equipment could fall and block hallways and exit areas.
ACTION TO BE TAKEN	• Secure shop equipment to concrete floor with concrete drill-in anchor bolt at each leg. • Secure shop equipment to wood floor with a lag bolt at each leg. Lag bolt must be installed into floor joists or blocking. • When clip angle is required, screw angle to equipment and fasten to floor with either concrete drill-in anchor or lag bolts.
TIMELINE	• Ongoing

IDENTIFIED HAZARD #20	**Unsecured gas cylinders/tanks.**
WHAT COULD HAPPEN	• Gas cylinders or tanks may fall over and damage the shut-off valve, releasing hazardous or flammable contents. • A cylinder with a damaged shut-off valve may result in the tank or valve becoming a projectile. • Cylinders may fall over, striking or rolling and striking nearby occupants.
ACTION TO BE TAKEN	• Secure each cylinder or tank to a wall with two restraints. • Alternatively, to providing wall restraints, cylinders or tanks may be kept within a storage rack or compartment that is secured to a wall or floor. • Store gas cylinders or tanks in non-occupied areas, and away from exit routes or exit doors. • Chain, cable or rope restraints must be attached to eyebolts or other closed hook structural fasteners. • Eyebolts or other fasteners must be attached to wall framing (studs or blocking).
TIMELINE	• Ongoing

IDENTIFIED HAZARD #22	**Unsecured water heaters.**
WHAT COULD HAPPEN	• Plumbing equipment or water heaters may slide or fall striking nearby occupants. • Plumbing equipment or water heaters may slide or fall spilling hot water on floor or nearby occupants, or rupture gas lines.
ACTION TO BE TAKEN	• Secure base of water heater by bolting to floor. • Secure water heater to wall with plumber's tapes, or other methods recommended by the Department of General Services – Division of the State Architect (DSA). • Use concrete drill-in anchor bolts for concrete floor and wall. • Use lag bolts for wood floor and wall. Lag bolts must be installed into floor beams, wall studs or blocking. • When clip angle is required, screw angle to equipment and fasten to floor with either concrete drill-in anchor or lag bolts. • Space between wall and water heater must be shimmed tight with non-combustible material at the locations of the plumber's tape. • Consult a qualified architect or professional engineer for seismic anchorage requirements.
TIMELINE	• Ongoing.

IDENTIFIED HAZARD #22	**Gas Shut-off Valves.**
WHAT COULD HAPPEN	• When an earthquake of significant magnitude occurs, gas lines may rupture, release natural gas and ignite to cause fires and explosions.
ACTION TO BE TAKEN	• Install natural gas earthquake automatic shut-off valves at all City sites.
TIMELINE	• Ongoing.

Appendix G
City Structures and Contents Replacement Values

Property and Contents Replacement Values as of September 3, 2004

Agency: **City of Lomita**

Hazard: **Losses from an Earthquake**

Name or Description of Asset	Sources of Information	Critical Facility	Vulnerable Population	Economic Assets	Special Considerations	Historic/Other Considerations	Building Size (sq. ft.)	Structure Replacement Value (in dollars)**	Contents Value (in dollars)**	100% Structure + Content Total Losses (in dollars)
Buildings										
Parks & Recreation Building (Tom Rico Recreation Center)	GASB 34*						5,000	$3,000,000	$103,684.00	$3,103,684.00
Gym & Recreational Center (Stephenson Center)	GASB 34*						20,000	$750,000		
Public Works Building	GASB 34*						10,500	$1,050,000	$666,950.12	$1,716,950.12
Lomita Manor	GASB 34*						60,000	$3,601,737		
Pump Station	GASB 34*						1,000	$150,000		
RR Museum	GASB 34*						5,000	$180,000	$6,886.21	$186,886.21
City Hall	GASB 34*						30,000	$3,000,000	$194,523.52	$3,194,523.52
Land										
Lomita Park	GASB 34*						8.81 acres	$1,227,852		
Hathaway Park	GASB 34*						0.94 acres	$79,916		
RR Museum & Irene Lewis Park	GASB 34*						0.92 acres	$184,000		
RR Museum & Annex Park	GASB 34*						0.18 acres	$20,230		

Agency: **City of Lomita**

Hazard: **Losses from an Earthquake**

Name or Description of Asset	Sources of Information	Critical Facility	Vulnerable Population	Economic Assets	Special Considerations	Historic/Other Considerations	Building Size (sq. ft.)	Structure Replacement Value (in dollars)**	Contents Value (in dollars)**	100% Structure + Content Total Losses (in dollars)
Veterans Memorial Park	GASB 34*						0.22	$33,682		
City Hall	GASB 34*						1.79 acres	$358,000		
Cypress Street Reservoir	GASB 34*						0.76 acres	$24,580		
247th Street Right of Way	GASB 34*						0.02 acres	$647		
Lomita Manor	GASB 34*						1.91 acres	$382,000		
Housing Authority – Vacant Land	GASB 34*						0.47 acres	$94,000		
Pumping Station	GASB 34*						0.22	$43,544		
Roadway										
Pavement	GASB 34*						5,425,124 SF	$21,700,496		
Sidewalks	GASB 34*						1,468,533 SF	$8,811,198		
Curb and Gutter	GASB 34*						296,444 SF	$5,928,880		
Traffic Signals	GASB 34*						7 (lights)	$1,400,000		
Medians	GASB 34*						87,100 SF	$522,600		
Street Trees	GASB 34*						5,835 (qty)	$8,752,500		
Streetscape Improvement Downtown	GASB 34*						--	$1,582,421		
Streetscape Improvement Downtown (Street Lights)	GASB 34*						58 (qty)	$172,856		

Agency: **City of Lomita**

Hazard: **Losses from an Earthquake**

Name or Description of Asset	Sources of Information	Critical Facility	Vulnerable Population	Economic Assets	Special Considerations	Historic/Other Considerations	Building Size (sq. ft.)	Structure Replacement Value (in dollars)**	Contents Value (in dollars)**	100% Structure + Content Total Losses (in dollars)
Streetscape Improvement Downtown (Monuments)	GASB 34*						7 (qty)	$92,417		
Subtotal: Roadway								**$48,963,368**		
Parks & Recreation										
Improvements (Park & Recreation network)	GASB 34*						10.9 acres	$829,813		
Subtotal: Parks & Recreation								**$829,813**		
Storm Drain System										
Catch Basin	GASB 34*						42 (qty)	$210,000		
Subtotal: Storm Drain System								**$210,000**		
Water System										
Pipes	GASB 34*						100,612 LF	$16,815,459		
Hydrants	GASB 34*						400 (qty)	$680,000		
Pump Stations	GASB 34*						3 (qty)	$600,000		
Reservoir: Water Pipes	GASB 34*						2 (qty)	$1,100,000		
Subtotal: Water System								**$19,195,459**		

Agency: **City of Lomita**

Hazard: **Losses from an Earthquake**

Name or Description of Asset	Sources of Information	Critical Facility	Vulnerable Population	Economic Assets	Special Considerations	Historic/Other Considerations	Building Size (sq. ft.)	Structure Replacement Value (in dollars)**	Contents Value (in dollars)**	100% Structure + Content Total Losses (in dollars)
Sewer System										
Sewer Pipes	GASB 34*						173,931 LF	$12,194,560		
Sewer Manholes	GASB 34*						882 (qty)	$3,528,000		
Subtotal: Sewer System								**$15,722,560**		
Projects in Progress	GASB 34*							**$789,247**		

**GASB Statement 34 .Implementation Valuations 2004*
***Data has been provided by City of Lomita.*