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Santa Monica-Malibu Unified School
District

&

Santa Monica College

All-Hazard Mitigation Plan

Version 3.0 (2017)

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

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Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Summary

To summarize, this document contains:

- The Santa Monica-Malibu USD and Santa Monica College Risk Assessment update;
- Progress on and prioritization of Santa Monica-Malibu USD and Santa Monica College Hazards for mitigation activities;
- Updates Hazard Mitigation Strategy Goals and Objectives;
- Reviews Hazard Mitigation efforts and plan input;
- Continued coordination with local interest groups and citizens;
- New and updated proposed strategies and actions to reduce short and long term risk to the identified hazards; as recommended by the Santa Monica-Malibu USD and Santa Monica College Hazard Mitigation Planning Committee, its sub-committees and the general public;
- Continued methods of implementing, monitoring, evaluating, and updating this DMA 2000 Hazard Mitigation Plan;
- Updated constraints to implementing Hazard Mitigation strategies and recommendations;
- The continuation of the Santa Monica-Malibu USD and Santa Monica College Hazard Mitigation Planning Committee to assist in the further development, prioritization and implementation of the recommended Hazard Mitigation strategies.

This document also provides a framework for the identification and coordination of Hazard Mitigation strategies developed in the Santa Monica-Malibu USD and Santa Monica College with other plans; agencies and organizations as well as those plans developed in order to file for Federal disaster assistance, as required by P.L. 106-390 (as amended) of the Disaster Mitigation Act of 2000.

Definition of Hazard Mitigation

Hazard Mitigation is any sustained action taken to eliminate or reduce long-term risk to human life, property and the environment posed by a hazard.

Hazard Mitigation Planning is the process of developing a sustained course of action taken to reduce or eliminate long-term risk to people and property from both natural and technological hazards and their effects. The planning process includes establishing goals and recommendations for mitigation strategies.

Hazard Mitigation may occur during any phase of a threat, emergency, or disaster. Mitigation can and may take place during the *preparedness* (before), *response* (during), and *recovery* (after) phases.

The process of hazard mitigation involves evaluating, identifying, and implementing actions to minimize or eliminate the hazard's impact.

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Purpose of the Plan

The purpose of this plan is to integrate Hazard Mitigation strategies into the day-to-day activities and programs of the Santa Monica-Malibu USD and Santa Monica College.

This plan identifies and evaluates specific strategies to be considered by the Santa Monica-Malibu USD and Santa Monica College and its agencies. It offers a District-wide support document as well as a planning support tool for those strategies developed by the District's political subdivisions, agencies, departments, special districts and organizations.

The strategies presented are deemed appropriate and effective by recommendation of the Santa Monica-Malibu USD and Santa Monica College All-Hazard Mitigation Planning Committee and the District's agencies, departments and private groups.

Upon acceptance by the California Emergency Management Agency (CalEMA) and the Federal Emergency Management Agency (FEMA), selected strategies will be further developed for funding and implementation by the lead District agencies and departments. This plan describes the potential sources of Hazard Mitigation Strategy funding, and general procedures to obtain that funding.

This plan is based upon the Santa Monica-Malibu USD and Santa Monica College Risk Analysis that considers natural, technological, and human-caused risks to which the District and its political subdivisions are vulnerable. The plan describes strategies that government and private sector organizations may utilize to develop their capabilities to mitigate those hazards.

It is understood that the mitigation strategies adopted in this plan are recommendations only, and they must be approved by the Superintendent of Schools, School Board and College Board of Trustees, then funded in order to be implemented as official Hazard Mitigation Strategies.

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Introduction to Participating Jurisdictions

Santa Monica-Malibu Unified School District

History

The Santa Monica-Malibu Unified School District is headquartered in Santa Monica and serves the coastal communities of Santa Monica and Malibu. It is located in Los Angeles County and serves 11,000 students in preschool through 12th grade in 10 elementary schools, two middle schools, one middle / high school, one comprehensive high school, a continuation high school and a K - 8th grade alternative school. The district is also home to 11 early childhood education centers and an adult school. The first classroom opened with 52 students in March 1876. SMMUSD's annual budget for the 2016-17 school year is \$150 million.



Santa Monica-Malibu Unified School District Vision, Mission & Beliefs

The Mission Statement for the Santa Monica-Malibu Unified School District is: "Extraordinary achievement for ALL students while simultaneously closing the achievement gap."

Vision

As a community of learners the Santa Monica-Malibu USD Unified School District works together in a nurturing environment to help students be visionary, versatile thinkers; resourceful, life-long learners; effective, multilingual communicators and global citizens. We are a rich, culturally diverse community that values the contributions of all its members and strives to promote social justice. We exist to assist all students in their pursuit of academic achievement, strength of character, and personal growth and to support them in their exploration of intellectual, artistic, technological, physical, and social expression.

Santa Monica-Malibu Unified School District & Santa Monica College
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Beliefs

- We believe in equality of opportunity and equitable access to an excellent education for all students.
- We believe in the strategic plan created by our community to guide our work.
- We believe that students, families, teachers, and support staff share in the responsibility for each child's learning.
- We believe that safe, clean, and functional school and district facilities are conducive to learning.
- We believe that the district should operate within responsible financial boundaries that include future fiscal planning which reflects instructional priorities and aggressively seeks available funding sources.
- We believe high standards and expectations for all our students promote rigorous learning environments.
- We believe acceptance, appreciation of and connection with the diversity of students and families in SMMUSD are essential for effective teaching and learning.
- We believe intelligence is learned and effort creates ability.
- We believe all children are capable of developing intelligence when they are offered proper instruction and the educational support and/or interventions to meet their specific learning needs.
- We believe that in partnership with students and families, teachers and district staff:
 - Are committed to students and their own learning.
 - Are responsible for managing and monitoring student learning.
 - Are responsible for developing intelligence in students.
 - Think systemically about their practice and learn from experience.
 - Know the subjects they teach and how to teach those subjects to students
- We believe that teachers and principals are lead members of our learning community.
- We believe two-way accountability between school site credentialed and classified staff and Central Office Committees promotes a culture of shared responsibility for student learning. Central Office Committees must have their goals and accountability system linked to providing support to the work of teachers and site leaders.
- We believe resources must be aligned to the goals and strategies for increasing student achievement for all while closing the achievement gap.
- We believe all members of the district should strive to eliminate all forms of discrimination, including: that based race, gender, color, religion, national origin, ethnic group, marital or parental status, physical or mental disability, sexual orientation or the perception of one or more of such characteristics.

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

School Site Information

Juan Cabrillo Elementary School
30237 Morningview Drive
Malibu, CA 90265

Edison Elementary School
2425 Kansas Avenue
Santa Monica, CA 90404

Franklin Elementary School
2400 Montana Avenue
Santa Monica, CA 90403

Grant Elementary School
2368 Pearl Street
Santa Monica, CA 90404

McKinley Elementary School
2401 Santa Monica Boulevard
Santa Monica, CA 90404

John Muir Elementary School
2526 Sixth Street
Santa Monica, CA 90405

Will Rogers Elementary School
2401 14th Street
Santa Monica, CA 90405

Roosevelt Elementary School
801 Montana Avenue
Santa Monica, CA 90403

Webster Elementary School
3602 Winter Canyon
Malibu, CA 90265

Santa Monica Alternative School House
2525 Fifth Street
Santa Monica, CA 90405

John Adams Middle School
2425 16th Street
Santa Monica, CA 90405

Lincoln High School
1501 California Street
Santa Monica, CA 90403

Malibu High School
30215 Morningview Drive
Malibu, CA 90265

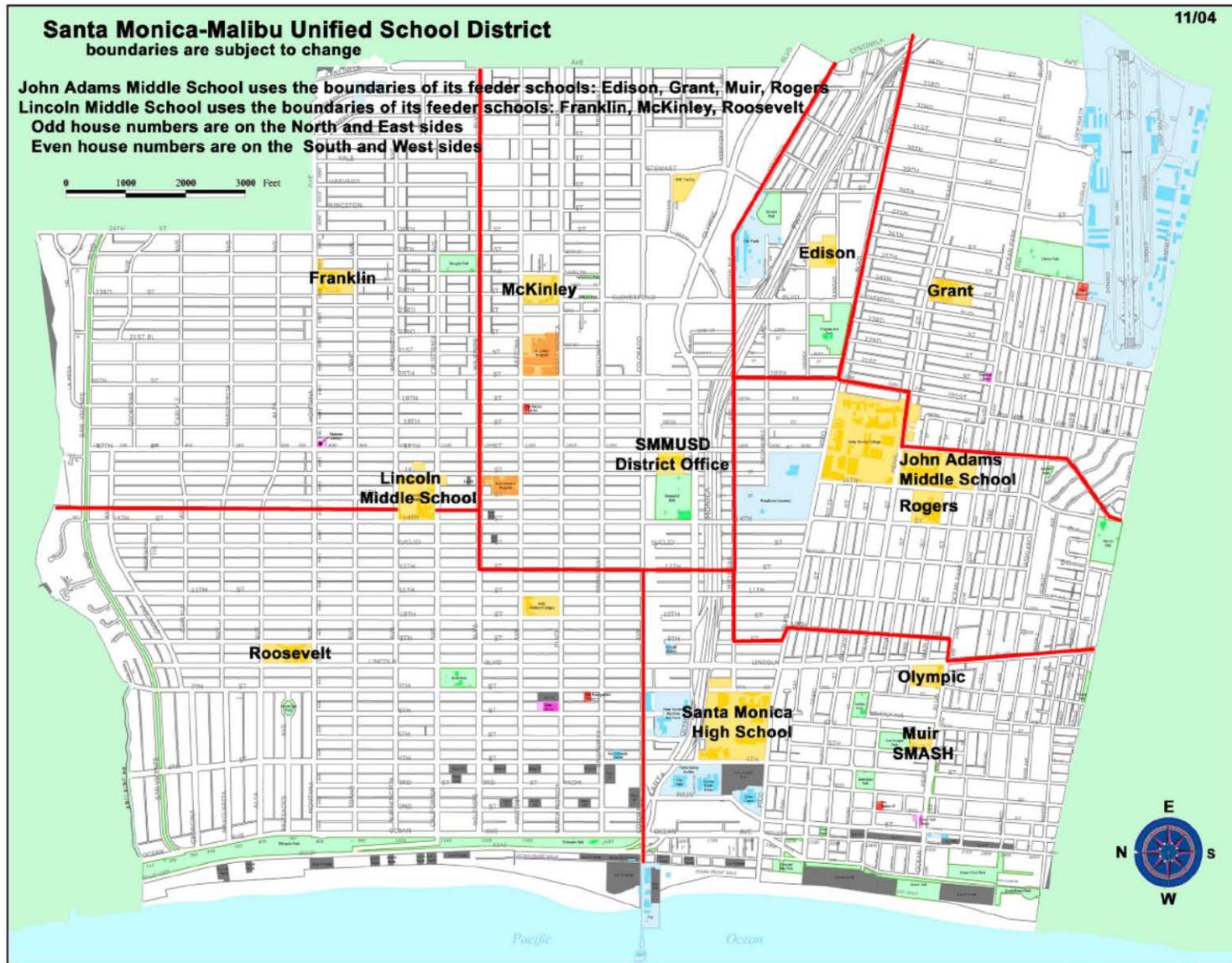
Santa Monica High School
601 Pico Boulevard
Santa Monica, CA 90405

Olympic High School
721 Ocean Park Blvd
Santa Monica, CA 90405

District Offices
1651 Sixteenth Street
Santa Monica, CA 90404

Point Dume Marine Science Elementary
6955 Fernhill Drive
Malibu, CA 90265

**Santa Monica-Malibu Unified School District & Santa Monica College
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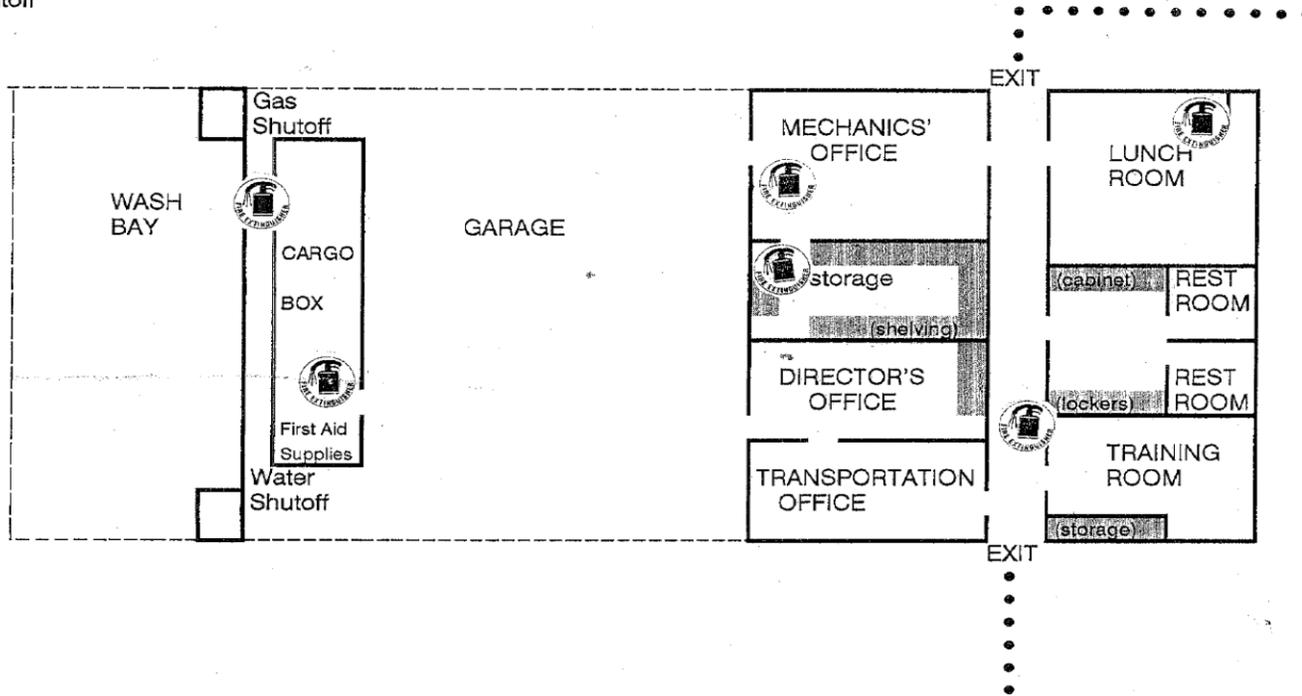


**Santa Monica-Malibu Unified School District & Santa Monica College
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SANTA MONICA – MALIBU UNIFIED SCHOOL DISTRICT
TRANSPORTATION DEPARTMENT
1899 OLYMPIC BLVD.

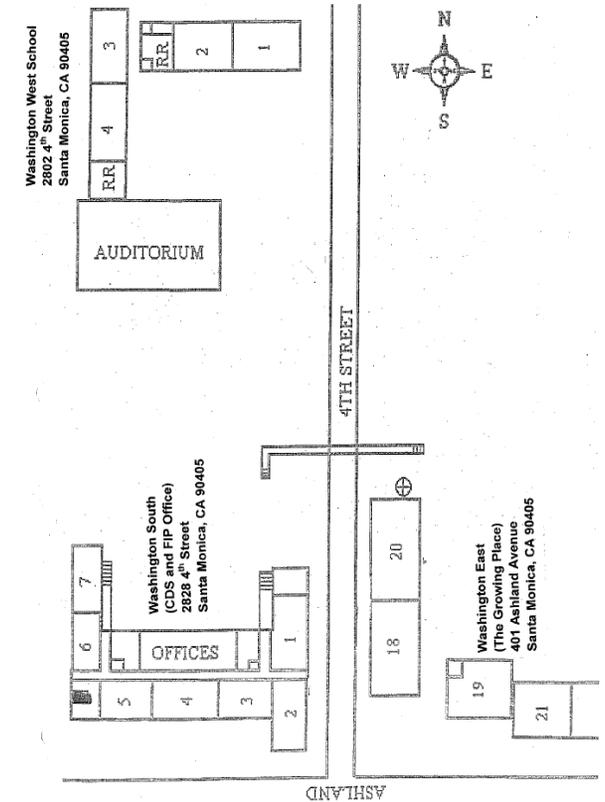
□ Electric Shutoff



OLYMPIC BLVD. ASSEMBLY AREA
(in parking lot)

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**Washington West/South, Child Development Services
2802 4th Street/ 2828 4th Street
Santa Monica, CA 90405**



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Juan Cabrillo Elementary School
30237 Morning View Dr.
Malibu, CA 90265



JUAN CABRILLO ELEMENTARY - MAIN ENTRANCE

SMMUSD - CAB-002

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Edison Elementary School
2425 Kansas Avenue
Santa Monica, CA 90404



Santa Monica-Malibu Unified School District & Santa Monica College
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Franklin Elementary School
2400 Montana Avenue
Santa Monica, CA 90403



FRANKLIN ELEMENTARY SCHOOL - MAIN ENTRANCE SMMUSD - FRN-011

Santa Monica-Malibu Unified School District & Santa Monica College
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Grant Elementary School
2368 Pearl Street
Santa Monica, CA 90404



GRANT ELEMENTARY - MAIN ENTRANCE

SMMUSD - GRT-002

Santa Monica-Malibu Unified School District & Santa Monica College
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McKinley Elementary
2401 Santa Monica Blvd.
Santa Monica, CA 90404



Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

John Muir School
2526 Sixth Street
Santa Monica, CA 90405



Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Point Dume Marine Science Elementary School
6955 Fernhill Drive
Malibu, CA 90265



Pt. DUME ELEMENTARY - MAIN ENTRANCE

SMMUSD - DUM-041

Santa Monica-Malibu Unified School District & Santa Monica College
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Roosevelt Elementary School
801 Montana Avenue
Santa Monica, CA 90403

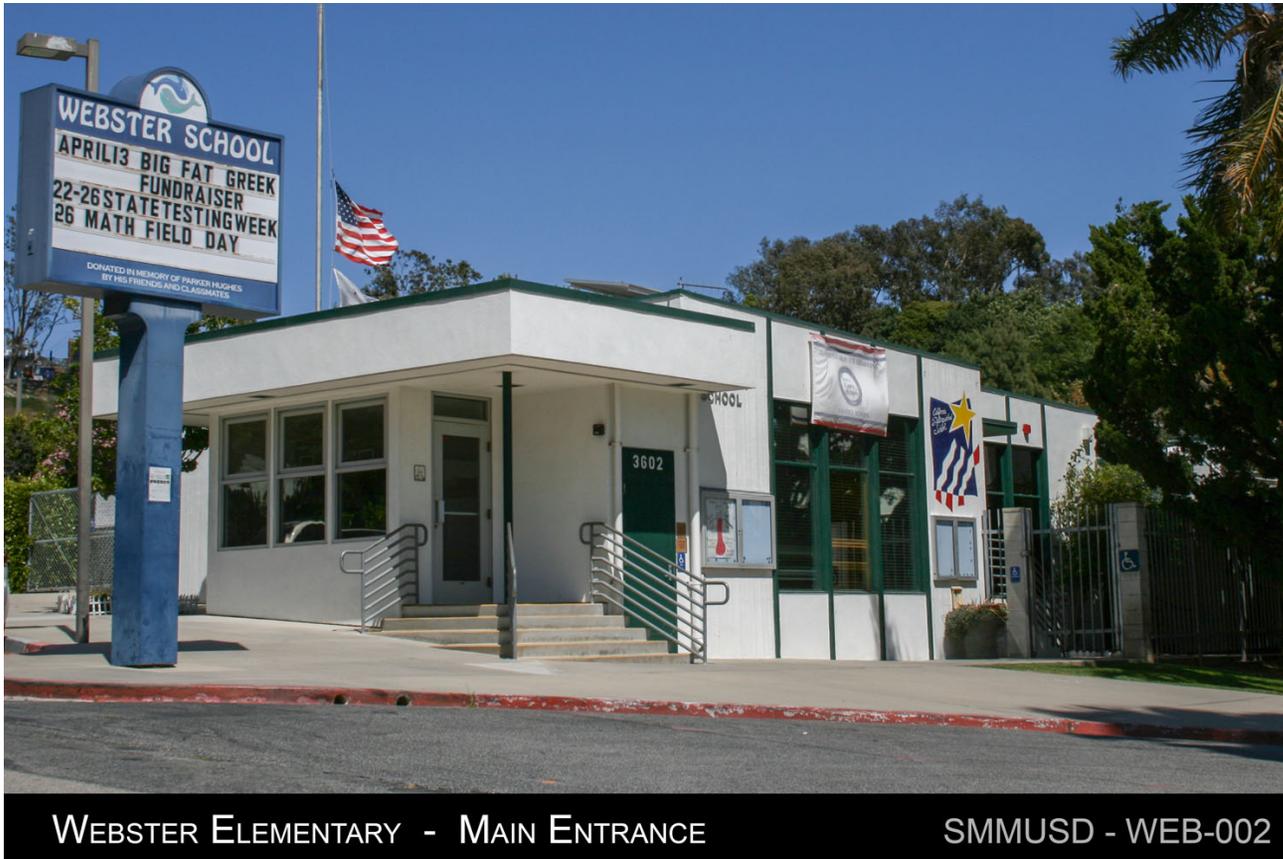


ROOSEVELT ELEMENTARY - MAIN ENTRANCE

SMMUSD - ROO-022

**Santa Monica-Malibu Unified School District & Santa Monica College
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Webster Elementary School
3602 Winter Canyon
Malibu, CA 90265



WEBSTER ELEMENTARY - MAIN ENTRANCE

SMMUSD - WEB-002

Santa Monica-Malibu Unified School District & Santa Monica College
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Will Rogers Elementary School
3602 Winter Canyon
Malibu, CA 90405



Santa Monica-Malibu Unified School District & Santa Monica College
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John Adams Middle School
2425 16th Street
Santa Monica, CA 90405



Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Lincoln Middle School
1501 California Avenue
Santa Monica, CA 90403



Santa Monica-Malibu Unified School District & Santa Monica College
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Santa Monica Alternative School House (SMASH) Alternative School
2525 5th Street
Santa Monica, CA 90405



Santa Monica-Malibu Unified School District & Santa Monica College
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Malibu High School
30215 Morning View Drive
Malibu, CA 90265



**Santa Monica-Malibu Unified School District & Santa Monica College
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Santa Monica High School
601 Pico Blvd.
Santa Monica, CA 90405



SANTA MONICA HIGH SCHOOL - MAIN ENTRANCE

SMMUSD - SAM-110

Santa Monica-Malibu Unified School District & Santa Monica College
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Olympic High School
721 Ocean Park Blvd.
Santa Monica, CA 90405



Santa Monica-Malibu Unified School District & Santa Monica College
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SMMUSD District Office
1651 16th Street
Santa Monica, CA 90404



**Santa Monica-Malibu Unified School District & Santa Monica College
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Enrollment

School		K	1	2	3	4	5	6	7	8	9	10	11	12	Total
Edison	ES	70	72	71	71	77	73								434
Franklin	ES	105	142	136	146	146	135								810
Grant	ES	102	90	91	96	114	116								609
Muir	ES	53	50	35	45	48	53								284
Cabrillo	ES	26	22	31	33	32	40								184
McKinley	ES	76	90	58	82	88	98								492
Point Dume	ES	35	25	33	35	38	29								195
Roosevelt	ES	134	124	114	134	148	141								795
Webster	ES	51	37	37	51	61	47								284
Rogers	ES	75	93	72	96	85	99								520
SMASH	ES	22	23	25	25	24	26								145
SMASH	MS							27	28	27					82
Adams	MS							332	371	362					1065
Lincoln	MS							352	366	351					1069
Malibu	MS							99	117	161					377
Malibu	HS										155	158	154	159	626
Olympic	HS										1	0	21	53	75
Samohi	HS										701	712	709	707	2829
		749	768	703	814	861	857	810	882	901	857	870	884	919	10875

Santa Monica-Malibu Unified School District & Santa Monica College
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Applicable Policies & Procedures

Philosophy, Goals, Objectives & Plans (ip sec)

A. QUALITY EDUCATION FOR ALL

- At each school, strengthen, expand and ensure access to an appropriate, challenging and articulated, educational experience for every student in our richly diverse learning community.
- Students who have been in our elementary programs will be successful readers and writers by the time they enter middle school.
- Develop and implement plans to expand the skillful use and application of technology
- Develop and implement plans to strengthen the link between school, higher learning and the community and the world of work.
- Develop and implement a plan for the integration of the teaching of mathematics, science, and health.
- Develop and implement a plan to facilitate students' transitions.
- Develop and implement an ongoing plan for students, family, staff, and community to enhance intercultural understanding and to improve human relations.
- All schools will develop programs to improve the graduation rate.
- All schools will develop programs to promote students' attendance, active participation in their learning and sense of belonging.
- Develop and implement a district-comprehensive assessment program of student learning outcomes.

B. EFFECTIVE UTILIZATION OF HUMAN RESOURCES

- Actively recruit and select well-qualified applicants reflecting and respectful of the district's and communities cultural diversity.
- Implement programs to encourage and support new employees, insuring their success while also continuing ongoing professional development for existing staff.
- Continue to refine the comprehensive evaluation program that provides training and in-service opportunities for certificated and classified managers in the area of effective employee evaluation.

C. EFFECTIVE RESOURCE ALLOCATION

- Continue to develop and expand the District's computer-based financial and student systems to facilitate site-based management and more effective district-wide decision-making. Improve the District facilities management functions to the extent necessary allowing the instructional and non-instructional programs to achieve their maximum potential and to avoid the deterioration of the facilities as experienced in the pre-ES Reconstruction period. BP 0200 (b) [formerly 0220 Outcome Statements for the District]

Santa Monica-Malibu Unified School District & Santa Monica College
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All Santa Monica-Malibu Unified School District students will graduate as:

1. VISIONARY, VERSATILE LEARNERS who recognize and solve complex problems through reflection, informed risk-taking, critical evaluation, and artistic exploration.
2. THINKERS with a working knowledge and appreciation of academics, aesthetics, personal wellness, and self as well as an understanding of the needs of others.
3. GLOBAL CITIZENS who value their richly varied world and act to sustain the natural environment by participating in democratic processes through ethical, informed decision-making.
4. LIFE-LONG LEARNERS who, individually and in collaboration with others, are intrinsically motivated to pursue their personal best and attain meaningful, productive lives.
5. EFFECTIVE, MULTILINGUAL COMMUNICATORS who use verbal, written, mathematical, artistic, and technological languages to give receive value and process information.

School Improvement Program

Comprehensive Plans The goal of school improvement programs at participating schools shall be to improve instruction, auxiliary services, school environment, and school organization so as to meet the needs of all the school's students.

The school site governance council shall develop a school improvement plan to guide the improvement activities.

Upon Board of Education approval of the plan, the site governance council shall assume responsibility for the ongoing review of its implementation and a periodic evaluation of the program's effectiveness. The site governance council shall annually review the plan, establish the plan budget, and update the plan to reflect changing improvement needs and priorities.

Management Resources

The Board of Education urges that persons who prepare press releases or news stories work closely and cooperatively with the Superintendent of Schools, or designee, both in the preparation and release of such information.

The Board of Education urges, furthermore, that persons who respond to press inquiries or who consent to be interviewed by a member of the press, consult the Superintendent of Schools, or designee, so as to insure that all accurate and comprehensive data are released consistent with current Board of Education policy.

In circumstances under which the response to a question or a more detailed press interview would be likely to place the respondent in the position of interpreting District policy, the Board urges that the person or agency be referred to the Superintendent, or designee, for a reply or for an interview.

Santa Monica-Malibu Unified School District & Santa Monica College
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Community Relations - Community Residents

Participation by the Public

Members of the School District community are encouraged to take an active part in school affairs. Such persons shall be invited to provide advice individually and in groups as follows:

1. In clarifying the general ideas and attitudes held by our residents regarding schools.
2. In determining educational goals, the purposes of courses of study and special instructional programs and services to be provided for students.
3. In evaluating the extent to which these purposes are being achieved by present practices.
4. In giving active assistance to the certificated staff in the actual operation of classes and services where the staff deems such aid valuable.
5. In helping to solve a specific problem or set of closely related problems about which the Board must make a decision.

The District staff shall consider needs and recommendations of the community in making their recommendations to the Board of Education and the Board of Education shall take these recommendations into consideration while using its own best judgment in arriving at decisions.

Business and Operations Budget Development

- 1.1 The District's Budget Document is a controlled spending plan, which contains an estimate of future revenues, expenditures, fiscal conditions, and financial reports for past and present fiscal periods.
- 1.2 The Board of Education shall approve, control, and regulate the Budget Development Process, for the purpose of adopting a balance budget.
- 1.3 The Board of Education shall ensure the appropriate Budget Implementation Process in order to maintain financial solvency on behalf of the students and community of the Santa Monica-Malibu Unified School District.
- 1.4 Pursuant to the State of California Education Code the Superintendent of Schools is hereby authorized to make expenditures and commitments in accordance and in harmony with the specific regulations of the Board of Education and administrative plans approved by the Board. This also applies to expenditures provided for by special Board of Education action.
- 1.5 The Superintendent shall direct the development of the budget for presentation to the Board of Education.
- 1.6 The Superintendent shall appoint a Budget Planning Committee to assist in the development of the budget.
- 1.7 The Board of Education shall appoint a Budget Advisory Committee to monitor and review the budget. The Committee shall include ten community members, one employee representative from each recognized employee group, and one high school student. The Budget Advisory Committee is established for the following purposes:
 - a) To improve the quality, acceptance and understanding of the budget process and financial reporting.

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

- b) To advise and explore ways of bringing revenue to the District.
 - c) To provide additional assurances concerning the credibility of financial information used by the Board of Education and the administration in making Budget decisions.
 - d) To provide more direct personal contact and communication between the Board, administration, and community members on the budget issues.
 - e) To make recommendation to the Board of Education regarding the budget.
 - f) To educate committee members in the difficult areas and intricacies of school finance.
- 1.8 In the preparation of the budget, the Budget Planning Committee shall confer with staff, employee representatives, advisory councils, the P.T.S.A., and other interested individuals and groups so as to make the budget as nearly as possible an expression of the interests of all concerned.
- 1.9 The budget shall reflect the true estimated revenues and expenditures for each account. Contingencies shall be provided for by the appropriation for contingencies rather than in individual budget accounts.

**Santa Monica-Malibu Unified School District & Santa Monica College
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Enrollment & Ethnicity

Students by Ethnicity Santa Monica-Malibu Unified School District, 2015-16			
	District		
	Enrollment	Percent of Total	
American Indian	32	0.3%	
Asian	654	5.8%	
Pacific Islander	21	0.2%	
Filipino	92	0.8%	
Hispanic	3,345	29.2%	
African American	785	7.0%	
White	5,627	50%	
Multiple/No Response	693	6.1%	
Total	11,249	100%	
<p>Source: California Department of Education, Educational Demographics Office</p>			

**Santa Monica-Malibu Unified School District & Santa Monica College
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Enrollment by Grade Santa Monica-Malibu Unified School District, 2015-16	
	Enrollment
Kindergarten	876
Grade 1	701
Grade 2	804
Grade 3	861
Grade 4	829
Grade 5	791
Grade 6	907
Grade 7	900
Grade 8	838
Grade 9	893
Grade 10	904
Grade 11	926
Grade 12	1,019
Total	11,249
Source: California Department of Education, Educational Demographics Office	

Governing Body

Board of Education

NAME	TERM EXPIRES
Oscar de la Torre	December 2018
Craig Foster	December 2018
Jon Kean	December 2020
Maria Leon-Vazquez	December 2020
Laurie Lieberman	December 2018
Ralph Mechur	December 2020
Dr. Richard Tahvildaran-Jesswein	December 2018
Dilon Eisman Malibu High School	June 2017
Alexa Lopez Santa Monica High School	June 2017
Piter Fouad Olympic High School	June 2017

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Administration

Ben Drati, Superintendent of Schools
Santa Monica - Malibu Unified School District

Dr. Mark Kelly, Interim Deputy Superintendent – Human Resources
Santa Monica - Malibu Unified School District

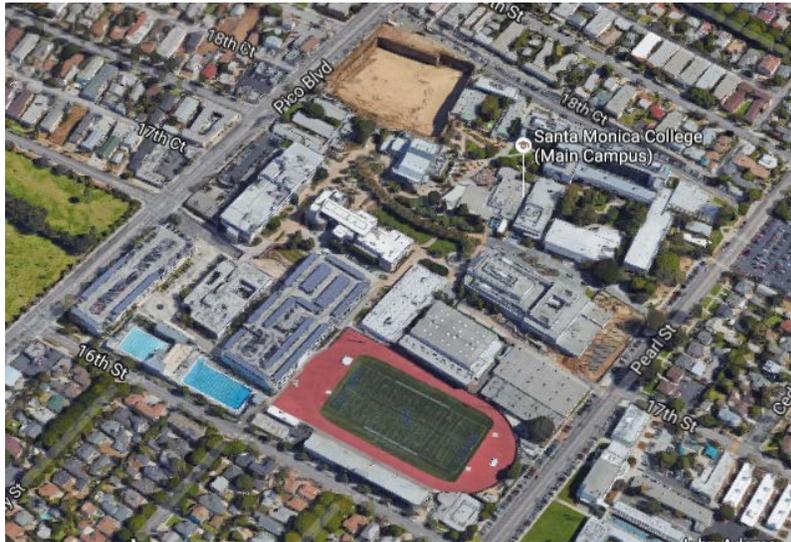
Dr. Terry Deloria, Assistant Superintendent - Educational Services
Santa Monica - Malibu Unified School District

VACANT, Assistant Superintendent/CFO
Santa Monica - Malibu Unified School District

**Santa Monica-Malibu Unified School District & Santa Monica College
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Santa Monica College

History



Santa Monica College is a two-year community college accredited by the Western Association of Schools and Colleges – opened in 1929 with just 153 students. It has now grown to a thriving campus with approximately 33,000 students and offerings in more than 90 fields of study.

The college has an impressive academic record. It is the leader among the state's 113 community colleges in transferring students to the University of California, University of Southern California and other four-year campuses. It

also is proud of preparing students for careers of the 21st century – in such fields as nursing, computer applications, early childhood education, business, accounting, graphic design, and other occupations.

Santa Monica College is one of the most affordable institutions of higher education in the world. Tuition is only \$46 a unit for California resident students. And it has an active Financial Aid office that helps students get the funds they need to pay for a college education.

Set on a 38-acre main campus less than two miles from the beach, Santa Monica College has computer labs, athletic facilities, performing and visual arts spaces, and active student clubs. The SMC Library underwent a \$23.6 million expansion and modernization and reopened in August 2003. The Science Complex is a state-of-the-art, architecturally-praised facility. It opened in fall 1999 and features the latest in equipment and high-tech labs. In 2015 the College opened the Information Technology Building giving the College the infrastructure to move forward into the next decade. In 2017 SMC opened the Core Performance Center a 66,000 SF complex, housing the Dance and Kinesiology programs as well as the fitness center and main campus chiller plant.

The college's academic excellence and prime location in an urban area attract students from all over the world. Santa Monica College boasts one of the largest international student populations of any community college in the nation, with approximately 3,300 from more than 100 countries.

Santa Monica College's Continuing & Community Education program offers year round a broad range of classes – in such fields as computers, career enhancement, the arts, self development, and fitness. Its widely praised Emeritus College was founded in 1975 to serve people 55 and older by offering classes in downtown Santa Monica and conveniently located community facilities.

SMC also brings public radio to Southern California through the award winning college station KCRW (89.9 FM).

Santa Monica-Malibu Unified School District & Santa Monica College
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Santa Monica-College's Vision, Mission & Goals

Santa Monica College: Changing Lives Through Excellence In Education

Mission

Santa Monica College provides a safe and inclusive learning environment that encourages personal and intellectual exploration, and challenges and supports students in achieving their educational goals. Students learn to contribute to the global community as they develop an understanding of their relationship to diverse social, cultural, political, economic, technological, and natural environments. The College recognizes the critical importance of each individual's contribution to the achievement of this mission.

Santa Monica College provides open and affordable access to high-quality undergraduate degrees and certificates, and participates in partnerships with other colleges and universities to facilitate access to baccalaureate and higher degrees. The College's programs and services assist students in the development of skills needed to succeed in college, prepare students for careers and transfer, and nurture a lifetime commitment to learning.

Vision & Core Values

Santa Monica College will be a leader and innovator in student learning and achievement. Santa Monica College will prepare and empower students to excel in their academic and professional pursuits for lifelong success in an evolving global environment.

As a community committed to open inquiry that encourages dialog and the free exchange of ideas, Santa Monica College will serve as a model for students in the practice of its core values:

- Democratic processes
- Communication and collegiality
- Global awareness
- Sustainability

Goals

To fulfill this mission, Santa Monica College has identified the following Institutional Learning Outcomes and supporting goals.

Institutional Learning Outcomes:

Santa Monica College students will:

- Acquire the self-confidence and self-discipline to pursue their intellectual curiosities with integrity in both their personal and professional lives
- Obtain the knowledge and skills necessary to access, evaluate, and interpret ideas, images, and information critically in order to communicate effectively, reach conclusions, and solve problems.
- Respect the inter-relatedness of the global human environment, engage with diverse peoples, and acknowledge the significance of their daily actions relative to broader issues and events.
- Assume responsibility for their own impact on the earth by living a sustainable and ethical lifestyle.

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Supporting Goals

Innovative and Responsive Academic Environment

Continuously develop curricular programs, learning strategies, and services to meet the evolving needs of students and the community

Supportive Learning Environment

Provide access to comprehensive student learning resources such as library, tutoring, and technology

Provide access to comprehensive and innovative student support services such as Admissions and Records, Counseling, Assessment, Outreach and Financial Aid

Stable Fiscal Environment

Response to dynamic fiscal conditions through ongoing evaluation and reallocation of existing resources and the development of new resources

Sustainable Physical Environment

Apply sustainable practices to maintain and enhance the College's facilities and infrastructure including grounds, buildings and technology

Supportive Collegial Environment

Employ decision-making and communication processes that respect the diverse needs of the entire College community

Strategic Initiatives

The following strategic initiatives developed to support the District's overarching goal of Student Learning and Achievement were reviewed:

1. **Fiscal Stability:** Develop benchmarks and maintain a fund balance to support the implementation of goals and priorities.
2. **Curricular Initiatives:** Identify up to three curricular initiatives to be funded and implemented in the next five years.
3. **Full-Time Faculty and Permanent Staff:** Develop an aggressive plan for the hiring of full-time faculty and permanent staff so that targets are met within the next five years. Full-time faculty target: the college comes into compliance with Education Code that mandates a goal that 75 percent of credit instruction be delivered by full-time faculty. Permanent staff target: all vacant position be filled.
4. **Engagement of Constituencies:** Initiatives and leadership coming from within campus constituency groups should be sought, acknowledged, and implemented.
5. **Environmental Audit:** Identify specific recommendations from the Environmental Audit to be funded and implemented in the next five years.
6. **Training Priorities:** Develop a set of institutional training priorities for faculty, staff and managers to enhance innovation, improve effectiveness, encourage succession planning and career laddering opportunities and increase efficiency in serving students.
7. **Student Support Services:** Identify critical student learning support services and improve accessibility.

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Student Demographic Data

FAST FACTS Spring 2016

Santa Monica College

Unduplicated Student Headcount
Credit: 29,527
Non-Credit Only: 3,327
Total: 32,854

Staffing Summary

Administrators & Managers: 106
Full-Time Faculty: 334
Part-Time Faculty: 1,090
Classified: 476
Confidential: 8

Credit Students Only (Total = 29,527)

Unit Load
 Full-time (12+ units): 33.6%
 Part-time (0.5 to 11.5 units): 66.4%

Ethnicity/Race
 Asian/Pacific Islander: 16.0%
 Black: 8.9%
 Hispanic: 38.3%
 Native American: 0.2%
 Two or more: 3.9%
 White: 27.8%
 Unreported: 4.9%

Gender
 Female: 52.7%
 Male: 47.3%

Age Group:
 19 & Younger: 26.7%
 20 to 24: 44.1%
 25 to 29: 13.4%
 30 to 39: 9.0%
 40 to 49: 3.6%
 50 & Older: 3.2%
 Average Age: 24.4

Educational Goal
 Transfer: 72.7%
 Associate Degree: 2.3%
 Certificate: 1.5%
 Career: 5.5%
 Four-Yr Student: 3.5%
 Ed Development: 4.8%
 Undecided: 4.6%
 Unreported: 4.5%
 Other: 0.6%

Enrollment Status
 First-time Freshmen: 4.7%
 First-time Transfer: 9.3%
 Continuing: 73.4%
 Returning: 10.7%
 Special Admit: 2.0%

Residence Status:
 California: 81.5%
 Out-of-State: 6.4%
 Foreign Country: 12.1%



FAST FACTS

Data Source: California Community College Chancellor's Office MIS Data
 For more detailed data, visit the SMC Institutional Research website at: www.smc.edu/ir

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

The following table describes students' gender (as reported on their college application). The data only includes students enrolled in credit courses as of the census date.

Gender	Fall 2011		Fall 2012		Fall 2013		Fall 2014		Fall 2015	
	Count	%								
Female	16,195	54.0%	16,019	52.9%	15,694	52.3%	15,819	52.5%	16,168	52.8%
Male	13,782	46.0%	14,241	47.1%	14,306	47.7%	14,340	47.5%	14,451	47.2%
Total	29,977	100%	30,260	100%	30,000	100%	30,159	100%	30,619	100%

The following table describes students' ethnicity/race (as reported on their college application). The data only includes students enrolled in credit courses as of the census date.

Ethnicity/Race	Fall 2008		Fall 2009		Fall 2010		Fall 2011		Fall 2012	
	Count	%								
Asian/Pacific Islander	6,137	19.5%	6,048	18.7%	5,860	18.8%	5,545	18.5%	4,680	15.5%
Black	3,296	10.5%	3,406	10.5%	3,047	9.8%	2,925	9.8%	2,914	9.6%
Hispanic	8,026	25.6%	9,250	28.6%	9,889	31.8%	10,096	33.7%	10,838	35.8%
White	10,128	32.2%	10,399	32.2%	9,710	31.2%	9,149	30.5%	8,504	28.1%
Other, Non-White	1,011	3.2%	--	--	--	--	--	--	--	--
Multi-Ethnic	--	--	514	1.6%	889	2.9%	1,041	3.5%	1,100	3.6%
Native American/ Alaskan Native	142	0.5%	110	0.3%	83	0.3%	74	0.2%	79	0.3%
Decline to State/Unreported	2,672	8.5%	2,600	8.0%	1,660	5.3%	1,147	3.8%	2,145	7.1%
Total	31,412	100.0%	32,327	100.0%	31,138	100.0%	29,977	100.0%	30,260	100.0%

Note: The reporting categories for ethnicity/race changed in fall term of 2009

The following table describes students' highest level of education completed as reported on their college application. The data only includes students enrolled in credit courses as of the census date.

Educational Status	Fall 2008		Fall 2009		Fall 2010		Fall 2011		Fall 2012	
	Count	%								
Special Admt (K-12 Student)	807	2.6%	347	1.1%	248	0.8%	154	0.5%	169	0.6%
Not a HS Graduate	770	2.5%	807	2.5%	645	2.1%	573	1.9%	563	1.9%
HS Diploma/GED or Equivalent	21,667	69.0%	22,885	70.8%	22,524	72.3%	22,012	73.4%	22,502	74.4%
Foreign Secondary Diploma/Certificate	2,615	8.3%	2,752	8.5%	3,166	10.2%	3,304	11.0%	3,138	10.4%
Associate's Degree	1,055	3.4%	1,005	3.1%	842	2.7%	768	2.6%	764	2.5%
Bachelor's or Higher Degree	4,497	14.3%	4,530	14.0%	3,712	11.9%	3,166	10.6%	3,115	10.3%
Total*	31,412	100.0%	32,327	100.0%	31,138	100.0%	29,977	100.0%	30,260	100.0%

**Total includes unreported educational status information*

**Santa Monica-Malibu Unified School District & Santa Monica College
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The following table describes students' citizenship status. The data only includes students enrolled in credit courses as of the census date.

Citizenship Status	Fall 2008		Fall 2009		Fall 2010		Fall 2011		Fall 2012	
	Count	%								
US	24,216	77.1%	25,182	77.9%	24,025	77.2%	23,046	76.9%	23,250	76.8%
Permanent Resident	2,592	8.3%	2,556	7.9%	2,426	7.8%	2,355	7.9%	2,260	7.5%
Temporary Resident	10	0.0%	6	0.0%	11	0.0%	6	0.0%	32	0.1%
Refugee	260	0.8%	257	0.8%	235	0.8%	204	0.7%	197	0.7%
Student Visa (F-1)	2,795	8.9%	2,862	8.9%	3,066	9.8%	3,108	10.4%	3,165	10.5%
Other	159	0.5%	139	0.4%	75	0.2%	60	0.2%	44	0.1%
Status Unknown	1,380	4.4%	1,325	4.1%	1,300	4.2%	1,198	4.0%	1,312	4.3%
Total	31,412	100%	32,327	100%	31,138	100%	29,977	100%	30,260	100.0%

The following table describes the students age (as of October 15) for the term recorded. The data only includes students enrolled in credit courses as of the census date.

Age at Term	Fall 2008		Fall 2009		Fall 2010		Fall 2011		Fall 2012	
	Count	%								
19 or Younger	9,945	31.70%	9,211	31.70%	9,945	31.70%	9,525	31.80%	9,260	30.6%
20 to 24	10,831	34.50%	9,971	34.30%	10,831	34.50%	11,816	39.40%	12,296	40.6%
25 to 29	4,434	14.10%	4,122	14.20%	4,434	14.10%	3,690	12.30%	3,783	12.5%
30 to 39	3,472	11.10%	3,223	11.10%	3,472	11.10%	2,812	9.40%	2,815	9.3%
40 to 49	1,568	5.00%	1,456	5.00%	1,568	5.00%	1,226	4.10%	1,192	3.9%
50 or Older	1,162	3.70%	1,110	3.80%	1,162	3.70%	908	3.00%	914	3.0%
Total	31,412	100%	29,093	100%	31,412	100%	29,977	100%	30,260	100.0%
Average Age	25.0		24.4		24.1		24.4		24.3	

**Santa Monica-Malibu Unified School District & Santa Monica College
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Reported Crimes: 2012-2014

College crime statistics and other crime, safety and prevention information are available at many locations throughout the college. Locations are listed in fall, spring and summer schedule of classes and are available to the public upon request.

CRIMES	ON CAMPUS			PUBLIC PROPERTY			NON-CAMPUS PROPERTY		
	2012	2013	2014	2012	2013	2014	2012	2013	2014
Murder	0	3	0	0	0	0	0	0	0
Manslaughter	0	0	0	0	0	0	0	0	0
Robbery	0	0	0	2	5	2	0	0	0
Aggravated Assault	1	0	1	0	1	0	0	0	0
Burglary	5	9	0	0	0	0	1	1	0
Vehicle Theft	1	0	0	1	2	3	0	0	0
Arson	0	0	0	0	0	0	0	0	0
Sex Offenses/Forcible									
Rape	0	0	0	0	1	0	0	0	0
Sodomy	0	0	0	0	0	0	0	0	0
Sexual Assault w/object	0	0	0	0	0	0	0	0	0
Sexual Battery	0	1	3	0	0	0	0	0	0
Sex Offenses/Non-Forcible									
Incest	0	0	0	0	0	0	0	0	0
Statutory Rape	0	0	0	0	0	0	0	0	0
Hate Crimes									
Ethnicity	0	0	0	0	0	0	0	0	0
Sexual Orientation	0	0	0	0	0	0	0	0	0
Gender	0	0	0	0	0	0	0	0	0
Religion	0	0	0	0	0	1	0	0	0
Race	0	0	0	0	0	0	0	0	0
Disability	0	0	0	0	0	0	0	0	0
VAWA									

**Santa Monica-Malibu Unified School District & Santa Monica College
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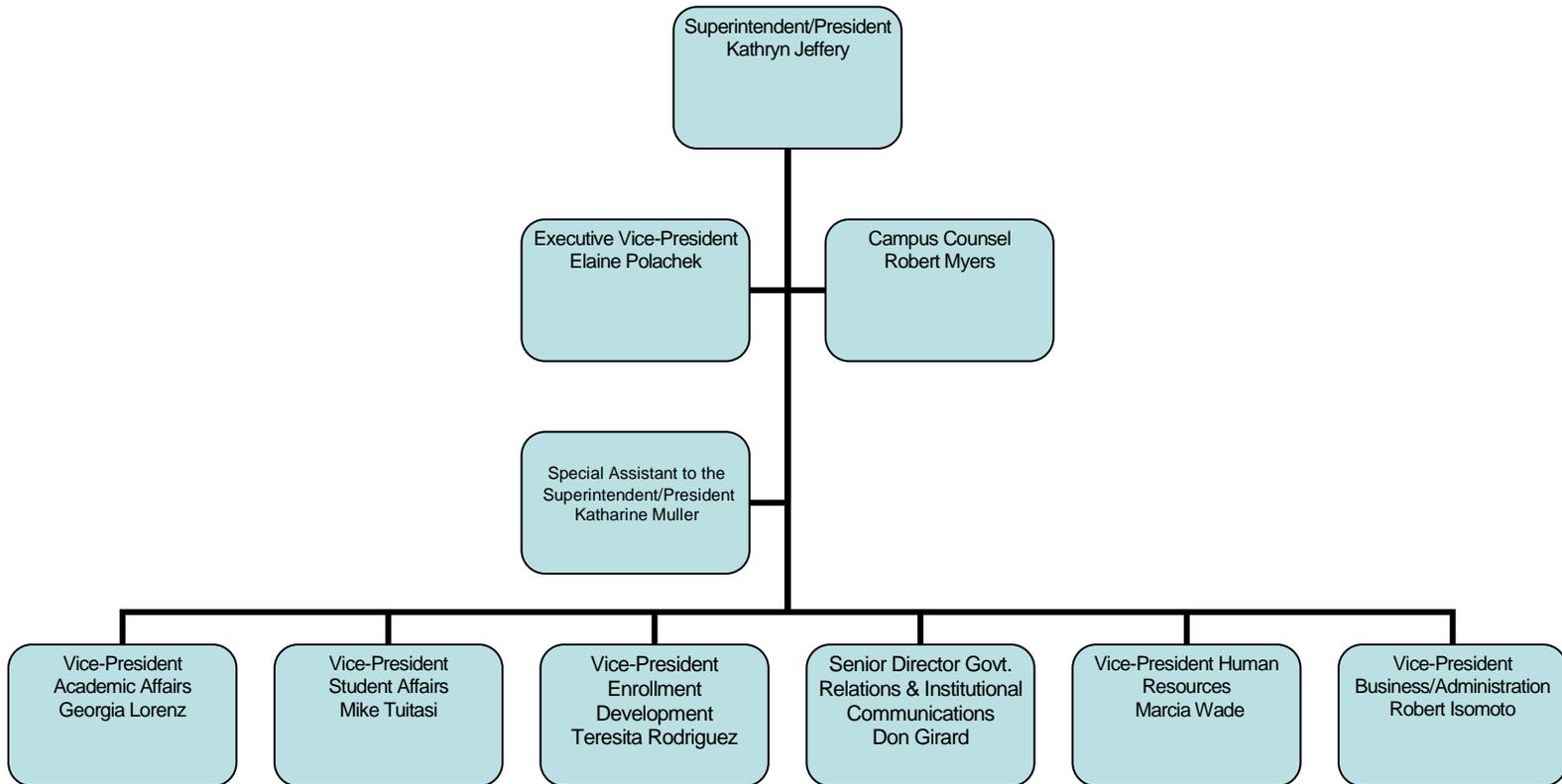
Domestic Violence		2	1		0	0		0	0	
Dating Violence		1	0		0	0		0	0	
Stalking		1	1		0	0		0	0	
Total		7	17	6	3	9	6	1	1	0
Special Category										
Liquor Laws Arrests	2	2	2	0	3	1	0	0	0	
Liquor Law Violations Referred for Disciplinary Action	4	10	3	0	0	0	0	0	0	
Drug Law Arrests	10	8	8	8	19	3	0	0	3	
Drug Law Violations Referred for Disciplinary Action	3	6	4	0	0	0	0	0	0	
Weapons Law Arrests	0	0	0	1	1	0	0	0	0	
Weapons Law Violations Referred for Disciplinary Action	0	1	0	0	0	0	0	0	0	
Total	19	27	17	9	23	4	0	0	3	
Santa Monica College does not maintain any dormitories for other off-campus student housing properties										

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Governance

The Santa Monica Community College District is governed by a seven-member Board of Trustees elected to four year terms by voters in the district, which serves Santa Monica and Malibu. A student trustee who serves for a one-year term is elected by the Santa Monica College students.

Senior Administrative Staff Organization



**Santa Monica-Malibu Unified School District & Santa Monica College
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Santa Monica College

SMC Campuses and Program Sites

ADDRESSES

Main Campus
1900 Pico Boulevard, Santa Monica, CA 90405

Center for Media and Design – CMD *Closed for Construction*
1660 Stewart Street, Santa Monica, CA 90404

Administration
2714 Pico Boulevard, Santa Monica, CA 90405

Airport Arts Campus – AIR
2800 Airport Avenue, Santa Monica, CA 90405

Bundy Campus
3171 S. Bundy Drive, Los Angeles, CA 90066

Emeritus College
1227 2nd Street, Santa Monica, CA 90401

Performing Arts Center – PAC
1310 11th Street, Santa Monica, CA 90401

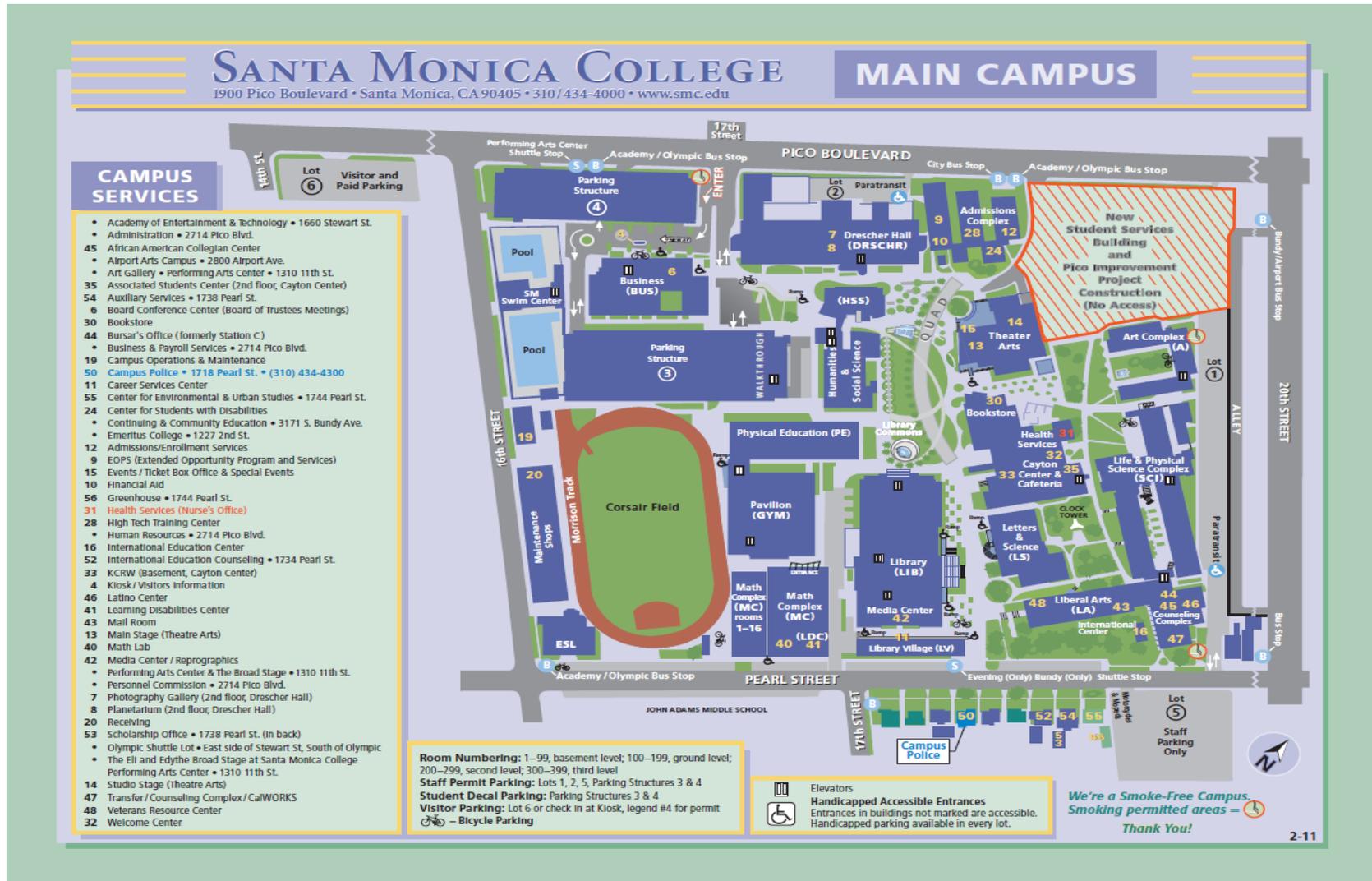
Additional Class Locations

John Adams Middle School
2425 16th Street, Santa Monica, CA 90405

Santa Monica High School
601 Pico Boulevard, Santa Monica, CA 90405



**Santa Monica-Malibu Unified School District & Santa Monica College
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Satellite Campuses

Main Campus
1900 Pico Boulevard
Santa Monica, CA 90405

Center for Media & Design
1660 Stewart Street
Santa Monica, CA 90404

Emeritus College
1227 2nd Street
Santa Monica, CA 90401

Santa Monica College Bundy Campus
3171 S. Bundy Drive
Los Angeles, CA 90066

John Adams Middle School
2425 16th Street
Santa Monica, CA 90405

Performing Arts Campus
1310 11th Street
Santa Monica, CA 90401

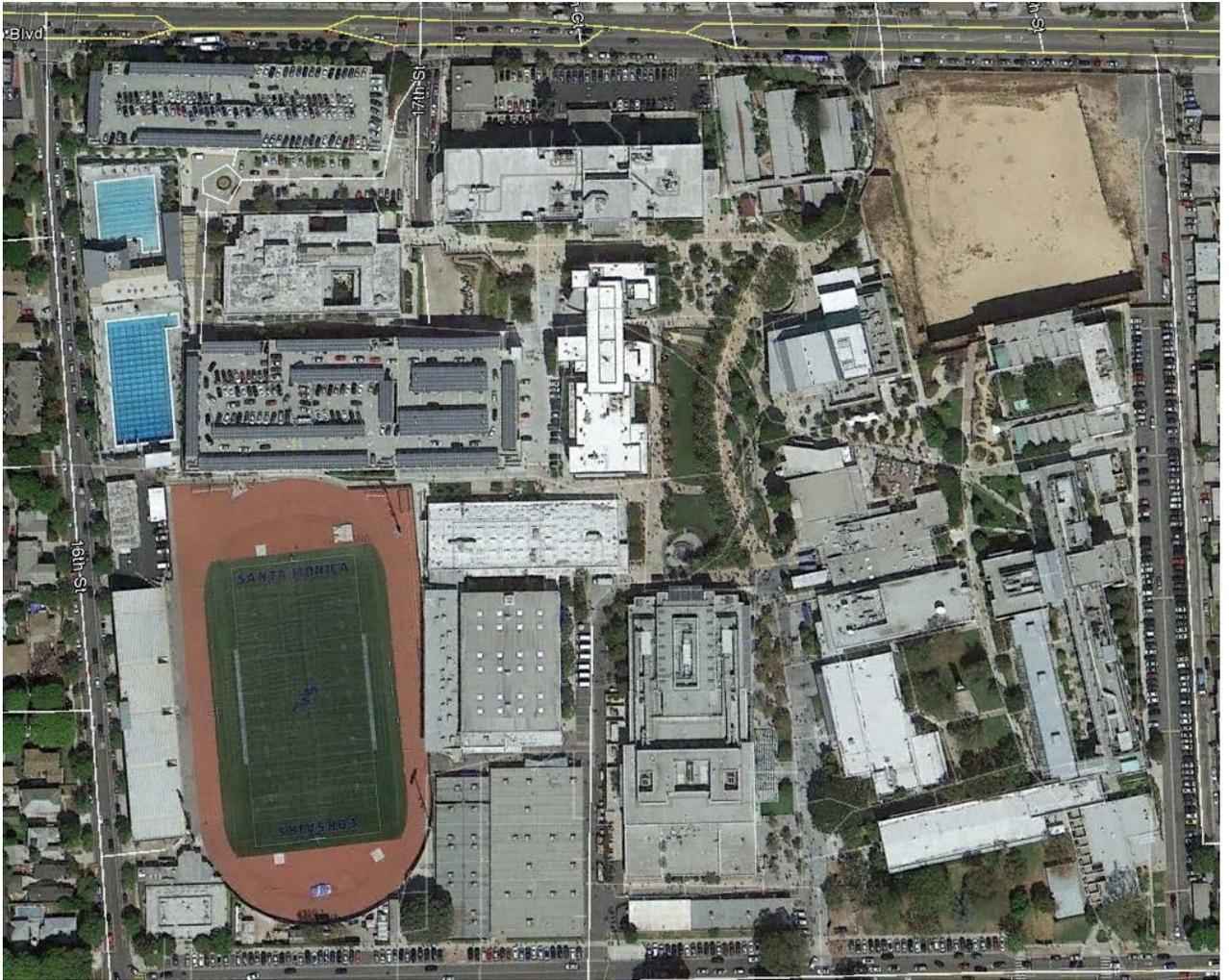
Airport Arts Campus
2800 Airport Avenue
Santa Monica, CA 90405

Administration
2714 Pico Boulevard
Santa Monica, CA 90405

Santa Monica High School
601 Pico Boulevard
Santa Monica, CA 90405

Webster Elementary School
3602 Winter Canyon Road
Malibu, CA 90265

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Santa Monica College Main Campus

**Santa Monica-Malibu Unified School District & Santa Monica College
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Santa Monica College Bundy Campus

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Santa Monica College Emeritus College

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Area Utilities & Agencies

Cable:

Spectrum Communications / 888-438-2427
6609 Santa Monica Blvd
Los Angeles, CA 90038-1311

Electric: Southern California Edison / 800-611-1911

Administrative Building
7300 Fenwick Lane
Westminister, CA 92683

Gas: Southern California Gas Company / 800-427-2200

555 W. Fifth Street,
Los Angeles, CA 90013-1011

Streetlights: Public Works / 310-458-8500 (to request repair of a malfunctioning streetlight.)

Telephone: Verizon Emergency Services / 800-981-9558

13031 W. Jefferson Blvd.
Los Angeles, CA 90094

Trash: G.I. Rubbish / 805-522-9400

Waste Management
195 W. Los Angeles Ave
Simi Valley, California 93065

Water:

Los Angeles County Public Works
Water District 29 / 310-456-6621 (24 Hour: 626-458-4357)
23533 W Civic Center
Malibu, CA90265

Air

Air Quality Management District
21865 Copley Drive - Diamond Bar,
California 91765

California Coastal Commission

45 Fremont Street
Suite 2000
San Francisco, CA 94105-2219

Los Angeles County Department of Beaches and Harbors / 310-305-9503

13837 Fiji Way
Marina Del Rey, CA 90292

Los Angeles County Animal Care & Control / 562-728-4882

5898 Cherry Avenue
Long Beach, CA 90805

Los Angeles County Vector Control

6750 Centinela Ave.
Culver City 90230

Los Angeles Regional Water Quality Control Board

320 West 4th Street
Los Angeles, CA 90013-2343

Santa Monica-Malibu Unified School District & Santa Monica College
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Other General Facilities

Federal

Santa Monica Mountains National Recreation Area is located east of Malibu.

State

Several State Parks surround the City of Santa Monica and Malibu.

- Leo Carrillo State Park
- Malibu Creek State Park
- Solstice Canyon Park
- Point Mugu State Park
- Topanga State Park
- Malibu Lagoon State Park
- Malibu Bluffs State Recreation Area

County

Los Angeles County
500 West Temple Street
Los Angeles, CA 90012

City

City of Santa Monica
1685 Main Street
Santa Monica, CA 90401

City of Malibu
23815 Stuart Ranch Road
Malibu, CA 90265-4861

Area Higher Education

Colleges/Universities in Santa Monica

ART INSTITUTE OF LOS ANGELES (FT enrollment: 1,116; Location: 2900 31ST ST; Private, for-profit)

EMPERORS COLLEGE OF TRADITIONAL ORIENTAL MEDICINE (FT enrollment: 251; Location: 1807B WILSHIRE BLVD; Offers Master's degree)

RAND GRADUATE SCHOOL OF POLICY STUDIES (FT enrollment: 63; Location: 1700 MAIN ST; Private, not-for-profit; Offers Doctor's degree)

OAK HILL ACADEMY (Location: 3017 SANTA MONICA BLVD STE 301; Private, for-profit;)

UNIVERSITY OF SANTA MONICA (Location: 2107 WILSHIRE BLVD; Private, not-for-profit; Offers Master's degree)

BERLITZ LANGUAGE CENTERS (Location: 616 SANTA MONICA BLVD; Private, for-profit)

Santa Monica-Malibu Unified School District & Santa Monica College
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SANTA MONICA MONTESSORI INSTITUTE (Location: 1909 COLORADO AVE; Private, not-for-profit)

VIDAL SASOON ACADEMY (Location: 321 SANTA MONICA BLVD; Private, for-profit;)

ALEXANDER TRAINING INSTITUTE OF LOS ANGELES (Location: 1526 14TH ST STE 110; Private, for-profit)

Other Colleges/Universities with Over 2000 Students near Santa Monica

UNIVERSITY OF CALIFORNIA-LOS ANGELES (about 5 miles; LOS ANGELES, CA; Full-time enrollment: 35,930)

WEST LOS ANGELES COLLEGE (about 6 miles; CULVER CITY, CA; FT enrollment: 4,640)

LOYOLA MARYMOUNT UNIVERSITY (about 8 miles; LOS ANGELES, CA; FT enrollment: 6,890)

LOS ANGELES VALLEY COLLEGE (about 12 miles; Valley Glen, CA; FT enrollment: 8,900)

LOS ANGELES SOUTHWEST COLLEGE (about 13 miles; LOS ANGELES, CA; FT enrollment: 2,971)

LOS ANGELES CITY COLLEGE (about 14 miles; LOS ANGELES, CA; FT enrollment: 8,298)

WEST VALLEY OCCUPATIONAL CENTER (about 15 miles; WOODLAND HILLS, CA; FT enrollment: 5,240)

Private High Schools in Santa Monica

CROSSROADS SCHOOL (Students: 1,121; Location: 1714 21ST STREET; Grades: KG - 12)

ST MONICA HIGH SCHOOL (Students: 597; Location: 1030 LINCOLN BOULEVARD; Grades: 9 - 12)

CONCORD HIGH SCHOOL (Students: 89; Location: 1831 WILSHIRE BLVD STE B; Grades: 9 - 12)

WILSHIRE WEST SCHOOL (Students: 48; Location: 1516 19TH STREET; Grades: 7 - 12)

PACIFICA CHRISTIAN HIGH SCHOOL (Student: 300; 1730 WILSHIRE BLVD., Grades: 9 - 12)

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Largest Private Primary/Middle Schools in Santa Monica

ST MONICA ELEMENTARY SCHOOL (Students: 293; Location: 1039 SEVENTH STREET; Grades: KG - 8)

CARLTHORP SCHOOL (Students: 281; Location: 438 SAN VICENTE BLVD; Grades: KG - 6)

ST ANNES SCHOOL (Students: 179; Location: 2015 COLORADA AVENUE; Grades: KG - 8)

PILGRIM LUTHERAN SCHOOL (Students: 169; Location: 1730 WILSHIRE BLVD; Grades: PK - 7)

PLURALISTIC SCHOOL INC (Students: 160; Location: 1454 EUCLID STREET; Grades: KG - 6)

SANTA MONICA MONTESSORI (Students: 155; Location: 1909 COLORADO AVE; Grades: PK - 8)

GARDEN OF ANGELS (Students: 126; Location: 1009 18TH ST.; Grades: PK - 6)

THE WESTSIDE WALDORF SCHOOL (Students: 124; Location: 1229 4TH ST; Grades: PK - 4)

SANTA MONICA FIRST METH KDGN (Students: 110; Location: 1008 11TH ST; Grades: PK - KG)

NEW ROADS (Students: 97; Location: 1238 LINCOLN BLVD.; Grades: 6 - 8)

College/University in Malibu

PEPPERDINE UNIVERSITY (Full-time enrollment: 5,492; Location: 24255 PACIFIC COAST HWY; Private, not-for-profit; Website: www.pepperdine.edu; Offers Doctor's degree)

Other Colleges/Universities with Over 2000 Students near Malibu

WEST VALLEY OCCUPATIONAL CENTER (about 15 miles; WOODLAND HILLS, CA; FT enrollment: 5,240)

SIMI VALLEY ADULT SCHOOL (about 17 miles; SIMI VALLEY, CA; FT enrollment: 4,272)

MOORPARK COLLEGE (about 20 miles; Moorpark, CA; FT enrollment: 7,773)

SANTA MONICA COLLEGE (about 22 miles; SANTA MONICA, CA; FT enrollment: 15,470)

UNIVERSITY OF CALIFORNIA-LOS ANGELES (about 24 miles; LOS ANGELES, CA; FT enrollment: 35,930)

LOS ANGELES VALLEY COLLEGE (about 26 miles; Valley Glen, CA; FT enrollment: 8,900)

Private Primary/Middle School in Malibu

OUR LADY OF MALIBU SCHOOL (Students: 207; Location: 3625 S WINTER CANYON ROAD; Grades: KG - 8)

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Area Transportation



Major Highways

Airports

- Los Angeles Airport: LAX
- Van Nuys Airport
- Ontario Airport
- John Wayne Airport
- Hawthorne Airport
- Long Beach Airport
- Santa Monica Airport

Ports & Harbors

- Los Angeles Beach and Harbors is responsible for the coast way.
- Beaches lay to the west of Santa Monica and Malibu.

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Climate

Local Meteorology

Average weather in Malibu, California

Based on data reported by over 4,000 weather stations

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temp. (°F)	55.7	56.7	57.5	60.5	63.0	67.2	71.1	72.1	70.5	66.1	60.0	56.1
High temperature (°F)	66.2	67.1	67.6	71.1	72.9	77.8	82.4	83.6	81.7	77.5	71.4	67.1
Low temperature (°F)	45.2	46.3	47.4	49.7	53.1	56.6	59.8	60.7	59.3	54.7	48.6	45.0
Precipitation (in)	4.6	4.7	3.9	0.9	0.3	0.1	0.0	0.1	0.2	0.6	1.5	2.7

Hydrology & Land Use

Oceans & Bays

The Cities of Santa Monica and Malibu are bounded on the west by the Pacific Ocean.

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Prerequisites

Plan Adoption

Process

The initial Plan was formally adopted on July 28, 2005. The updated Multi-Jurisdictional Hazard Mitigation Plan was reviewed and approved by the Santa Monica-Malibu Unified School District & Santa Monica College's DMA 2000 Hazard Mitigation Planning Committee. SMMUSD's Board of Education will then formally re-adopt their updated plan. SMC will send their updated Plan to their Board of Trustees for formal adoption. The document will then be turned over to SMMUSD's Board of Education for final editing. The updated plan will then be submitted for review and approval by the State of California and FEMA.

Ongoing Maintenance & Procedures

The Santa Monica-Malibu USD and Santa Monica College DMA 2000 Hazard Mitigation Planning Committee shall review and revise the plan every 12 months: That review will:

- Document the process on implementation of hazard mitigation strategies
- Review and update changes as appropriate to the Plan.

The Plan will be re-submitted to the California Emergency Management Agency (CalEMA) and FEMA every 5 years for review and approval.

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

SMMUSD Plan Adoption Resolution

**SANTA MONICA-MALIBU UNIFIED SCHOOL DISTRICT
BOARD OF EDUCATION**

**RESOLUTION
ADOPTING ALL-HAZARD MITIGATION PLAN**

WHEREAS, the Santa Monica-Malibu Unified School District (SMMUSD) and Santa Monica College (SMC) All-Hazard Mitigation Plan (“*All-Hazard Mitigation Plan*”) has been prepared in accordance with regulations promulgated by the Federal Emergency Management Agency (44 C.F.R. § 201.6); and

WHEREAS, the SMMUSD Board of Education and the Santa Monica College District jointly participated in the preparation of a multi-jurisdictional *All-Hazard Mitigation Plan*; and

WHEREAS, the SMMUSD Board of Education has reviewed the *All-Hazard Mitigation Plan* and affirms that the Plan was promulgated in accordance with all legal requirements;

NOW THEREFORE, BE IT RESOLVED that the Santa Monica-Malibu Unified School District Board of Education does hereby approve and adopt the *All-Hazard Mitigation Plan* as this jurisdiction’s *All-Hazard Mitigation Plan*, and resolves to execute the actions in the Plan.

PASSED AND ADOPTED by the Board of Education of the Santa Monica-Malibu Unified School District, Los Angeles County, State of California, this 11th day of September 2017 by the following vote:

AYES:

NOES:

ABSTENTIONS:

ABSENT:

Laurie Lieberman, President
Board of Education

Dr. Ben Drati, Superintendent
Santa Monica-Malibu
Unified School District

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

SMC Adoption Resolution

RESOLUTION ADOPTING ALL-HAZARD MITIGATION PLAN

WHEREAS, the *Santa Monica-Malibu Unified School District and Santa Monica College All-Hazard Mitigation Plan* (“*All-Hazard Mitigation Plan*”) has been prepared in accordance with regulations promulgated by the Federal Emergency Management Agency (44 C.F.R. § 201.6); and

WHEREAS, the Santa Monica Community College District and the Santa Monica-Malibu Unified School District jointly participated in the preparation of a multi-jurisdictional *All-Hazard Mitigation Plan*; and

WHEREAS, the Santa Monica Community College District has reviewed the *All-Hazard Mitigation Plan* and affirms that the Plan was promulgated in accordance with all legal requirements.

NOW THEREFORE, BE IT RESOLVED by Board of Trustees of the Santa Monica Community College District approves and adopts the *All-Hazard Mitigation Plan* as this jurisdiction’s All-Hazard Mitigation Plan, and resolves to execute the actions in the Plan.

ADOPTED this 11th day of September, 2017.

AYES:

NOES:

ABSTENTIONS:

ABSENT:

Dr. Kathryn E. Jeffery
Santa Monica College Superintendent

Dr. Andrew Walzer
Santa Monica College Board of Trustees Chair

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Legal Authorities

Federal Laws

Federal legislation has historically provided funding for disaster relief, recovery, and some hazard mitigation planning. The Disaster Mitigation Act of 2000 (DMA 2000) is the latest legislation to improve this planning process (Public Law 106-390). The new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. As such, DMA 2000 establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP).

Section 322 of DMA 2000 specifically addresses mitigation planning at the state and local levels. It identifies new requirements that allow HMGP funds to be used for planning activities, and increases the amount of HMGP funds available to states that have developed a comprehensive, enhanced mitigation plan prior to a disaster. States and communities must have an approved mitigation plan in place prior to receiving post-disaster HMGP funds. Local and tribal mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to and the capabilities of the individual communities. FEMA prepared an Interim Final Rule, published in the Federal Register on February 26, 2002 (44 CFR Parts 201 and 206), which establishes planning and funding criteria for states and local communities. The Plan has been prepared to meet FEMA and COESS requirements thus making the County eligible for funding and technical assistance from state and federal hazard mitigation programs.

State Laws

California has many laws and programs relating to hazard mitigation, the most effective of which include:

- California Earthquake Hazards Reduction Act of 2004 (as amended)
- Caltrans' Seismic Retrofit Program
- California Fire Alliance
- California Earthquake Authority's Seismic Retrofit Program
- NFIP, administered by the DWR
- State planning law and OPR's general plan guidance documents
- CDI Residential Retrofit Program
- California Education Code Katz Act Section 35295-35297
- California Government Code Petris Bill Section 8607
- California Education Code The Huges Bill Sec. 35294.2
- Field Act/Garrison Act/Riley Act – Building Codes

The following are state laws and executive orders related to hazard mitigation:

- Executive Order W-18-19
- Executive Order W-9-91
- Health & Safety Code §19211
- Health & Safety Code §19181.
- Public Resources Code §2621, et seq. (the Alquist-Priolo Earthquake Fault Zoning Act)

Local Codes & Ordinances

The jurisdictions recognize and adhere to Federal, State, County, and City codes and ordinances for building codes, land use, and development.

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Planning Process

Additional Planning Mechanisms

The Planning committee reviewed the City of Santa Monica's DMA 2000 Plan and the City of Malibu's Emergency Operations Plan. The information concerning hazards and mitigation strategies were used as a baseline in hazard prioritization whenever feasible.

In addition, the committee reviewed current school law and incorporated the law's requirements with future mitigation strategy pertaining to keeping schools in safe repair through modernization.

Identified Mitigation Constraints

Santa Monica-Malibu USD schools and facilities are located in the Cities of Santa Monica and Malibu. The Cities and Los Angeles County are responsible for law enforcement and fire protections. Santa Monica College is located in the City of Santa Monica with six off site repeater towers. SMMUSD and SMC are not directly in control of First Responder action or mitigation. These include:

- Law Enforcement from California Highway Patrol, Los Angeles County Sheriff's department, Los Angeles County Fire Department, the City of Santa Monica Police Department and Fire Department.
- Transportation Loss greatly impacts both school districts. The ability for students to travel to and from school is important from both an evacuation and economic standpoint. The school districts are dependent on city, county, and state roadways, plus freeways to transport students to and from schools.
- Aviation Disasters is a constant threat to all the facilities for SMMUSD and SMC. The below airports are located and operate near the school grounds. Their flight patterns are over the schools.
 - Los Angeles Airport: LAX
 - Van Nuys Airport
 - Ontario Airport
 - John Wayne Airport
 - Hawthorne Airport
 - Long Beach Airport
 - Santa Monica Airport

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Documentation of the Planning Process

Hazard Mitigation Planning Committee (2017)

- **Johnnie Adams, Chief of Police, SMC**
- **Lindsey Barker, Chief Resilience Officer, City of Santa Monica**
- **Gary Bradbury, CSP, CSR, CEA, CPSI, Risk Management Specialist, SMMUSD**
- **Marcia A. Lewis, Emergency Preparedness and Safety Facilitator, SMC**
- **Mike Tuitasi, Vice President – Student Affairs, SMC**
- **Cary Upton, Chief Operations Officer, SMMUSD**
- **Paul Weinberg, Emergency Services Administrator, City of Santa Monica**

Hazard Mitigation Planning Committee (2013 Update)

Marolyn Freedman, Director Student Services	SMMUSD
Al Vasques, Dean Chief of Police	SMC
J. C. Saunders-Keurjian, Chief of Facilities	SMC
Gary Bradbury, Risk Manager	SMMUSD
Ana Flores, Administrative Assistant	SMMUSD
Terry Kamibayashi, Manager	SMMUSD
Rich Rogala, Consultant	Dimensions Unlimited, Inc.

Hazard Mitigation Planning Committee By-laws (Readopted 2013)

1. The SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Hazard Mitigation Planning Committee was organized in February 2005 and reconvened in 2011-12 to update the plan.
2. Members of the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Hazard Mitigation Planning Committee shall elect a chair/co-chair.
3. Members of the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Hazard Mitigation Planning Committee agree to meet periodically to update hazard priorities and review, identify and implement the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD hazard mitigation strategy recommendations.
4. The SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Hazard Mitigation Planning Committee agrees to review and update policy recommendations by a vote of a simple majority of those members present at the scheduled meeting.
5. Any single Hazard Mitigation Planning Committee member may request, at a scheduled meeting of the SANTA MONICA COLLEGE and SANTA MONICA MALIBU USD Hazard Mitigation Planning Committee as a whole, an adoption of, or amendment to the plan or process.
6. The SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Hazard Mitigation Planning Committee may form subcommittees to review and develop those feasible

Santa Monica-Malibu Unified School District & Santa Monica College
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hazard mitigation strategy recommendations identified that will be reviewed by the Hazard Mitigation Planning Committee as a whole.

7. The sub-committees or members will identify and bring forward new hazard mitigation strategies from existing recommendations contained in plans and documents, and from the input of inter-city departments, committees, commissions, private citizens and organizations.
8. The SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Hazard Mitigation Planning Committee will review and update constraints to mitigation strategies that affect SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD's ability, authority, and responsibility to implement those strategies.
9. A Public Input plan will be implemented by direction of the Committee.

Santa Monica-Malibu Unified School District & Santa Monica College
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Hazard Mitigation Planning Tasks (Updated 2013)

1. Coordinate all-hazard mitigation planning tasks and activities with the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD administrative staff and departments to update the hazard mitigation plan and support the Hazard Mitigation Planning Committee chair/co-chair's oversight of the planning process.
2. Review incorporation of existing plans, studies, reports, and technical information.
3. Assist in carrying out the goals and objectives of the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Hazard Mitigation Plan in compliance with FEMA DMA 2000 Hazard Mitigation Act.
4. Review and re-prioritize risks for implementing mitigation strategies.
5. Review and update designated Critical Facilities owned by SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD and in proximity to SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD facilities, and update a risk exposure analysis for those facilities.
6. Select highest priority and most-desired mitigation recommendations and develop those recommendations for further action by each member of the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Hazard Mitigation Planning Committee.
7. Review mitigation planning drafts, recommendations, and updates.
8. Review and update long- and short-term goals.
9. Continue integration of the plan with all phases of the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD's Emergency and Strategic Planning Plans.
10. Provide for the implementation of Planning Committee decisions.
11. Encourage development of, coordinate, and implement a methodology for the implementation of public input.
12. Maintain a Hazard Mitigation Planning Committee.
13. Review implementation ability and constraints for proposed Hazard Mitigation planning steps and development of strategies.
14. Bring forward community concerns through private and public input.
15. Update implementation resources.
16. Update lead departments, commissions and committees for implementation of strategies.
17. Provide for the update of the Disaster Mitigation Plan on a regularly scheduled basis.
18. Review, evaluate and carry out mitigation activities, as feasible.
19. Assist in implementation of funding identification and procurement.

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Hazard Mitigation Planning Goals (Updated 2013)

1. Support the priorities of the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD; its mandates, employees, students' citizens and the business community.
2. Promote economic development consistent with seismic, floodplain and risk management guidance as developed by the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD and its departments, committees and/or commissions.
3. Provide for an effective public awareness program for natural, human-caused, and technological hazards present in the SANTA MONICA COLLEGE-SANTA MONICA MALIBU USD.
4. Encourage scientific study and the development of data to support mitigation strategies for those hazards that are a threat to the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD.
5. Promote the recognition of the real value of hazard mitigation to public facilities, public safety, and the welfare of all citizens of the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD.
6. Support the mitigation efforts of local governments, private citizens, non-profit organizations, community-based organizations, and private businesses throughout the city.

Hazard Mitigation Planning Objectives (Updated 2013)

1. Review and update mitigation actions to reduce loss of lives and property.
2. Review and updated implemented mitigation actions that are feasible, to reduce loss of lives and property.
3. Update mitigation strategies that will allow the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD to perform its primary mission and goals.
4. Update mitigation opportunities for short- and long-range planning considerations.
5. Maintain safe building and zoning codes that support scientific findings of a known risk.
6. Update lead SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Departments, Commissions, and Committees that have an interest in mitigation of specific hazards.
7. Review and update the standard mitigation program utilizing authorities, policies and programs of each SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Department, Commission, and/or Committee.
8. Continue to organize, train, and maintain an effective and ongoing SANTA MONICA COLLEGE- and SANTA MONICA MALIBU USD Hazard Mitigation Planning Committee that will facilitate implementation of the SANTA MONICA COLLEGE-and SANTA MONICA MALIBU USD All-Hazard Mitigation Plan.

All-Hazard Mitigation Plan

9. Review and update other SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD programs to identify current and future mitigation goals and objectives in compliance with appropriate city, county, state and Federal requirements.
10. Continue finding support of the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD's administration for the SANTA MONICA COLLEGE/SANTA MONICA MALIBU USD Multi-Hazard Mitigation Plan implementation.
11. Achieve the overall goal of developing a comprehensive mitigation program with Federal, state, county and city organizations, and other appropriate jurisdictions.

Public Participation

Public Outreach Program

SMMUSD and SMC used several methods to involve their clients, students, public, vendors, and stakeholders in the Hazard Mitigation Planning Process.

Methodology:

- Public Input Questionnaire
- Invitations to Stakeholder/Vendors to contribute information helpful in the planning process.
- Invitation to participate in DMA 2000 Hazard Planning Committee Meetings

In early 2012 a survey was designed and distributed on line as a link to the jurisdictions' websites. The survey's intent was afford the public an opportunity to assist in the update to the Hazard Mitigation Plan by soliciting information and limited statistics from the student/staff/parent populations of Santa Monica Malibu Unified School District and Santa Monica College.

The data gathered from the survey was used to assist in devising portions of the hazard mitigation strategies for the jurisdictions.

The survey is shown on the next page:

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

**Santa Monica-Malibu Unified School District & Santa Monica College
Hazard Mitigation and Preparedness Questionnaire**

This questionnaire is designed to help the SMMUSD/SMC DMA 2000 Hazard Mitigation Planning Committee by identifying the community's concerns about natural and human-caused hazards and to better understand community needs in reducing risk and loss from such hazards. The questionnaire should be completed by an adult, preferably the homeowner or the head of the household. Please, take a few moments to complete this questionnaire. All individual responses are strictly confidential, and are for research purposes only.

1. Zip code: _____ Community Name or location: _____ Internet Access? Y/N _____ Own/Rent _____

2. How concerned are you about the following disasters affecting your community? Please give each hazard a priority rating as follows: 0 = **Not concerned**; 1 = **Somewhat concerned**; 2 = **Moderately concerned**; 3 = **Very concerned**

Natural:

Floods _____	Landslide/Mudslide _____	Fire _____
Levee Failure _____	Earthquake _____	Telecommunications Failure _____
High Winds _____	Biological/Plant/Animal _____	Radiological Incident _____
Dam Failure _____		Special Events _____
Health Alert/Epidemic _____	Human caused:	Terrorism _____
Transportation Loss _____	Utilities Interruption _____	

3. What is the most effective way for you to receive information about how to make your household and home safer from natural disasters? (**Please check all that apply.**)

- Media:
- | | |
|--|---|
| <input type="checkbox"/> Newspaper | <input type="checkbox"/> Books |
| <input type="checkbox"/> Newspaper ads | <input type="checkbox"/> Mail |
| <input type="checkbox"/> Television news | <input type="checkbox"/> Fire Department |
| <input type="checkbox"/> Television ads | <input type="checkbox"/> Internet |
| <input type="checkbox"/> Radio news | <input type="checkbox"/> Fact sheet/brochure |
| <input type="checkbox"/> Radio ads | <input type="checkbox"/> Church/religious organization |
| | <input type="checkbox"/> Employer |
| Other methods: | <input type="checkbox"/> Public meetings |
| <input type="checkbox"/> Schools | <input type="checkbox"/> University or research institution |
| <input type="checkbox"/> Outdoor advertising (billboards, etc) | <input type="checkbox"/> Utility Bills |

4. In the following list, please check those activities that you **have done**, **plan to do** in the near future, **have not done**, or are **unable to do**. (**Please check one answer for each preparedness activity**)

Have you or someone in your household:	Have done	Plan to do	Not done	Unable to do
Attended meetings or received written information on natural disasters or emergency preparedness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Talked with family members about what to do in case of a disaster or emergency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prepared a "Disaster Supply Kit" (extra food, water, medications, batteries, first aid items and other emergency supplies)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Building a disaster supply kit, receiving First Aid training and developing a household/family emergency plan are all inexpensive activities that require a personal time commitment. How much time (per year) are you willing to spend on disaster/emergency preparedness? (**Check only one**)

- 0-1 hour 2-3 hours 4-7 hours 8-15 hours 16+ hours Other, please specify

6. Did you consider the possible occurrence of a natural hazard when you bought/moved into your current home?

- Yes No

7. Would you be willing to spend more money on a home that has features that make it more disaster resistant?

- Yes No Don't know

**Santa Monica-Malibu Unified School District & Santa Monica College
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8. Do you carry flood insurance? If so what is the annual cost? Yes No _____

9. Would you be willing to make your home more resistant to natural disasters?
 Yes No

10. What nonstructural or structural modifications for earthquakes and floods have you made to your home?

(Please check all that apply)

10a. Nonstructural

- Anchor bookcases, cabinets to wall
- Secure water heater to wall
- Install latches on drawers/cabinets
- Fit gas appliances with flexible connections
- Others (please explain)
- Others (please explain)
- None

10b. Structural

- Secure home to foundation
- Brace inside of cripple wall with sheathing
- Brace unreinforced chimney
- Brace unreinforced masonry and concrete walls and foundations

11. Natural and human-caused disasters can have a significant impact on a community but planning for these events can help lessen the impact. The following statement will help us determine community priorities for planning for those hazards. Please tell us how important each one is to you.

Statement	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Protecting private property	<input type="checkbox"/>				
Protecting critical facilities (hospitals, transportation networks, fire stations)	<input type="checkbox"/>				
Preventing development in hazard areas	<input type="checkbox"/>				
Protecting natural environment	<input type="checkbox"/>				
Protecting historical and cultural landmarks	<input type="checkbox"/>				
Promoting cooperation among public agencies, citizens, non-profit organizations and businesses	<input type="checkbox"/>				
Protecting and reducing damage to utilities	<input type="checkbox"/>				
Strengthening emergency services (police, fire, ambulance)	<input type="checkbox"/>				

12. Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters.

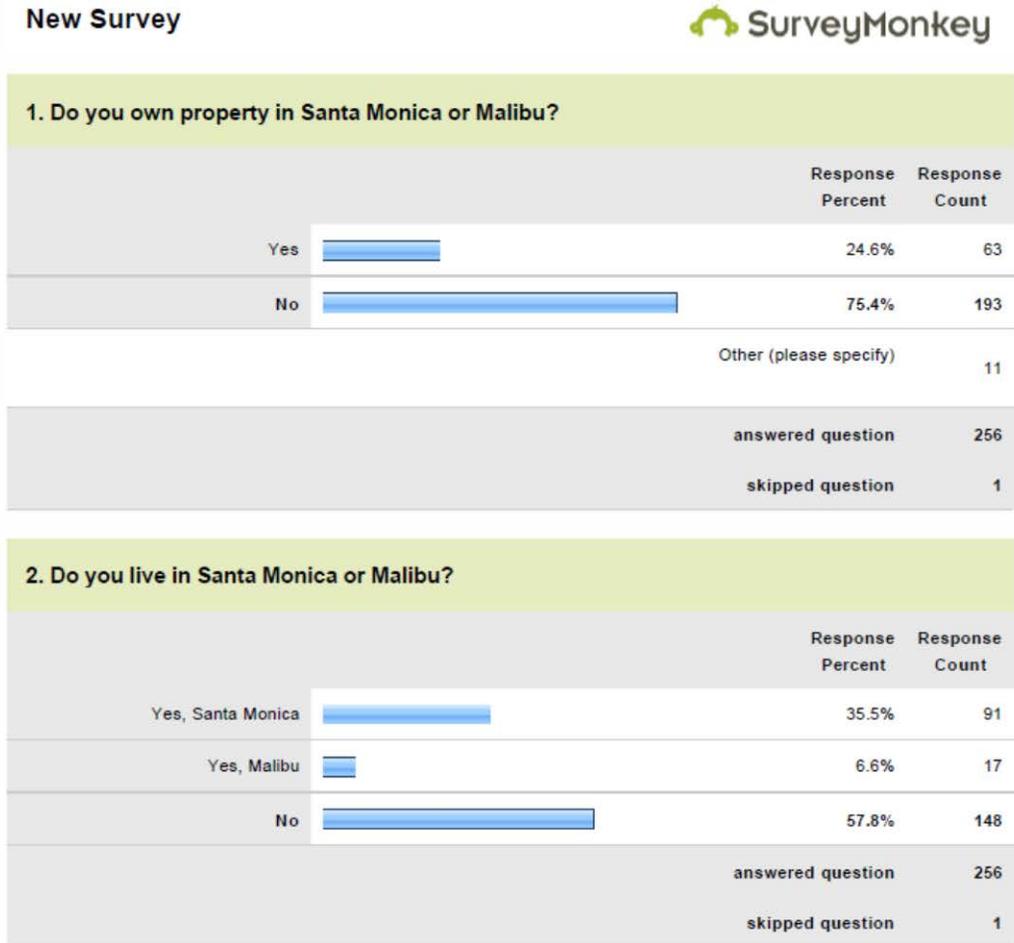
Communitywide Strategies	Agree	Neutral	Disagree	Not Sure
I support a regulatory approach to reducing risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I support a non-regulatory approach to reducing risk.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I support policies to prohibit development in areas subject to natural hazards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I support the use of local tax dollars to reduce risks and losses from natural disasters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I support protecting historical and cultural structures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would be willing to make my home more disaster-resistant.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I support steps to safeguard the local economy following a disaster event	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I support improving the disaster preparedness of schools.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Mail to: SMMUSD/ SMC

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Survey Results

Data from the survey was collecting using an automated system. Tabulated data is shown below:



**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

3. Do you work in Santa Monica or Malibu?			
		Response Percent	Response Count
Yes, Santa Monica		78.4%	200
Yes, Malibu		13.7%	35
Yes, Santa Monica & Malibu		5.5%	14
No		2.4%	6
answered question			255
skipped question			2

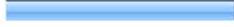
4. Which of the following hazards have you or your family experienced in Santa Monica or Malibu in the last 20 years? (Check all that apply)			
		Response Percent	Response Count
Drought		19.2%	48
Earthquake		71.6%	179
Erosion		4.8%	12
Flood		9.2%	23
Land/Rockslide		15.6%	39
Severe Weather (extreme heat, freeze, high winds, etc.)		29.2%	73
Wildland/Urban Area Fire		22.0%	55
None		18.8%	47
Other (please specify)			11
answered question			250
skipped question			7

**Santa Monica-Malibu Unified School District & Santa Monica College
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5. How prepared is your household for a natural hazard event?			
		Response Percent	Response Count
Not at all prepared		12.3%	31
Somewhat prepared		64.7%	163
Adequately prepared		17.1%	43
Well Prepared		6.0%	15
answered question			252
skipped question			5

6. How concerned are you about the possibility of your community being impacted by a natural hazard event?			
		Response Percent	Response Count
Not concerned		10.2%	26
Somewhat concerned		63.9%	163
Extremely concerned		25.9%	66
answered question			255
skipped question			2

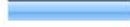
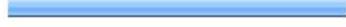
**Santa Monica-Malibu Unified School District & Santa Monica College
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7. What steps has your household taken to prepare for a natural hazard event? (Check all that apply)			
		Response Percent	Response Count
First Aid/CPR trained		67.7%	172
Home evacuation plan		45.3%	115
Designated meeting place		40.9%	104
Identification of utility shutoffs		49.2%	125
Disaster Preparedness Kits		48.8%	124
Installed smoke/carbon monoxide detectors		74.0%	188
Debris clearance around home for defensible space		29.5%	75
Natural hazards insurance (fire, flood, earthquake)		37.0%	94
Fire extinguisher		61.8%	157
None		5.9%	15
	Other (please specify)		12
answered question			254
skipped question			3

**Santa Monica-Malibu Unified School District & Santa Monica College
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8. How concerned are you about the following events affecting Santa Monica and Malibu? (Check a response for each hazard)				
	Low Concern	Moderate Concern	High Concern	Response Count
Drought	64.8% (160)	27.5% (68)	7.7% (19)	247
Earthquake	4.3% (11)	39.0% (99)	56.7% (144)	254
Flood	66.8% (165)	26.3% (65)	6.9% (17)	247
Power Outage	31.2% (78)	43.6% (109)	25.2% (63)	250
Terrorist Attack	71.2% (178)	20.8% (52)	8.0% (20)	250
Erosion	67.7% (168)	28.6% (71)	3.6% (9)	248
Rock/Landslide	62.2% (155)	28.9% (72)	8.8% (22)	249
Severe Weather	60.2% (150)	34.9% (87)	4.8% (12)	249
Wildland Fire	53.8% (135)	25.1% (63)	21.1% (53)	251
Tsunami	55.8% (139)	34.5% (86)	9.6% (24)	249
Hazardous Chemical Release	61.7% (153)	31.5% (78)	6.9% (17)	248
			answered question	254
			skipped question	3

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

9. Which of the following methods do you feel are the most effective ways to provide information on emergency preparation in Santa Monica or Malibu?			
		Response Percent	Response Count
Local newspaper		48.4%	123
Local radio stations		55.9%	142
Internet		82.7%	210
Public meetings		29.5%	75
Local community groups		26.4%	67
Library		23.2%	59
Schools		72.0%	183
Community poster/banners		37.4%	95
	answered question		254
	skipped question		3

**Santa Monica-Malibu Unified School District & Santa Monica College
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10. Of the following events that could affect a school campus, in your opinion which pose the greatest concern for Santa Monica and Malibu public schools

	Low Concern	Moderate Concern	High Concern	Response Count
Terrorist Attack	75.7% (184)	14.4% (35)	9.9% (24)	243
Shooter on campus	24.5% (61)	47.0% (117)	28.5% (71)	249
Earthquake	4.4% (11)	34.9% (87)	60.6% (151)	249
Fire	29.6% (73)	40.9% (101)	29.6% (73)	247
Riot	62.0% (152)	29.4% (72)	8.6% (21)	245
Wild land fire in surrounding area	56.8% (138)	23.0% (56)	20.2% (49)	243
Aircraft crash	63.8% (155)	28.0% (68)	8.2% (20)	243
Tsunami	58.8% (143)	30.0% (73)	11.1% (27)	243
Disease outbreak	53.9% (132)	32.7% (80)	13.5% (33)	245
Power outage	36.3% (90)	41.5% (103)	22.2% (55)	248
			answered question	252
			skipped question	5

11. Do you support using public school facilities as emergency shelters

	Response Percent	Response Count
Yes	95.3%	241
No	4.7%	12
	answered question	253
	skipped question	4

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

12. Are there any other issues regarding the reduction of risk and loss associated with natural hazards in your community that you think are important?	
	Response Count
	34
answered question	34
skipped question	223

13. Are there any additional comments that you would like to address that were not contained in this survey?	
	Response Count
	39
answered question	39
skipped question	218

Are there any other issues regarding the reduction of risk and loss associated with natural hazards in your community that you think are important?	
	Response Count
	34
answered question	34
skipped question	223

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Page 1, Q1. Are there any other issues regarding the reduction of risk and loss associated with natural hazards in your community that you think are important?		
1	I'm concerned about traffic in SM, especially around the High School, during and after an emergency.	Aug 28, 2012 5:39 PM
2	Buildings in need of upgrade for earthquakes: ex is business building at Samohi	Aug 24, 2012 4:12 PM
3	no	Aug 23, 2012 4:41 PM
4	The school's emergency plan in our faculty handbook is about 3 years old. Personnel no longer with the school site are identified as responders or coordinators. A recent power outage caused the entire school to shut down. It's obvious that phones and PA systems won't work in an emergency. I think recent upgrades to communications actually set our school back in terms of being able to respond to parents.	Aug 23, 2012 11:33 AM
5	Use of text alerts and phone calls in times of hazard/disaster	Aug 22, 2012 3:37 PM
6	The airport	Aug 22, 2012 12:51 PM
7	No	Aug 22, 2012 12:35 PM
8	Text message alerts	Aug 22, 2012 11:36 AM
9	enforcement of safety codes at schools	Aug 22, 2012 9:35 AM
10	I saw in the elementary schools that parents provided incentive and some supplies for excellent preparedness supplies. Secondary schools emergency supplies done by staff, not as well prepared. Staff school plan at all schools was excellent. We should have consistant supplies(water, snack, first aid, sun protection) consistant across schools.	Aug 16, 2012 7:10 AM
11	Don't send your Malibu middle schoolers to Ohio. Kbye.	Aug 15, 2012 1:58 PM
12	none	Aug 9, 2012 12:30 AM
13	na	Jul 31, 2012 12:16 PM
14	No	Jul 24, 2012 9:48 PM
15	make sure there is enough supplies- food and water	Jun 26, 2012 8:04 AM
16	Communication is key.	Jun 19, 2012 8:51 AM
17	Community plan that supports older citizens that live by themselves.	Jun 18, 2012 2:00 PM
18	Continue training of police, fire, emergency services and hospital staffs.	Jun 18, 2012 11:02 AM
19	More practice needed for school staff to be prepared in an actual event	Jun 18, 2012 9:38 AM
20	get rid of Santa Monica Airport	Jun 18, 2012 8:35 AM
21	Keeping parents of school-aged children calm and following directions.	Jun 18, 2012 6:28 AM
22	When we evacuate Grant, we have so many classes all coming down one hall.	Jun 17, 2012 9:03 PM

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Page 1, Q1. Are there any other issues regarding the reduction of risk and loss associated with natural hazards in your community that you think are important?		
	If there were a real emergency it would be a problem.	
23	no	Jun 17, 2012 12:49 AM
24	The emergency plan at Samohi does not have the best people allocated to the search and rescue jobs; it should go to people with period 2 conference, who can be trained. This means that each year slightly different people need to be trained; that's a good thing, since it will keep things fresh in their minds. The recent power outage was kinda pathetic; I can't believe the whole school has to shut down because we had a power outage. What will happen when an earthquake hits and there's no power for 4+ days?	Jun 15, 2012 7:47 PM
25	???	Jun 15, 2012 4:57 PM
26	no	Jun 15, 2012 3:59 PM
27	During 9/11 we used our schools for shelter, news, and just about everything.	Jun 15, 2012 2:02 PM
28	no	Jun 15, 2012 1:45 PM
29	No.	Jun 15, 2012 1:33 PM
30	I think all school staff should be locally trained in CERT, community emergency response team.	Jun 15, 2012 1:13 PM
31	Train more staff & faculty in First Aid/CPR and Disaster Response	Jun 15, 2012 12:37 PM
32	In schools, more lockdown and earthquake drills and fewer fire drills.	Jun 15, 2012 12:29 PM
33	We have been relying on parent contributions for emergency supplies because funding has been cut and expectations for site-based money has been directed to be used for academic purposes.	Jun 15, 2012 12:16 PM
34	No.	Jun 15, 2012 12:13 PM

Are there any additional comments that you would like to address that were not contained in this survey?	
	Response Count
	39
answered question	39
skipped question	218

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Page 1, Q1. Are there any additional comments that you would like to address that were not contained in this survey?		
1	I see no evidence that most of our schools are adequately prepared particularly the middle and high schools where staff believe they are going to go home and leave the students behind. They make these plans during the drills and are very vocal they will not be present for the real thing. Shameful!	Aug 26, 2012 6:51 PM
2	Schools need more funding for emergency safety equipment!	Aug 24, 2012 8:28 AM
3	no, but thanks.	Aug 23, 2012 4:41 PM
4	I only favor using the schools if schools are not in session at the time (weekends, holidays, or school has been cancelled due to the event).	Aug 22, 2012 2:46 PM
5	Although I am in support of using public schools as emergency shelters, I think that it is important to specify additional staff to support the school administration in the event of an emergency. School staff should not be responsible for community members.	Aug 22, 2012 1:56 PM
6	No	Aug 22, 2012 12:35 PM
7	Teach SM residents how to drive. Contrary to popular belief, the California State Vehicle Code does apply in SM.	Aug 22, 2012 9:35 AM
8	Use the parks as emergency shelters and kick out the homeless (vagrants).	Aug 22, 2012 9:26 AM
9	Make her move back to Malibu. Seriously.	Aug 15, 2012 1:58 PM
10	none	Aug 9, 2012 12:30 AM
11	na	Jul 31, 2012 12:16 PM
12	Np	Jul 24, 2012 9:48 PM
13	Non-natural hazards - such as radioactive fallout from Fukushima accumulating in food (fish, milk, mushrooms, etc.) Pesticides, GMO's, pollution. We need better testing and more disclosure.	Jul 5, 2012 10:46 AM
14	nope	Jun 26, 2012 8:04 AM
15	Poisoning the water system or disabling acquisition to water	Jun 24, 2012 10:38 AM
16	How well trained are staff for these disasters? Do we have enough trained staff?	Jun 20, 2012 11:04 PM
17	no	Jun 18, 2012 2:00 PM
18	Communication /protocol during an emergency (cellular phone use or text or call or email or social media)	Jun 18, 2012 10:12 AM
19	We're always told teachers with children may leave first, those without would stay until all students were picked up during an emergency, this doesn't seem fair, what about pets?	Jun 17, 2012 9:03 PM
20	no	Jun 17, 2012 12:49 AM

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Page 1, Q1. Are there any additional comments that you would like to address that were not contained in this survey?		
21	Do you really care about this info and how does listing concerns about drought,etc help with disaster planning for a school district. If you had really wanted good information and planned to use it, you would not have sent this out in the afternoon of the last day of school. Unbelievable!	Jun 15, 2012 11:37 PM
22	The phones at Samohi are VOIP, and during training on the new system, we were told there is enough battery power for the phones to continue working for 30-45 minutes after a power outage. The recent power outage showed this to be incorrect. In the event of an earthquake, you are looking at MAJOR liability issues, with parents not being able to contact the school, teachers telling students they must stay, and students leaving without being checked out. This is totally predictable AND preventable.	Jun 15, 2012 7:47 PM
23	Students with disabilities need to be considered in evacuation plans. Students can not be sent home on busses before parents are contacted. Parents need better access to the school when picking up students with disabilities. Teachers need to be notified -if not consulted- about plans before they are implemented without proper preparation.	Jun 15, 2012 6:16 PM
24	It will be very frightening at many sites particularly at Santa Monica High School, should there ever be a true emergency. There was chaos twice this year, once when the fire alarms went off between periods on a rainy day and also when the power went out at lunch, no bells, no PA system, not computers, limited or no way to communicate (can't there at least be bullhorns?!?!). Absurd!	Jun 15, 2012 5:41 PM
25	No	Jun 15, 2012 4:57 PM
26	no	Jun 15, 2012 3:59 PM
27	none	Jun 15, 2012 1:45 PM
28	No.	Jun 15, 2012 1:33 PM
29	Remember New Orleans...having large shelters for people without a way to identify their criminal status is extremely dangerous for everyone, but especially kids. There either needs to be a way to keep them separated, or adequately monitored by a huge support staff of police offices, social workers, or rescue teams equipt to handle this.	Jun 15, 2012 1:14 PM
30	#10 was difficult to answer because some potential hazards are more likely to be of concern in a particular school rather than at all schools so it was hard to answer about ALL schools.	Jun 15, 2012 1:13 PM
31	School sites, particuraly Samohi, need to be better prepared to accommodate students during an emergency. Staff is hard to corral for training. During a fire alarm, most students and teachers ignored the alarm and continued through building during passing period. Not enough people take safety procederes seriously.	Jun 15, 2012 12:58 PM
32	This school district is absolutely inadequately prepared for a "disaster". All the plan books sitting on a shelf do not denote adequate preparedness. Untill the feet on the street are totally trained and tested for appropriate response, all of us	Jun 15, 2012 12:45 PM

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Page 1, Q1. Are there any additional comments that you would like to address that were not contained in this survey?		
	are in jeopardy. We still have staff members that believe their first and primary responsibility is to get home to take care of personal needs potentially hundreds of students behind without trained leadership!!!!	
33	Thank you for asking.	Jun 15, 2012 12:37 PM
34	Malibu has only one main road, which makes our schools hard to access by parents in an emergency.	Jun 15, 2012 12:18 PM
35	Use twitter and facebook to inform community members about disasters.	Jun 15, 2012 12:17 PM
36	Construction projects on nearly every campus in the district require revisions of the emergency plans. In addition, external organizations like Red Cross need to be made aware of these changes, should they need to take over a school, in the event of an emergency. There should be a standardization of what supplies are needed and how they should be stored. I know some classrooms have trashcans with emergency supplies in them, where other campuses have locked storage bins. Contents of each of these is very different.	Jun 15, 2012 12:16 PM
37	No.	Jun 15, 2012 12:13 PM
38	I think a lot of emergency preparedness training is aimed at people who live in single family homes. Would be helpful to share information with families/staff about preparing in apartment buildings.	Jun 15, 2012 12:04 PM
39	More State and Federal funding should be provided to schools for disaster preparations.	Jun 15, 2012 11:54 AM

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Stakeholder Participation

Each one of the Hazard Mitigation Planning Stakeholders identified in the initial Hazard Mitigation Plan was contacted and/or evaluated by the Hazard Mitigation Planning Committee. The list was revised and Stakeholders were identified for this update as follows:

SMMUSD Hazard Mitigation Stakeholders (updated 2017)

A-Z BUS SALES Attn: Safety Officer / Risk Management Office PO BOX 700 1900 S RIVERSIDE AVENUE COLTON, CA 92324	11560 W. PICO BLVD WEST LOS ANGELES, CA 90064
AAA CONTAINERS & EQUIP SALES Attn: Safety Officer / Risk Management Office 11120 ALMOND AVENUE FONTANA, CA 92337	CITY OF SANTA MONICA Attn: Safety Officer / Risk Management Office 1717 4TH STREET SUITE 270 SANTA MONICA, CA 90401
ADT SECURITY SERVICES INC Attn: Safety Officer / Risk Management Office 5400 W ROSECRANS AVENUE HAWTHORNE, CA 90250	DANIELS TIRE SERVICE Attn: Safety Officer / Risk Management Office 11850 E SLAUSON PO BOX 3708 SANTA FE SPRINGS, CA 90670
AMERICAN FIDELITY ASSURANCE CO Attn: Safety Officer / Risk Management Office P.O. BOX 24128 OKLAHOMA CITY, OK 73124	DON LEE FARMS/GOODMAN FOODS Attn: Safety Officer / Risk Management Office 200 E. BEACH AVE. INGLEWOOD, CA 90302
ANTELOPE VALLEY BUS COMPANY Attn: Safety Officer / Risk Management Office 660 W AVENUE L LANCASTER, CA 93534	DRIFTWOOD DAIRY Attn: Safety Officer / Risk Management Office 10724 E. LOWER AZUSA ROAD P.O. BOX 5508 EL MONTE, CA 91734
APPLE COMPUTER CORP Attn: Safety Officer / Risk Management Office 12545 RIATA VISTA CIRCLE MS: 198-31ES AUSTIN, TX 78727	DURHAM TRANSPORTATION Attn: Safety Officer / Risk Management Office 1728 MOORPARK ROAD BOX 437 THOUSAND OAKS, CA 91360
ASR FOOD DISTRIBUTORS INC Attn: Safety Officer / Risk Management Office 6100 SHEILA STREET COMMERCE, CA 90040	PIONEER CHEMICAL CO Attn: Safety Officer / Risk Management Office 13717 S NORMANDIE AVENUE GARDENA, CA 90249
BEN'S ASPHALT & MAINTENANCE Attn: Safety Officer / Risk Management Office 1420 S ALLEC STREET ANAHEIM, CA 92805	SANTA MONICA FENCE CO Attn: Safety Officer / Risk Management Office 1547 16TH STREET SANTA MONICA, CA 90404
CHEVRON U.S.A. INC. Attn: Safety Officer / Risk Management Office P.O. BOX 2001 CONCORD, CA 94529	SANTA MONICA MUN BUS LINES Attn: Safety Officer / Risk Management Office 612 COLORADO AVENUE SANTA MONICA, CA 90401
CITIZENS MEDICAL GROUP Attn: Safety Officer / Risk Management Office	

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

SANTA MONICA SCHOOL (#SDSMCU)
Attn: Safety Officer / Risk Management Office
1750 14TH STREET SANTA MONICA, CA
90401

SANTA MONICA WATER DIVISION
Attn: Safety Officer / Risk Management Office
1212 FIFTH ST., 3RD FLOOR SANTA
MONICA, CA 90401

THE GAS COMPANY
Attn: Safety Officer / Risk Management Office
P.O. BOX C MONTEREY PARK, CA 91756

ZOLL MEDICAL CORPORATION
Attn: Safety Officer / Risk Management Office
269 MILL ROAD CHELMSFORD, MA 18240

ZONES BUS SOLUTIONS/MAC ZONE
Attn: Safety Officer / Risk Management Office
1102 15TH STREET SW AUBURN, WA
98001

DEPARTMENT OF TRANSPORTATION
Office of Public Affairs
100 S. Main Street Los Angeles, CA 90012

SANTA MONICA FIRE DEPARTMENT
Office of Public Affairs
333 Olympic Street Santa Monica, CA 90401

SANTA MONICA POLICE DEPARTMENT
Office of Public Affairs
333 Olympic Street Santa Monica, CA 90401

CALIFORNIA HIGHWAY PATROL
Office of Public Affairs
PO Box 942898 Sacramento, CA 94298

ST. JOHN'S HEALTH CENTER
Public Relations
1328 22nd Street Santa Monica, CA 90404

LOS ANGELES COUNTY SHERIFF'S
DEPARTMENT
Office of Public Affairs
207050 Agoura Road Calabasas, CA 91301

MALIBU COMMUNITY CENTER
Office of Public Relations
6955 Frenhill Drive Malibu, CA 90265

SMC Hazard Mitigation Stakeholders (updated 2017)

**Architecture Seismic Design Project
Management**
447 LaVerne Street
Redlands, CA 92373

Keenan & Associates
2355 Crenshaw Blvd., Ste., 200
Torrance, CA 90501

American Red Cross
**American Red Cross of Greater Los
Angeles**
2700 Wilshire Blvd.
Los Angeles, CA 90057-3202

Community Outreach
Santa Monica-UCLA Medical Center
1250 16th Street
Santa Monica, CA 90404

Southern California Gas Company
Centralized Correspondence
P.O. Box 3150
San Dimas, CA 91773

Southern California Edison
Economic & Business Development
2244 Walnut Grove Ave
Rosemead, CA 91770

Jacqueline Seabrooks
Chief of Police
Santa Monica Police Department
1685 Main Street
Santa Monica, CA 90401

Office of Emergency Management
City of Santa Monica
333 Olympic Blvd., 2nd Floor
Santa Monica, CA 90401

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Assets & Critical Facilities

Each jurisdiction reviewed their lists of assets and those designated as critical facilities in the event of a disaster. The following is an update to those lists:

Santa Monica Malibu Unified School District Assets

Juan Cabrillo Elementary School
30237 Morningview Drive
Malibu, CA 90265

Edison Elementary School
2425 Kansas Avenue
Santa Monica, CA 90404

Franklin Elementary School
2400 Montana Avenue
Santa Monica, CA 90403

Grant Elementary School
2368 Pearl Street
Santa Monica, CA 90404

McKinley Elementary School
2401 Santa Monica Boulevard
Santa Monica, CA 90404

John Muir Elementary School
2526 Sixth Street
Santa Monica, CA 90405

Will Rogers Elementary School
2401 14th Street
Santa Monica, CA 90405

Roosevelt Elementary School
801 Montana Avenue
Santa Monica, CA 90403

Webster Elementary School
3602 Winter Canyon
Malibu, CA 90265

Santa Monica Alternative School House
2525 Fifth Street
Santa Monica, CA 90405

John Adams Middle School
2425 16th Street
Santa Monica, CA 90405

Lincoln High School
1501 California Street
Santa Monica, CA 90403

Malibu High School
30215 Morningview Drive
Malibu, CA 90265

Santa Monica High School
601 Pico Boulevard
Santa Monica, CA 90405

Olympic High School
721 Ocean Park Blvd
Santa Monica, CA 90405

District Offices
1651 Sixteenth Street
Santa Monica, CA 90404

Point Dume Marine Science Elementary
6955 Fernhill Drive
Malibu, CA 90265

SMMUSD District Office/Maintenance
1651 16th Street
Santa Monica, CA

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

SMMUSD Asset Values:

Total Building Square Footage:	1,678,089 Sq. Ft.
Total Estimated Building Replacement Cost	\$ 390,446,000
Total Estimated Content Replacement Cost	\$ 40,800,000

SMMUSD Critical Assets

The committee judged that because of the nature of school districts and public assumptions that school facilities will be available for staging and shelters during a disaster, their facilities are all deemed critical to remain in service during disaster responses.

SMC Assets

July 1, 2017

Property Inventory

1410 Pico Blvd., Santa Monica, CA 90405 (Parking Lot 6)
AIN: 4284-034-900
Date Purchase: December 1999
Purchase price: \$1,510,000
Square Footage: approximately 28,460 of land
Deed on file.

1510 Pico Blvd., Santa Monica, CA 90405
AIN: 4284-034-902
Date Purchase: March 2011
Purchase price: \$4,000,000
Square Footage: approximately 14,970 of building, 9,874 of land
Deed on file.

1516 Pico Blvd., Santa Monica, CA 90405 (Foundation)
AIN: 4284-034-901
Date Purchase: June 2010
Purchase price: \$1,775,000
Square Footage: approximately 3,000 of building, 4,750 of land
Deed on file.

1900 Pico Blvd. (1702 Pico), Santa Monica, CA 90405
AIN: 4273-001-907
Date Purchase: 1940
Purchase price: \$26,400
Square Footage: approximately 36.1 acres of land
Deed on file.

2714 Pico Blvd., Santa Monica, CA 90405
AIN: 4270-003-900
Date Purchase: January 1999
Purchase price: \$3,350,000
Square Footage: 22,587 of building, 15,720 of land
Deed on file.

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1714 Pearl St., Santa Monica, CA 90405 (SMCPD Annex)
AIN: 4273-022-901
Date Purchase: March 1977
Purchase price: \$70,000
Square Footage: 1,075 of house, 369 of garage, 6,500 of land
Deed on file.

1718 Pearl St., Santa Monica, CA 90405 (SMCPD)
AIN: 4273-022-900
Date Purchase: 1976
Purchase price: \$51,000
Square Footage: 1,000 of house, 6,500 of land
Deed on file.

1724 Pearl St., Santa Monica, CA 90405 (Outreach)
AIN: 4273-022-902
Date Purchase: February 1977
Purchase price: \$70,000
Square Footage: 1,102 of house, 6,500 of land
Deed on file.

1734 Pearl St., Santa Monica, CA 90405 (International Student)
AIN: 4273-022-903
Date Purchase: April 1977
Purchase price: \$79,000
Square Footage: 1,008 of house, 379 of garage, 6,500 of land
Deed on file.

1738 Pearl St., Santa Monica, CA 90405 (Auxiliary Services)
AIN: 4273-022-905
Date Purchase: October 2003
Purchase price: \$700,000
Square Footage: 999 of house, 6,500 of land
Deed on file.

1744 Pearl St., Santa Monica, CA 90405 (Eco House)
AIN: 4273-022-904
Date Purchase: October 1993
Purchase price: \$199,000
Square Footage: 1,008 of house, 533 of garage, 6,500 of land
Deed on file.

Parking Lot 5 on Pearl Street
AIN: 4273-021-901
Date Purchase: 1961
Purchase price: \$125,000
Square Footage: 46,173 of land
Deed on file.

1825 Pearl St., Santa Monica, CA 90405 (Apartment building, 4 units)
AIN: 4273-002-900
Date Purchase: February 1998
Purchase price: \$395,000
Square Footage: 2,376 of building, 6,159 of land
Deed on file.

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

919 Santa Monica Blvd., Santa Monica, CA 90401
AIN: 4282-011-900
Date Purchase: November 2011
Purchase price: \$9,000,000
Square Footage: 26,277 of building, 17,500 of land
Deed on file.

1310 11th Street, Santa Monica, CA 90401 (Performing Arts Center)
AIN: 4282-012-900
Date Purchase: September 1990
Purchase price: Lease
Square Footage: 42,819 of building, approximately 4 acres of land

1227 2nd Street, Santa Monica, CA 90401 (Emeritus College)
AIN: 4291-002-902
Date Purchase: October 2002
Purchase price: \$8,657,500
Square Footage: 19,875 of building, approximately 1 acre of land
Deed on file.

2800 Airport Ave., Santa Monica, CA 90405 (Airport Arts Campus)
Date Purchase: July 1988
Purchase price: Lease
Square Footage: 28,463 of building

3171 South Bundy Dr., Los Angeles, CA 90066
AIN: 4247-001-900
Date Purchase: December 2001
Purchase price: \$30,280,878
Square Footage: 64,000 of building, 10.4 acres of land
Deed on file.

1660 Stewart St., Santa Monica, CA 90404
AIN: 4268-001-902
Date Purchase: August 1996
Purchase price: \$8,500,000
Square Footage: approximately 53,000 of building, 3 acres of land
Deed on file.

2909 Exposition Blvd., Santa Monica, CA 90404
AIN: 4268-013-907
Date Purchase: January 2007
Purchase price: \$17,250,000
Square Footage: 2.35 acres of land
Tri-Party Exchange October 2013
Square Footage: 102,709sq/ft 2.357acres
Deed on file.

2019-2023 14th Street, Santa Monica, CA 90405 (YWCA)
AIN: 4284-034-004; 4284-034-014
Date Purchase: March 31, 2017
Purchase price: \$5,000,000
Square Footage: 43,400sq/ft of land
Deed on file.

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Non-owned Critical Facilities Shared by SMMUSD/SMC

Los Angeles County Fire Department - Contact Information

Fire Station #70 - 3970 Carbon Canyon Rd. / 310- 456-2513
Fire Station # 71 - 28722 PCH / 310-457-2578
Fire Station # 88 - 23720 Malibu Road / 310-456-2812
Fire Station # 99 - 32550 PCH / 310-457-3706

Los Angeles County Sheriff's Department

Law enforcement services in Malibu are provided by the Los Angeles County Sheriff's Department. The Malibu Lost Hills Station area includes the area within Malibu City limits as well as unincorporated L.A. County areas around Malibu.

Malibu Lost Hills Sheriff's Station
27050 Agoura Road, Calabasas, CA
(818) 878-1808
(310) 456-6652

City of Santa Monica Emergency Services/Departments

City of Santa Monica
Public Safety Facility (Police, Fire, and Office of Emergency Management)
333 Olympic Drive
Santa Monica, CA 90401
Police Non-emergency Dispatch 310-458-8491
Fire Non-emergency Dispatch 310-458-8600
Emergency Operations Center: 310-458-2201 x 2132

Substations

Santa Monica Pier, near entrance to the Pier parking lot

3rd Street Promenade, located on 3rd St. south of Santa Monica Blvd

City of Santa Monica Fire Station Locations

Station 1: 1444 7th Street, between Santa Monica Boulevard and Broadway

- o One Paramedic Engine Company (Engine 1) with a crew of four
- o One Paramedic Engine Company (Engine 6) with a crew of four
- o One 100' ladder Truck (Truck 1) with a crew of five
- o One Air/Light/Rescue unit (Rescue 1) – part of Truck 1
- o One command vehicle with a Battalion Chief (Battalion 1)

Station 2: 222 Hollister Avenue, at 2nd Street

- o One Paramedic Engine Company (Engine 2) with a crew of four
- o One Paramedic Rescue Squad (Squad 2) with a crew of two
- o One Urban Search & Rescue Vehicle (USAR 2)
- o One Reserve Engine

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Station 3: 1302 19th Street, at Arizona Avenue

- Two Paramedic Engine Companies (Engine 3 & Engine 4) each with a crew of four
- One Hazardous Materials Response Vehicle (Haz Mat 4, with Utility 4)
- One Reserve Engine

Station 5: 2450 Ashland Avenue, south of Ocean Park Boulevard at the Airport

- One Paramedic Engine Company (Engine 5), with a crew of four
- One Aircraft Rescue Fire Fighting Vehicle (CR5)
- One Reserve Engine
- One Reserve Ladder Truck (Truck 2)

Support Services

Public Safety Facility
333 Olympic Drive
Santa Monica, CA 90401
310-458-8491

Medical Facilities

UCLA Medical Center, Santa Monica
1250 16th Street
Santa Monica, CA 90404
424-259-6000

Providence Saint John's Health Center
2121 Santa Monica Blvd.
Santa Monica, CA 90401
310-829-5511, 310-829-8268

Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan

Risk Analysis

A hazard can be defined as a condition that has the potential to result in equipment or system failure that can result in human injury, death, or damage to the environment. Hazards are divided into two categories: natural or technological. Natural hazards include earthquakes, wild fires, and floods; while technological hazards include transportation accidents, illegal disposal, and equipment failures during manufacturing, storage, transportation, and use of hazardous materials.

A risk assessment is the process of evaluating the degree of harm a hazard presents. Risk assessments are utilized in developing emergency response plans and procedures, designing and modifying safety systems, identifying needed resources, conducting training and exercises, and minimizing damage and liability.

Identifying Hazards

Instructions for Hazard Mitigation Rating

The risk analysis from the initial plan was reviewed and updated using the following criteria:

Magnitude

Physical and Economic Greatness of the event

Factors to consider

- Size of Event
- Threat to life
- Threat to Property
 1. Individual
 2. Public Sector
 3. Business and Manufacturing
 4. Tourism

Duration

The length of time the disaster and the effects of the disaster last

Factors to consider

- Length physical duration during emergency phase
- Length of threat to life and property
- Length of physical duration during recovery phase
- Length of effects on individual citizen and community recovery
- Length of effects on economic recovery, tax base, business and manufacturing recovery, tourism, threat to tax base and threat to employment

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Distribution

The depth of the effects among all sectors of the community and State

Factors to consider:

- How wide spread across the state is the effects of the disaster
- Are all sectors of the community affected equally or disproportionately

Area Affected

How large an area is physically threatened and potentially impaired or by a disaster risk

Factors to Consider:

- Geographic Area affected by primary event
- Geographic, physical, economic areas affected by primary risk and the potential secondary effects.

Frequency

The historic and predicted rate of recurrence of a risk caused event (generally expressed in years such as the 100-year flood)

Factors to consider:

- Historic events and recurrences of events in a measured time frame
- Scientifically based predictions of an occurrence of an event in a given period of time.

Degree of Vulnerability

How susceptible is the population, community infrastructure and state resources to the effects of the risk.

Factors to Consider:

- History of the impact of similar events
- Mitigation steps taken to lessen impact
- Community and State preparedness to respond to and recover from the event

Community Priorities

The importance placed on a particular risk by the citizens and their elected officials

- Willingness to prepare for and respond to a particular risk
- More widespread concerns over a particular risk than other risks
- Cultural significance of the threat associated a risk.

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Prioritization of Hazard Matrix Results

Hazards are listed in this section first by Natural Hazards and then by Human-Caused Hazards. Each hazard and its vulnerability information is in order by priority. For example, in the Natural Hazards section, Earthquake are listed first, then Wild Land Urban Interface Fire, then Winds. In the Moderate Risk Section for Natural Hazards, Severe Weather are listed first, then Floods and so on.

Stakeholder Prioritization for SMMUSD & SMC (2017)

High Risk Natural Hazards

- Earthquake
- Wild Land Urban Interface Fire
- Landslide/ Mudslide← *ADDED*

Moderate Risk Natural Hazards

- Severe Weather/ Winds← *winds added from High*
- Flood
- Drought

Low to No Risk Natural Hazards

- Tsunami
- Sinkholes/subsidence
- Volcanic

High Risk Human-Caused Hazards

- Utility Loss
- Data Telecommunications
- Transportation incident/loss← From Moderate
- Biological Health/Disease ← From Moderate

Moderate Risk Human-Caused Hazards

- Aviation Disaster ← From High
- WMD Terrorism← From High
- Active Shooter-ADDED
- Economic Disruption
- Water, Wastewater Disruption
- Civil Unrest/ Disorder
- Special Events← From Low
- Hazmat ← ADDED

Low to No Risk Human-Caused Hazards

- Explosions

Key points that were discussed in the review process include:

Transportation – Landslide PCH, I-405, Light rail extension – 2015 / 17
Hazardous Material – Santa Monica - Radiation Hazard, SAC SM swim center –chlorine

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HIGH RISK NATURAL HAZARDS

Earthquake

PROFILE

SMMUSD

The impact can vary from minimal to catastrophic, depending on numerous factors, such as the time of the disaster, magnitude and location. If the earthquake occurs during school hours the potential for loss of life is much greater due to the fact the students are in class. The secondary effects are economic, utility, transportation, data/telecommunication loss, landslides, flooding, and fire.

SMC

The impact is mainly the same as SMMUSD, except the age of the students prohibits SMC from the ability to control the campus. The students have the right to evacuate during the event or shortly after causing a potential mob mentality and danger to themselves and SMC's staff.

The City of Santa Monica and Malibu have completed their Hazard Mitigation Plans. The school district and college evaluated the cities' mitigation strategies and how to or network to ensure the maximum implementation for mitigation.

Description

Earthquake Faults

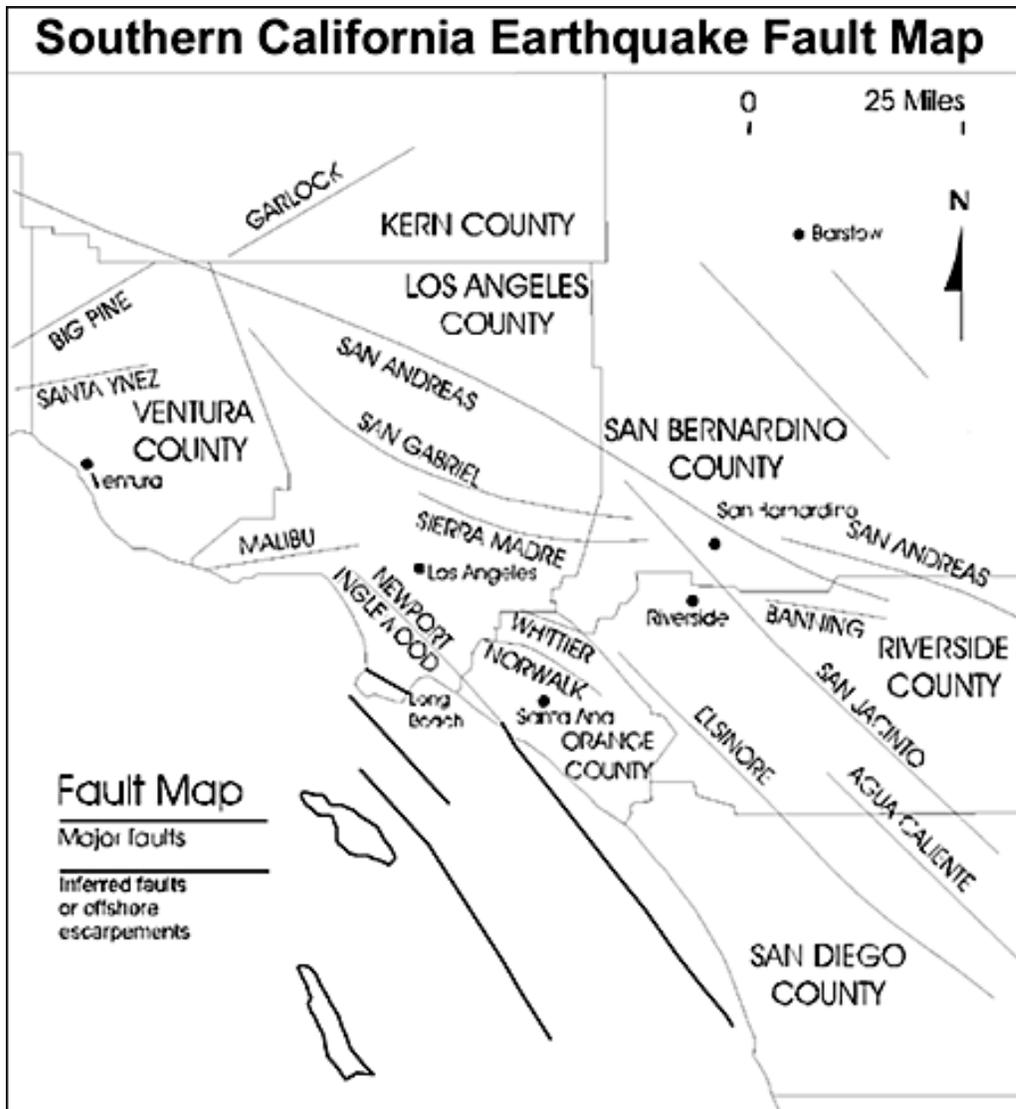
There are multiple fault zones in the proximity to Malibu and Santa Monica Regions. Although the San Andreas Fault is capable of producing an earthquake with a magnitude greater than 8, there are multiple 'lesser' faults that are in closer proximity and have the potential to inflict greater damage to the region. Some of the better known faults include the Newport-Inglewood, Whittier, Chatsworth, Elsinore, Hollywood, Los Alamitos, and Palos Verdes faults. Beyond the known faults, there are a potentially large number of —blind faults that underlie the surface of Southern California. One such blind fault was involved in the Whittier Narrows earthquake in October 1987.

The City of Santa Monica is in the vicinity of several known active and potentially active earthquake faults including the San Andreas which lies approximately 40 miles east of Santa Monica, the San Jacinto, Santa Monica, Whittier-Elsinore, and the northeastern end of the Newport-Inglewood Fault Zone, the source of the 1933 Long Beach earthquake, that is located within the Los Angeles Metropolitan area. New faults within the region are continuously being discovered. Scientists have identified almost 100 faults in the Los Angeles area known to be capable of a magnitude 6.0 or greater earthquake.

Clearly, as a result of Santa Monica's natural geology, the City is at risk of suffering significant losses due to earthquakes, both in terms of loss of life and injuries, as well as damage to property and the environment. The following description of earthquake risks to Santa Monica detail the threat that earthquakes pose to the community. Fortunately, since the 1994 Northridge earthquake, the City of Santa Monica has enacted strong building codes and other ordinance (as described in this plan) that will likely reduce the impacts of strong earthquakes to the community.

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Southern California Earthquake Fault Map



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Earthquake Faults in the Greater Los Angeles/Ventura County Area



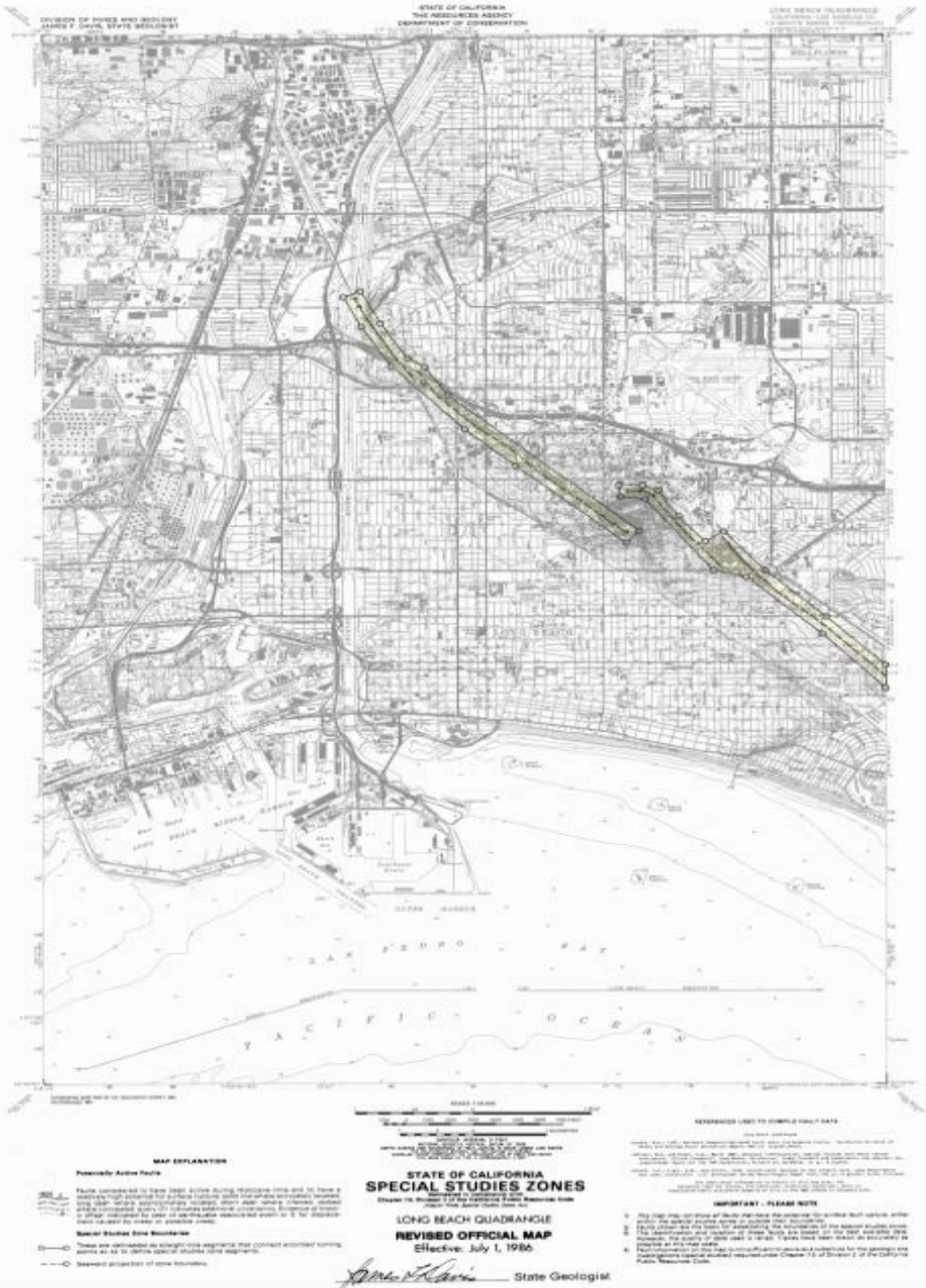
Major Earthquake Faults

Fault Name	Potential Magnitude	Length	Distance to LVMCOG	Direction from the LVMCOG
Chatsworth	6.0-6.8	12.5 miles	1 mile	NE
Hollywood	5.8-6.5	9.4 miles	15 miles	E
Malibu Coast Fault	6.7	21.3 miles	0 miles	S
Newport/Inglewood	6.0-7.4	46.9 miles	15 miles	E
Raymond	6.0-7.0	16.3 miles	25 miles	E
San Andreas	6.8-8.0	750.0 miles	40 miles	NE
San Fernando	6.0-6.8	10.6 miles	15 miles	N
Santa Monica	6.6	15.0 miles	10 miles	SE
Simi-Santa Rosa	7.0	25.0 miles	10 miles	NW

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Earthquake History

Since seismologists 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. The table below describes the historical earthquake events that have affected Southern California.

The chart below provides examples of 24 significant earthquakes in Southern California since 1857.

Date	Time	Location	Magnitude
01.09.1857	8:24 am	Fort Tejon	7.9
02.24.1892	11:20 pm	Laguna Salada	7.3
12.25.1899	4:25 am	San Jacinto/Hemet	6.7
04.21.1918	2:31 pm	San Jacinto	6.8
06.29.1925	7:42 am	Santa Barbara	6.8
11.04.1927	5:51 pm	Offshore Lompoc	7.1
03.10.1933	5:54 pm	Long Beach	6.4
05.18.1940	8:37 pm	Imperial Valley	6.9
04.10.1947	7:58 am	Manix	6.5
07.21.1952	3:52 am	Kern County	7.5
04.09.1968	6:29 pm	Borrego Mountain	6.6
02.09.1971	6:01 am	San Fernando	6.6
10.15.1979	4:16 pm	Imperial Valley	6.4
07.08.1986	2:21 am	North Palm Springs	5.7
10.01.1987	7:42 am	Whittier Narrows	5.9
11.24.1987	5:15 am	Superstition Hills	6.6
06.28.1991	7:43 am	Sierra Madre	5.8
04.22.1992	9:50 pm	Joshua Tree	6.1
06.28.1992	4:57 am	Landers	7.3
06.28.1992	8:05 am	Big Bear	6.3
01.17.1994	4:30 am	Northridge	6.7
10.16.1999	2:46 am	Hector Mine	7.1
12.22.2003	11:15 am	San Simeon	6.5
07.29.2008	11:42 am	Chino Hills	5.4

SOURCE: Southern California Earthquake Center (SCEC)

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.

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Fifty-seven 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. 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.

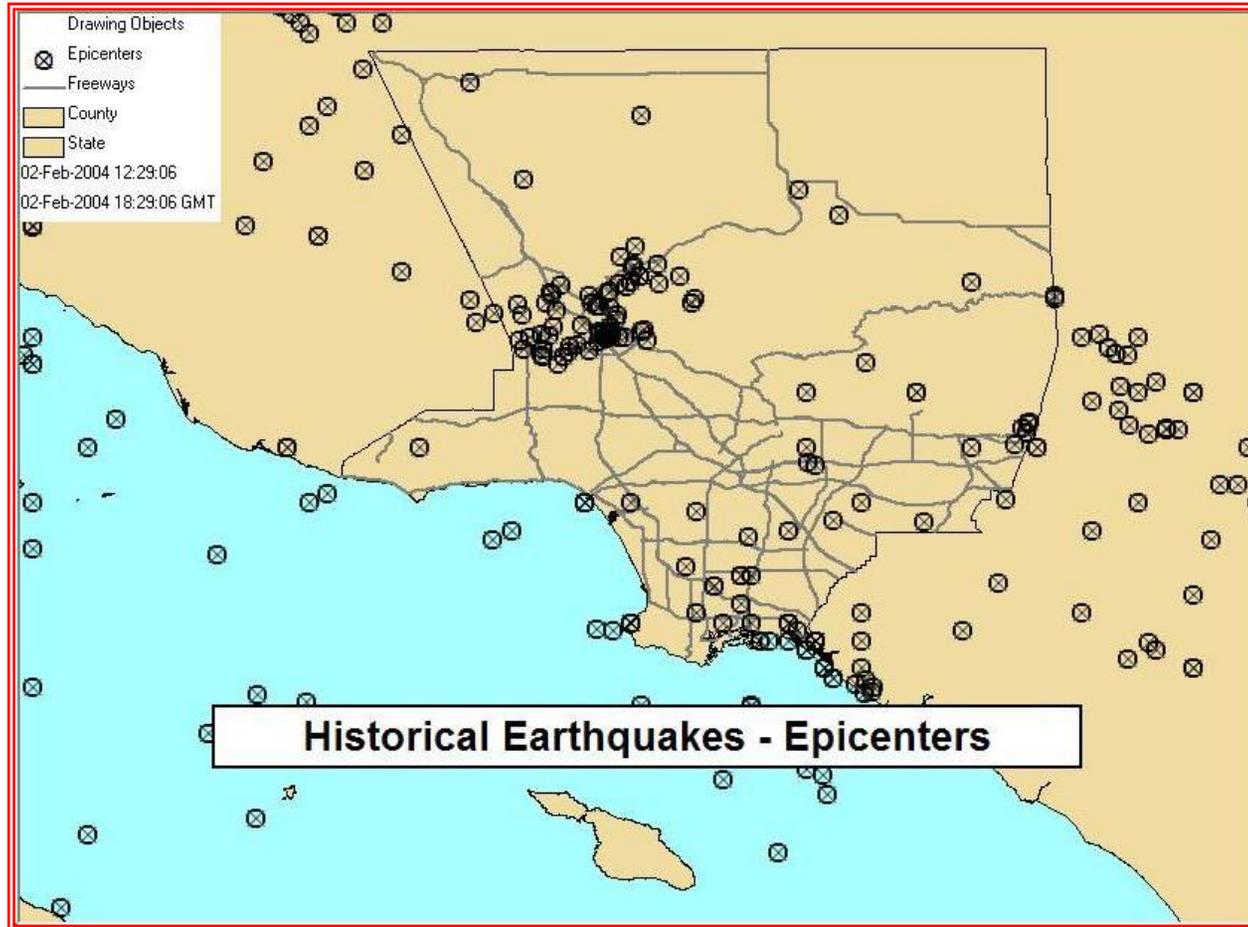
However, the earthquake occurred early in the morning on a holiday. This circumstance considerably reduced the potential effects. Many collapsed buildings were unoccupied, and most businesses were not yet open. The direct and indirect economic losses ran into the 10's of billions of dollars.

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 earthquakes are based on observations and felt reports, and are 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 in 1872 (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.

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 lack of understanding regarding earthquake hazards among Californians.

Dr. Kerry Sieh of Cal Tech has investigated the San Andreas fault at Palmett Creek. —The record at Palmett Creek shows that rupture has recurred about every 130 years, on average, over the past 1500 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. ii Damage from a great quake on the San Andreas would be widespread throughout Southern California.

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Location

Since seismologists 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. The table below describes the historical earthquake events that have affected Southern California.

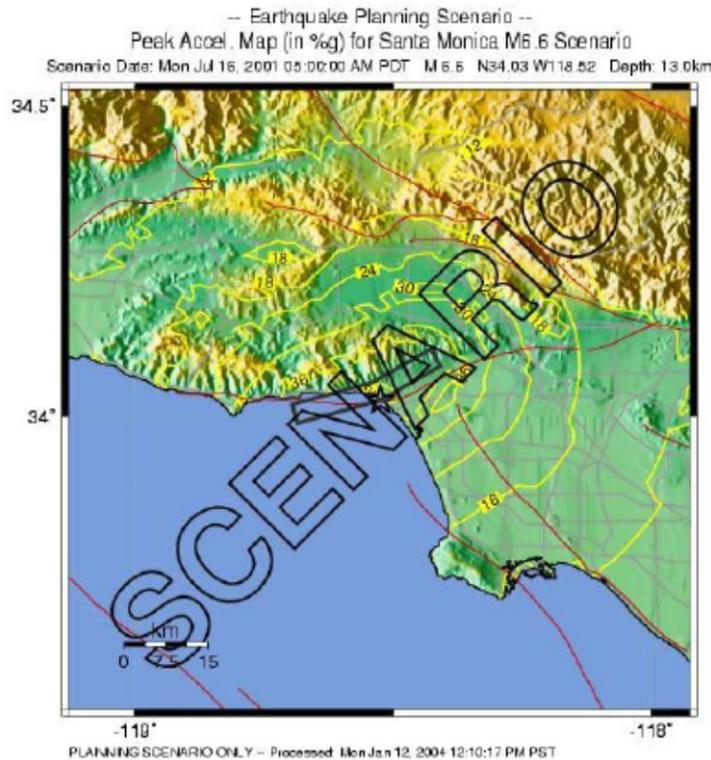
About 30 earthquakes occur every day in Southern California. Most have a magnitude of less than 2.0. No evidence exists that earthquakes are more likely to occur in certain kinds of weather.

The best place to see any part of the monstrous, 800-mile San Andreas Fault is in Palmdale in a road cut along the Antelope Valley Freeway (Route 14) just north of Avenue S. The last time this part of the fault was active was in 1857.

Santa Monica Fault

The Santa Monica fault is part of the Transverse Ranges Southern Boundary fault system, a west-trending system of reverse, oblique-slip, and strike-slip faults that extends for more than 200 km along the southern edge of the Transverse Ranges (Dolan et al., 1997, 2000a). Other faults in this system are the Hollywood and Raymond faults. The Anacapa-Dume, Malibu Coast, Santa Cruz Island, and Santa Rosa Island faults to the west are also part of this system.

The Santa Monica fault extends east from the coastline in Pacific Palisades through Santa Monica and West Los Angeles and merges with the Hollywood fault at the West Beverly Hills Lineament in Beverly Hills, west of the crossing of Santa Monica Boulevard and Wilshire Boulevard, where its strike is northeast. Onshore, the fault offsets the surface 2-3.5 km south of the Santa Monica Mountains range front. The graphic below shows the Santa Monica Fault in relation to a map of the area.



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Santa Monica Fault Data

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/yr.

INTERVAL BETWEEN MAJOR RUPTURES: unknown

PROBABLE MAGNITUDES: Mw6.0 - 7.0

OTHER NOTES: This is a north-dipping fault. Its slip rate may be greatest at its western end.

Santa Monica – Malibu Unified School District has facilities in both the Santa Monica municipal area and in Malibu, which is known as the Las Virgenes-Malibu Region in hazard planning. Santa Monica College has facilities in the Santa Monica municipal area.

Extent

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.

The Seismic Hazards Mapping Act, passed in 1990, addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides.vii The State Department of Conservation operates the Seismic Mapping Program for California.

Earthquake Related Hazards

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

Ground Shaking

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter (where the earthquake originates). Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

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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. Amplification can also occur in areas with deep sediment filled basins and on ridge tops.

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 Tech, 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.

Probability

Residents cannot live in southern California worrying about every one of the more than 300 faults described on the previous page. We also do not need to. As described on pages 8 and 9, the ground shaking in an earthquake depends on the magnitude, the distance from the fault and local soil conditions. For, example, look at the patterns of shaking for two different earthquakes in these figures. The magnitude 4.2 earthquake produced stronger shaking near Beverly Hills than did the much larger but more distant magnitude 7.1 Hector Mine earthquake. These patterns can be simulated by computers to make maps of the shaking to expect from any potential earthquake. Shaking intensities from all possible earthquakes are added to determine the total hazard for each site.

Each area of southern California will be shaken by a different set of earthquakes, though larger earthquakes may shake many areas. In the long run most everywhere in southern California will experience heavy earthquake shaking. Some locations will experience such shaking more frequently because they are closer to more faults or have local soil conditions that amplify earthquake shaking.

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Unfortunately, scientists do not yet have the information needed to predict which earthquakes will happen first, so we must be ready for the shaking in our area from any possible earthquake. To help, scientists have summed up the probable shaking from all our known faults to create this map. It shows the relative intensity of ground shaking in California from all anticipated future earthquakes. Areas in red and pink are nearer major, active faults and on average experience stronger earthquake shaking more frequently. Although the greatest hazard is in these areas, no region within the state is immune from the potential for earthquake damage.

The Los Angeles metropolitan area is susceptible to earthquake damage resulting from the ongoing tectonic process that characterizes coastal California. This process is dominated by the intersection of the San Andreas and the Transverse Range fault systems; the effects of this intersection are evident in the regular occurrence of moderate size earthquakes.

The Los Angeles metropolitan area, inhabited by more than 11 million people, is one of the key industrial, commercial, and cultural centers of the United States. As the area's population and development continue to expand, so does its vulnerability to damaging earthquakes. The 1971 San Fernando and the Whittier Narrows earthquakes, both moderate-sized events, demonstrate how vulnerable a complex modern urban society is to the damaging effects of earthquakes. Earthquakes of similar moderate magnitude can be expected to recur in the region on a regular basis. According to the U.S. Geological Survey, there is a strong possibility that the potential for moderate magnitude earthquakes within the Los Angeles Basin has been underestimated by seismologists and emergency planners.

Even though the losses from these and other moderate earthquakes are significant, they do not reflect the overall risk to the region, since none has been as strong as the largest credible earthquake, an 8.0+ magnitude event on the San Andreas Fault. The probability that such a large earthquake will occur sometime in the next 25 years near the Los Angeles metropolitan area is estimated to be 50 percent or greater. Projected losses would exceed those of any previous natural disaster in the United States.

The USGS database shows that there is a 97.596% chance of a major earthquake within 50 kilometers of Los Angeles, California within the next 50 years. The largest earthquake within 100 miles of Los Angeles, California was a 6.7 Magnitude in 1994.

Probability of earthquakes within the next 50 years

Within 31 Miles / 50km Above Magnitude

Magnitude	Probability
5.0	97.596%
5.1	96.383%
5.2	94.918%
5.3	93.258%
5.4	91.471%
5.5	89.628%
5.6	87.796%
5.7	86.028%
5.8	84.363%
5.9	82.828%
6.0	81.438%
6.1	80.072%
6.2	78.842%
6.3	77.565%

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Magnitude	Probability
6.4	74.313%
6.5	66.904%
6.6	59.721%
6.7	52.293%
6.8	46.900%
6.9	42.705%
7.0	38.742%
7.1	35.815%
7.2	32.655%
7.3	29.358%
7.4	26.300%
7.5	23.142%
7.6	20.093%
7.7	16.357%
7.8	12.242%
7.9	8.125%
8.0	4.394%
8.1	1.698%
8.2	0.302%
8.3	0.061%
8.4	0.013%
8.5	0.000%

Northridge Earthquake

The magnitude 6.7 Northridge earthquake occurred at 4:31 on the morning of January 17, 1994, a national holiday, when most Californians were at home asleep. Fifty-seven people lost their lives, nearly 9,000 were injured, and damage was in excess of \$20 billion.

Responding to the losses from the Northridge earthquake, Governor Pete Wilson issued Executive Order W-78-94 instructing the Seismic Safety Commission to review the effects of the earthquake and to coordinate a study of the specific policy implications arising from the Northridge earthquake, with particular attention to seismic structural safety and land-use planning.

In carrying out the Governor’s mandate, the Commission used over three dozen background reports (published separately in the *Compendium of Background Reports on the Northridge Earthquake*, SSC 94-08) that describe the relevant laws, codes, regulations, and current practices in the fields of land use planning, structure and lifeline design, construction, and earth sciences. These reports were prepared by experts who reviewed the legal, social, and physical environment in which they took place. The reports were also reviewed by over 60 stakeholders, from state agencies and professional organizations to private citizens. In addition, a number of detailed case studies were conducted on over two dozen buildings following the earthquake and published as *Northridge Buildings Case Studies*, SSC 94-06.

Effects of the Northridge Earthquake

At 4:31 a.m. on January 17, 1994, eight miles below the surface of the northwestern end of the San Fernando Valley, the magnitude 6.7 earthquake generated intense shaking that caused widespread damage and enormous economic loss. The communities of Northridge, San Fernando, West Hollywood, Santa Clarita, Fillmore, Simi Valley, and Sherman Oaks were the hardest hit, but strong

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shaking and vulnerable buildings caused extensive damage as far away as central Los Angeles, Santa Monica, and Whittier.

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Geologic and Geotechnical Aspects of the Northridge Earthquake

The Northridge earthquake occurred at a depth of approximately nine miles beneath the earth's surface on a buried, or "blind", thrust fault. It produced intense shaking and caused extensive damage that reaffirmed the potential risk from this type of fault – and the need to mitigate that risk.

The earthquake was the most recorded earthquake that has ever occurred in California. Strong-motion instrument recordings were obtained at 257 sites. Over 11,000 aftershocks have been recorded by these instruments. By maintaining and enhancing data collection programs and identifying areas that have faults capable of causing earthquakes, California can learn to better reduce its seismic risk.

The Northridge earthquake also caused secondary hazards, the most prominent of which was localized amplifications of the ground motion caused by local geologic conditions. The identification and mitigation of secondary hazards, such as landslides, liquefaction, and areas that may amplify shaking, need to be integrated into land use planning programs, building codes, and engineering practices.

The Northridge earthquake provided many geologic, seismologic and geotechnical data that are still being compiled and analyzed. A significant value of the Northridge earthquake data is their use in the development and calibration of methods for assessing seismic hazard for planning and engineering applications. For example, the Northridge event occurred on a buried fault, highlighting the need to characterize and include earthquakes on this type of fault in their analysis of the ground motion component of the overall seismic hazard. It also reaffirmed that most of the hazard associated with earthquakes typically comes from strong shaking.

Strong Ground Motion

The Northridge earthquake was a moderate earthquake that produced strong ground motions and intense shaking. The term "moderate" describes the *magnitude* of the earthquake, which in this case was 6.7. Moderate earthquakes (less than magnitude 7.0) generally produce localized shaking of intensity (that is, amplitude of motion and frequency content) on stiff structures similar to that of major earthquakes (magnitudes of 7.0 and above). However, a more extensive area experiences intense shaking in a higher-magnitude earthquake and the duration of the shaking, the length of time the strong motion lasts generally increases with increases in magnitude. Since a higher-magnitude earthquake affects a larger area and lasts longer, it can be expected to cause greater damage.

VULNERABILITY

Overview

According to the Los Angeles County HAZUS Study for earthquakes, a catastrophic earthquake anywhere in the area would potentially damage or destroy approximately 19% of its assets. Structures owned by the Santa Monica-Malibu Unified School District and Santa Monica College are estimated to be vulnerable to the same impact.

Ground Shaking

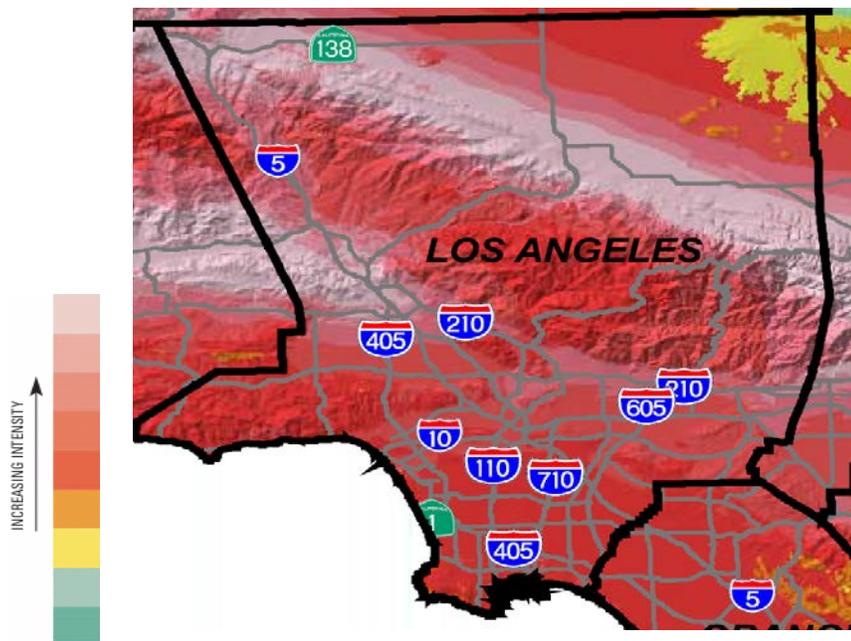
Ground shaking, landslides, liquefaction, and amplification are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude, and the type of earthquake.

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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.

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter (where the earthquake originates). Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

These regions are near major, active faults and will on average experience stronger earthquake shaking more frequently. This intense shaking can damage even strong, modern buildings. The regions distant from known, active faults will experience lower levels of shaking.



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.

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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.ⁱⁱⁱ Amplification can also occur in areas with deep sediment filled basins and on ridge tops.

Structures

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

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.

Based on Los Angeles County HAZUS Studies, in any given moderate-major earthquake scenario educational institutions can estimate that 19% of their structures will sustain moderate to major damage. Along with this estimate, we can include at risk-populations, losses to infrastructure, and other losses such as environmental, historical, economic, and human. Santa Monica Malibu Unified School District can expect that 250,509 square feet of its structures will be damaged. Santa Monica College can expect that 119,042 square feet of its structures will be damaged.

Other Area Infrastructure & Structures

Communications

Telephone systems will be affected by system failure, overloads, loss of electrical power and possible failure of some alternate power systems. Immediately after the event, numerous failures will occur coupled with saturation overloads. This will disable up to 80% of the telephone system for approximately one day. In light of the expected situation, emergency planners should not plan on the use of telephone systems for the first few days after the event. During a major emergency, communication from the City's Emergency Operations Center (EOC) to the outside world is a primary

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necessity. Twenty individual private lines are currently connected directly to the EOC from General Telephone. One line is connected through the City's telephone switch through one Police Department extension. This allows the EOC to operate independently of the City Hall network should the system be damaged or fail to operate. The obvious disadvantage of this system is the potential for damage to occur to the hard wire connections between the EOC and General Telephone. Four separate and independent radio systems are available for emergency use by EOC personnel. They are already in place and are operated by the Environmental Public Works Management (EPWM), Fire Department, the Police Department and Transportation Department. Each system has its own unique characteristics. In a disaster, it is possible that all systems could be rendered partially or completely inoperative. Additionally, the Disaster Communication Services (DCS) provides amateur radio communication. DCS Communication equipment is located at the EOC, Fire Station One, Fire Station Five, and the Alternate EOC at the Ken Edwards Center.

Environmental and Public Works Management (EPWM) Communications

The backbone of the EPWM radio system is a fully repeated receiver/transmitter located on the reservoir property in the 800-900 block of Franklin Street. There are five locations within the city that have remote control links connected to the system; City Hall; Police Headquarters; City Yards; Clover Park; and the Fire Department. The primary area of concern during a disaster would be whether or not the telephone lines would continue to function from the control points and receiver locations. If telephone lines were to fail and if the Franklin equipment were not damaged, the system would continue to operate by itself, for car to car operation, but with some range limitation. There is good possibility that the back-up system located at 2500 Michigan would enable one of these systems to work during and after a disaster.

Fire Department Communications

The Fire Department's radio system functions through three remote receivers which are connected via telephone lines to the main receiver site located at 2500 Michigan Avenue. The major disadvantage with this type of system lies with the telephone connections. If the main lines between the dispatcher and transmitter should fail, the dispatcher would lose the ability to hear or transmit to field units. To mitigate this problem, the fire department has installed a back-up transmitter at their dispatch center. Although providing only reduced coverage, this back-up will provide emergency communication should the main transmitter site fail.

Police Department Communications

The Police Department's radio system operates from their main transmitter site located on the roof of 100 Wilshire Boulevard, formally known as the GTE building. Receivers are placed in four strategic locations around the city and received signals are routed via telephone lines to Police Headquarters where the best signal is selected and routed back up to the 100 Wilshire site for transmission. As in other systems the telephone lines have been determined to be the weak link. Once this system is replaced by microwave, Police communication will be fault free as long as electrical power is not interrupted and the building structures are in place. Generator power is available at the Police Facility, 100 Wilshire and the City Yards. Some of these locations also have battery back-up as do all the sites without generator power. The City Hall telephone network, the 911 telephone network, and the Police dispatch equipment are all supported by back-up battery power which is in turn charged by the generator. Radio systems are expected to be 40 to 75% effective; microwave systems, 30% effective or less.

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Dam/Flood Control Channels

No dam/flood control channels exist in Santa Monica. Portions of the City may be subject to flooding, due to flash flooding, urban flooding (storm drain failure/infrastructure breakdown), river channel overflow, downstream flooding, etc.) The City has not historically been vulnerable to storm surge inundation associated with hurricanes and tropical storms.

Stone Canyon Reservoir

The Stone Canyon Reservoir is located in the City of Los Angeles. There is a likelihood that the 10,370 acre feet capacity Stone Canyon Reservoir above the City of Brentwood would rupture in a major earthquake, inundating Brentwood and portions of West Los Angeles, and depositing no less than several inches of water on the northeast portion of Santa Monica.

Riviera Reservoir

The Riviera Reservoir, 1252 Capri, Los Angeles, is owned by the City of Santa Monica and located about two miles north of the City in Santa Monica Canyon. The California Department of Water Resources Bulletin No.17 lists the reservoir as having a height of 40 feet and a storage capacity of 76 acre-feet, which translates to approximately 25 million gallons. The Riviera Reservoir is an off-stream, covered storage reservoir built with vertical concrete walls. These walls are keyed top and bottom to the roof and foundations. The north and west sidewalls on the south and east have compacted backfill in front of them. These are the sides through which water will pass should a failure occur. If the failure were to occur on the east side, the structures, located at the Riviera Golf Course, immediately below the dam will definitely be in jeopardy. If the south side of the dam were to fail, no structures would be harmed. However, the golf course would be flooded.

Flood waters released during the reservoir failure would empty onto the Riviera Country Golf Course, eventually flowing into the Santa Monica Creek. The flood control channels will contain the flood waters directing them to the Pacific Ocean. Santa Monica Creek located in the City of Los Angeles, is dry the majority of the time and is not likely to be carrying flow at a time when the reservoir might fail. Damage to any homes adjacent to the golf course is considered unlikely. The travel time of the flood flows to the flood control channel would be within 15 minutes.

Electrical Power

Major power plants are expected to sustain some damage due to liquefaction and the intensity of the earthquake. During the Northridge earthquake power was restored within 24 hours in most areas of Santa Monica. Up to 60% of the system load may be interrupted immediately following the initial shock. According to representatives of Southern California Edison Company, the electrical power will not be rerouted and will be lost for an undefined period of time. Much of the imported power is expected to be lost. In some areas of greatest shaking it should be anticipated that some of the distribution lines, both underground and surface, will be damaged. Much of the affected area may have service restored in days; damaged areas with underground distribution may require a longer time. Loss of Southern California Edison transmission lines is possible.

Fire Operations

Although total collapse of fire stations is not expected, possible disruption of utilities, inoperable apparatus doors and loss of power can create major problems. Numerous fires due to disruption of power and natural gas networks can be expected. Many connections to major water sources may be

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out and storage facilities would have to be relied on; water supply could vary from little or none to inadequate. First response from fire personnel is expected to be assessment of the area to establish what is needed to determine response and recovery needs. Operations may take days because of the disruption of transportation routes for fire department personnel and equipment. Secondary responses by the Fire Service after assessment will be placed upon diversion of resources to accomplish search and rescue of trapped persons and extinguishment of fires with conflagration potential. Major problems the Fire Service should expect are loss of power and water, restricted mobility due to debris, and possible loss of primary dispatch capability.

Highways and Bridges

Damage to freeway systems is expected to be major as experienced in the partial collapse of the Santa Monica Freeway (U.S. Highway 10) during the Northridge earthquake. Any inner surface transportation routes could be subject to delays and detours. A major portion of surface streets in the vicinity of freeways could be blocked due to collapsed overpasses. Many surface streets in the older central business districts will be blocked by debris from buildings, falling electrical wires and pavement damage.

Natural Gas

Damage to natural gas facilities will consist primarily of (a) some isolated breaks in major transmission lines, and (b) innumerable breaks in mains and individual service connections within the distribution systems, particularly in the areas of intense ground shaking. These many leaks in the distribution system will affect a major portion of the urban areas, resulting in a loss of service for extended periods. Fires should be expected at the sites of a small percentage of ruptures both in the transmission lines and the distribution system. Transmission pipelines serving the general basin area are most vulnerable to damage.

Railroads

No operational railroads exist in the City of Santa Monica. However, it is expected that 21 of the 59 route segments serving the Southern California region could be unavailable for post-earthquake service; the 21 segments include all major connections with the north. The post earthquake capacity to serve both the Los Angeles and Orange County areas would be very small-probably no more than 5 trains a day. This is a dramatic loss from the 120 to 140 trains per day that can currently enter the area. Many railroad bridges are susceptible to damage because of age, design and construction. Some lines could be blocked because of damage to freeway overpass structures.

Sanitation Systems

The Sewer System is operated and maintained by the City of Santa Monica. Santa Monica sewage is treated by the City of Los Angeles at the Hyperion Treatment Plant in Playa Del Rey. Many waste water treatment facilities could be out of service from 4 to 6 months depending on the damage caused by the severity of intensity and liquefaction. There is a limited volume of storage available in the waste water treatment plants; if the treatment infrastructure cannot be restored before storage is exceeded, the waste water will require discharge with emergency chlorination to reduce health hazards. Overflow of sewage through manholes and from ponds can be expected due to breakage in mains and loss of power. As a result, there will be a danger of excessive collection of explosive gas in sewer mains, and flow of untreated sewage in some street gutters. Many residential sewer connections will break and plug.

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Water Supply

Most of the City's water is provided by the Metropolitan Water District. In a major earthquake, two of the three major aqueducts serving Southern California are expected to be out of service from 3 to 6 months following the event; only the Colorado River Aqueduct is expected to remain in service. This indicates the imported water supply to Los Angeles County may be only partial for a 3 to 6 months period. Several ruptures are anticipated along the water pipelines in the County. Anticipated damage to reservoir outlet works could take weeks to repair. The majority of water wells are expected to be disabled by loss of electricity and the lack of backup power sources. In addition, shear forces could render about a third of the wells inoperative for an indefinite period. Water availability and distribution for needed life support, to treat the sick and injured and for fire suppression activities is of MAJOR concern to each community.

Repetitive Loss

The nature, infrequency and lack of ability to predict earthquakes are not conducive to maintaining Repetitive Loss records for damage to structures and property. Generally, after a destructive earthquake, damaged structures are either demolished and replaced or retrofitted to enhance their survivability in future earthquakes with the same or greater magnitude.

Potential Loss Estimates

Based on data in Los Angeles County HAZUS studies, estimated damages from a major earthquake are shown below:

Santa Monica Malibu Unified School Districts

Estimated Daily Population at Risk	Potential \$ losses to Critical Facilities or Infrastructure	Potential \$ Losses to Other Owned Buildings	Potential Other \$ Losses	Total Potential \$ Losses
11,300 enrollment 1,200 employees	\$84,726,782	0	\$19,635,000	\$104,361,782

Santa Monica College

Estimated Daily Population at Risk	Potential \$ losses to Critical Facilities or Infrastructure	Potential \$ Losses to Other Owned Buildings	Potential Other \$ Losses	Total Potential \$ Losses
33,000 enrollment 1,500 employees	\$50,307,000	0	\$11,570,000	\$61,877,000

Development Trends

State and Federal laws and regulations, along with local codes and policies, govern the design, placement and building of educational institutional facilities. In depth geological studies of potential building sites eliminate or greatly reduce the possibility of locating structures in seismically unsafe areas. New structures are built in compliance with all laws, regulations, codes and policies and meet or exceed seismic standards.

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Wild Land Urban Interface Fire

PROFILE

SMMUSD

The schools located in the City of Malibu are vulnerable to Wild Land Urban Interface Fires. The land surrounding the schools is located near state and local parks. The potential danger varies from minor to high risk depending on the locale and fuel.

SMC

The impact is minor to the college. Their location in the City of Santa Monica reduces their risk. The danger to their six repeater sites can impact their data/telecommunication capabilities. SMC will cooperate and participate in hazard mitigation and training with the City of Santa Monica whenever feasible and applicable.

Description

There are three categories of interface fire: The classic wild land/urban interface exists where well-defined urban and suburban development presses up against open expanses of wild land areas; the mixed wild land/urban interface is characterized by isolated homes, subdivisions and small communities situated predominantly in wild land settings; and the occluded wild land/urban interface exists where islands of wild land vegetation occur inside a largely urbanized area. Certain conditions must be present for significant interface fires to occur. The most common conditions include: hot, dry and windy weather; the inability of fire protection forces to contain or suppress the fire; the occurrence of multiple fires that overwhelm committed resources; and a large fuel load (dense vegetation). Once a fire has started, several conditions influence its behavior, including fuel topography, weather, drought and development.

Southern California has two distinct areas of risk for wild land fire. The foothills and lower mountain areas are most often covered with scrub brush or chaparral. The higher elevations of mountains also have heavily forested terrain. The lower elevations covered with chaparral create one type of exposure.

Past fire suppression is not to blame for causing large shrub land wildfires, nor has it proven effective in halting them. Under Santa Ana conditions, fires carry through all chaparral regardless of age class. Therefore, prescribed burning programs over large areas to remove old stands and maintain young growth as bands of firebreaks resistant to ignition are futile at stopping these wildfires.

The higher elevations of Southern California's mountains are typically heavily forested. The magnitude of the 2003 fires is the result of three primary factors: (1) severe drought, accompanied by a series of storms that produce thousands of lightning strikes and windy conditions; (2) an infestation of bark beetles that has killed thousands of mature trees; and (3) the effects of wildfire suppression over the past century that has led to buildup of brush and small diameter trees in the forests.

The Interface

One challenge Southern California faces regarding the wildfire hazard is from the increasing number of houses being built on the urban/wild land interface. Every year the growing population has expanded

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further and further into the hills and mountains, including forest lands. The increased "interface" between urban/suburban areas and the open spaces created by this expansion has produced a significant increase in threats to life and property from fires and has pushed existing fire protection systems beyond original or current design and capability. Property owners in the interface are not aware of the problems and threats they face. Therefore, many owners have done very little to manage or offset fire hazards or risks on their own property. Furthermore, human activities increase the incidence of fire ignition and potential damage.

Location

Santa Monica

The bulk of SMMUDS and SMC facilities lie within the City of Santa Monica. The SMMUSD and SMC facilities located in the City of Santa Monica are relatively isolated from the risk of large Wild Land Urban Interface Fires. Santa Monica is surrounded on all sides by densely populated urban centers. Generally the risk to Santa Monica would be from wild fire smoke created in a nearby large fire that may be influenced by air and weather patterns to lie over the city.

Threat of Urban Conflagration

Although communities like Santa Monica without an urban/wild land interface are much less likely to experience a catastrophic fire, in Southern California there is a scenario where any community might be exposed to an urban conflagration similar to the fires that occurred following the 1906 San Francisco earthquake.

Large fires following an earthquake in an urban region are relatively rare phenomena, but have occasionally been of catastrophic proportions. The two largest peace-time urban fires in history, 1906 San Francisco and 1923 Tokyo, were both caused by earthquakes.

Malibu

Wildfires present a substantial hazard to life and property in Malibu that is built within or adjacent to hillsides and mountainous areas. Consequently there is a significant potential for losses due to fire in the region.

The region has a long history of wild land fires. Future major wildfires in the area pose significant consequences to local populations and housing. Careful placement and landscape maintenance of school facilities in Malibu reduce the risk of the facilities being swept over by an advancing fire, however because of the proximity; these facilities remain at risk from the affects of fire.

Extent

According to the California Division of Forestry and Fire Protection (CAL FIRE) for the years 2013 through 2015 the following fire season totals were reported in California:

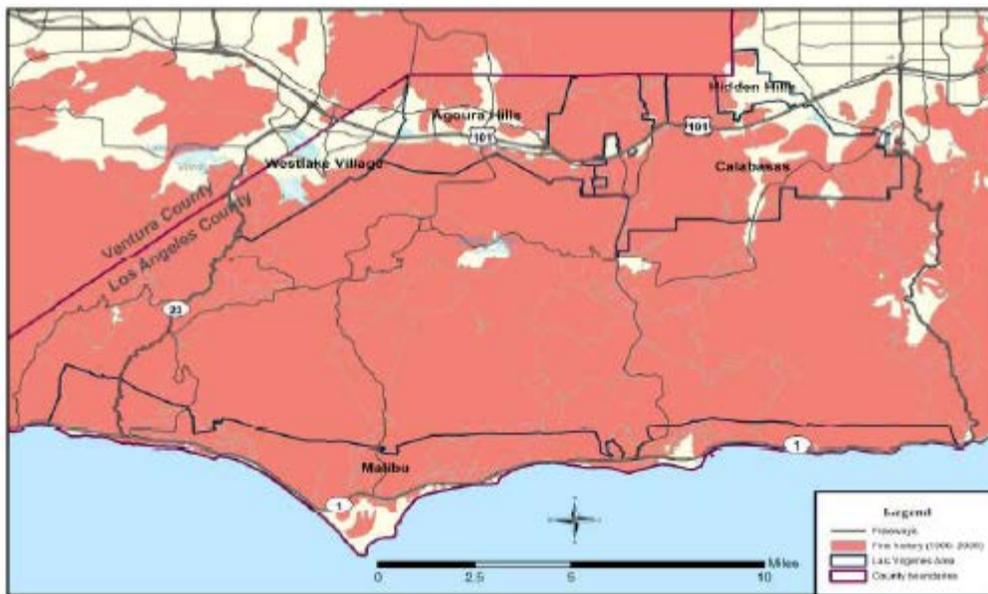
INTERVALS	FIRES	ACRES
January 1, 2015-December 31, 2015	55	773,415
January 1, 2014-December 31, 2014	51	535,318
January 1, 2013-December 31, 2013	54	546,298
Three year average (same interval)	53	618,343

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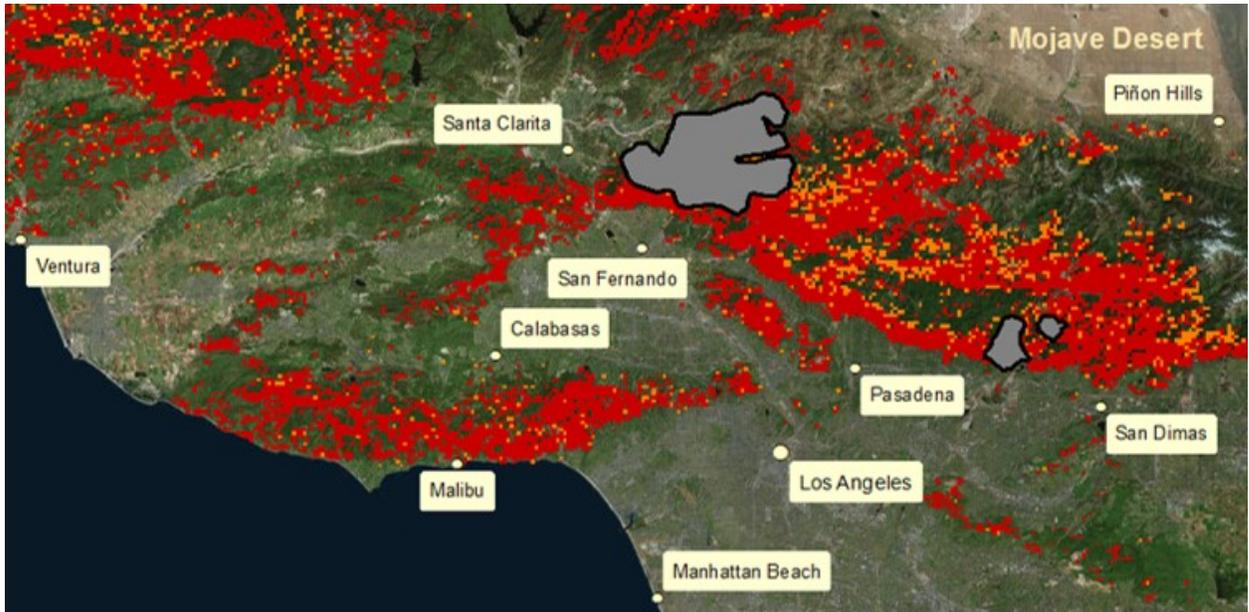
The following table shows examples of significant fires in Los Angeles County from 1993 to 2013:

Fire Name	Start Date	Acres	Structures Destroyed	Deaths
Powerhouse	May 2013	30,274	58	0
Crown	July 2010	13,918	10	0
Station	August 2009	160,557	209	2
Sayre	November 2008	11,262	634	0
Ranch (Castaic/Piru)	October 2007	58,401	10	0
Buckweed	October 2007	38,356	63	0
Topanga	November 1993	18,000	323	3

The area around Malibu has a long history of wild land fires. The map below shows the fire history of the area from 1900 to 2017. Over the past 117 years nearly the entire region has been impacted by fire.



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Probability

As depicted in red on the map above, Malibu and other cities in the region have been designated as VHFHSZs (Very High Fire Hazard Severity Zones) by the Los Angeles County Fire Department. In order to comply with state law, Malibu and the other cities in the region completed an evaluation of the following factors to determine the areas which would qualify as VHFHSZs.

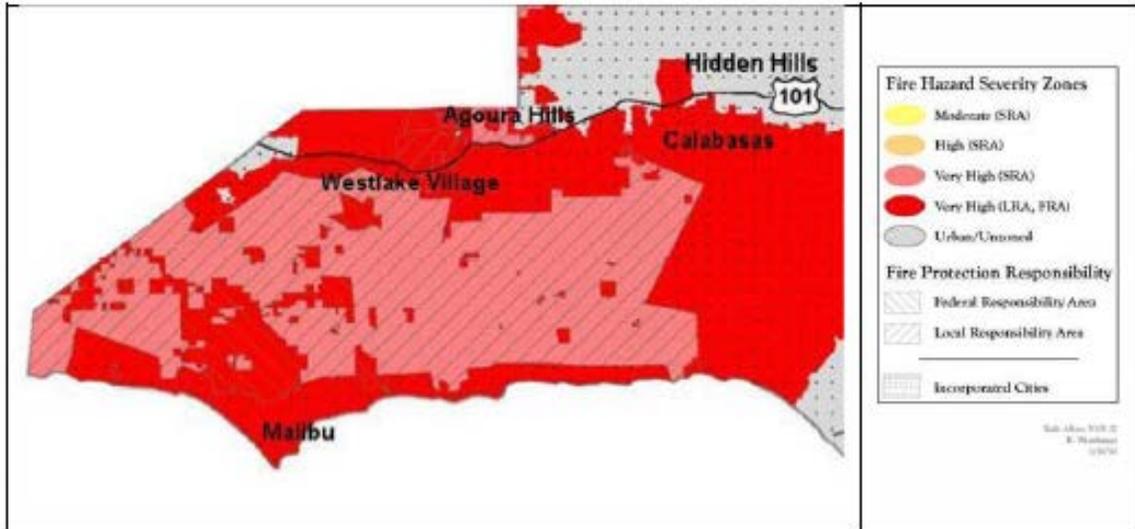
- Fuel
- Topography
- Dwelling density
- Weather
- Infrastructure
- Fire codes and ordinances as they relate to brush issues

Each factor was given a value of 1-4 with a 4 being the highest danger rating. A total score over 10 qualified the area as being one of VHFHSZ. Malibu rated 10 or above.

The National Hazard Disclosure Map below depicts the two types of fire hazard areas referred to in legislation as disclosure items in real estate transactions. These areas are:

- Wild land areas that may contain substantial forest fire risks and hazards
- Very High Fire Hazard Severity Zones (VHFHSZ)

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<p>Very High State Responsibility Areas (SRA)</p>	<p>The State Board of Forestry and Fire Protection classify areas in which the primary financial responsibility for preventing and suppressing fires is that of the state. These include: lands covered wholly or in part by timber, brush, undergrowth or grass, whether of commercial value or not; lands which protect the soil from erosion, retard run-off of water or accelerated percolation; lands used principally for range or forage purposes; lands not owned by the Federal government; and lands not incorporated. By Board regulations, unless specific circumstances dictate otherwise, lands are removed from SRA when housing densities average more than 3 units per acre over an area of 250 acres.</p>
<p>Very High Local Responsibility Areas (LRA)</p>	<p>Government Code 51175-89 directs the California Department of Forestry and Fire Protection (CAL FIRE) to identify areas of very high fire hazard severity zones within Local Responsibility Areas (LRA). Mapping of the areas, referred to as Very High Fire Hazard Severity Zones (VHFHSZ), is based on data and models of, potential fuels over a 30-50-year time horizon and their associated expected fire behavior, and expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure (including firebrands) to buildings. Local Responsibility Area VHFHSZ maps were initially developed in the mid-1990s and are now being updated based on improved science, mapping techniques, and data. In late 2005 to be effective in 2008, the California Building Commission adopted California Building Code Chapter 7A requiring new buildings in VHFHSZs to use ignition resistant construction methods and materials. These new codes include provisions to improve the ignition resistance of buildings, especially from firebrands. The updated very high fire hazard severity zones will be used by building officials for new building permits in LRA. The updated zones will also be used to identify property whose owners must comply with natural hazards disclosure requirements at time of property sale and 100 foot defensible space clearance. It is likely that the fire hazard severity zones will be used for updates to the safety element of general plans.</p>
<p>Very High Federal Responsibility Areas (FRA)</p>	<p>The State and Federal Agencies jointly develop and review the Annual Operating Plan for the protection of Federal Responsibility Areas (FRA) located within State DPAs. As identified in the Annual Operating Plan, the State provides wildland fire protection at a level, which is most nearly equivalent to the wildland fire protection that would be provided directly by the Federal Agencies on FRA of equal hazard, risk, and value. Federal Agencies retain all land management responsibilities except for wildland fire protection on FRA within the area where the State has direct protection responsibility. This does not preclude the Federal Agencies from conducting fire prevention activities on these lands.</p>

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VULNERABILITY

Overview

In order to determine the 'base hazard factor' of specific wildfire hazard sites and interface areas, several factors must be taken into account. Categories used to assess the base hazard factor include:

- Fuel
- Topography
- Weather
- Development

Base Hazard Factor

Fuel

Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is classified by volume and by type. Volume is described in terms of "fuel loading", or the amount of available vegetative fuel.

The type of fuel also influences wildfire. Chaparral is a primary fuel of Southern California wildfires. Chaparral habitat ranges in elevation from near sea level to over 5,000' in Southern California. Chaparral communities experience long dry summers and receive most of their annual precipitation from winter rains. Although chaparral is often considered as a single species, there are two distinct types; hard chaparral and soft chaparral. Within these two types are dozens of different plants, each with its own particular characteristics.

Fire has been important in the life cycle of chaparral communities for over 2 million years, however, the true nature of the "fire cycle" has been subject to interpretation. In a period of 750 years, it is generally thought that fire occurs once every 65 years in coastal drainages and once every 30 to 35 years inland.

The vegetation of chaparral communities has evolved to a point it requires fire to spawn regeneration. Many species invite fire through the production of plant materials with large surface-to-volume ratios, volatile oils and through periodic die-back of vegetation. These species have further adapted to possess special reproductive mechanisms following fire. Several species produce vast quantities of seeds which lie dormant until fire triggers germination. The parent plant which produces these seeds defends itself from fire by a thick layer of bark which allows enough of the plant to survive so that the plant can crown sprout following the blaze. In general, chaparral community plants have adapted to fire through the following methods; a) fire induced flowering; b) bud production and sprouting subsequent to fire; c) in-soil seed storage and fire stimulated germination; and d) on plant seed storage and fire stimulated dispersal.

An important element in understanding the danger of wildfire is the availability of diverse fuels in the landscape, such as natural vegetation, manmade structures and combustible materials. A house surrounded by brushy growth rather than cleared space allows for greater continuity of fuel and increases the fire's ability to spread. After decades of fire suppression —dog-hair" thickets have accumulated, which enable high intensity fires to flare and spread rapidly.

Topography

Topography influences the movement of air, thereby directing a fire course. For example, if the percentage of uphill slope doubles, the rate of spread in wildfire will likely double. Gulches and canyons can funnel air and act as chimneys, which intensify fire behavior and cause the fire to spread faster.

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Solar heating of dry, south-facing slopes produces up slope drafts that can complicate fire behavior. Unfortunately, hillsides with hazardous topographic characteristics are also desirable residential areas in many communities. This underscores the need for wildfire hazard mitigation and increased education and outreach to homeowners living in interface areas.

Weather

Weather patterns combined with certain geographic locations can create a favorable climate for wildfire activity. Areas where annual precipitation is less than 30 inches per year are extremely fire susceptible. High-risk areas in Southern California share a hot, dry season in late summer and early fall when high temperatures and low humidity favor fire activity. The so-called —Santa An winds, which are heated by compression as they flow down to Southern California from Utah create a particularly high risk, as they can rapidly spread what might otherwise be a small fire.

Recent concerns about the effects of climate change, particularly drought, are contributing to concerns about wildfire vulnerability. The term drought is applied to a period in which an unusual scarcity of rain causes a serious hydrological imbalance. Unusually dry winters, or significantly less rainfall than normal, can lead to relatively drier conditions and leave reservoirs and water tables lower. Drought leads to problems with irrigation and may contribute to additional fires, or additional difficulties in fighting fires.

Development

Growth and development in scrubland and forested areas is increasing the number of human-made structures in Southern California interface areas. Wildfire has an effect on development, yet development can also influence wildfire. Owners often prefer homes that are private, have scenic views, are nestled in vegetation and use natural materials. A private setting may be far from public roads, or hidden behind a narrow, curving driveway. These conditions, however, make evacuation and fire fighting difficult. The scenic views found along mountain ridges can also mean areas of dangerous topography. Natural vegetation contributes to scenic beauty, but it may also provide a ready trail of fuel leading a fire directly to the combustible fuels of the home itself.

Levels of Wild land Fire Protection Services

The history of California wildfires indicates that the following trends will continue. Risk from wildfire to life, property, natural resources, and firefighter safety is increasing.

- Population will grow and more people will live and use wild land areas.
- Topography and climate support ecosystems where large wildfires can be expected.
- Drought and fuel moisture conditions will be unpredictable but almost always dangerous in fire season.
- More structures will be constructed in areas that are very susceptible to wildfire.
- Historical legacy of narrow roads, difficult entrance, insufficient water supplies, flammable building construction and location that make many communities and homes wildfire-prone still exists.
- Public demand for wild land fire protection and other services will increase.
- Deteriorating forest health, increasing fuel loads and other factors have led to more intense, destructive wildfires; unabated this pattern will continue.

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Assets at risk will increase, especially watershed assets, because of the rapid rise in the demand for water to supply more people. Based on population projections, the potential for accelerating loss of protected assets, especially life and property, will be greater from disastrous wildfires.

Large wildfires do not respect political or property boundaries. Historically, a strength of California's firefighting agencies is found within a concept of mutual cooperation at the federal, state, and local levels of government. Day-to-day mutual aid for initial attack, as well as a statewide mutual-aid system for fire disasters, is the basis of this cooperation and coordination. The ability to rapidly mobilize, effectively deploy and support large numbers of specialized firefighting resources is essential to cope with large multiple fires. Hence, CDF, in cooperation with other fire agencies, must maintain infrastructure, including communications and capital improvements necessary to facilitate such a response.

Fire protection forces in California must have sufficient depth to respond to large, multiple wildfires and still prevent other small fires from becoming large damaging fires. CDF plays a key role in supplying and coordinating such forces; it should maintain and enhance this ability. The 1985 Fire Plan includes a model to provide adequate depth of resources that show CDF needing 96 additional engines and 825 personnel for managing large fires using the Incident Command System. There is a greater need today as reflected in the California Fire Plan.

SOURCE: California Fire Plan

Wildfire Smoke

Perhaps the greatest hazard to the school and college districts is the threat of harm caused by smoke from a large wildfire.

The behavior of smoke depends on many factors, including the fire's size and location, the topography of the area and the weather. Inversions are common in mountainous terrain. Smoke often fills the valleys, where people usually live. Smoke levels are unpredictable: a wind that usually clears out a valley may simply blow more smoke in, or may fan the fires, causing a worse episode the next day. Smoke concentrations change constantly. By the time public health officials can issue a warning or smoke advisory, the smoke may already have cleared. National Weather Service satellite photos, weather and wind forecasts, and knowledge of the area can all help in predicting how much smoke will come into an area, but predictions are rarely accurate for more than a few hours.

Estimating Particulate Matter Levels

Particulate matter levels are measured as micrograms (*mg*) of particles per cubic meter of air. Most particle monitoring devices measure particulate matter with a median diameter of 10 micrometers or less (PM₁₀). An increasing number of monitors now measure smaller particles, also known as fine particles, which have median diameters of 2.5 micrometers or less (PM_{2.5}). In wildfire smoke, most particles are less than one micrometer, so the values obtained by measuring either PM₁₀ or PM_{2.5} are virtually interchangeable, and are treated as such in this document.

Communities with established air quality programs may issue public alerts based on predicted 24-hour average concentrations of particulate matter. Smoke emergencies need to be handled differently, however, as smoke concentrations generally tend to be very high for only a few hours at a time. These short-term peaks may cause some of the most deleterious health effects.

Another factor is public perception. Since smoke is so effective at scattering light, visibility changes drastically as smoke concentrations increase. Even without being told, the public can tell when the

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smoke is getting worse, and they want authorities to respond to changes as they are happening. Many communities don't have continuous PM monitoring, and therefore need to estimate particle levels. Continuous PM monitors give an instant reading of particulate matter concentrations. However, visibility can sometimes serve as a good surrogate. Even in areas with monitors, this index can be useful, since smoke levels change constantly and can vary dramatically even between monitors that are near one another. A visibility index gives members of the public a quick way to assess smoke levels for themselves.

Estimating particulate matter concentrations from visibility assessment

Categories	Visibility in Miles	Particulate matter levels* (1-hour average, $\mu\text{g}/\text{m}^3$)
Good	10 miles and up	0 - 40
Moderate	6 to 9	41 - 80
Unhealthy for Sensitive Groups	3 to 5	81 - 175
Unhealthy	1 1/2 to 2 1/2	176 - 300
Very Unhealthy	1 to 1 1/4	301 - 500
Hazardous	3/4 mile or less	over 500

*In wildfire smoke, most particles are less than one micrometer, so the values obtained by measuring either PM₁₀ or PM_{2.5} are virtually interchangeable, and are treated as such in this document. Therefore, in the table above, the different particle levels can be measured using either PM₁₀ or PM_{2.5} monitors.

Smoke Hazards as a Result of Wild Land Fires

Smoke is composed primarily of carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons and other organic chemicals, nitrogen oxides, trace minerals and several thousand other compounds. The actual composition of smoke depends on the fuel type, the temperature of the fire, and the wind conditions. Different types of wood and vegetation are composed of varying amounts of cellulose, lignin, tannins and other polyphenolics, oils, fats, resins, waxes and starches, which produce different compounds when burned.

Particulate matter is the principal pollutant of concern from wildfire smoke for the relatively short-term exposures (hours to weeks) typically experienced by the public. Particulate matter is a generic term for particles suspended in the air, typically as a mixture of both solid particles and liquid droplets. Particles from smoke tend to be very small - less than one micrometer in diameter. For purposes of comparison, a human hair is about 60 micrometers in diameter. Particulate matter in wood smoke has a size range near the wavelength of visible light (0.4 – 0.7 micrometers). Thus, smoke particles efficiently scatter light and reduce visibility. Moreover, such small particles can be inhaled into the deepest recesses of the lung and are thought to represent a greater health concern than larger particles.

Another pollutant of concern during smoke events is carbon monoxide. Carbon monoxide is a colorless, odorless gas, produced by incomplete combustion of wood or other organic materials. Carbon monoxide levels are highest during the smoldering stages of a fire. Other air pollutants, such as acrolein, benzene, and formaldehyde, are present in smoke, but in much lower concentrations than particulate matter and carbon monoxide.

The effects of smoke range from eye and respiratory tract irritation to more serious disorders, including reduced lung function, bronchitis, exacerbation of asthma, and premature death. Studies have found that fine particles are linked (alone or with other pollutants) with increased mortality and aggravation of pre-existing respiratory and cardiovascular disease. In addition, particles are respiratory irritants, and exposures to high concentrations of particulate matter can cause persistent cough, phlegm, wheezing

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and difficulty breathing. Particles can also affect healthy people, causing respiratory symptoms, transient reductions in lung function, and pulmonary inflammation. Particulate matter can also affect the body's immune system and make it more difficult to remove inhaled foreign materials from the lung, such as pollen and bacteria. The principal public health threat from short-term exposures to smoke is considered to come from exposure to particulate matter.

Wildfire smoke also contains significant quantities of respiratory irritants. Formaldehyde and acrolein are two of the principal irritant chemicals that add to the cumulative irritant properties of smoke, even though the concentrations of these chemicals individually may be below levels of public health concern.

Sensitive Populations

Most healthy adults and children will recover quickly from smoke exposures and will not suffer long-term consequences. However, certain sensitive populations may experience more severe short-term and chronic symptoms from smoke exposure. Much of the information about how particulate matter affects these groups has come from studies involving airborne particles in cities, though a few studies examining the effects of exposure to smoke suggest that the health effects of wildfire smoke are likely to be similar. More research is needed to determine whether particles from wildfires affect susceptible subpopulations differently.

Individuals with asthma and other respiratory diseases: Levels of pollutants that may not affect healthy people may cause breathing difficulties for people with asthma or other chronic lung diseases. Asthma, derived from the Greek word for panting, is a condition characterized by chronic inflammation of the airways, with intermittent bronchial-constriction and airflow obstruction, causing shortness of breath, wheezing, chest tightness, coughing, sometimes accompanied by excess phlegm production. During an asthma attack, the muscles tighten around the airways and the lining of the airways becomes inflamed and swollen, constricting the free flow of air. Because children's airways are narrower than those of adults, irritation that would create minor problems for an adult may result in significant obstruction in the airways of a young child. However, the highest mortality rates from asthma occur among older adults. Individuals with chronic obstructive pulmonary disease (COPD), which is generally considered to encompass emphysema and chronic bronchitis, may also experience a worsening of their conditions because of exposure to wildfire smoke. Patients with COPD often have an asthmatic component to their condition, which may result in their experiencing asthma-like symptoms. However, because their pulmonary reserve has typically been seriously compromised, additional bronchial-constriction in individuals with COPD may result in symptoms requiring medical attention. Epidemiological studies have indicated that individuals with COPD run an increased risk of requiring emergency medical care after exposure to particulate matter or forest fire smoke. Exposure to smoke may also depress the lung's ability to fight infection. People with COPD may develop lower respiratory infections after exposure to wildfire smoke, which may require urgent medical care as well. In addition, because COPD is usually the result of many years of smoking, individuals with this condition may also have heart disease, and are potentially at risk from both conditions.

Individuals with airway hyper-responsiveness: A significant fraction of the population may have airway hyper-responsiveness, an exaggerated tendency of the bronchi and bronchioles to constrict in response to respiratory irritants and other stimuli. While airway hyper-responsiveness is considered a hallmark of asthma, this tendency may also be found in many non-asthmatics, as well; for example, during and following a lower respiratory tract infection. In such individuals, smoke exposure may cause bronchial-spasm and asthma-like symptoms.

Individuals with cardiovascular disease: Diseases of the circulatory system include, among others, high blood pressure, cardiovascular diseases, such as coronary artery disease and congestive heart failure, and cerebral-vascular conditions, such as atherosclerosis of the arteries bringing blood to the brain. These chronic conditions can render individuals susceptible to attacks of angina pectoris, heart attacks, sudden death due to a cardiac arrhythmia, acute congestive heart failure, or stroke.

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Cardiovascular diseases represent the leading cause of death in the United States, responsible for about 30 to 40 percent of all deaths each year. The vast majority of these deaths are in people over the age of 65. Studies have linked urban particulate matter to increased risks of heart attacks, cardiac arrhythmias, and other adverse effects in those with cardiovascular disease. People with chronic lung or heart disease may experience one or more of the following symptoms: shortness of breath, chest tightness, pain in the chest, neck, shoulder or arm, palpitations, or unusual fatigue or lightheadedness. Chemical messengers released into the blood because of particle-related lung inflammation may increase the risk of blood clot formation, angina episodes, heart attacks and strokes.

The Elderly. In several studies researchers have estimated that tens of thousands of elderly people die prematurely each year from exposure to particulate air pollution, probably because the elderly are more likely to have pre-existing lung and heart diseases, and therefore are more susceptible to particle-associated effects. The elderly may also be more affected than younger people because important respiratory defense mechanisms may decline with age. Particulate air pollution can compromise the function of alveolar macrophages, cells involved in immune defenses in the lungs, potentially increasing susceptibility to bacterial or viral respiratory infections.

Children. Children, even those without any pre-existing illness or chronic conditions, are considered a sensitive population because their lungs are still developing, making them more susceptible to air pollution than healthy adults. Several factors lead to increased exposure in children compared with adults: they tend to spend more time outside; they engage in more vigorous activity, and they inhale more air (and therefore more particles) per pound of body weight. Studies have shown that particulate pollution is associated with increased respiratory symptoms and decreased lung function in children, including symptoms such as episodes of coughing and difficulty breathing. These can result in school absences and limitations of normal childhood activities.

Pregnant Women. While there have not been studies of the effects of exposure to wildfire smoke on pregnancy outcomes, there is substantial evidence of adverse effects of repeated exposures to cigarette smoke, including both active and passive smoking. Wildfire smoke contains many of the same compounds as cigarette smoke. In addition, recent data suggest that exposures to ambient air pollution in cities may result in low birth weight and possibly other, more serious adverse reproductive effects. Therefore, it would be prudent to consider pregnant women as a potentially susceptible population as well.

Smokers. People who smoke, especially those who have smoked for many years, have already compromised their lung function. However, due to adaptation of their lungs to ongoing irritation, smokers are less likely to report symptoms from exposure to irritant chemicals than are nonsmokers. However, they may still be injured by wildfire smoke. Therefore, some smokers may unwittingly put themselves at greater risk of potentially harmful wildfire smoke exposures, believing that they are not being affected.

Hazards Associated with Cleanup of Wild Land Fires

Heat sources may remain as a result of smoldering wood or other debris that could reignite if contact is made with a combustible material or if oxygen becomes available. Workers and employers must therefore take extra precautions.

Cleanup activities may involve walking on unstable surfaces such as construction debris, trees and other vegetation. Piles of debris and other unstable work surfaces create a risk for traumatic injury from slips, falls, puncture wounds from nails and sharp objects, and collapsing materials. Extreme caution is necessary when working on these surfaces. Protective equipment, such as hard hats, safety glasses, leather gloves, and steel toe boots should be considered to minimize the risk of injury.

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Cleanup workers are at risk for developing serious musculoskeletal injuries to the hands, back, knees, and shoulders. Special attention is needed to avoid back injuries associated with manual lifting and handling of debris and building materials.

Cleanup workers are at serious risk for developing heat stress. Excessive exposure to hot environments can cause a variety of heat-related problems, including heat stroke, heat exhaustion, heat cramps, and fainting

Fires can rearrange and damage natural walkways, as well as sidewalks, parking lots, roads, and buildings. Never assume that fire-damaged structures or ground are stable. Buildings that have been burned may have suffered structural damage and could be dangerous.

Fires to commercial and residential buildings and water used to fight the fire can dislodge tanks, drums, pipes, and equipment, which may contain hazardous materials such as pesticides or propane. Containers may be damaged by fire and heat.

Wild Land Fire Protection Fiscal Issues

Multi-year fiscal problems are occurring at all governmental levels, constraining the availability of funding to address the increasing workload, costs and losses of the California wild land fire protection system.

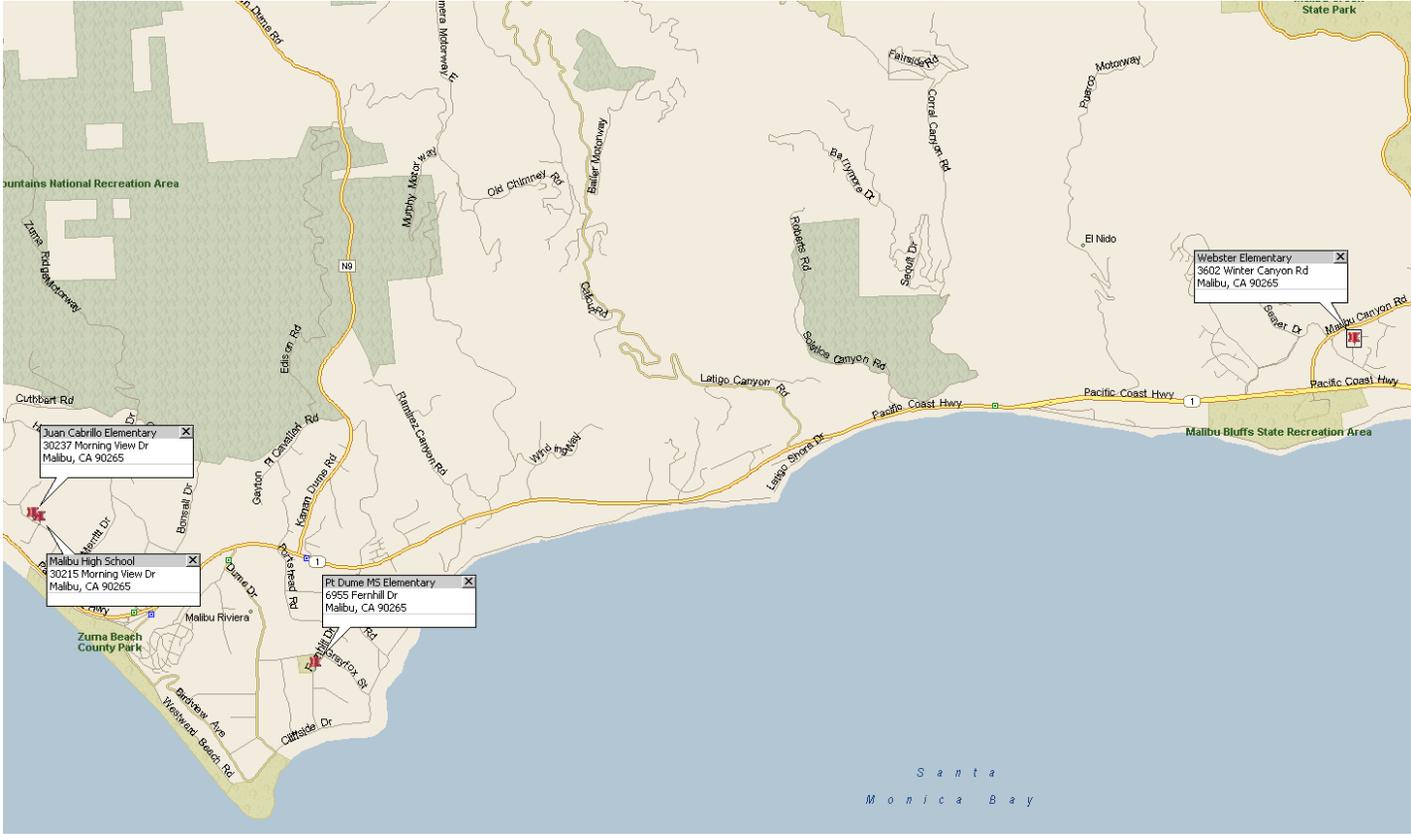
The increasing number of structures and people in California wild lands and the growing importance of the state's natural resources create a growing demand to fund additional wild land fire protection services for both the structures and the wild land resource assets.

The primary fiscal responsibilities for the initial attack responsibilities: (1) for federal wild land fire protection are the federal taxpayers, (2) for privately owned wild land fire protection are the state taxpayers, and (3) for structure fire protection in wild land areas are the local taxpayers. However, during the annual fire season, the state and federal taxpayers provide a minimum level of structural fire protection that is incidental to their primary missions of wild land fire protection. Similarly, in most wild land areas, local taxpayers provide year-round wild land fire protection on both state and federal responsibility areas that is incidental to the local government primary mission of structural fire protection.

Structures

Structures threatened would be those Santa Monica Malibu Unified School District facilities located in Malibu. On the next page is a map showing the location and proximity to public lands and recreation areas prone to wild fires.

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Santa Monica Malibu Unified School District Facilities Located in Malibu Area

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Other Assets at Risk

Resource	Asset Value Basis	Level of Disaggregation	Levels of Value*	Strength of Methodology
Life and safety	Non-economic values are not quantified	By population density	National, state and local	High
Air quality	Average dollar impact from particulate matter (PM10) emitted per acre burned; non-commodity assets also exist	Air quality basins (13) and basic fuel types (2)	National, state and local	Low
Range	Dollar cost of replacement feed per acre of rangeland burned	Values by regions (8), cover types (9) and ownership classes (5)	State and local	High
Recreation on public wildlands	Average dollar loss per acre burned; non-commodity assets also exist	Statewide average by public ownership categories (5)	National, state and local	Low
Structures	Average dollar loss per home burned; non-commodity assets also exist	Statewide average	State and local	High
Timber	Average dollar loss per acre burned	Values by regions (6) and ownership categories (4)	National, state and local	High
Water and watersheds	Range of economic impacts per acre for value of increased water yields; cost of sediment removal; loss of reservoir capacity; effects on hydroelectric generation; costs of watershed rehabilitation; non-commodity assets also exist	Statewide ranges of economic impacts	National, state and local	Low to medium
Wildlife, habitat, plants and ecosystem health	Qualitative discussion of the tradeoffs in fire impacts	Statewide	State and local	Low
Other resource assets, cultural and historic resources, unique scenic areas	These non-commodity assets cannot be quantified adequately; descriptive enumeration only	Statewide (generically) or place-specific	National, state and local	Low to medium

Repetitive Loss

Though many wild land fires have occurred, especially in the Malibu area, SMMUSD facilities have never been damaged by fire. Smoke exposure to students and staff at school facilities has historically been the primary concern and measures have been put in place to mitigate any consequences.

Potential Loss Estimates

Even though no historical loss is recorded for school facilities, the fact remains that the area in Malibu where school facilities are located is rated as a Very High Fire Hazard Severity Zone. Los Angeles County data based on past wild fire losses indicates that 2% of school facilities would either be destroyed or sustain major damage. Based on this, the following table is the calculated loss estimate for Santa Monica Malibu Unified School District:

Estimated Daily Population at Risk	Potential \$ losses to Critical Facilities or Infrastructure	Potential \$ Losses to Other Owned Buildings	Potential Other \$ Losses	Total Potential \$ Losses
1,800 enrollment	\$1,411,000	0	\$74,000	\$1,485,000

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170 employees				
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Development Trends

Population increases in wild land areas have raised strategic concerns about wildfire protection. Clearance laws, zoning, and related fire safety requirements implemented by state and local authorities need to address these factors:

Fire-resistant construction standards: We can no longer view a wild land fire as affecting only watershed, wildlife and vegetation resources; we must now consider their effect on people and their structures. Further, this increase in people and structures have provided increasing ignition sources for fire, which, due to their proximity, can spread into the wild land. Building construction standards that encompass such items as roof covering, opening protection and fire resistance are designed to both protect the structure from external fires and to contain internal fires for longer periods.

Hazard reduction near structures (defensible space): The public image of defensible space as part of pre-fire management should be expanded to include such immediate benefits as improved aesthetics, increased health of large remaining trees and other valued plants, and enhanced wildlife habitat. The use of defensible space that provides landscape naturalness, along with its compatibility with wildlife, water conservation and forest health, should be emphasized.

Infrastructure: Effective fire protection in the intermix cannot be accomplished solely through the acquisition of equipment, personnel and training. The area's infrastructure also must be considered during the formulation of development plans. Specific fire hazard areas should be evaluated and reasonable safety standards adopted, covering such elements as adequacy of nearby water supplies, routes or throughways for fire equipment, addresses and street signs, and maintenance. The ultimate objectives for fire-safe planning and construction are (1) improve the ability of communities and other high value assets that will survive a large, high intensity wildfire with minimal fire suppression effort and (2) provide for improved citizen and firefighter safety.

SOURCE: California Fire Plan

School Facility Construction

School facility construction in Wild Land Fire-prone areas is intricately scrutinized well before the first shovel load is scooped. Studies of historical fire data, vegetation screening, infrastructure support, ingress, egress, population trends and many other factors are done. All these factors are used to determine whether a school facility would be safe. During the building process, construction codes and standards are strictly adhered to.

Existing facilities are fastidiously maintained with the fire risk utmost in the process. Landscaping is designed to maintain the lowest possible threat to wildfire encroachment.

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Landslide/Mudslide

PROFILE

Description

Landslides are a serious geologic hazard in almost every state in America. Nationally, landslides cause 25 to 50 deaths each year. The best estimate of direct and indirect costs of landslide damage in the United States range between \$1 and \$2 billion annually. As a seismically active region, California has had significant number of locations impacted by landslides. Some landslides result in private property damage; other landslides impact transportation corridors, fuel and energy conduits, and communication facilities. They can also pose a serious threat to human life.

Landslides can be broken down into two categories: (1) rapidly moving (generally known as debris flows), and (2) slow moving. Rapidly moving landslides or 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. Slow moving landslides can cause significant property damage, but are less likely to result in serious human injuries.

The topography of the City of Santa Monica is essentially flat and there is little (or no) danger of landslide activity. However, the Palisades, located in the northwest portion of the City, is a sheer cliff of fragile sandstone that rises about 100 feet above the coast that separates the northern part of the City from the beach below. As this area is susceptible to landslides, mitigation projects have been enacted.

The City of Santa Monica does have liquefaction zones. Since the settlement of the city in the 1800's, there have not been any instances of liquefaction associated with seismic activity.

Fortunately, there are no critical facilities that are at risk of being impacted by landslides in Santa Monica. The built environment that could be impacted by landslide activity at the Bluffs includes public walkways, lighting, irrigation systems, a senior center, and other structures in Palisades Park.

Within the Malibu region, there are areas that are susceptible to landslides due to slope instability, fire activity, rainfall and the geologic make-up of the area. Although Malibu prohibits development in areas that may be prone to landslides, there are existing properties that may be susceptible to landslide activity.

Location

Landslides are a common hazard in California. Weathering and the decomposition of geologic materials produces conditions conducive to landslides and human activity further exacerbates many landslide problems. Many landslides are difficult to mitigate, particularly in areas of large historic movement with weak underlying geologic materials. As communities continue to modify the terrain and influence natural processes, it is important to be aware of the physical properties of the underlying soils as they, along with climate, create landslide hazards. Even with proper planning, landslides will continue to threaten the safety of people, property, and infrastructure, but without proper planning, landslide hazards will be even more common and more destructive.

The increasing scarcity of build-able land, particularly in urban areas, increases the tendency to build on geologically marginal land. Additionally, hillside housing developments in Southern California are prized for the view lots that they provide.

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Rock falls occur when blocks of material come loose on steep slopes. Weathering, erosion, or excavations, such as those along highways, can cause falls where the road has been cut through bedrock. They are fast moving with the materials free falling or bouncing down the slope. In falls, material is detached from a steep slope or cliff. The volume of material involved is generally small, but large boulders or blocks of rock can cause significant damage.

Earth flows are plastic or liquid movements in which land mass (e.g. soil and rock) breaks up and flows during movement. Earthquakes often trigger flows. Debris flows normally occur when a landslide moves downslope as a semi-fluid mass scouring, or partially scouring soils from the slope along its path. Flows are typically rapidly moving and also tend to increase in volume as they scour out the channel. Flows often occur during heavy rainfall, can occur on gentle slopes, and can move rapidly for large distances.

Landslide Conditions

Landslides are often triggered by periods of heavy rainfall. Earthquakes, subterranean water flow and excavations may also trigger landslides. Certain geologic formations are more susceptible to landslides than others. Human activities, including locating development near steep slopes, can increase susceptibility to landslide events. Landslides on steep slopes are more dangerous because movements can be rapid.

Although landslides are a natural geologic process, the incidence of landslides and their impacts on people can be exacerbated by human activities. Grading for road construction and development can increase slope steepness. Grading and construction can decrease the stability of a hill slope by adding weight to the top of the slope, removing support at the base of the slope, and increasing water content. Other human activities effecting landslides include: excavation, drainage and groundwater alterations, and changes in vegetation.

Wild land fires in hills covered with chaparral are often a precursor to debris flows in burned out canyons. The extreme heat of a wildfire can create a soil condition in which the earth becomes impervious to water by creating a waxy-like layer just below the ground surface. Since the water cannot be absorbed into the soil, it rapidly accumulates on slopes, often gathering loose particles of soil in to a sheet of mud and debris. Debris flows can often originate miles away from unsuspecting persons, and approach them at a high rate of speed with little warning.

Natural Conditions

Natural processes can cause landslides or re-activate historical landslide sites. The removal or undercutting of shoreline-supporting material along bodies of water by currents and waves produces countless small slides each year. Seismic tremors can trigger landslides on slopes historically known to have landslide movement. Earthquakes can also cause additional failure (lateral spreading) that can occur on gentle slopes above steep streams and riverbanks.

Particularly Hazardous Landslide Areas

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; and
- Fan-shaped areas of sediment and boulder accumulation at the outlets of canyons.

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- Canyon areas below hillside and mountains that have recently (within 1-6 years) been subjected to a wild land fire.

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Extent

Santa Monica

The City of Santa Monica's Roads Division has responded to debris clearance resulting from sloughing at the Bluffs often over the past several years, following significant rainfalls. In 1994, 1995, 1998, and most recently in 2005, the Pacific Coast Highway below the Bluffs has been closed for debris clearance. There have been no significant damages to property resulting from these landslides, however there are clear economic and other impacts due to the closure of the Pacific Coast Highway when debris clearance activities are undertaken. The California Incline, the roadway south of the Bluffs, has also been closed due to sloughing from the Bluffs, intermittently over the years. When these roads are closed, there is a significant economic impact to the Santa Monica area and its neighbors. Traffic is either diverted to alternate routes, or is slowed to a point that reduces traffic flows a great deal. For example, whenever there is sloughing from the Bluffs that impacts the PCH or the California Incline, these routes are generally impacted for several days, until debris is safely removed.

Other Relevant Santa Monica landslide information:

Much of the following information was collected in a meeting with the City of Santa Monica's Principal Civil Engineer, David Britton. Mr. Britton has been with the City of Santa Monica's Engineering Department for more than twenty five years and is well-versed in the landslide issues and mitigation steps that have been undertaken by the City of Santa Monica. Many of the issues addressed in this meeting were raised in FEMA's initial review of the City of Santa Monica's Local Hazard Mitigation Plan.

The Palisades Bluffs rise 30 to 150 feet above Pacific Coast Highway from the McClure tunnel to the northerly city limits. The slope of the bluff is steep to near vertical at various locations with deeply eroded gullies and areas of landslide debris. After the January 17, 1994 Northridge earthquake, various sections were impacted by earth falls, debris and mudflows, fractures and slides. Further sloughing after the disaster level storms of 1995 and 1998 exacerbated the damage.

At that time the City retained the services of Dames and Moore, geotechnical engineers, to conduct an evaluation of the earthquake and storm damaged areas of Palisades Park and the bluffs. Several remedial measures were taken as a result of the recommendations from the studies including relocating portions of the fence in Palisades Park; installing subsurface drains in the face of the bluff; landscaping restoration; and grading Palisades Park to direct the existing surface drainage into underground storm drain devices in Ocean Avenue to reduce the amount of surface runoff.

In 1998, Congress passed the Transportation Equity Act for the 21st Century. One of the high priority projects approved under that Act was the Santa Monica Palisades Bluff Improvement Project. The federal funding authorized for the construction of the project amounts to \$6,000,000.

On February 12, 2002, the City Council approved a professional services contract with URS Corporation to provide a geotechnical study for the Santa Monica Palisades Bluff Improvement project. The intent of the geotechnical study was to evaluate the current conditions of the soils within the

existing bluff area and to provide recommendations to mitigate existing damage and potential future deterioration of the bluffs.

In 2015-2017 The City of Santa Monica, using federal funds, conducted a major reconstruction of the bluffs and the California Incline in order to stabilize the bluffs and the roadway.

Malibu

Several areas around the Malibu region have experienced landslide events due to heavy rains or seismic events. Landslide events in the City of Malibu have included the Calle del Barco, Kanan, Pacific Coast Highway, Las Flores, Love, and Malibu Road landslides. Due to the topography of the

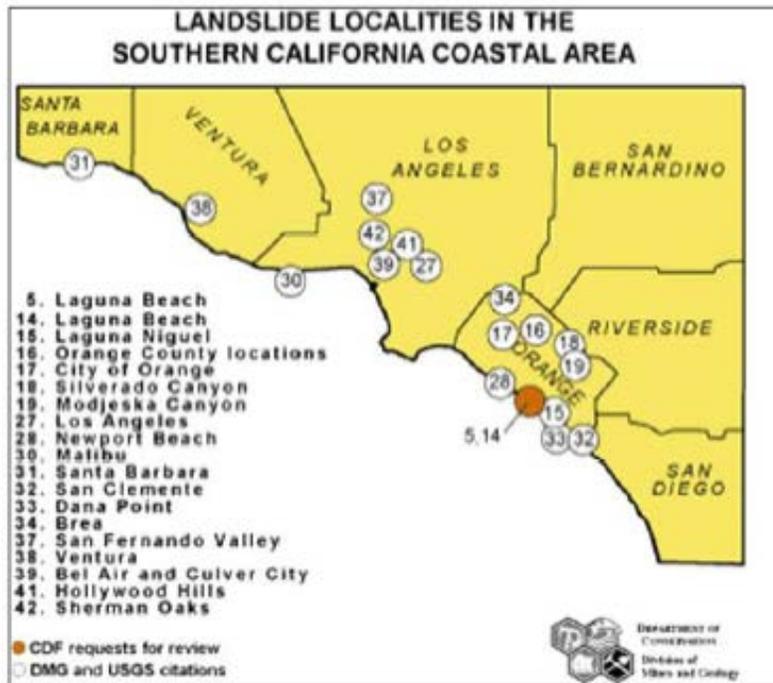
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area, landslides in Malibu can severely disrupt transportation at a regional level. The Pacific Coast Highway is a heavily used transportation route and road closures due to landslides are a major concern.

In December 1997, homes in Malibu were damaged by waves and sea cliff erosion. On February 7, 1998, Malibu Canyon Road closed due to mudslides and rock falls. On February 8, an ocean-eroded cliff buckled causing one home to collapse and two others threatened. The homes along Broad Beach Road were undermined by high tides. On February 16, several homes along the beach of Malibu were damaged by the high surf and rainstorms,

On February 23, Pacific Coast Highway, Topanga Canyon Boulevard and Malibu Canyon Road were blocked by mudslides. A Union Pacific railroad trestle was undermined by the surging flows of the Ventura River and was not reopened to rail traffic for weeks. On February 24, in Malibu's Las Flores Canyon, officials called for evacuation of about a dozen homes because of unstable ground. Also, more mudslides on Pacific Coast Highway forced officials to close the local courthouse. On February 25, a 140-foot retaining wall partially collapsed, damaging two homes above the slide on Calle del Barco. The 20-year-wall along a narrow road just above Pacific Coast Highway began to give way during the evening.

The Landslide Localities in Southern California Coastal Area Map below depicts the landslides throughout the area, which occurred in 1997-1998.



Geology

Soil and rock that comprises hill slopes will eventually move downhill. Some of this material will move grain-by-grain through erosion and soil creep, and some will move as larger slabs or liquefied masses, commonly called landslides and mudslides. Geologists generally classify landslides on their shape, rate (speed) of movement, type of motion, and material properties. In most classification schemes, there are three distinct types of movement: flow (e.g. debris flows and mudflows); sliding along a discrete plane or failure (e.g. debris slide); and falling (e.g. rock falls and avalanches).

Landslides can be small, involving only a few cubic yards of material, or large, involving more than a square mile of land. Some landslides are shallow, only a few feet deep, while others can

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be hundreds of feet deep. Landslides can be slow, and move only a few inches a year. It can also be fast and move at tens to hundreds of miles per hour.

While most hill slopes are marginally stable under dry conditions, the addition of water from rainfall, snowmelt, or human activities (e.g. watering lawns) can radically alter the character of the soil and weathered rock and lessen the stability of slopes. Generally, all other conditions being equal, if groundwater is at or near the ground surface, there is a great probability that a landslide or debris flow will occur.

Another major factor that may trigger landslides is sudden changes in the shape of the slope. Slope changes that may trigger landslides include, but are not limited to, man-made cuts and fills, undermining of slopes by stream erosion or formation of gullies, or undermining and overloading of slopes due to landslide movement on adjacent land. In fact, landslide movement in one part of a hill slope can radically affect the stability of adjacent slopes. Events at Rio Nido in Sonoma County illustrate how complex the changes in stability can be. In simplified terms, the Rio Nido landslide began when a block of soil and rock, high on a ridge, rotated down and out on the slope. This movement pushed a bulge of material onto the existing steep slope at the toe of the landslide. Fissures opened at both the top of the rotational block and within the toe of the landslide. The rotational movement of the landslide also undermines up-slope areas (decreasing stability), changing the groundwater flow patterns (increasing stability in parts of the slide while decreasing stability in other). Because the toe of the landslide was no longer supported by the surrounding slope (the slope became overly steep), the saturated outside edge failed by toppling and breaking apart. This loose material then mobilized as debris flow down a stream channel, picking up additional debris, including sediment and trees, as it flowed toward the houses on the canyon flow below. Immediate concerns were that the landslide mass would continue to move high on the slope, and as it did, the entire mass would break apart and fail as a massive debris flow that would inundate a much larger down slope area. Currently, the rotational component of the Rio Nido landslide has not shifted since monitoring equipment was installed two weeks after the failure began.

Hillsides may also be more vulnerable to debris flows following wildfires. Removal of vegetation generally makes hillsides more susceptible to erosion and landslides. After a forest fire there is reduction in the amount of vegetation on the hillsides to hold the soil in place. Also, the roots decay over a period of years following the fire. This results in an increased landslide hazard for 3 to 5 years following a large fire. In 1997, Southern California had 27 wildfires greater than 300 acres. At least 22 of those sites had some erosion damage in 1987, and it came in the form of debris flows and minor flooding.

There is evidence to suggest that most landslides and debris flows occur where they have happened in the past. For example, the Rio Nido landslide is next to an existing landslide deposit identified on a CA Division of Mines and Geology (DMG) map.

Though landslides are fairly common in California's hillside areas, there is considerable pressure to construct new homes at these locations. Some communities require site-specific investigations prior to permitting development. Engineers attempt to stabilize slopes by providing drainage, flattening slopes, and filling-in valleys. Sometimes, these modified slopes and fills require maintenance and while many of these modified slopes could last decades, some failures occur. This is what happened to houses in Laguna Niguel, Orange County, which were built on an engineered slope that had shown signs of distress for three years.

Just as there is pressure to develop hill slope areas, the beautiful ocean views from sea cliffs make them desirable places to live. During the recent disaster, accelerated cliff erosion in Pacifica resulted from slightly higher than normal seasonal ground water infiltration. When the ground becomes saturated, wave action can more easily remove materials that have fallen to the bottom of the cliffs, temporarily accelerating cliff retreat in the areas up slope. The rocks in these particular cliffs are highly fractured and nonresistant. They include sandstone, shale, and metamorphic rocks that are prone to rapid erosion during the rainy season. Erosion usually has occurred episodically, not continually at the same time. This year the cliffs locally eroded as much as 10 feet, compared to the frequently noted annual averages of 3 to 4 inches.

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Probability

Past landslide events have caused major property damage or significantly impacted city residents, and continuing to map city landslide and debris flow areas will help in preventing future loss. Factors included in assessing landslide risk 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 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.

Landslides can affect utility services, transportation systems, and critical lifelines. 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.

Although landslides are a natural occurrence, human impacts can substantially affect the potential for landslide failures in the City of Santa Monica. Proper planning and geotechnical engineering can be exercised 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.

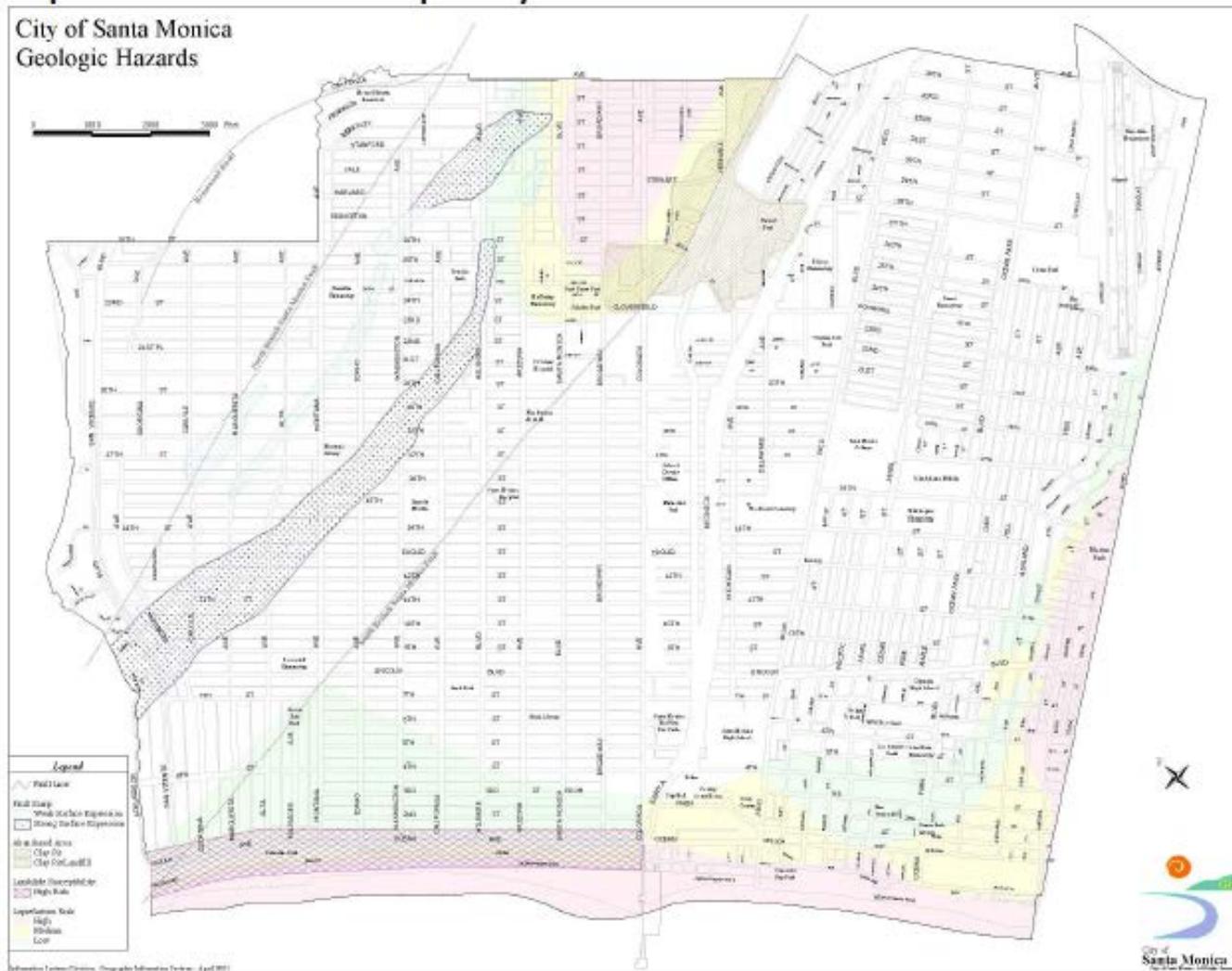
Drainage and Groundwater Alterations

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 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 landslide hazards. Drainage can be affected naturally by the geology and topography of an area; 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. Ground saturation and concentrated velocity flow are major causes of slope problems and may trigger landslides

Changes in Vegetation

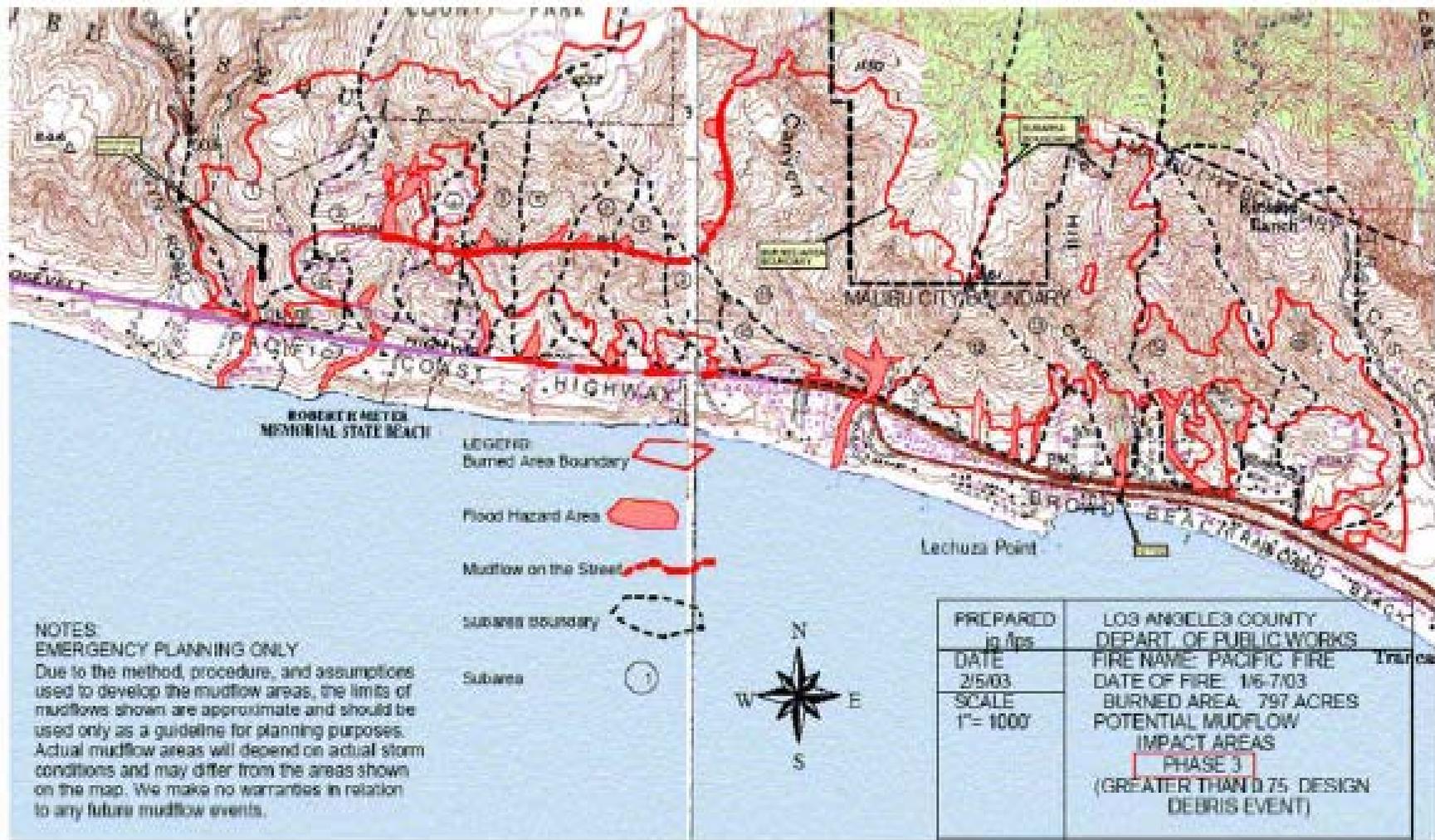
Removing vegetation from very steep slopes can increase landslide hazards. Areas that experience wildfire and land clearing for development may have long periods of increased landslide hazard. Also, certain types of ground cover have a much greater need for constant watering to remain green. Changing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

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City of Santa Monica Geologic Hazards

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Potential Mudflow Impact, City of Malibu

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VULNERABILITY

Landslides can affect a variety of functions including utility services, transportation systems and critical lifelines. Communities may suffer immediate damages and loss of services. 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. Natural gas pipes may also be at risk of breakage from landslide movements.

While a quantitative vulnerability assessment (an assessment that describes number of lives or amount of property exposed to the hazard) has not yet been conducted for the City of Santa Monica landslide events, there are many qualitative factors that point to potential vulnerability. Landslides can impact major transportation arteries, blocking residents from essential services and businesses.

Overview

Roads and Bridges

Losses incurred from landslide hazards in the City of Santa Monica have been associated with roads, specifically the Pacific Coast Highway. The City of Santa Monica Roads Division is responsible for responding to slides that inhibit the flow of traffic or are damaging a road or a bridge. The roads department does its best to communicate with residents impacted by landslides, but can usually only repair the road itself, as well as the areas adjacent to the slide where the city has the right of way.

It is not cost effective to mitigate all slides because of limited funds and the fact that some historical slides are likely to become active again even with mitigation measures. The city Roads Division alleviates problem areas by grading slides, and by installing new drainage systems on the slopes to divert water from the landslides. This type of response activity is often the most cost-effective in the short-term, but is only temporary. Unfortunately, many property owners are unaware of slides and the dangers associated with them.

City of Malibu Public Works, and other departments, are responsible for cleaning up slides that inhibit the flow of traffic or are damaging roadways. Public agencies can usually only repair the roadway itself, as well as the areas adjacent to the slide. Individual property damage does not fall under their immediate action.

Landslide hazards can be alleviated by grading slides, by installing load bearing walls on roadsides and installing new drainage systems on slopes to divert water from potential landslide areas. This type of response activity is often the most cost effective in the short term but is only temporary.

Schools are highly dependent on the availability of transportation to and from their facilities. Landslides that block transportation routes have the potential for requiring school facilities to remain occupied by stranded students and staff maybe for days, until the routes can be cleared. This would also require that the facilities have enough emergency provisions and shelter supplies available.

Lifelines and Critical Facilities

Lifelines and critical facilities should remain accessible, if possible, during a natural hazard event. The impact of closed transportation arteries may be increased if the closed road or bridge is critical for

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hospitals and other emergency facilities. Therefore, inspection and repair of critical transportation facilities and routes is essential and should receive high priority. Losses of power and phone service are also potential consequences of landslide events. Due to heavy rains, soil erosion in hillside areas can be accelerated, resulting in loss of soil support beneath high voltage transmission towers in hillsides and remote areas. Flood events can also cause landslides, which can have serious impacts on gas lines that are located in vulnerable soils.

Closed transportation arteries may result in an inability of hospitals and other emergency facilities to receive and transport patients as well as obtain emergency supplies. Losses of power and telephone services are also potential consequences of landslide events. Soil erosion in hillside areas can undermine the soil supporting high voltage transmission towers and communication networks. Finally, soil displacement can result in pipeline breaks, further exasperating the potential for landslides.

Structures

Direct damage to educational facilities within the jurisdictions from landslides has been mitigated over the years so that there is little chance of loss. However, seismic events and catastrophic storms may bring about unplanned for or unforeseen landslide events that could damage buildings.

The nature of a fast-moving mudflow is to run into low ground and basins where it will eventually settle. School facilities in some areas could be damaged by running mud as it flows downhill, depending on where the floe originated and how big it is.

The City of Santa Monica is relatively flat where school facilities are located. The danger to facilities located in the Malibu area is greater.

Potential Loss Estimates

Even though no historical loss is recorded for school facilities, the fact remains that the area in Malibu where school facilities are located is rated as a Very High Fire Hazard Severity Zone. Los Angeles County data based on past wild fire losses indicates that 2% of school facilities would either be destroyed or sustain major damage. Based on this, the following table is the calculated loss estimate for Santa Monica Malibu Unified School District:

Estimated Daily Population at Risk	Potential \$ losses to Critical Facilities or Infrastructure	Potential \$ Losses to Other Owned Buildings	Potential Other \$ Losses	Total Potential \$ Losses
1,800 enrollment 170 employees	\$1,411,000	0	\$74,000	\$1,485,000

Development Trends

Santa Monica and Malibu follow the California Building Code. The CBC requires geotechnical investigation of the potential soil liquefaction and soil strength loss during earthquakes for development in the liquefaction zones. The geotechnical reports are to address potential consequences of any liquefaction and soil strength loss and discuss mitigation measures.

The City of Malibu Building Code addresses development on steep slopes. Generally, the ordinance requires soils and engineering geologic studies for proposed developments on slopes of 20 percent grade or greater. More detailed surface and subsurface investigations are warranted if indicated by engineering and geologic studies. This may include soils, vegetation, geologic formation and drainage

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patterns. Site evaluations may also occur where stability might be lessened by proposed grading/filling or land clearing.

MODERATE RISK Natural Hazards

Severe Weather/Winds

PROFILE

SMMUSD & SMC

The impact varies in the school districts on the severity and duration of the severe weather. Numerous different results can change the impact from minor to devastation in damage to roads, buildings and property. The unique difference in impact between SMMUSD and SMC pertains to transportation. SMMUSD students are dependent on school buses to transport to and from school. SMC students are mostly self-sufficient in transportation. The minor age of the SMMUSD students create a higher safety risk.

School District and College Facilities are located in areas subject to Severe Weather and are considered vulnerable to damage. Depending on the severity and scope of a catastrophic severe storm, it is estimated that .12% of College and School District assets would be impacted.

Description

Windstorms

Severe windstorms pose a significant risk to life and property by creating conditions that disrupt essential systems such as public utilities, telecommunications and transportation routes. High winds have the potential to cause damage to local homes and businesses from falling trees and debris. In addition, windstorms increase the risk of wildfire as the moisture content decreases in brush and vegetation on hillsides, especially in urban interface areas.

High winds can and do occasionally cause damage to homes and businesses. Severe windstorms can present a very destabilizing effect on the dry brush that covers local hillsides and urban wild land interface areas and increase wildfire threat. Destructive impacts to trees, power lines, and utility services also are associated with high winds. High winds can ha

Windstorm events can be caused by short term, topographically influenced high wind gusts as well as extended duration Santa Ana wind conditions. Damage can occur directly from the high wind speeds generated or from the secondary effects of very low humidity, which increases the threat of wildfires, particularly in the fire-prone chaparral country.

Santa Ana Winds

Based on local history, most incidents of high wind in the Los Angeles County are the result of Santa Ana wind conditions. While high impact wind incidents are not frequent in the area, significant Santa Ana wind events have been known to negatively impact areas of the County. Santa Ana winds are blustery, warm – (often hot) – dry winds that blow from the east or northeast. These occur below the passes and canyons of the coastal ranges of Southern California and in the Los Angeles basin. Typically they occur from October to March when cooler air in the desert increases air pressure and creates strong westerly winds. Generally speaking, wind speed must reach 25 knots to be classified as a Santa Ana wind.

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Based on local history, most incidents of high wind in the City of Santa Monica are the result of the Santa Ana wind conditions. While high impact wind incidents are not frequent in the area, significant Santa Ana Wind events and sporadic tornado activity have been known to negatively impact the local community.



The map above shows the direction of the Santa Ana winds as they travel from the stable, high-pressure weather system called the Great Basin High through the canyons and towards the low pressure system off the Pacific. Areas of Los Angeles County are in the direct path of the ocean-bound Santa Ana winds.

While the effects of Santa Ana Winds are often overlooked, it should be noted that in 2003, two deaths in Southern California were directly related to the fierce condition. A falling tree struck one woman in San Diego. The second death occurred when a passenger in a vehicle was hit by a flying pickup truck cover launched by Santa Ana winds.

In windstorms, reports of dislodged roofs and fallen trees and power lines are common. The winds are not considered major widespread threats to population and property, but do involve responses from emergency service personnel. Fallen power lines may cause widespread power outages and fire. Falling trees can occasionally cause fatalities and serious structural damage. These incidents are rare as well as localized.

Tornados

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Tornadoes are spawned when there is warm, moist air near the ground, cool air aloft, and winds that speed up and change direction. An obstruction, such as a house, in the path of the wind causes it to change direction. This change increases pressure on parts of the house, and the combination of increased pressures and fluctuating wind speeds creates stresses that frequently cause structural failures.

In order to measure the intensity and wind strength of a tornado, Dr. T. Theodore Fujita developed the Fujita Tornado Damage Scale. This scale compares the estimated wind velocity with the corresponding amount of suspected damage. The scale measures six classifications of tornadoes with increasing magnitude from —F0 tornado to a —F6+ tornado.

Tornados, like those that occur every year in the Midwest and Southeast parts of the United States, are a rare phenomenon in most of California, with most tornado-like activity coming from micro-bursts.

Microbursts

Unlike tornados, microbursts are strong, damaging winds which strike the ground and often give the impression a tornado has struck. They frequently occur during intense thunderstorms. The origin of a microburst is downward moving air from a thunderstorm's core. But unlike a tornado, they affect only a rather small area.

University of Chicago storm researcher Dr Ted Fujita first coined the term —downburst to describe strong, downdraft winds flowing out of a thunderstorm cell that he believed were responsible for the crash of Eastern Airlines Flight 66 in June of 1975.

A downburst is a straight-direction surface wind in excess of 39 mph caused by a small-scale, strong downdraft from the base of convective thundershowers. In later investigations into the phenomena he defined two sub-categories of downbursts: the larger macro bursts and small microbursts.

Macro bursts are downbursts with winds up to 117 mph which spread across a path greater than 2.5 miles wide at the surface and which last from 5 to 30 minutes. The microburst, on the other hand is confined to an even smaller area, less than 2.5 miles in diameter from the initial point of downdraft impact. An intense microburst can result in damaging winds near 270 km/hr (170 mph) and often last for less than five minutes

Weather Anomalies

El Niño

El Niño is defined by prolonged warming in the Pacific Ocean sea surface temperatures when compared with the average value. The accepted definition is a warming of at least 0.5°C (0.9°F) averaged over the east-central tropical Pacific Ocean. Typically, this anomaly happens at irregular intervals of two to seven years, and lasts nine months to two years. The average period length is five years. When this warming occurs for only seven to nine months, it is classified as El Niño "conditions"; when it occurs for more than that period, it is classified as El Niño "episodes". Similarly, La Niña conditions and episodes are defined for cooling.

The first signs of an El Niño are:

1. Rise in surface pressure over the Indian Ocean, Indonesia, and Australia
2. Fall in air pressure over Tahiti and the rest of the central and eastern Pacific Ocean
3. Trade winds in the south Pacific weaken or head east
4. Warm air rises near Peru, causing rain in the northern Peruvian deserts
5. Warm water spreads from the west Pacific and the Indian Ocean to the east Pacific. It takes the rain with it, causing extensive drought in the western Pacific and rainfall in the normally dry eastern Pacific.

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El Niño's warm rush of nutrient-poor water heated by its eastward passage in the Equatorial Current, replaces the cold, nutrient-rich surface water of the Humboldt Current. When El Niño conditions last for many months, extensive ocean warming and the reduction in easterly trade winds limits upwelling of cold nutrient-rich deep water, and its economic impact to local fishing for an international market can be serious.

Winters, during the El Niño effect, are warmer and drier than average in the Northwest, northern Midwest, and northern Mideast United States, so those regions experience reduced snowfalls. Meanwhile, significantly wetter winters are present in northwest Mexico and the southwest United States, including central and southern California, while both cooler and wetter than average winters in northeast Mexico and the southeast United States occur during the El Niño phase of the oscillation.

Some believed the ice storm in January 1998, which devastated parts of southern Ontario and southern Quebec, was caused or accentuated by El Niño's warming effects. El Niño warmed Vancouver for the 2010 Winter Olympics, such that the area experienced a subtropical-like winter during the games.

El Niño is credited with suppressing hurricanes, and made the 2009 hurricane season the least active in 12 years.

In the spring of 1997, Pacific Ocean temperatures along the equator from South America to Australia were rising above normal, changing wind patterns in the area. This is phenomenon known as El Nino. As part of the global impact of El Nino, heavy storms for 1997-1998 were predicted for the State of California.

La Niña

La Niña is the name for the cold phase of ENSO, during which the cold pool in the eastern Pacific intensifies and the trade winds strengthen. The name La Niña originates from Spanish, meaning "the girl", analogous to El Niño meaning "the boy". It has also in the past been called *anti-El Niño*, and El Viejo (meaning "the old man").

La Niña causes mostly the opposite effects of El Niño, above-average precipitation across the northern Midwest, the northern Rockies, Northern California, and the Pacific Northwest's southern and eastern regions. Meanwhile, precipitation in the southwestern and southeastern states is below average. This also allows way above average hurricanes in the Atlantic and less in the Pacific.

La Niña occurred in 1904, 1908, 1910, 1916, 1924, 1928, 1938, 1950, 1955, 1964, 1970, 1973, 1975, 1988, 1995, 1998, 2010, 2011, 2012, 2016 and 2017. In Canada, La Niña will, in general, cause a cooler, snowier winter, such as the near-record-breaking amounts of snow recorded in the La Niña winter of 2007/2008 in Eastern Canada. The 2010-2011 La Niña was one of the strongest ever observed. The effect on Eastern Australia was devastating.

A strong La Niña episode occurred during 1988–1989. La Niña also formed in 1995 and from 1998–2000, and a minor one from 2000–2001. In recent times, an occurrence of El Niño started in September 2006 and lasted until early 2007. From June 2007 on, data indicated a moderate La Niña event, which strengthened in early 2008 and weakened before the start of 2009; the 2007–2008 La Niña event was the strongest since the 1988–1989 event. The strength of the La Niña made the 2008 Atlantic hurricane season one of the most active since 1944; 16 named storms had winds of at least 39 mph (63 km/h), eight of which became 74 mph (119 km/h) or greater hurricanes.

Location

Tornados

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The south coastal region of California, including the Los Angeles Basin, has the greatest incidence of tornadoes in the state. In the period from 1950 to 1992, the basin had 99 confirmed tornadoes. According to Blier and Battan (1994), this area has a tornado incidence similar to that of the State of Oklahoma. However, these researchers go on to point out that the size, severity and duration of California tornadoes is less than those common to the plains states, and the tornado count in the Golden State may be inflated due to inaccuracies within the database. Nevertheless, the fact that tornadoes occur with great frequency in a very densely populated urban area makes the occurrence of tornadoes in the Los Angeles Basin particularly relevant.

Unlike their Plains counterparts, southern California tornadoes occur mainly in the winter. Of the 99 tornadoes that were reported in the Los Angeles Basin between 1950 and 1992, the vast majority (83) occurred in the months November through March. March had the highest number of incidents (22). The fact that few tornadoes occur in the Los Angeles Basin during the warm season is primarily due to the stabilizing effect of the marine layer, and the lack of dynamic forcing during the warmer months.

Roughly a quarter of the tornadoes listed by Blier and Battan originated as waterspouts over either Santa Monica Bay or San Pedro Channel. There were many more waterspouts that never made landfall; these were not included in the tornado count.

The cause of many, if not most, of the Los Angeles Basin tornadoes seems to be linked to the terrain layout of the basin. Hales specifically mentioned the natural curvature of the shoreline and the location of the coastal mountains. Due to frictional and barrier flow effects, a convergent cyclonic wind pattern is established in the vicinity where most L.A. tornadoes occur. Blier and Battan discussed several features that require further investigation, including convergence to the lee of the Palos Verdes Peninsula and Santa Catalina Island.

In the 1997-98 *El Nino* episode, the Pacific storm track was located over southern California for much of the winter season. This produced a number of days in which Hale's criteria were approximated over the Los Angeles Basin and adjacent waters. In that season, there were over twenty days in which either waterspouts, funnel clouds or tornadoes were reported—including 30 separate sightings. Two tornadoes touched down within the City of Long Beach.

Thunderstorms

A mass of warm, moist subtropical air occasionally overlies the Los Angeles Basin during the mid to late summer. The subtropical air mass originates in Mexico, then moves northwest into Arizona usually around the first week in July. The humid, sultry air, with its characteristic high dew points, frequently pulses into southern California deserts and occasionally extends into the coastal plain. During these periods, thunderstorms form mostly over the mountains of southern California in the afternoons, then occasionally meander over the coastal lowlands during evening and nighttime hours.

The mean number of days per year on which thunderstorms occur (i.e. days on which thunder is heard, regardless of precipitation) is 4.1 in the downtown Los Angeles area.

Because they are an infrequent visitor to the heavily populated southern California coast, thunderstorms are very notable when they do occur. Even when they produce only light precipitation, they can be a source of serious inconvenience by wetting an area that had been dry for weeks, or even

months. Also, they may cause shifting surface winds with local gusts to 50 miles per hour or more. This combination, more or less innocuous in other parts of the United States, is actually dangerous in Los Angeles. The inevitable result of even small summer thunderstorms is a rash of highway accidents, freeway traffic jams and local power outages.

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During one afternoon in the spring of 1999 when scattered thunderstorms occurred across the Los Angeles Basin, a cluster of traffic accidents was reported, including one 70-car pileup on Interstate 10.

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Extent

Severe weather and windstorm events in the region can be caused by short term topographically influenced high wind gusts as well as extended duration Santa Ana wind conditions. Santa Ana Winds typically occur between October and February.

Ocean-born and influenced storms also are events that can cause moderate to severe damage in the coastal communities of Santa Monica and Malibu. Heavy precipitation and extreme tides influenced by a large low pressure area moving in from the Pacific periodically contribute to localized flooding, landslides and power outages throughout the area.

The frequent storms that occurred in February 1998 saturated soils and triggered numerous debris flows and landslides, resulting in severe damage throughout river valleys and coastal areas. Eroding cliffs jeopardized homes, and debris flows forced many residents to evacuate their homes. Such headline grabbing events focused attention on the geologic problems produced by the wet season. It should be noted, however, that deep-seated landslide movements could continue after the heavy rains have stopped.

Probability

Given the location and topography of the area, severe weather and windstorms are a possibility. While the historic occurrence of these events has been minimal, when they do occur they do pose a threat to life, property, utility delivery systems, infrastructure and transportation. Furthermore, if severe weather results in a prolonged utility disruption it may be necessary to use school facilities to aid in the care and sheltering of displaced residents. In addition, the economic impact of providing shelter, conducting repairs and the disruption of local businesses can result in economic losses to the entire area. Finally, severe weather can cause the loss of historic landmarks and forests in the area.

The risk of trees falling is one of the more significant hazards resulting from severe weather events. The leafy canopy and structural elements of a tree crown present a drag type barrier to winds. A high wind coupled with heavy precipitation softens the ground weakening the ability of tree roots to hold their place. The Beaufort Wind Scale specifically notes problems with trees as wind speeds increase. The scale references the likelihood of whole tree motion as wind speeds exceed 32 mile per hour, twig breakage at 39 mph and whole tree wind throw as speeds exceed 55 mph. The susceptibility of trees to wind-throw can be influenced by the general structural condition of the trees, the location of the trees in reference to wind patterns and the level and frequency of pruning maintenance.

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Beaufort Force Scale

Beaufort Force	Speed (mph)	Wind Description - State of Sea - Effects on Land
0	Less 1	Calm - Mirror-like - Smoke rises vertically
1	1-3	Light - Air Ripples look like scales; No crests of foam - Smoke drift shows direction of wind, but wind vanes do not
2	4-7	Light Breeze - Small but pronounced wavelets; Crests do not break - Wind vanes move; Leaves rustle; You can feel wind on the face
3	8-12	Gentle Breeze - Large Wavelets; Crests break; Glassy foam; A few whitecaps - Leaves and small twigs move constantly; Small, light flags are extended
4	13-18	Moderate Breeze - Longer waves; Whitecaps - Wind lifts dust and loose paper; Small branches move
5	19-24	Fresh Breeze - Moderate, long waves; Many whitecaps; Some spray - Small trees with leaves begin to move
6	25-31	Strong Breeze - Some large waves; Crests of white foam; Spray - Large branches move; Telegraph wires whistle; Hard to hold umbrellas
7	32-38	Near Gale - White foam from breaking waves blows in streaks with the wind - Whole trees move; Resistance felt walking into wind
8	39-46	Gale - Waves high and moderately long; Crests break into spin drift, blowing foam in well marked streaks - Twigs and small branches break off trees; Difficult to walk
9	47-54	Strong Gale - High waves with wave crests that tumble; Dense streaks of foam in wind; Poor visibility from spray - Slight structural damage
10	55-63	Storm - Very high waves with long, curling crests; Sea surface appears white from blowing foam; Heavy tumbling of sea; Poor visibility - Trees broken or uprooted; Considerable structural damage
11	64-73	Violent Storm - Waves high enough to hide small and medium sized ships; Sea covered with patches of white foam; Edges of wave crests blown into froth; Poor visibility - Seldom experienced inland; Considerable structural damage
12	>74	Hurricane – Sea white with spray. Foam and spray render visibility almost non-existent – Widespread damage. Very rarely experienced on land in Southern California

VULNERABILITY

Overview

Severe Weather

Damage can occur almost as soon as the first heavy rains begin. During the El Nino event of 1998, casualties in the State of California included 17 confirmed deaths and 29 confirmed injuries. The total amount of residential damage was estimated at over \$120 million. Roads, utilities, and levees were also damaged.

According to the California Coastal Commission, *Storm Summary Report for Coastal California, March 10, 1998*, the El Nino '98 Storms caused extensive damage along Coastal California. In many cases, coastal bluff and mountain soils lost stability due to saturation from copious precipitation and large waves. High river levels caused flooding of several low elevation areas. There was a great deal of beach erosion in Los Angeles, Orange, and San Mateo Counties, as well as other parts of California. Storm waves damaged many low-lying oceanfront structures. The Coastal Commission issued approximately 75 emergency coastal permits, mostly for rip rap and seawall repairs to protect residential structures.

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Shelters

The El Nino '98 Storms created a need to feed and shelter thousands of people. The American Red Cross (ARC), members of the National Volunteer Organizations Active in Disaster (NVOAD), and numerous other voluntary agencies, are usually the first to respond to the needs of disaster victims. The Red Cross provided housing for 5,112 people at 91 shelter locations, more than 140,000 meals were served, and financial assistance was extended to more than 2,300 households. The Red Cross relief efforts for the El Nino winter storms exceeded \$4.6 million. School facilities and campuses were the primary locations for shelter.

Landslides

Landslides and debris flows can have a great impact during severe weather events. The severity of the problems can range from catastrophic losses in a community, to small erosion problems with minor impact. Landslides and erosion also can cause residential damage and destruction.

Windstorms

There have been past occurrences of winds strong enough to create damage to property in the area. However, there has not been a recorded instance of a windstorm strong enough to create wide spread damage. Damage is usually done to roofs and trees damage, and is generally isolated.

Life and Property

Based on the historical data for the region, windstorm events can be expected, perhaps annually, across widespread areas of Los Angeles County. This can result in required emergency responses. Both residential and commercial structures with vulnerable or weak construction are susceptible to damage. Wind pressure can create a direct and frontal assault on a structure, pushing walls, doors, and windows inward. Conversely, passing currents can create lift suction forces that pull building components and surfaces outward. With extreme wind forces, roofs or entire buildings can fail, causing considerable damage. Debris carried by strong winds can contribute directly to loss of life, and indirectly to the failure of protective building envelopes, siding, or walls. When severe windstorms strike a community, resulting downed trees, power lines, and damaged property are major hindrances to emergency response and disaster recovery.

Increased Fire Threat

Perhaps the greatest danger from in Southern California comes from the combination of the always present threat of wild fires and the drying hot Santa Ana winds that occur every few years in the urban/wild land interface. With the Santa Ana winds driving the flames, the speed and reach of the wild fires is much greater than in times of calm wind conditions. The higher fire hazard raised by Santa Ana wind conditions requires that even more care and attention be paid to proper brush clearances on property in the wild land/urban interface areas.

Structures

Utilities

Historically, falling trees have been the major cause of power outages in the region as a result of high winds. Windstorms can cause flying debris that cut utility lines. For example, tree limbs breaking in winds of only 45 mph can be thrown over 75 feet. As such, overhead power lines may receive damage in even relatively minor windstorms. Falling trees bringing electric power lines down to the ground create the possibility of electric shock.

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Buildings

Windstorms can damage buildings, power lines, and other property and infrastructure because of falling trees and branches. During wet winters, saturated soils cause trees to become less stable and more vulnerable to uprooting from high winds. Windstorms can result in collapsed or damaged buildings or blocked roads and bridges, damaged traffic signals, streetlights, and parks. Roads blocked by fallen trees during a windstorm may have severe consequences to people who need to be accessed by emergency workers.

Infrastructure

Emergency response operations can be complicated when roads are blocked or when power supplies are interrupted. Industry and commerce can suffer losses from interruptions in electric services and from extended road closures. They can also sustain direct losses from damaged buildings, injured personnel, and damage to other vital equipment. There are direct consequences to the local economy resulting from windstorms related to both physical damages and interrupted services.

Transportation

Windstorm activity can have an impact on local transportation in addition to the problems caused by downed trees and electrical wires blocking streets and highways. During periods of extremely strong Santa Ana winds, major highways may require temporarily closure to truck and recreational vehicle traffic. Typically these disruptions are not long lasting, nor do they generally carry a severe long-term economic impact on the region.

Losses

Losses from damage caused by windstorms are generally limited to isolated property such as roofs or tree damage. There are no areas of specific risk in Los Angeles County. Losses are seldom significant in the County.

Potential Loss Estimates

If severe weather or windstorm were to occur, the consequences to SMMUSD and SMC could be significant. The tables below provide the estimated potential losses of such an event.

Santa Monica Malibu Unified School Districts

Estimated Daily Population at Risk	Potential \$ losses to Critical Facilities or Infrastructure	Potential \$ Losses to Other Owned Buildings	Potential Other \$ Losses	Total Potential \$ Losses
>30	< \$100,000	0	>\$10,000	\$100,000
<10				

Santa Monica College

Estimated Daily Population at Risk	Potential \$ losses to Critical Facilities or Infrastructure	Potential \$ Losses to Other Owned Buildings	Potential Other \$ Losses	Total Potential \$ Losses
>30	\$72,000	0	>\$10,000	\$82,000
<10				

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Development Trends

As stated, one of the most common problems associated with windstorms are power outages. High winds may cause trees to bend, sag, or break (tree limbs or entire trees). They may come in contact with nearby electrical distribution power lines. Fallen trees can cause short-circuiting and conductor overloading. Wind induced damage to the power system may cut power to customers, be costly to repair, and in some cases cause wild land fires.

California Code

Though severe weather is not a direct factor in determining development trends or building/location of educational facilities, one of the strongest and most widespread existing mitigation strategies pertains to tree clearance. Currently, California State Law requires utility companies to maintain specific clearances – depending on the type of voltage running through the line – between electrical power lines and all vegetation.

The following California Public Resource Code Sections establish tree pruning regulations:

- 4293: Power Line Clearance Required
- 4292: Power Line Hazard Reduction
- 4291: Reduction of Fire Hazards Around Buildings
- 4171: Public Nuisances

The following pertain to tree pruning regulations and are taken from the California Code of Regulations:

- Title 14: Minimum Clearance Provisions □ Sections 1250-1258
- General Industry Safety Orders
- Title 8: Group 3: Articles 12, 13, 36, 37, 38
- California Penal Code Section 385
- The following California Public Utilities Commission section has additional guidance:
- California Public Utilities Commission □ General Order 95: Rule 35

Failure to allow a utility company to comply with the law can result in liability to the homeowner for damages or injuries resulting from a vegetation hazard. Many insurance companies do not cover this type of damage if the policy owner has refused to allow the hazard to be eliminated. The power companies, in compliance with the above regulations, collect data about tree failures and their impact on power lines. This mitigation strategy assists the power company in preventing future tree failure.

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Flood

SMMUSD and SMC

SMMUSD and SMC share the same impact for flooding. Flooding can be caused by severe weather or a tsunami. SMMUSD has more concern due to the number of campuses, which are at risk because of their locations within a mile of the Pacific coastline.

PROFILE

Description

A flood, as defined by the National Flood Insurance Program, is a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from overflow of inland or tidal waters, unusual or rapid accumulation or runoff of surface waters from any source, or mudflow.

Flooding may occur as a result of sustained heavy rainfall, microbursts, large wave activity on the coast, or reservoir/dam failure. A "100-year Recurrence Interval" is defined as a flood that according to historical data has a probability of occurring once in 100 years. This benchmark is used by FEMA to establish a regulatory baseline for all flooding events. Similar benchmarks are defined for 25, 50, and 500 year events.

California has a chronic and destructive flood history. Of seventy-two federally declared disasters in the state between 1950 and 2000, half were flood related. While the "Great Flood" of 1861-62 may be unmatched in scope, the devastating effects of recent floods far exceed the damage of a century ago. Despite the construction of massive and relatively effective flood control projects, California remains vulnerable to flooding. A steady rise in population and accompanying development contribute to increased flood risks throughout the state. Between 1992 and 2002, every county in California was declared a federal disaster area at least once for a flooding event. The counties of Los Angeles, Orange, and San Bernardino were declared federal flood disaster areas five times, and sixteen other counties were declared disaster areas four times.

Flooding occurs when climate, geology, and hydrology combine to create conditions where water flows outside of its usual course.

Winter Rainfall

Over the last 125 years, the average annual rainfall in Los Angeles is 14.9 inches. But the term —averagell means very little as the annual rainfall during this time period has ranged from only 4.35 inches in 2001-2002 to 38.2 inches in 1883-1884. In fact, in only fifteen of the past 125 years, has the annual rainfall been within plus or minus 10% of the 14.9 inch average. And in only 38 years has the annual rainfall been within plus or minus 20% of the 14.9 inch average. This makes the Los Angeles basin a land of extremes in terms of annual precipitation.

Monsoons

Another relatively regular source for heavy rainfall, particularly in the mountains and adjoining cities is from summer tropical storms. Table xxx lists tropical storms that have had significant rainfall in the past century, and the general areas affected by these storms. These tropical storms usually coincide with El Niño years.

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Floodplain

A floodplain is a land area adjacent to a river, stream, lake, estuary, or other water body that is subject to flooding. This area, if left undisturbed, acts to store excess flood water. The floodplain is made up of two sections: the floodway and the flood fringe.

100-Year Flood The 100-year flooding event is the flood having a one percent chance of being equaled or exceeded in magnitude in any given year. Contrary to popular belief, it is not a flood occurring once every 100 years. The 100-year floodplain is the area adjoining a river, stream, or watercourse covered by water in the event of a 100-year flood.

Floodway

The floodway is one of two main sections that make up the floodplain. Floodways are defined for regulatory purposes. Unlike floodplains, floodways do not reflect a recognizable geologic feature. For NFIP purposes, floodways are defined as the channel of a river or stream, and the overbank areas adjacent to the channel. The floodway carries the bulk of the flood water downstream and is usually the area where water velocities and forces are the greatest. NFIP regulations require that the floodway be kept open and free from development or other structures that would obstruct or divert flood flows onto other properties.

The NFIP floodway definition is "the channel of a river or other watercourse and adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

Flood Fringe

The flood fringe refers to the outer portions of the floodplain, beginning at the edge of the floodway and continuing outward.

Base Flood Elevation (BFE)

The term "Base Flood Elevation" refers to the elevation (normally measured in feet above sea level) that the base flood is expected to reach. Base flood elevations can be set at levels other than the 100-year flood. Some communities choose to use higher frequency flood events as their base flood elevation for certain activities, while using lower frequency events for others. For example, for the purpose of storm water management, a 25-year flood event might serve as the base flood elevation; while the 500-year flood event may serve as base flood elevation for the tie down of mobile homes. The regulations of the NFIP focus on development in the 100-year floodplain.

Location

The South Coast hydrologic region extends up from the U.S.-Mexico border to the Tehachapi, San Bernardino, San Gabriel, and San Jacinto mountains. Nearly one-third of the area is coastal plain. Major stream systems in the South Coast region include:

- Calleguas Creek Basin
- Malibu and Santa Monica Bay streams
- Ventura River
- Santa Clara River
- Los Angeles River
- San Gabriel River
- Santa Ana River
- Santa Margarita River
- San Luis Rey River
- San Dieguito River
- San Diego River
- Sweetwater River
- Otay-Tijuana River

This region contains major urban centers, including the counties of Los Angeles, Orange, and San Diego. Much of the flooding is sudden and severe, resulting in massive slides, debris flows, and mudflows. Typical of the flooding that occurs in this area were the 1969 winter storms that

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killed forty-seven and resulted in \$300 million in property damage. During these storms, an alluvial flood and debris flow on Deer Creek in San Bernardino County killed eleven. Normally Deer Creek is dry and is not considered a special flood hazard area on the National FIRMs. However, the region has experienced tremendous population growth since 1969 and the area of the Deer Creek alluvial fan is now home to several public schools and Ontario International Airport.

Santa Monica

Santa Monica is designated by the National Flood Insurance Program as a Zone "C", or City of minimal flood hazard. The hazardous situations caused by storms are generally dependent on the amount of warning time that the City receives prior to an actual disaster. Monitoring of storms by weather services have historically provided warning times that can vary from weeks to hours prior to the event. The ability of City personnel to conduct an evacuation, provide sandbagging, and perform other mitigative measures is dependent on the amount of warning time that the City receives from weather services.

The City of Santa Monica is familiar with the flooding and destruction caused by astronomical tides and heavy storm conditions. During the winter of 1983, the City suffered a major loss to the Pier facility. Most of the west end of the Pier and the section under Pacific Park was rebuilt with concrete pilings and caps following the 1983 storm. Again, in 1988, additional storm damage was sustained. In 1998, the El Nino Storms created approximated \$400,000 in flood damage and recurring landslides along Palisades Park blocking Pacific Coast Highway. The landslide was approximately 115 feet high and 150 feet wide. Sloughing affected the stability of the near vertical bluff. Mitigation measures of drilling vertically and horizontally into the hillside assisted in removing water from bluff and grading the top and bottom of the bluff reduced the threat to life and property.

Malibu

The Malibu area is situated near the western portion of the Santa Monica Mountains and has experienced flooding in the past from major winter storm events. Rainfall in the Malibu area averages nearly 18 inches per year. However, the term 'average rainfall' is misleading because over the recorded history of rainfall in the region, amounts have ranged from none at all in some years to well over normal amounts in very wet years. Furthermore, actual rainfall in Southern California tends to fall in large amounts during sporadic and often heavy storms rather than in consistent amounts throughout the year.

The Malibu Region geologic features mainly consist of un-consolidated and semi-consolidated alluvial materials underlain and bounded on the north and east by consolidated sediments and crystalline rocks. These deposits consist of a shallow layer of Quaternary fill that has been washed down from the Santa Monica Mountains. The materials are generally poorly sorted sands and gravels, intermingled with silts and clays. This lack of open ground forces water to remain on the surface and rapidly accumulate. If it were not for the existing flood control system in the area with its concrete lined river and stream beds, flooding would be a much more common occurrence.

Extent

Flooding occurs when climate, geology, and hydrology combine to create conditions where water flows outside of its usual course. Due to steep terrain, runoff from the mountains concentrates quickly. Runoff from urban watersheds is generally uncontrolled and is characterized by high flood peaks of short durations, because a high percentage of the rain falls on impervious cover. Los Angeles area flood events are typically of less than twelve hour durations. The lower Los Angeles River will respond to heavy rain by rising from 2/3 channel capacity to full in less than an hour, and reversing to 2/3

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channel capacity within two hours. Such events have been noted recently, in 1980, 1993 and 1995. Furthermore, due to continued growth, economic development and an increase of impermeable areas, the region's storm water collection and conveyance system may become overwhelmed.

The City of Santa Monica is familiar with the flooding and destruction caused by astronomical tides and heavy storm conditions. During the winter of 1983, the City suffered a major loss to the Pier facility. Most of the west end of the Pier and the section under Pacific Park was rebuilt with concrete pilings and caps following the 1983 storm. Again, in 1988, additional storm damage was sustained. In 1998, the El Nino Storms created approximated \$400,000 in flood damage and recurring landslides along Palisades Park blocking Pacific Coast Highway. The landslide was approximately 115 feet high and 150 feet wide. Sloughing affected the stability of the near vertical bluff. Mitigation measures of drilling vertically and horizontally into the hillside assisted in removing water from bluff and grading the top and bottom of the bluff reduced the threat to life and property.

Types of Flooding in California

Flood Type	Problems
Alluvial Fan	<p>Alluvial fan flooding occurs in the steep arid or semiarid mountains found throughout the state. Alluvial fans are fan-shaped deposits of eroded rock and soil carried out of mountains and into valley floors by landslides, mudslides, mudflows, and surface runoff (sheet flows and stream flows.) At the beginning of the valley, alluvial fans are steep and narrow with boulders and other coarse material. The deposited material becomes increasingly fine as the gradient decreases and the material, mainly gravels, sand and mud, spreads.</p> <p>When rain falls, runoff from the canyon walls flows as a high-velocity sheet that channels into rivulets, and then to natural drainage courses. The rapidly moving water often carries large boulders and other material from the watershed depositing them into runoff channels, blocking the flow of water. Floodwater then spills out onto the fan, with each event finding a new channel that soon fills up with deposits and overflows. Flooding in alluvial fans often can cause greater damage than clear-water flooding.</p>
Coastal	<p>Coastal flooding and erosion present some of the most complex and serious high-risk problems. In California, coastal erosion is most often caused by a combination of factors: winter storms, rising sea levels, tidal action, currents and waves, and high winds.</p>
Flash	<p>Flash floods are quick events, particularly where the topography enhances rainfall from Pacific or Gulf storms and thunderstorms. Flash floods are caused by the rapid buildup of runoff after high-intensity rainfall. The precipitation is often so intense that both perennial streams and dry watercourses are rapidly transformed into torrents, sweeping away whatever lies in their path. Loss of life in such a flooding is common because of the suddenness of high flows.</p> <p>A flash flood can occur in mountainous regions and urban areas. In the mountains, a stream level may rise quickly in a heavy rainstorm. Dry desert washes, especially those near mountains, can reach flood stage within minutes as a result of thunderstorms miles away.</p> <p>Urban flash flooding can occur in any terrain. It is particularly aggravated where natural cover has been removed to construct buildings, roads and parking lots. Streets become rivers, inundating vehicles and causing heavy damage to residential and industrial properties situated along stream channels.</p>
Fluvial	<p>California rivers generally flow west to the Pacific Ocean and may fall as much as 5,000 feet within the first 20 miles. This relatively steep slope creates a high-velocity flow that carries eroded material. As the slope of the river flattens, the velocity slows and the material is deposited. As a result, the lower reaches of many streams pass through the sandy alluvial plains they have formed.</p> <p>Flood flows can cause these streams to migrate, resulting in a higher and wider floodplain. Developed areas on land originally outside the defined floodplain can later flood.</p>
Lake	<p>Lake level fluctuations primarily concern shore land property owners, but impact local, state and federal agencies with regulatory or financial responsibilities for water and related land use associated with lakes. Both natural and human actions cause changing lake levels. Natural factors include direct precipitation, surface runoff, evaporation, ground water inflow, ice formation, aquatic growth, meteorological disturbances, and, in larger lakes, tidal and crustal movement. Human factors include dredging, diversion, consumptive uses and intruding structures.</p>

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Flood Type	Problems
Levee	<p>Levees are a basic means of providing flood protection along rivers and waterways in regions where development exists, or is planned, and in agricultural areas. Levees confine floodwaters to the main river channel or protect inland areas from high tides.</p> <p>The causes of levee problems are structural failures, foundation failures of underlying soils, and overtopping by flood flows, tides and waves. Contributing factors include poor construction materials, erosion by current and wave action, seepage through or under the levee, burrowing rodents, and improper repairs. Lack of adequate and regular maintenance to correct these problems also contributes to levee failure. Most failures are composites of several of these factors.</p>
Mudslides	<p>Mud floods and mudflows cause several types of flood damage that are not characteristic of clear-water flooding. These include:</p> <p>The force of debris-laden water, which can be tens or hundreds of times greater than that generated by clear water, destroys retaining walls and other protective works;</p> <p>Mud and debris may fill drainage channels, river or stream channels, and sediment basins, causing otherwise normal runoff to suddenly inundate areas outside the floodplains; and</p> <p>Sediment and debris are more damaging to houses and their contents than clear water. Frame structures are often total losses, and if they remain intact, sediment and mud must be removed and washed out. Stains, mildew and dry rot often result.</p> <p>Major floods almost always involve heavy intrusions of mud, sediment and debris. Such conditions are caused or worsened by forest and brush fires. Once the hills have been denuded of vegetation, there is more runoff and less infiltration. Even light rainfall can develop into rapid runoff with severe erosion occurring in such areas.</p>
Riverine	<p>Riverine flooding, the most common type of flooding in the state, occurs when a stream channel fills with more water than it can carry. The water rises and flows over the channel banks onto the adjacent floodplain.</p>
Seiche and Tsunami	<p>Tsunamis, or seismic sea waves, are usually created by undersea earthquakes or landslides. Seiches are similar, large waves in lakes. Waves are generated by a crustal disturbance giving a vertical impulse to the sea surface. These are long-period waves that travel long distances at speeds of up to 600 miles per hour with little or no loss of energy. When tsunami waves approach a coastal region in which water depth decreases rapidly, their height is increased by refraction, shoaling, and local bay or harbor conditions, and speed is increased. Tsunamis frequently arrive in a series of spaced intervals.</p>

Historical Flooding

Through historic times, and as evidenced in a variety of pre-historic sources, the Los Angeles area has been periodically pounded by heavy rains and inundated by floods. Some of the heaviest rains ever recorded on the west coast of North America occurred near Los Angeles as a result of the high transverse orographic barrier catching a moist subtropical airflow. Historical references highlight eight major floods across the coastal plain in the Los Angeles area between 1815 and 1876. From 1884 to 1938, nine more floods wreaked havoc. In the latter half of the twentieth century, enormous public work projects were completed which served to mitigate flood damage in the Los Angeles area.

Prior to 1915, little was done to control flooding within the county. To the contrary, uncontrolled growth and economic development did much to exacerbate a growing urban flood problem, which in fact had become one of the worst in the United States.

Through the early twentieth century, the Los Angeles River, at 55 miles long, was the county's major (and most capricious) drainage. The Los Angeles River had a long history of meandering almost at random across the coastal plain, emptying into the Pacific Ocean at various places from Santa Monica to Long Beach.

Flood destruction and loss of life awakened the growing population of the Los Angeles Basin to the need for flood control. The Los Angeles County Flood Control District was established in 1915, and

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Congress authorized the U.S. Army Corps of Engineers to work on the Los Angeles River problem at about the same time.

The river posed major difficulties: An intermittent and swampy slough in the late summer, it became an unpredictable and raging torrent during periods of heavy rain. In flood stage, the river was gorged with huge volumes of water, strong current velocities, large debris loads, and unstable channels. As the population of the Los Angeles area grew rapidly in the early twentieth century, each flood produced increasing damage to the district, and scores of lives were lost. Flood control had become absolutely essential.

Between 1917 and 1965, the huge public works projects undertaken by the Corps of Engineers and its partners bore fruit. With great leaps forward in technology and in ecological sensitivity, a series of catchment basins and concrete or stone-lined channels controlled the Los Angeles River, its tributaries, and other streams within the district. The cost was high — over two billion dollars in federal and local funds for the entire project — but great benefits were realized. There were no more catastrophic floods after the 1950s, in spite of the sharp upward trend in urbanization and an increase in the number of heavy rainfall events late in the century. In addition, valuable recreation land was set aside for the public trust as a result of construction of catchment basins along channels.

The last major flood destruction in Los Angeles occurred on March 2, 1938. Forty-nine lives were lost. A major rainfall event occurred in 1969, in which an estimated \$1.5 billion in damage was saved by flood control projects. Other heavy rains in 1983, 1992 and 1998 were well-handled by the complex system of drainages, catchments and bridges built by the Corps of Engineers within the Los Angeles area.

The current Los Angeles County Drainage Area flood control system is one of the world's largest and most extensive flood protection infrastructures. This flood protection includes:

- 15 flood control reservoirs
- 5 flood control basins
- 143 debris control basins
- 225 stabilization dams
- 33 storm water pumping plants
- 470 miles of open, improved channel
- 2,400 miles of underground drains
- 75,000 catch basins

The Corps of Engineers estimates that the value of damages prevented by the system in storms during its lifetime has already reached \$3.6 billion.

Projects now underway in the lower Los Angeles River will expand the channel capacity from 133,000 cubic feet per second (cfs) to 182,000 cfs, which would approximate a 133-year flood (Plates 1-5). *(Attached to text).*

Heavy rain still poses a flooding threat in the Los Angeles Basin, but the greatest problems are now associated with urban flooding, ponding of water in poorly drained areas, and high outflow of water, mud and debris below canyons draining higher terrain.

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Local Flood Information

Federal Flood Disaster Declarations (Los Angeles County and adjacent jurisdictions)

County	Total Pop in FIRM Zone	Pop in Zone A - 100YR	Population of County	# PA Applicants	PA Amt Eligible	% PA Amt Eligible	% IA Damage Locations
LOS ANGELES	390,305	98,371	9,519,338	2,908	\$61,466,583	10.35	45.36
ORANGE	1,384,403	428,779	2,846,289	1,391	\$32,167,618	5.42	2.39
RIVERSIDE	295,081	72,628	1,545,387	615	\$7,846,555	1.32	1.00
SAN BERNARDINO	196,945	61,247	1,709,434	951	\$10,734,165	1.81	1.63
SAN DIEGO	181,757	82,807	2,813,833	798	\$11,163,308	1.88	1.54
SANTA BARBARA	54,731	24,772	399,347	1,465	\$36,227,678	6.10	1.82
VENTURA	187,179	56,113	753,197	1,120	\$33,556,411	5.65	1.38
STATEWIDE Nonspecific	5,227,897	1,973,712	33,871,648	30,713	\$593,611,817	100.00%	100.00%

Probability

The towering mountains that give the Los Angeles region its spectacular views also wring a great deal of rain out of the storm clouds that pass through. Because the mountains are so steep, the rainwater moves rapidly down the slopes and across the coastal plains on its way to the ocean. The Santa Monica, Santa Susana and Verdugo mountains, which surround three sides of the valley, seldom reach heights above three thousand feet. The western San Gabriel Mountains, in contrast, have elevations of more than seven thousand feet. These higher ridges often trap eastern-moving winter storms. Although downtown Los Angeles averages just fifteen inches of rain a year, some mountain peaks in the San Gabriels receive more than forty inches of precipitation annually.

Naturally, this rainfall moves rapidly downstream, often with severe consequences for anything in its path. In extreme cases, flood-generated debris flows will roar down a canyon at speeds near 40 miles per hour with a wall of mud, debris and water tens of feet high. In Southern California, stories of floods, debris flows, persons buried alive under tons of mud and rock and persons swept away to their death in a river flowing at thirty-five miles an hour are without end. No catalog of chaos could contain all the losses suffered by man and his possessions from the regions rivers and streams.

Santa Monica

During certain years, property losses resulting from flood damage are extensive. Development in the floodplains of the City of Santa Monica will continue to be at risk from flooding because flood damage occurs on a regular basis throughout the county. Property loss from floods strikes both private and public property. Losses in the City of Santa Monica over the past 25 years have totaled approximately \$23,102.

No dam/flood control channels exist in Santa Monica. Portions of the City may be subject to flooding, due to flash flooding, urban flooding (storm drain failure/infrastructure breakdown), river channel overflow, downstream flooding, etc.) The City has not historically been vulnerable to storm surge inundation associated with hurricanes and tropical storms.

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Bridges & Roads

Roads systems in the City of Santa Monica are maintained by multiple jurisdictions. Federal, state, county, and city governments all have a stake in protecting roads from flood damage. Road networks often traverse floodplain and floodway areas. Transportation agencies responsible for road maintenance are typically aware of roads at risk from flooding.

Bridges are key points of concern during flood events because they are important links in road networks, river crossings, and they can be obstructions in watercourses, inhibiting the flow of water during flood events. The bridges in the City of Santa Monica are state, county, city, or privately owned. A state-designated inspector must inspect all state, county, and city bridges every two years; but private bridges are not inspected, and can be very dangerous. The inspections are rigorous, looking at everything from seismic capability to erosion and scour.

Rivera Reservoir

The Riviera Reservoir, 1252 Capri, Los Angeles, is owned by the City of Santa Monica and located about two miles north of the City in Santa Monica Canyon. The California Department of Water Resources Bulletin No.17 lists the reservoir as having a height of 40 feet and a storage capacity of 76 acre-feet, which translates to approximately 25 million gallons.

The Riviera Reservoir is an off-stream, covered storage reservoir built with vertical concrete walls. These walls are keyed top and bottom to the roof and foundations. The north and west sidewalls on the south and east have compacted backfill in front of them. These are the sides through which water will pass should a failure occur. If the failure were to occur on the east side, the structures, located at the Riviera Golf Course, immediately below the dam will definitely be in jeopardy. If the south side of the dam were to fail, no structures would be harmed. However, the golf course would be flooded. Flood waters released during the reservoir failure would empty onto the Riviera Country Golf Course, eventually flowing into the Santa Monica Creek.

Storm Water

Storm water, which is more accurately called urban runoff, consists of rainwater as well as runoff draining to city streets generated by irrigation, car washing or the hosing down of streets and sidewalks. The majority of this urban runoff in Santa Monica drains untreated into Santa Monica Bay via an underground storm drain system. This system consists of 2,308 catch basins and 64 storm drain lines which discharge at five outfalls within the city limits. The largest of these is located on the beach at Pico Boulevard and is known as the Pico-Kenter outfall. In addition to runoff from Santa Monica, this outfall also discharges runoff from parts of Brentwood and West Los Angeles. The other four outfalls are located on the beach at Montana Avenue, Wilshire Boulevard, the Santa Monica Pier, and Ashland Avenue. The Montana and Wilshire outfalls typically only discharge runoff to the ocean during heavy rains. The remaining three outfalls discharge year-round, during wet and dry periods. Under the federal Clean Water Act (CWA) the City is responsible for the quality of the urban runoff entering the storm drain system and for the enforcement and implementation of Local, State and Federal storm water regulations. City oversight of storm water programs and operation and maintenance of the storm water system is coordinated by the Department of Environmental and Public Works Management. The City is responsible for the operation and maintenance of 824 catch basins and approximately 20 miles of

storm drain lines. The remainder of the catch basins and storm drains within the city are owned and maintained by Los Angeles County.

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The CWA and the California Ocean Plan are the primary mechanisms through which pollutant discharges to water bodies are regulated in California. The CWA established minimum national water quality goals and created the National Pollutant Discharge Elimination System (NPDES) to regulate the quality of discharged water. As of 1990 all municipal storm water runoff became regulated under the NPDES system. The City of Santa Monica is currently a co-permit holder with all other cities in Los Angeles County on the County's NPDES permit which was issued in 1990. Under this permit all co-permit holder were required to develop a storm water management plans.

Wastewater

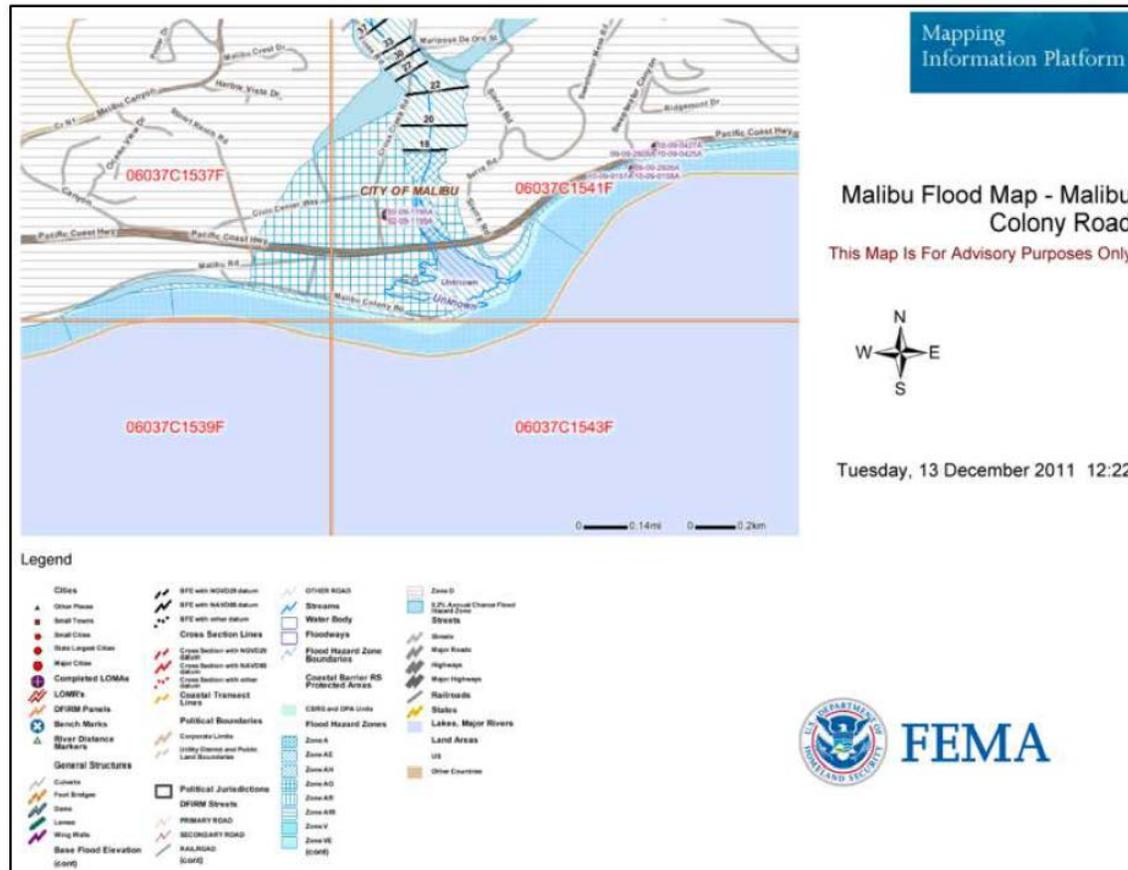
Wastewater (or "sewage") generated by Santa Monica's residential, commercial and industrial water users flows through underground sewer lines to the City of Los Angeles' Hyperion Treatment Plant, located approximately 7 miles southeast of Santa Monica in Playa del Rey. There the wastewater is screened, settled, and biologically treated before being discharged into Santa Monica Bay. Santa Monica pays a fee to Los Angeles for disposal of its wastewater based on the monthly effluent flows to the treatment plant. There are approximately 125 miles of sewer lines within the city limits. They are owned by Santa Monica and are inspected and maintained by the City's Environmental and Public Works Management Department. Permitting and inspection of commercial and industrial wastewater generators is overseen by the department's Industrial Waste Division. Santa Monica's sewer system is completely separate from the storm water system with only the wastewater being treated before it enters the Bay.

Malibu

The City of Malibu extends 27 miles along the Pacific coast. In addition to its proximity to the Pacific Ocean, the City also contains multiple riparian zones that are subject to flood. .

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FEMA has identified areas with Malibu as Special Flood Hazard Areas. The map below provides an example of a Flood Hazard Map in the Malibu area.



FIRM Panels for all of Malibu are contained in the Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan.

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VULNERABILITY

The major concern regarding the impact on communities from flood events is the loss of life and property. Critical infrastructure failures are also a threat and may require days or weeks to repair. Similarly, the impact to business and industry can result in immediate or long term economic loss.

Overview

Flood maps and Flood Insurance Studies (FIS) are often used to identify flood-prone areas. The NFIP was established in 1968 as a means of providing low-cost flood insurance to the nation's flood-prone communities. The NFIP also reduces flood losses through regulations that focus on building codes and sound floodplain management. NFIP regulations (44 Code of Federal Regulations (CFR) Chapter 1, Section 60, 3) require that all new construction in floodplains must be elevated at or above base flood level. There are no flood prone zones in Santa Monica.

Flood Insurance Rate Maps (FIRM) and Flood Insurance Studies (FIS) Floodplain maps are the basis for implementing floodplain regulations and for delineating flood insurance purchase requirements. A Flood Insurance Rate Map (FIRM) is the official map produced by FEMA which delineates SFHA in communities where NFIP regulations apply. FIRMs are also used by insurance agents and mortgage lenders to determine if flood insurance is required and what insurance rates should apply.

Property Loss

Extensive damage can be caused by flooding and landslide damage related to soil saturation from flood events. The type of property damage caused by flood events depends on the location, depth, and velocity of flood waters. Flood waters can wash buildings off foundations and sweep personal property downstream.

Critical Infrastructure

Critical infrastructure can be damaged during floods especially when high water levels combine with flood debris. Damage can occur to water and sewer systems, electrical supplies, pipelines, transportation networks, emergency facilities, communications networks, and other essential sites. Furthermore, contamination of underground wells and reservoirs can impact local water supplies. Finally, flood waters and debris can overflow local storm water systems causing traffic disruptions and pose a hazard to health of the local community.

Business & Industry

Flood events impact businesses by damaging property and interrupting access by employees, suppliers, and customers. Furthermore, a loss of utilities caused by flooding can prevent businesses and industry from functioning.

Schools & Educational Facilities

Flooding can cause site erosion, structural and nonstructural building damage, the destruction or impairment of utilities and mechanical equipment, damage to or loss of contents, health threats from contaminated floodwater, and temporary or permanent closure.

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Site damage. School grounds may be subject to erosion and scour, with the possible loss of soil and damage to paved areas, including access roads. Large amounts of debris and sediment can accumulate on the site, especially against fences.

Structural damage. Foundations can be eroded, destabilizing or collapsing walls and heaving floors.

Saturation damage. Saturated walls and floors can lead to plaster, drywall, insulation, and tile damage, mold and moisture problems, wood decay, and metal corrosion. Sewers can back up and contaminate the water supply and building components.

Contents damage. School furniture, computers, files, books, lab materials and equipment, and kitchen goods and equipment can be damaged or contaminated.

Health threats. Mold growth and contaminants in flooded schools can pose significant health threats to students and staff.

School closure. Flooded schools must be closed during cleanup and repair. The length of closure and the ability of the school district to return to teaching depends on the severity of the damage and lingering health hazards. It may also depend on whether the school is fully insured or how quickly disaster assistance is made available for cleaning and repair. If the school is located in a flood plain, it may be permanently closed.

Utility system damage. Electrical wiring and equipment can be shorted and their metal components corrode. Ductwork can be fouled and expensive heating and cooling equipment ruined. Oil storage tanks can be displaced and leak, polluting the areas around them.

There may be unseen damage, particularly soil erosion and scour that undermines foundations, sidewalks, and roads.

School Facilities as Emergency Shelters

According to Section 5.8 of FEMA 424, *Design Guide for Improving School Safety in Earthquakes, Floods, and High Winds*, schools are good sites for both short- and long-term shelters because their kitchen and restroom facilities are designed to serve many people and there is space for cots in gymnasiums, classrooms, and corridors.

Emergency shelters require:

- A site located no lower than the 500-year flood level, and preferably higher;
- A reliable source of emergency power for lighting, communications, and refrigeration;
- A water supply that will remain potable during flood conditions;
- Wastewater service that will remain functional during flood conditions;
- Vehicular access over dry ground.

Shelter planning, activation, staffing, traffic control, administration, and communication are addressed in American Red Cross protocols.

Structures

Other than localized overflows of storm water drain systems, no structures owned or operated by SMMUSD or SMC are subject to major damage by flooding. Aggressive maintenance of sewer systems and drain fields keep the potential for damage low.

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Repetitive Loss

Floodplain Management Plan for Repetitive Loss Properties

Repetitive Loss Properties (RLPs) are most susceptible to flood damages; therefore, they have been the focus of flood hazard mitigation programs. Unlike a countywide program, the Floodplain Management Plan (FMP) for repetitive loss properties involves highly diversified property profiles, drainage issues, and property owner's interest. It also requires public involvement processes unique to each RLP area. The objective of an FMP is to provide specific potential mitigation measures and activities to best address the problems and needs of communities with repetitive loss properties. A repetitive loss property is one for which two or more claims of \$1,000 or more have been paid by the National Flood Insurance Program (NFIP) within any given ten-year period.

National Flood Insurance Program (NFIP) and the Community Ratings System (CRS)

The NFIP provides federally supported flood insurance in communities that regulate development in their floodplains. The Community Ratings System (CRS) was implemented in 1990 as a program for recognizing and encouraging community floodplain management activities that exceed the minimum NFIP standards. The CRS encourages comprehensive planning to address the community's flooding problems and provides credit for preparing, adopting, implementing, evaluating, and updating a comprehensive FMP.

Los Angeles County has been a voluntary participant in the CRS established by Federal Emergency Management Agency (FEMA). This program provides a discount on flood insurance premiums for participating property owners, including those properties located within the designated Special Flood Hazard Areas defined by the Flood Insurance Rate Maps (FIRMs).

On March 31, 1992, the LA County Board of Supervisors adopted the "Repetitive Loss Plan for the National Flood Insurance Program CRS", which was approved by FEMA for CRS Activity. To continue program participation, the County is required to prepare an annual update of activities in the Repetitive Loss Plan that reduce the number of and/or mitigate the risk to properties with multiple flood damage claims.

Schools & Educational Facilities

Facilities owned or operated by SMMUSD and SMC do not fall into areas associated with CRS or RLP.

Potential Loss Estimates

Damage estimates to facilities and properties owned and/or operated by SMMUSD and SMC from a catastrophic flood event in either Malibu or Santa Monica are shown in the tables below

Santa Monica Malibu Unified School Districts

Estimated Daily Population at Risk	Potential \$ losses to Critical Facilities or Infrastructure	Potential \$ Losses to Other Owned Buildings	Potential Other \$ Losses	Total Potential \$ Losses
>30	\$250,000	0	>\$10,000	\$300,000
<10				

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Estimated Daily Population at Risk	Potential \$ losses to Critical Facilities or Infrastructure	Potential \$ Losses to Other Owned Buildings	Potential Other \$ Losses	Total Potential \$ Losses
>30	\$57,000	0	>\$10,000	\$67,000
<10				

Development Trends

When structures or fill are placed in the floodway or floodplain water is displaced. Development raises the river levels by forcing the river to compensate for the flow space obstructed by the inserted structures and/or fill. When structures or materials are added to the floodway or floodplain and no fill is removed to compensate, serious problems can arise. Flood waters may be forced away from historic floodplain areas. As a result, other existing floodplain areas may experience flood waters that rise above historic levels. Local governments must require engineer certification to ensure that proposed developments will not adversely affect the flood carrying capacity of the Special Flood Hazard Area (SFHA). Displacement of only a few inches of water can mean the difference between no structural damage occurring in a given flood event, and the inundation of many homes, businesses, and other facilities. Careful attention should be given to development that occurs within the floodway to ensure that structures are prepared to withstand base flood events.

In highly urbanized areas, increased paving can lead to an increase in volume and velocity of runoff after a rainfall event, exacerbating the potential flood hazards. Care should be taken in the development and implementation of storm water management systems to ensure that these runoff waters are dealt with effectively.

Flood maps and Flood Insurance Studies (FIS) are often used to identify flood-prone areas. The NFIP was established in 1968 as a means of providing low-cost flood insurance to the nation's flood-prone communities. The NFIP also reduces flood losses through regulations that focus on building codes and sound floodplain management. NFIP regulations (44 Code of Federal Regulations (CFR) Chapter 1, Section 60, 3) require that all new construction in floodplains must be elevated at or above base flood level. There are no flood prone zones in Santa Monica.

Development under the City of Malibu's General Plan could place structures within the SFHA for that area, but not in a manner that would substantially impede or redirect flows. Adherence to development policies as well as state and federal regulations reduces impacts from flooding to less than significant levels.

The City of Malibu General Plan polices guide the City in its continued compliance with NFIP guidelines and in reducing present and future flood hazards.

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Drought

SMMUSD and SMC

The impact of drought varies from minimal to moderate depending on the drought cycles.

Unlike weather forecasting, Climatologists deal with years. One 6 inch rainstorm out of nowhere could make these predictions for this year look foolish in your area. Therefore you will have drought forecasts tempered with, "indications are" "likely" and "overdue".

PROFILE

Description

There are four different ways that drought can be defined: Meteorological - a measure of departure of precipitation from normal. Due to climatic differences what is considered a drought in one location may not be a drought in another location. Agricultural - refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop. Hydrological - occurs when surface and subsurface water supplies are below normal. Socioeconomic - refers to the situation that occurs when physical water shortage begins to affect people.

Agricultural Definition of Drought

Drought is a protracted period of deficient precipitation resulting in extensive damage to crops, resulting in loss of yield.

Lack of rainfall for an extended period of time can bring farmers and major metropolitan areas to their knees. It does not take very long; a few rain-free weeks spreads panic and shrivels crops. We are told to stop washing our cars, cease watering the grass and take other weather conservation steps. Continued sunshine without sufficient rain can turn a rain forest into a desert; so maybe sunny weather is not always the best weather.

The Dust Bowl days of the 1930's affected 50,000,000 acres of land, rendering the farmers helpless. In the 1950's the Great Plains suffered a severe water shortage when seven years went by with rainfall well below normal. Crop yields failed, the water supply fell.

Deficient Topsoil Moisture

A good definition of agricultural drought should be able to account for the variable susceptibility of crops during different stages of crop development, from emergence to maturity. deficient topsoil moisture at planting may hinder germination, leading to low plant populations per hectare and a reduction of final yield. However, if topsoil moisture is sufficient for early growth requirements, deficiencies in subsoil moisture at this early stage may not affect final yield if subsoil moisture is replenished as the growing season progresses or if rainfall meets plant water needs.

Concept of Drought

Drought is an insidious hazard of nature. Although it has scores of definitions, it originates from a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought should be

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considered relative to some long-term average condition of balance between precipitation and evapotranspiration (i.e., evaporation + transpiration) in a particular area, a condition often perceived as "normal". It is also related to the timing (i.e., principal season of occurrence, delays in the start of the rainy season, occurrence of rains in relation to principal crop growth stages) and the effectiveness of the rains (i.e., rainfall intensity, number of rainfall events). Other climatic factors such as high temperature, high wind, and low relative humidity are often associated with it in many regions of the world and can significantly aggravate its severity. Drought should not be viewed as merely a physical phenomenon or natural event. Its impacts on society result from the interplay between a natural event (less precipitation than expected resulting from natural climatic variability) and the demand people place on water supply. Human beings often exacerbate the impact of drought. Recent droughts in both developing and developed countries and the resulting economic and environmental impacts and personal hardships have underscored the vulnerability of all societies to this "natural" hazard.

A five-year drought has parched soils, lowered reservoirs and weakened forests. And if the past is any guide, the dry spell could go on for decades.

One dry year does not normally constitute a drought in California, but serves as a reminder of the need to plan for droughts. California's extensive system of water supply infrastructure -- its reservoirs, groundwater basins, and inter-regional conveyance facilities -- mitigates the effect of short-term dry periods for most water users. Defining when a drought begins is a function of drought impacts to water users. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions.

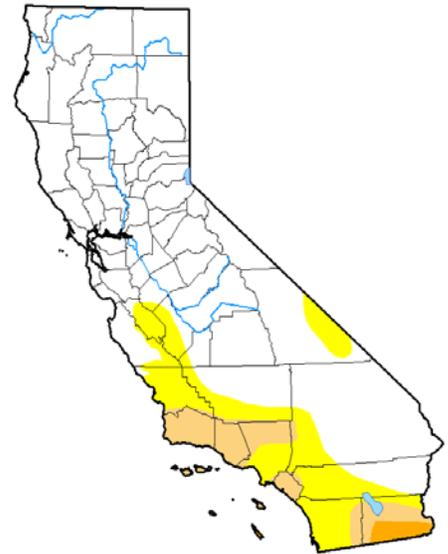
Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, over a multiyear period. There is no universal definition of when a drought begins or ends. Impacts of drought are typically felt first by those most reliant on annual rainfall -- ranchers engaged in dry land grazing, rural residents relying on wells in low-yield rock formations, or small water systems lacking a reliable source. Criteria used to identify statewide drought conditions do not address these localized impacts. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline.

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Location

The Drought Monitor (See example below) was introduced as an operational weekly product in 1999 to provide an overview of conditions averaged across a broad array of time scales and impact indicators, leaning toward those that seem most relevant to observed impacts. This approach has led to an unprecedented degree of cooperation and coordination among a variety of disparate Federal, state, and local government agencies, in addition to many interested members of the academic and private research communities. The result has boiled the complex issues of drought and drought-related impact assessment down to a single, simple, visually-intuitive summary of conditions, which has replaced the uncoordinated, disparate, and often contradictory assortment of opinions, and data that formerly characterized responses to requests for drought information.

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current 2017-04-04	76.54	23.46	8.24	1.06	0.00	0.00
Last Week 2017-03-28	76.54	23.46	8.24	1.06	0.00	0.00
3 Months Ago 2017-01-03	18.07	81.93	67.61	54.02	38.17	18.31
Start of Calendar Year 2016-12-27	17.47	82.53	68.87	57.79	40.60	18.31
Start of Water Year 2016-09-27	0.00	100.00	83.59	62.27	42.80	21.04
One Year Ago 2016-04-05	3.55	96.45	90.58	74.37	55.25	31.68



Intensity:

- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary.

Author(s): Anthony Artusa, NOAA/NWS/NCEP/CPC Past California Droughts

Droughts exceeding three years are relatively rare in Northern California, the source of much of the State's developed water supply. The 1929-34 drought established the criteria commonly used in designing storage capacity and yield of large Northern California reservoirs. The table below compares the 1929-34 drought in the Sacramento and San Joaquin Valleys to the 1976-77 and 1987-92

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droughts. The driest single year of California's measured hydrologic record was 1977. California's most recent multi-year drought was 2012-2016.

Measured hydrologic data for droughts prior to 1900 are minimal. Multi-year dry periods in the second half of the 19th century can be qualitatively identified from the limited records available combined with historical accounts, as illustrated in the figure below, but the severity of the dry periods cannot be directly quantified.

One approach to supplementing California's limited period of measured data is to statistically reconstruct data through the study of tree rings (called dendrochronology). Information on the thickness of annual growth rings can be used to infer the wetness of the season. Site-specific approaches to supplementing the historical record can include age-dating dryland plant remains now submerged in place by rising water levels, or sediment and pollen studies. For example, a 1994 study of relict tree stumps rooted in present-day lakes, rivers, and marshes suggested that California sustained two epic drought periods, extending over more than three centuries. The first epic drought lasted more than two centuries before the year 1112; the second drought lasted more than 140 years before 1350. In this study, the researcher used drowned tree stumps rooted in Mono Lake, Tenaya Lake, West Walker River, and Osgood Swamp in the central Sierra Nevada. These investigations indicate that California has been subject to droughts more severe and more prolonged than those witnessed in the brief historical record.

The historical record of California hydrology is brief in comparison to geologically modern climatic conditions. The following sampling of changes in climatic conditions over time helps put California's twentieth and twenty-first century droughts into perspective. Most of the dates shown below are necessarily approximations. Not only must the climatic conditions be inferred from indirect evidence, but the onset or extent of changed conditions may vary with geographic location. Readers interested in the subject of paleo-climatology are encouraged to seek out the extensive body of popular and scientific literature on this subject.

The historical record of California hydrology is brief in comparison to the time period of geologically modern climatic conditions. The following samplings of changes in climatic and hydrologic conditions help put California's twentieth century droughts into perspective, by illustrating the variability of possible conditions. Most of the dates shown below are necessarily approximations, since the dates must be inferred from indirect sources.

11,000 years before present

Beginning of Holocene Epoch- Recent time, the time since the end of the last major glacial epoch

6,000 years before present

Approximate time when trees were growing in areas now submerged by Lake Tahoe. Lake levels were lower then, suggesting a drier climate.

900-1300 A.D.(approximate)

The Medieval Warm Period, a time of warmer global average temperatures. The Arctic ice pack receded, allowing Norse settlement of Greenland and Iceland. The Anasazi civilization in the Southwest flourished, its irrigation systems supported by monsoonal rains.

1300-1800 A.D. (approximate)

The Little Ice Age, a time of colder average temperatures. Norse colonies in Greenland failed near the start of the time period, as conditions became too cold to support agriculture and livestock grazing. The Anasazi culture began to decline about 1300 and had vanished by 1600, attributed in part to drought conditions that made agriculture infeasible.

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Mid - 1500s A.D.

Severe, sustained drought throughout much of the continental U.S., according to dendro-chronology. Drought suggested as a contributing factor in the failure of European colonies at Parris Island, South Carolina and Roanoke Island, North Carolina.

1850s A.D.

Sporadic measurements of California precipitation began.

1890s A.D.

Long-term stream flow measurements began at a few California locations.

Extent

Droughts are not clearly defined. Identifying periods of drought in a statewide context is a matter of subjective interpretation, even in retrospect. The period of drought during the 1920's and 1930's in California, for example, has been variously identified as 1922-34 (Troxell, 1957). 1923-34 (Thomas and others, 1963), 1924-34 (Matthai, 1979). 1928-34 (California Department of Water Resources, 1987), 1929-34 (California Department of Water Resources, 1973), and 1928-37 (Earle and Fritts, 1986). Differences in the duration and severity of droughts from place to place account for much of the discrepancy. Even at a given location, however, it is a matter of judgment whether a period of greater than normal runoff represents the end of a drought or just a minor interruption.

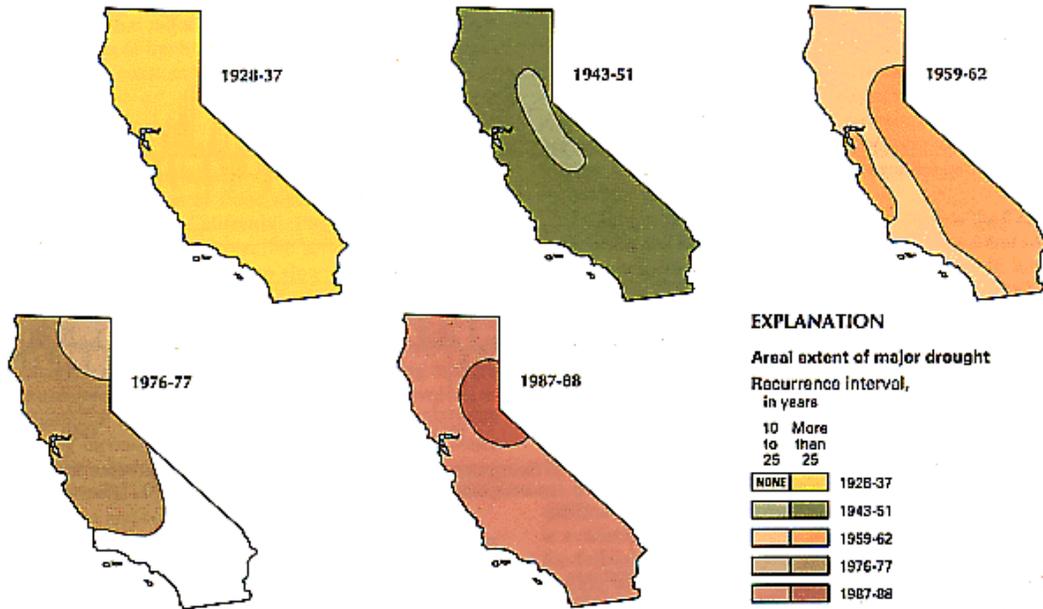
In California, the total annual runoff generally is more important to the State's water supplies than the distribution of runoff within the year. Short periods of greater than normal runoff do not necessarily mark the end of a drought and are commonly included within identified droughts. In some instances, even an entire year of slightly greater than average flow is included in a drought. For example, three of the six representative gauging stations had greater than average flows during water year 1932, which by all

accounts is considered to be part of a major statewide drought. In assessing the statewide significance of a period of drought, more importance is given to droughts in the northern part of the State than in the southern part because the northern part is the source of much of the State's developed water supply.

Stream flow records of the Sacramento River Basin Index were used to supplement the period of record for the drought analysis. The Sacramento River Basin Index, compiled by the DWR, is a widely used measure of northern California water supply. The index is adjusted to represent unimpaired runoff and is based on the combined flows from the upper Sacramento, Feather, Yuba, and American River basins. Two separate runoff records of the Sacramento River Basin Index were used in the drought analyses. The historical record is based on flows measured directly at gauging stations from 1906 to 1988 and on estimates of annual run-off made by the DWR by using historical data from 1872 to 1905. A separate record of annual runoff, referred to as the tree-ring reconstruction, has been estimated for 1560 to 1980 by Earle and Fritts (1986) from the analysis of tree rings. The accuracy of the tree-ring reconstruction is limited, and not all historic droughts are replicated in the reconstructed record.

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Areal Extent of Droughts



The major drought of the 1920's and 1930's is identified here as lasting from 1928 to 1937, even though drought conditions were simultaneously in effect over the entire State only from 1929 to 1934. Less than normal flows did not begin until 1929 in the northern Coast Ranges and lasted only into 1934 or 1935 for most of the State less than normal flows persisted into 1937 only in the northern one-quarter of the State. The duration of the drought in different areas thus ranged from about 7 to 10 years. Owing in part to the extended duration, the drought of 1928-37 accumulated the largest deficiency in runoff of any drought in the State's history. It is arguably the State's most severe drought.

The drought of 1928-37 had a recurrence interval exceeding 80 years, based on the longest gauging-station records available. This drought is unequalled in the historical record of the Sacramento River Basin Index dating back to 1872; this indicates that the drought had a recurrence interval of more than 100 years. The stream flow record reconstructed from tree-ring data, moreover, indicates that the drought is unequalled for the entire period from 1560 to 1980; these data indicate a possible recurrence interval of more than 400 years.

For the drought of 1943-51, the durations at specific gauging stations differed widely. The drought was at its maximum extent (statewide) during 1947-49. In general, the drought lasted 3-4 years in the central and northern Sierra Nevada and 6-8 years in the rest of the State. Yearly departures of runoff were erratic in the northern part of the State; the general trend of the drought was interrupted by much greater than normal runoff early in water year 1946 and nearly normal runoff in water year 1948. This drought was most severe in central and southern coastal areas, where accumulated deficiencies in runoff approached, and in some instances exceeded, those of the drought of 1928-37.

Water year 1951 ranks as the driest of record at several gauging stations in southern coastal California. Recurrence intervals for the drought of 1943-51 were about 20 years in the central and northern Sierra Nevada, because of the short duration there, and about 20-80 years in the rest of the State, where this drought is exceeded in duration and severity only by the drought of 1928-37. The historical record of the Sacramento River Basin Index also indicates that the drought of 1943-51 (recurrence interval 55 years) ranks second only to the drought of 1928-37. The drought of 1943-51 is not well reflected in the stream flow record reconstructed from tree-ring data.

The drought of 1959-62 began simultaneously state-wide. In general, the drought lasted 4 years along the central and north coast and inland to the northern Sacramento River basin. In the rest of the State,

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it lasted 3 years. Despite the slightly longer duration in the northern part of the State, accumulated deficiencies in runoff generally increased from north to south.

In the southern one-half of the State, water year 1961 was the driest of the drought of 1959-62, ranking among the driest years of record at many sites. Recurrence intervals for this drought were greatest along the central coast, in the Sierra Nevada, and in the southern California desert (30-75 years). In the rest of the State, recurrence intervals were about 15-20 years. The historical record of the Sacramento River Basin Index indicates a recurrence interval for this drought of 23 years. The stream flow record reconstructed from tree-ring data that reflects reasonably the drought of 1959-62 indicates a recurrence interval of slightly more than 30 years.

The drought of 1976-77 was short and severe. The direct hydrologic effects of the drought were most severe in the northern three-quarters of the State (**See above graphic**) but the impact of the drought was statewide because of the dependence of southern California on water transfers from the north. The duration of the drought in the areas most affected was about 2 years. Farther south, outside the area of extreme magnitude, the period of deficient runoff began in 1974; for sites in the Southern California Desert province, where the concept of drought has little meaning, the period of deficient runoff began as early as 1970.

Water year 1977 was the driest year of record at almost all gauging stations in the affected area. Water year 1976 ranks as the second driest at gauging stations in the central part of the Coast Ranges and among the five driest in the central and northern Sierra Nevada. The 2-year deficiency in runoff accumulated during the drought is unequaled at gauging stations in the affected area; this deficiency has a recurrence interval that exceeds 80 years. The 2-year deficiency in stream flow is also unequaled in severity for the historical record of the Sacramento River Basin Index, which indicates a recurrence interval of more than 100 years. Like the drought of 1943-51, the drought of 1976-77 is not well reflected in the stream flow record reconstructed from tree-ring data; the recurrence interval is considerably smaller than that derived from the historical record.

In terms of recurrence intervals, the droughts of 1928-37 and 1976-77 are similar; both are of unsurpassed severity among droughts of corresponding duration during the period of systematic record collection. Arguments can be made that either is the most severe drought in the history of the State. Because of the differences between the two droughts, however, direct comparisons beyond that provided by an evaluation of recurrence interval are difficult. The drought of 1928-37 was longer and

accumulated a larger deficiency in runoff. The drought of 1976-77 was more intense and had greater annual deficiencies in runoff.

California's most recent drought began over most of the State in 1987 and is still in progress at the time of this writing (July 1989). In parts of southern California, less than normal runoff began in 1984, but with little statewide implication. The relative deficiencies in runoff accumulated during 1987-88 were greatest along the central coast and in the northern Sierra Nevada.

Water years 1987 and 1988 were approximately equivalent in severity, and neither year, by itself, was exceptionally dry. The drier of the two, which differs depending on the part of the State, ranks as only the fifth to tenth driest on record. The drought period 1987-88 was considerably less severe than the drought of 1976-77 and also less severe than parts of the drought of 1928-37. In different areas of the State, the drought in 1987 and 1988 also was less severe than 2-year periods within the droughts of 1922-26, 1943-51, and 1959-62. For the years 1987-88, the current drought has a recurrence interval of about 15 years, except in the northern Sierra Nevada, where some gauging stations indicate that the drought had a recurrence interval as great as 35 years. The historical record of the Sacramento River Basin Index indicates a recurrence interval close to 40 years. The record of runoff reconstructed from tree-ring data extends only to 1980 and thus does not allow an analysis.

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Probability

The West has been dry for millions of years, with hugely varying annual rainfall, climatologists say. The Southland gets an average of 15 inches a year — enough water to supply 5 million people. But that can range from the 3 inches that Los Angeles eked by with seven years ago, to the 38 inches dumped on it during an El Niño season.

Longer cycles could bring severe drought. The 11th century saw an 80-year drought, long enough to wipe out a tribe of pre-Columbian Pueblo peoples. With the exception of a few water heavy storms, it's been drier than normal for over a decade.

Storage in the state's two largest reservoirs, Shasta Lake and Lake Oroville, are considerably above normal for the date, thanks to the big storms in the Northern Sierra that turned the final three months of 2016 and the first four months of 2017 into what appear to be near records for precipitation.

With statewide snowpack at approximately 172% of the norm for this time of state and federal water managers are expecting above-normal runoff this spring and increasing reservoir levels.

Based upon the drought of the past four years (2012-2016) the impact of California's statewide drought has diminished significantly during the recent rainy season. However, state and federal water managers are stating that the drought conditions still exist but at a smaller scale.

On an average year, the area's 10 million residents now get more than a third of their water from the L.A. Aqueduct, half their water from imports by the Metropolitan Water District, 11 percent from groundwater and 1 percent from reclaimed sewer water.

By 2025 — 10 years ahead of its long-term projections — the area expects to cut its Delta and Colorado imports in half, while boosting groundwater use to 16 percent, recycled sewer water to 8 percent, water conservation to 9 percent and storm water capture to 3 percent.

VULNERABILITY

Drought is one of the most costly natural disasters affecting the U.S. The National Integrated Drought Information System (NIDIS) was established in 2006 (NIDIS Act) to provide the nation with a drought early warning system.

Overview

If drought conditions continue it will affect SMMUSD and SMC:

Food and fuel prices will feel an upward pressure. Only large surplus production elsewhere in the world will be able to counterbalance price pressure. The jurisdictions' already tight budgets will feel the impact. The U.S. Department of Agriculture estimates that the drought will push retail food prices up by between 0.5% to 1% in 2017. That's a lower-than-average number: over the last 20 years, average annual increases have been 2.5% . Next year, most of the cost increases will be centered on animal products, like eggs, beef and poultry.

Businesses and economies that depend on agricultural productivity will see major shortfalls, if serious drought conditions resume, some local economies may collapse. Though Santa Monica and Malibu would most certainly be directly affected in this manner, indirect economic impact would be felt.

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For areas where water supplies are already under major strain, individuals - even entire towns - will be forced to leave their homes. In many instances, individuals who stay will have to pay for water delivery. Some local governments will start to build water pipelines to adjacent municipalities.

Many wildfires will break out and spread, leading to one of the worst wildfire seasons ever in the US.

Forests and other ecosystems will suffer. Some regions will experience permanent loss of plant and animal species from that area; some endangered and threatened species could go extinct.

Landscaping and lawns will shrivel and die because of lack of water available for maintenance.

Drought-related Health Issues

These extreme weather conditions can lead to wellness issues that linger after the searing, dry weather breaks. We spoke to microbiology experts to find out what long-term problems drought can bring:

Depression and Stress

Coping with a prolonged drought's economic fallout can easily snowball into heightened stress levels and take a serious toll on people's mental health. Lots of difficult decisions and choices need to be made.. For instance, people may struggle with higher food prices, or their homes may be threatened by drought-fueled wildfires.

These escalated stress levels can cause depression, post-traumatic stress disorder, substance abuse and more.

Respiratory Illness

There are a lot more airborne pollutants because there is no rain water to flush them out of the atmosphere.. The increased dust, mold and pollen particles aggravate allergies and asthma, and can potentially lead to bronchitis.

Viruses

When water levels decline, pools of water become stagnant and polluted — ripe breeding grounds for mosquitoes carrying the West Nile and Zika viruses, which according to some experts are the greatest waterborne health risk in the country. The viruses range in severity. Some people infected with the West Nile virus may not have any symptoms, but others may get a headache and high fever, or even suffer convulsions, coma or paralysis. People infected with the Zika virus may not show symptoms, but the most common symptoms are fever, rash, joint and or muscle pain, headaches and may cause birth defects.

Infections

When trying to minimize water usage during a drought, some people cut down on daily hygiene routines, such as washing hands and showering. This can put people at risk for gastrointestinal disorders and other infectious diseases.

Nutritional deficiencies

Although widespread malnutrition is not an immediate issue for Americans, skyrocketing prices for such basic food staples as vegetables and meat can push people into unbalanced eating habits, which can lead to anemia and other nutritional deficiencies.

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Other Drought Impacts

Drought and extreme heat can take a toll in other ways, causing cracks in building foundations, higher maintenance costs and loss of vegetation. School districts may be required to deal with the extreme weather by changing school procedures — and some have already had to take costly preventative measures or make expensive repairs. Outdoor irrigation may be banned using city water, so wells may have to be placed in service in order to safe football and other athletic fields.

Potential Loss Estimates

Loss estimates are based on the discussion above:

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Estimated Daily Population at Risk	Potential \$ losses to Critical Facilities or Infrastructure	Potential \$ Losses to Other Owned Buildings	Potential Other \$ Losses	Total Potential \$ Losses
>30 <10	\$50,000	0	\$275,000 (grounds, landscaping)	\$325,000

Santa Monica College

Estimated Daily Population at Risk	Potential \$ losses to Critical Facilities or Infrastructure	Potential \$ Losses to Other Owned Buildings	Potential Other \$ Losses	Total Potential \$ Losses
>30 <10	\$57,000	0	\$235,000 (grounds, landscaping)	\$292,000

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LOW RISK Natural Hazards

The following hazards were deemed as LOW to NO RISK hazards by the Santa Monica Malibu Unified School District/Santa Monica College Hazard Mitigation Planning Committee during the 2017 review and update process:

- Tsunami
- Explosions
- Sinkholes/Subsidence
- Volcanic

High Risk Human-Caused Hazards

Utility Loss

PROFILE

California's massive electricity in-state generation system generates more than 200,000 gig watt-hours each year and is transported over the state's 32,000 miles of transmission lines. In 2016, California produced 70% of the electricity it uses; the rest was imported from the Pacific Northwest (10%) and the U.S. Southwest (20%). Natural gas is the main source for electricity generation at 45% of the total in-state electric generation system power.

The state's main challenge is to ensure adequate electricity supplies while reducing greenhouse gas emissions as directed by AB 32 (33% reduction by 2020). Since 2003, California's energy policy has recognized an electricity "loading order" as the preferred sequence for meeting electricity demands. The loading order lists energy efficiency and demand response first, renewable resources second, and clean and efficient natural gas-fired power plants third.

In addition, under the Renewable Portfolio Standard, California's goal was to increase the amount of electricity generated from renewable energy resources to 20% by 2010 and in 2011 legislation passed that pushes that goal to 33% by 2020. Currently, California's in-state renewable generation is comprised of biomass, geothermal, small hydro, wind, and solar generation sites that make up approximately 17% of the total in-state generational output.

Description

California is served by about 75 load-serving entities (LSEs). These are broken down as:

- Investor-Owned Utilities - 6
- Publicly Owned Utilities - 48
- Rural Electricity Cooperatives - 4
- Native American Utilities - 3
- Other Electricity Service Providers - 14

Chronology ^{[1][2][3]}	
1996	California begins to modify controls on its energy market and takes measures ostensibly to increase competition.
April 1998	Spot market for energy begins operation.
May 2000	Significant rise in energy price.
June 14, 2000	Blackouts affect 97,000 customers in San Francisco Bay area during a heat wave .
August 2000	San Diego Gas & Electric Company files a complaint alleging manipulation of the markets.
January 17–18, 2001	Blackouts affect several hundred thousand customers.
January 17, 2001	Governor Davis declares a state of emergency.
March 19–20, 2001	Blackouts affect 1.5 million customers.
April 2001	Pacific Gas & Electric Co. files for bankruptcy.
May 7–8, 2001	Blackouts affect upwards of 167,000 customers.
September 2001	Energy prices normalize.
December 2001	Following the bankruptcy of Enron, it is alleged that energy prices were manipulated by Enron.
February 2002	Federal Energy Regulatory Commission begins investigation of Enron's involvement.
Winter 2002	The Enron Tapes scandal begins to surface.
November 13, 2003	Governor Davis ends the state of emergency.

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The five largest utilities and total electricity consumption (in 2016) are:

1. Southern California Edison Company (SCE) - 88,208 million kilowatt-hours
2. Pacific Gas and Electric Company (PG&E) - 85,057 million kilowatt-hours
3. Los Angeles Department of Water and Power (LADWP) - 24,317 million kilowatt-hours
4. San Diego Gas & Electric (SDG&E) - 20,300 million kilowatt-hours
5. Sacramento Municipal Utility District (SMUD) - 10,917 million kilowatt-hours

California's investor-owned electric utilities send power through roughly 200,000 miles of overhead transmission and distribution lines and an additional 70,000 miles of underground lines.

Power Plants

California produces roughly 70 percent of its electricity from power plants located within our state and from plants that are outside of the state but owned by California utilities. About 33 percent is imported electricity from the Pacific Northwest and the American Southwest. In 2015, the total electricity imported was 92,130 terra- watt-hours.

The installed capacity of the 1,008 in-state power plants (greater than 0.1 megawatts - MW) totals 69,709 MW. These plants produced 196,193 gig watt-hours of electricity in 2015.

California and the Pacific Northwest share generating resources by long-distance transmission lines. The Pacific Northwest hydropower supplies may be less available in California in the future (Markoff and Cullen 2008, Perez et al., 2009). Lu et al. (2010) have demonstrated the adverse impact of simultaneous warming across the Western Grid.

Extent

History

The California electricity crisis, also known as the Western U.S. Energy Crisis of 2000 and 2001 was a situation in which California had a shortage of electricity caused by market manipulations and illegal shutdowns of pipelines by Texas energy consortiums. The state suffered from multiple large-scale blackouts, one of the state's largest energy companies collapsed, and the economic fall-out greatly harmed Governor Gray Davis's standing.

Drought, delays in approval of new power plants, and market manipulation decreased supply. This caused 800% increase in wholesale prices from April 2000 to December 2000. In addition, rolling blackouts adversely affected many businesses dependent upon a reliable supply of electricity, and inconvenienced a large number of retail consumers.

California had an installed generating capacity of 45GW. At the time of the blackouts, demand was 28GW. A demand supply gap was created by energy companies, mainly Enron, to create an artificial shortage. Energy traders took power plants offline for maintenance in days of peak demand to increase the price. Traders were thus able to sell power at premium prices, sometimes up to a factor of 20 times its normal value. Because the state government had a cap on retail electricity charges, this market manipulation squeezed the industry's revenue margins, causing the bankruptcy of Pacific Gas and Electric Company (PG&E) and near bankruptcy of Southern California Edison in early 2001.¹

The financial crisis was possible because of partial deregulation legislation instituted in 1996 by Governor Pete Wilson. Enron took advantage of this deregulation and was involved in economic withholding and inflated price bidding in California's spot markets. The crisis cost between \$40 to \$45 billion.

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September 8, 2011 Power Failure

The worst blackout in California history began with maintenance work at a transmission substation outside Yuma, Arizona that tripped off a 500-kilovolt power line at 3:27 p.m. That disruption cascaded across San Diego County and Baja California, halting 11 minutes later at a San Onofre switch yard 45 miles north of San Diego.

The western transmission grid, stretching across 14 states and into Canada and Mexico, is designed and monitored to withstand any major failure, such as the initial power-line outage on Sept. 8. The outage exposed weakness in the electricity grid that supplies San Diego County with its power.

The grid is part of a web of power lines stretching from Canada to northern Baja California, connecting electricity plants with their customers. Because of San Diego's position in a geographical cul de sac, it is connected to the grid only through two major energy lines: a northern line connected to the San Onofre nuclear plants and an eastern line connected to power plants in Imperial County, Arizona, and northern Mexico.

The problem began at an Arizona substation that is a major delivery point of electricity between power plants in Arizona and San Diego. Just before 3:30 p.m., a worker at the substation replaced monitoring equipment that had been causing trouble earlier in the day. That created a short-term power outage for about 56,000 customers in Yuma and western Arizona, said APS, Arizona's largest electric utility, which runs the substation.

Ten minutes later, workers at the substation unsuccessfully tried to restore power to the region, shorting the circuits. That led to a disruption in the electricity lines across Imperial County to San Diego — one of the county's two major sources of electricity.

The worst that should have happened was thought to be temporary, localized "rolling" brownouts or blackouts as the county began to draw power from its second major energy source, the northern power lines connected to the San Onofre nuclear plants. But there were no rolling blackouts. Officials at San Diego Gas & Electric described a "cascading effect" as the electric system shut down.

A safeguard that was a built-in as an automatic protective device activated when the San Onofre power plant shut off. The reason that the outage tended to cascade was that the system tried to protect itself from voltage fluctuations.

Amid a heat wave and surging energy demands, SDG&E engineers worked nonstop to execute a "black start" from zero power.

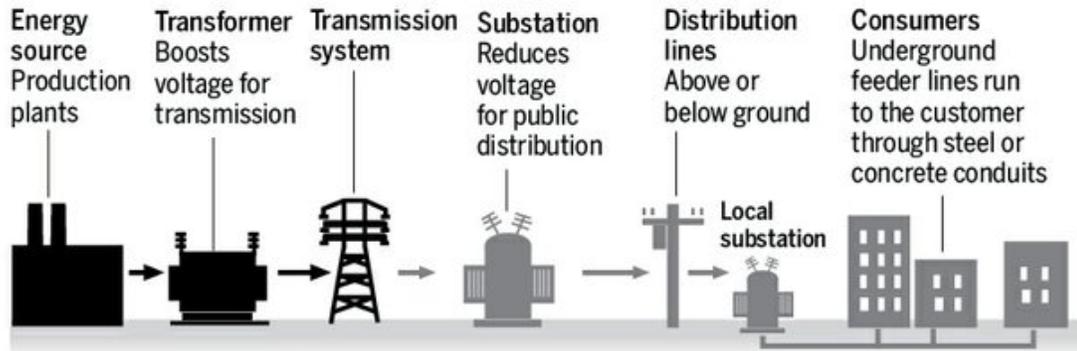


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Sources: California Energy Commission; APS; ESRI

MATT PERRY & AARON STECKELBERG • U-T

How a power grid works



Cause of outage:
A high-voltage transmission line near Yuma, Ariz., tripped off line resulting in a major power outage.

- Steps to restore power:**
1. Re-establish ties with the rest of the Western electric grid.
 2. Bring plants to a "synchronous speed" with other sources.
 3. Extend transmission through substations, then local substations.
 4. Gradually turn on about 1,000 distribution circuits to customers while avoiding sudden jolts.

Source: SDG&E

AARON ATENCIO & MORGAN LEE • U-T

Probability

Extreme summer heat drives up electricity demand for cooling. This can strain electrical supply, transmission, and distribution systems and thereby increase the risks of very costly and disruptive blackouts. An analysis released by Oak Ridge National Laboratory cites two examples in Arizona in 2011 that illustrate the vulnerability of the electrical system under very hot conditions. "Heat waves have become longer and more extreme," says the National Academy of Sciences in *Advancing the Science of Climate Change: America's Climate Choices* (2010), adding that "it is very likely" that "heat waves will become more intense, more frequent" in the future.

Cities and towns across America already are seeing changes in weather extremes and experiencing the disruptive consequences," says Keya Chatterjee of WWF. "This report describes the growing threat to our communities, and demonstrates that the threat will be much greater in the long term if we do not sharply reduce our greenhouse gas emissions. Washington's inaction on climate change is leaving our cities dangerously exposed. Now is time for cities to address these challenges, and for citizens of every city and town to begin building a safer, healthier and happier future."

Extreme Weather

Regarding implications of climate change for infrastructures in the United States, we find that:

- Extreme weather events associated with climate change will increase disruptions of infrastructure services in some locations.
- A series of less extreme weather events associated with climate change, occurring in rapid succession, or severe weather events associated with other disruptive events may have similar effects.
- Disruptions of services in one infrastructure will almost always result in disruptions in one or more other infrastructures, especially in urban systems, triggering serious cross-sector cascading infrastructure system failures in some locations, at least for short periods of time.

These risks are greater for infrastructures that are:

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- Located in areas exposed to extreme weather events
- Located at or near particularly climate-sensitive environmental features, such as coastlines, rivers, storm tracks, and vegetation in arid areas
- Already stressed by age and/or by demand levels that exceed what they were designed to deliver.
- These risks are significantly greater if climate change is substantial rather than moderate.

Regarding implications of climate change for urban systems in the United States:

- Urban systems are vulnerable to extreme weather events that will become more intense, frequent, and/or longer-lasting with climate change.
- Urban systems are vulnerable to climate change impacts on regional infrastructures on which they depend.
- Urban systems and services will be affected by disruptions in relatively distant locations due to linkages through national infrastructure networks and the national economy.
- Cascading system failures related to infrastructure interdependencies will increase threats to health and local economies in urban areas, especially in locations vulnerable to extreme weather events.
- Such effects will be especially problematic for parts of the population that are more vulnerable because of limited coping capacities.

"Heat waves have become longer and more extreme," says the National Academy of Sciences in *Advancing the Science of Climate Change: America's Climate Choices* (2010), adding that "it is very likely" that "heat waves will become more intense, more frequent" in the future.

"The likely increase in heat waves implies more peak load demands, stresses on the energy distribution systems and more frequent brownout and blackouts," says the ORNL in *Climate Change and Infrastructure, Urban Systems, and Vulnerabilities*. "These will have negative impacts on local health and local economies."

The ORNL findings are consistent with those of researchers who reported on *Climate, Extreme Heat, and Electricity Demand in California* in the June 2008 issue of the *Journal of Applied Meteorology and Climatology*. They concluded that "[o]ver the twenty-first century, the frequency of extreme-heat events for major cities in heavily air conditioned California is projected to increase rapidly." They added that "present-day 'heat wave' conditions may dominate summer months—and patterns of electricity demand—in the future" and that "similar increases in extreme-heat days are likely for other southwestern U.S. urban locations."

"By the end of this century, all model/scenario combinations indicate an increase in region-wide extreme temperature conditions of a severity associated with electricity shortages under the current configuration of the electric power system and patterns of demand," said the researchers.

Economic and Social Effects

Electricity is the backbone of each industrialized society and economy. Modern countries are not used to having even short power blackouts. The increased dependency on continuous power supply related to electronics, industrial production, and daily life makes today's society much more vulnerable concerning power supply interruptions.

A brownout (reduced voltage) of some minutes or a similar blackout (complete failure of electricity supply) may cause some inconvenience at home such as having the lights turn off. But a blackout of a few hours or even several days would have a significant impact on our daily life and the entire economy.

- Critical infrastructure such as communication and transport would be hampered, the heating and water supply would stop and production processes and trading would cease.
- Emergency services like fire, police or ambulance could not be called due the breakdown of the telecommunication systems.

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- Hospitals would only be able to work as long as the emergency power supply is supplied with fuel.
- Financial trading, cash machines and supermarkets would in turn have to close down, which would ultimately cause a catastrophic scenario.

Already, electricity reliability considerations are affecting business decisions. California's electricity supply reliability problems in periods during which demand exceeds the available generating and/or transmitting capacity have already resulted in industries moving out of California to regions with a more dependable supply of electricity. In the future, this issue is likely to continue to plague California, the southwestern United States, and other heavily air conditioned regions in which electricity shortfalls occur.

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VULNERABILITY

Overview

The energy industry today consists of a patchwork of companies with different and competing interests. Even though the electrical grid on the North American continent is now split into two large sections plus Texas, the responsibility for producing, distributing and maintaining energy is distributed among thousands of power companies and utilities. There are over 6,000 power plants, owned by 3,000 utilities, that pour power into 140 regional 'control areas,' which communicate with one another to coordinate moving the electricity as it is bought and sold.

While power generation and the wholesale energy market have been deregulated, transmission and the sale of electricity to consumers is as yet still partially regulated. This means that companies that own both generating plants and transmission networks are more likely to cut back spending on the latter and invest more in the former. Moreover, it is often difficult for utilities that own networks to receive permission from local authorities to build new lines or raise consumer rates.

Energy demand has grown by 35 percent over the past decade, but investment in the grid has increased by only 18 percent. The total investment of utility companies in transmission infrastructure in the United States is about the same as in the United Kingdom, even though the electrical grid in the US is 15 times as large.

Adding to these burdens on the transmission grid is the fact that in areas where deregulation has gone ahead, utilities that own transmission lines are required by law to open their grids to other companies, meaning that while the utilities will have to bear the brunt of the cost, the benefit goes to any company that uses the lines.

Concurrent with the breakup of the old regulatory mechanisms, there has been a vast expansion in the amount of energy being pumped through the grid and a major lengthening of the distance through which it passes between buyer and seller. This has placed added strains on the physical capacity of the system, and has also exacerbated the problems associated with the balkanized character of ownership and regulation in the grid.

There is no regulatory authority that has the power to oversee the entire system and enforce standards on utility and power companies. The North American Energy Reliability Council (NERC) is an industry-sponsored group that sets some guidelines, but has no mechanism for enforcement. NERC describes itself as a "voluntary organization, relying on reciprocity, peer pressure and the mutual self-interest of all those involved." As part of the deregulatory fervor, over the past several years the limited regulatory authority possessed by the Federal Energy Regulatory Commission has been cut back.

The fact that the electrical grid in some regions may be unreliable has been known for some time. Over the past several years, the frequency of transmission bottlenecks and failures has increased.

Impact

Though a wide-spread and prolonged power failure has not affected the SMMUSD & SMC, the potential damage as a result of one would negatively impact services and quality of life provided to the students and staffs. Small power outages may impact these; however, the jurisdictions are prepared to respond and maintain as long as there is fuel for generators, infrastructure in place to protect vital services and people who can implement emergency power plans.

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Backup power became a big issue after rolling blackouts that occurred in past years SMMUSD and SMC mitigated this by installing emergency generators that provide power to the essential facilities such as and waste water and refrigeration.

SMMUSD and SMC Hazard Mitigation Planning Team rate the risk HIGH when given the scenario of a **wide-spread** and **prolonged** power failure because they realize that their ability to continue is contingent on short-term response and neither has the resources nor the people to provide suitable electrical power to residents and business for an extended period.

The Impact of Any Loss of Power on Water & Sewer Systems

California is a populous state that receives minimal rainfall. Approximately 70% of the population obtains its drinking water from surface sources with the remainder relying on ground water supplies. The basic types of system used by the water companies are pressurized (pressure fed) and non-pressurized (gravity fed) systems. The basic types of system used by the sewer companies are collection and treatment systems that use force pumps to move sewerage.

Drinking water is supplied to California residents through a myriad of governmental agencies, cities, districts, private utilities, mutual water companies, private businesses, and individually owned wells. There are over 10,000 public water suppliers in the state serving water to approximately 29 million consumers. Less than 10% of the public water systems in the state serve collectively more than 95% of the state's population. The remaining 90% of the systems serves less than 5% of the population. D.01-05-089 added Category M (limited other customers as necessary to protect public health and safety, to the extent exempted by the Commission) to the list of essential customers normally exempt from rotating outages.

Due to the current energy situation, and rolling blackouts that historically occurred, the Water Division conducted an informal inquiry into the impact of the rolling blackouts and concluded that the California energy situation and rolling blackouts had no significant impact upon the California Water and Sewer System Industries, in part due to the "Y2K" efforts of 1999. Water utilities and sewer system utilities appear to have the matter well under control with little to no impact on customer service at this time.

The Effects on Public Health and Safety

Public health and safety must be the primary factor used to evaluate a customer's eligibility for exemption from rotating outages. Exempting a fire department from rotating outages is of little value if the water resources needed to fight these fires are not available to it, particular during the high fire season. Fires that start during extreme fire weather conditions are a high risk to the safety of the residents and firefighters, and have a high probability of spreading rapidly and inflicting major property loss, if water pumping facilities are compromised.

A review of the Chief of the Los Angeles County Fire Department's (LACFD) comments indicated that the emergency restoration procedures are likely inadequate and do not ensure that sufficient water supplies will be available in an emergency. LACFD also is concerned that the procedures have not been activated nor tested, the procedures may not have been communicated consistently between the electric utilities, water agencies and fire fighting forces, the procedures do not provide for the instantaneous supply of water required in a fire emergency, and the current procedures require the caller to identify the exact location of the power restoration.

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Data/Telecommunications Disruption

SMMUSD & SMC depends upon information systems and communications networks to carry out nearly all aspects of day to day business. In this digital era, as we use automated information technology (IT) systems to process information for better support of our missions, risk management plays a critical role in protecting our information assets, and therefore our missions, from IT-related risk.

PROFILE

Telephone Systems: Santa Monica and Malibu are in a “planning zone C” for the major earthquake scenarios. This means that almost total outage of telephone communications can be expected immediately after the quake with a gradual recovery of service over days to weeks. In a “C” zone it is expected that no more than 35-40 percent recovery can be expected within three days.

Radio Systems: Emergency response and other local jurisdiction radio systems are expected to operate at around 40% effectiveness for response forces for the first 12-24 hours following a major quake. This will occur because of the need to employ these communications system for a broad spectrum of transmissions until augmentation can be secured. The integration of amateur radio volunteers will be required. Such capabilities exist in a volunteer system within the city. Radio traffic will be unfavorably impacted if microwave towers, repeater stations and/or antenna system become misaligned or are damaged. Effective radio communications require that communications discipline procedures be followed.

Commercial Broadcasters: All radio and television stations in the basin are expected to incur some disruption of broadcast capability for periods of up to 24 hours. This will occur because of equipment failure, damage, destruction, transmission line outages or power problems. The Emergency Broadcast System (EBS) is expected to experience some reduction in capability for the first hours after the event. Persons or facilities with the capability of monitoring out of area broadcasts must be cautious about accepting this broadcast information at face value.

Local governments depend upon information systems and communications networks to carry out nearly all aspects of day to day business. In this digital era, as we use automated information technology (IT) systems to process information for better support of our missions, risk management plays a critical role in protecting our information assets, and therefore our missions, from IT-related risk.

An effective risk management process is an important component of a successful IT security program. The principal goal of an organization’s risk management process should be to protect the *organization and its ability to perform their mission*, not just its IT assets. Therefore, the risk management process should not be treated primarily as a technical function carried out by the IT experts who operate and manage the IT system, but as an essential management function of the organization.

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VULNERABILITY

Electrical & Technical Failures

The term downtime is used to refer to periods when a system is unavailable. Downtime or outage duration refers to a period of time that a system fails to provide or perform its primary function. Reliability, availability, recovery, and unavailability are related concepts. The unavailability is the proportion of a time span that a system is unavailable or offline. This is usually a result of the system failing to function because of an unplanned event, or because of routine maintenance.

The term is commonly applied to networks and servers. The common reasons for unplanned outages are system failures (such as a crash) or communications failures (commonly known as network outage). Unplanned downtime may be the result of a software bug, human error, equipment failure, malfunction, high bit error rate, power failure, overload due to exceeding the channel capacity, a cascading failure, etc.

Telecommunication outage classifications

Downtime can be caused by failure in hardware (physical equipment), software (logic controlling equipment), interconnecting equipment (such as cables, facilities, routers...), wireless transmission (wireless, microwave, satellite), electrical outage, and/or capacity (system limits).

The failures can occur because of damage, failure, design, procedural (improper use by humans), engineering (how to use and deployment), overload (traffic or system resources stressed beyond designed limits), environment (support systems like power and HVAC), scheduled downtime (outages designed into the system for a purpose such as software upgrades and equipment growth), or for an unknown reason.

The failures can be the responsibility of customer/service provider, vender/supplier, utility, government, contractor, end customer, public individual or act of nature.

Computer Security Breaches

As the need for high levels of computer security became increasingly apparent to government and business owners, many began to earmark additional dollars for security technology and for staff to oversee security measures. By then, the most popular form of attack was the denial of service (DOS), which simply overloads a network system until it crashes. For example, a DOS attack on online auction giant eBay in February 2000, which involved sending the site a barrage of fake requests for Web pages, caused eBay's system to crash. Similarly, CERT's Web site was shut down for two days after a myriad of fake information requests overloaded its system. A DOS known as a worm began gaining significant media attention in 2001. In July of that year, the worm entitled Code Red began attacking Microsoft Internet Information Server systems. Code Red infected servers running Windows NT 4, Windows 2000, Windows XP, and IIS 4.0, and it replaced Web site content with the phrase "Welcome to www.worm.com Hacked by Chinese!" The damage caused by the Code Red worm was estimated at \$1.2 billion. As Alex Salkever stated in a May 2001 *BusinessWeek Online* article, these types of attacks are commonplace. "According to a study released last week by scientists at the University of California-San Diego's supercomputing facility, more than 4,000 DOS attacks happen each week. The most

sophisticated and serious last for days as dozens, hundreds, even thousands, of hijacked 'zombie' computers pour forth an unceasing barrage of Web-page requests, all unbeknownst to the machines' owners."

Mail bombs behave in the same manner. However, they target a network's mail server with the goal of shutting down e-mail service by overloading the system. Hackers targeting networks may also attempt

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to gain access to secure areas containing sensitive data, such as credit card numbers or social security numbers. A security breach of this type can cause serious damage to a business or institution since data files can be not only copied, but also deleted. AOL became victim to this type of attack in the late 1990s when teenagers from Wichita, Kansas, successfully hacked AOL's network and used the credit card numbers they found there to purchase video games.

Other types of attacks on computers include viruses and Trojan horses. A virus is a program designed to affix itself to something within a computer, such as a file or boot sector, and begin reproducing itself. A file virus, attaches itself to an executable file—one that controls applications—and begins overwriting parts of the file. Roughly two-thirds of all virus attacks involve boot sector viruses, which are harder to detect than file viruses because they make no discernible impact on a system until they actually attack. Boot sector viruses are quite often designed to overwrite an entire hard drive. A virus also might be designed to use all of a computer's resources and prompt it to crash. Two of the most popular transmission methods for viruses are floppy disks and e-mail. For example, the "I LOVE YOU" and the "Love Bug" viruses that appeared in May of 2000 were circulated via e-mail. The resulting damage to individuals, companies, and institutions was judged to be nearly \$10 billion. Like viruses, logic bombs attack computer files and hard drives. Quite often, hackers use a Trojan horse to gain initial access to computers. Trojan horses are disguised as harmless programs, but once executed might release a virus or even a worm.

In July, 2003, California enacted a law mandating the public disclosure of computer security breaches involving confidential information. The law covers not just state agencies but all private enterprises doing business in California. The law essentially states that any entity that fails to disclose that a breach has occurred could be liable for civil damages or face class action suits.

Cyber Crime

Cyber crime is becoming one of the Net's growth businesses. Attacks that gum up Web sites for hours--known as "denial of service"--is only one type. Today, criminals are doing everything from stealing intellectual property and committing fraud to unleashing viruses and committing acts of cyber terrorism in which political groups or unfriendly governments nab crucial information. Cyber thieves have at their fingertips a dozen dangerous tools, from "scans" that ferret out weaknesses in Web site software programs to "sniffers" that snatch passwords. All told, the FBI estimates computer losses at up to \$10 billion a year.

As broadband connections have caught on and dial-up has waned, the Web has gone from being the occasionally accessed to being "always on". That concept is nirvana to e-tailers, but poses a real danger to consumers where cyber crooks can come and go into their computer systems at will. Cyber criminals keep knocking on doors until they find computers that aren't protected. Sadly, the biggest threat is from within. Law enforcement officials estimate that up to 60% of break-ins are from employees.

Impact

Outages caused by system failures can have a serious impact on the users of computer/network systems, in particular those industries that rely on a nearly 24-hour service:

- Medical informatics
- Nuclear power and other infrastructure
- Banks and other financial institutions
- Government records availability and processing
- Limited or no emergency dispatch services
- Aeronautics, airlines
- News reporting
- E-commerce and online transaction processing

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- Persistent online games

Also affected can be the users of an Internet Service Provider (ISP) and other customers of a telecommunication network. Corporations can lose business due to network outage or they may default on a contract, resulting in financial losses. Governments may not be able to provide services to citizens. Those people or organizations that are affected by downtime can be more sensitive to particular aspects. Some are more affected by the length of an outage - it matters to them how much time it takes to recover from a problem. Others are sensitive to the timing of an outage - outages during peak hours affect them the most. The most demanding users are those that require high availability.

Transportation Incidents/Loss

PROFILE

The accessibility of schools and educational facilities has a major impact upon communities. The Transportation Department for the SMMUSD operates 25 school buses, transporting over 500 students to the Malibu schools, and over 250 students to special education programs throughout the District. The Transportation Staff consists of 22 school bus drivers, 2 vehicle and equipment mechanics, 1 administrative assistant, and a Director.

The City of Santa Monica collaborates with several transportation sources. These are:

- Santa Monica Big Blue Bus
- Los Angeles Metropolitan Transit Authority - MTA
- AMTRAK
- Culver City Bus
- Metrolink (Expo Line)

Santa Monica College transportation links to these sources and provides a shuttle service to all of its facility locations.

Santa Monica is a dense urban area that is served by 2 major interstate highways and several important surface streets. Interstate 405 crosses near the eastern boundary of the city. There is a major interchange at Santa Monica Boulevard where heavy traffic enters and exits the freeway, at all hours of the day. Santa Monica is the western terminus to Interstate 10 as well.

Vehicular traffic is the main source of transportation into and out of the Santa Monica area and the only means of transportation into and out of Malibu. Any disruption in the flow of traffic in any direction on any of the major arteries serving these communities has the potential for severely affecting transportation systems that serve the area.

There is one direct light rail (commuter) service serving the Santa Monica area, there are no intra or interstate rail services in the city. There is a Greyhound Bus station in the city that links to the nearest rail stations (Downtown Los Angeles and Van Nuys).

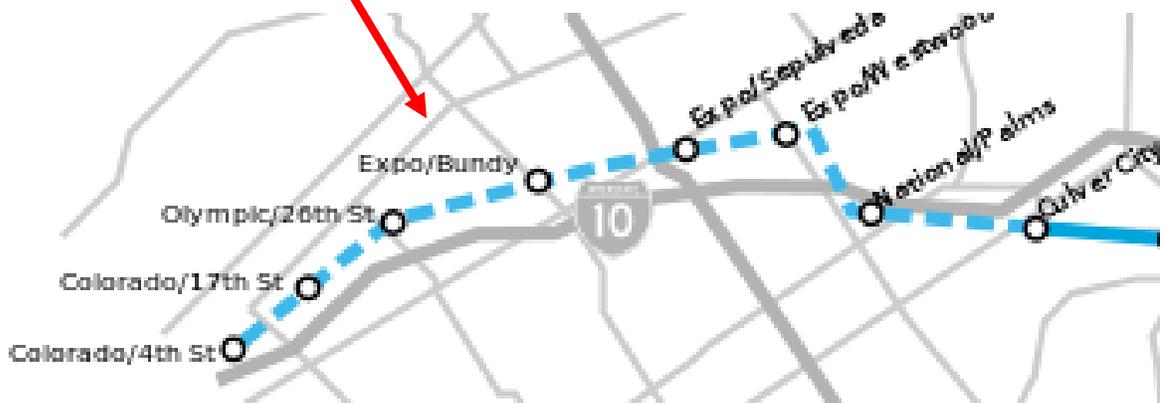
When opened in 2016, Phase 2 of the Expo Light Rail Line extended light rail service from Culver City to Santa Monica, with 7 new stations serving popular destinations along the Westside.

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Metro Rail System, Los Angeles County (dotted lines indicate expansion plans)

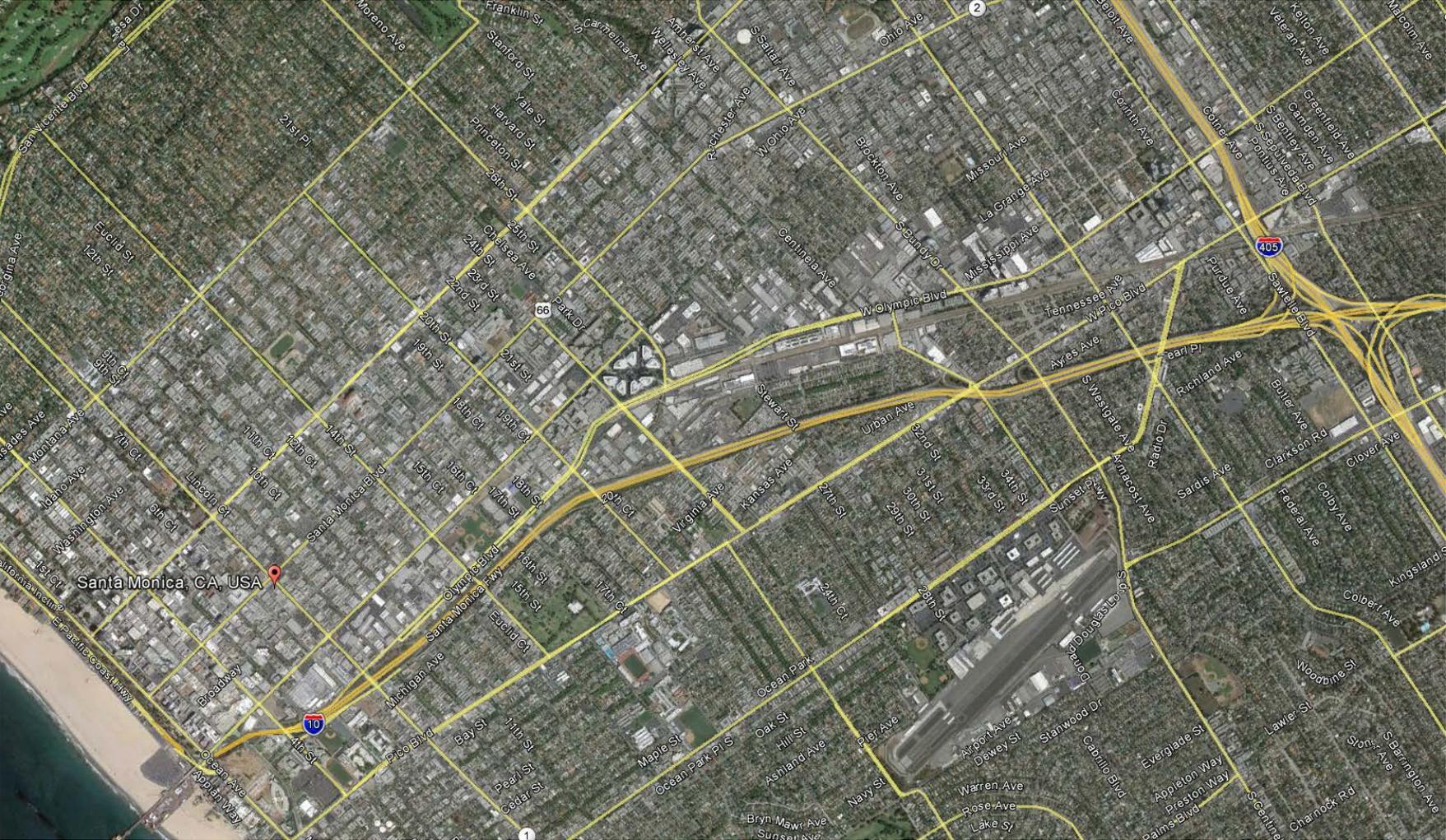


Under Construction Expo Light Rail Expansion into Santa Monica



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Main Transportation Routes around Santa Monica



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VULNERABILITY

Transportation Accidents

Train Incidents

Train derailments are so localized that the incidents themselves would not constitute a disaster. However, if there are volatile or flammable substances on the train and the train is in a highly populated or densely forested area, death, injuries, damage to homes, or forest fires could occur.

There have been 14 train accidents affecting 12 communities since 1950.

Incident	Location
Metrolink collision	Glendale
Southern Pacific collision	Beaumont
Union Pacific derailment	Kelso
Freight train derailment	Cajon
Atchison, Topeka, & Santa Fe/Union Pacific collision	Cajon
Atchison, Topeka, & Santa Fe/ATSF collision	Corona
Amtrak passenger train collision	Stockton
Southern Pacific derailment	San Bernardino
Southern Pacific derailment	West Surf
Union Pacific collision	Kelso
Western Pacific derailment	Hayward
Southern Pacific collision	Thousand Palms
Southern Pacific collision	Tracy
Two Southern Pacific trains collision	Indio

Highway Incidents

On any given day, Los Angeles County highways have thousands of large trucks carrying all sorts of cargos (including hazardous materials). The potential for a highway accident involving one or more trucks carrying volatile cargo is great. Generally, these accidents are handled as incidents by the appropriate jurisdiction; however, because of the dense population and sheer volume of vehicular traffic, the risk of a crash becoming a catastrophic event grows.

Large trucks account for about 4 percent of all registered vehicles and 7 percent of total vehicle miles traveled. Large trucks account for about 8 percent of all vehicles involved in fatal crashes and 4 percent of all vehicles involved in injury and property-damage-only crashes.

The average cost per crash involving a large truck is \$148,279. With about 429,000 large truck-related crashes per year, the total monetary expense is minimally \$63,611,691,000.00 using today's cost estimates.

Chain reaction accidents on crowded interstate highways that intertwine Los Angeles County are also another consideration. These events can quickly grow into localized disasters that overstrain local responders. Potentially, they could expand into catastrophic incidents involving hazardous materials, mass casualties, fire, and transportation disruption. Depending on the occurrence, the response could involve mass evacuation, mutual aid and other aspects of managing a disaster.

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Maritime Incidents

There is ever-present danger of boat collisions and crashes in the crowded waters off Los Angeles County. There is also the constant potential for plane crashes in the ocean. A recent development was enforcement of FAA policy mandating disaster response plans for planes taking off over the ocean from L.A. International Airport. The U.S. Coast Guard, L.A. County Lifeguards, County Fire Department, L.A. City Fire Department, L.A. County Sheriffs, and other allied agencies have developed a response plan for airliner crashes in the Santa Monica Bay.

Part of the plan calls for personnel from L.A. County Fire Station 110, USAR1, and the Air Operations Section to fly rescue swimmers to the crash site; deploy them from helicopters with inflatable life boats, and to begin rescue operations while other agencies respond with boats and helicopters to remove people from the water. These "Blue Water Rescue" teams may also be dispatched to boating accidents in the open ocean.

Many commercial vessels carry passengers, heightening the need for attention to safety. Ferries and specialty vessels, such as casino ships and sport fishing boats, number in the thousands and may carry several hundred passengers at once (National Research Council, 1995). The cruise industry is a growing maritime presence, with single ships carrying as many as 3,300 persons and many of the leading cruise markets in or adjacent to U.S. waters (National Research Council, 1995).

Transportation Loss

Transportation disruption and loss in Santa Monica and Malibu have the potential for catastrophic consequences on the populace. The area's heavy reliance on conveyances is a major factor in economic stability and survival during emergencies. Los Angeles County's transportation corridor interconnections link all parts of the county to neighboring jurisdictions and their stability and dependability is necessary to assure population health and welfare in an emergency. A catastrophic loss or extended disruption in any of the transportation forms listed below could have severe and long-lasting impacts on the area's economy and health.

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Los Angeles County Area Statistics

MEANS OF TRANSPORTATION TO WORK

Workers 16 years & over

Means of Transportation	2000 Census		1990 Census	
	Number	Percent	Number	Percent
Total Workers Age 16+	1,494,895	100.00%	1,629,096	100.00%
Car, truck, or van	1,203,143	80.48%	1,312,048	80.54%
Drove alone	982,735	65.74%	1,061,714	65.17%
Carpooled	220,408	14.74%	250,334	15.37%
Public transportation	152,435	10.20%	171,746	10.54%
Bus or trolley bus	144,973	9.70%	169,303	10.39%
Streetcar or trolley car	804	0.05%	711	0.04%
Subway or elevated	3,054	0.20%	360	0.02%
Railroad	1,730	0.12%	194	0.01%
Ferryboat	136	0.01%	184	0.01%
Taxicab	1,738	0.12%	994	0.06%
Motorcycle	2,474	0.17%	7,798	0.48%
Bicycle	9,052	0.61%	9,607	0.59%
Walked	53,386	3.57%	63,885	3.92%
Other means	12,710	0.85%	13,549	0.83%
Worked at home	61,695	4.13%	50,463	3.10%

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Biological Health/Disease

PROFILE

Disasters often result in the need for health and human services as part of the immediate and long-term recovery period. Some disasters are localized with service needs focused in a single location; other disasters, such as floods, wildfires, and severe storms result in geographically widespread health and human services needs.

It is essential following a disaster to identify locations where large numbers of people are gathered in open areas. These areas will require evaluation in order to assess health and human service needs. The recovery period may be shortened if health, mental health, and housing problems can be addressed quickly.

This plan is primarily directed to Los Angeles County Departments that will provide the initial team members. Other key human service providers, public and private, will be added to the teams to meet the growing needs of disaster victims.

Mission statements of the following Departments all relate to health and human services; they are annotated below:

Department of Health Services

“...To protect, maintain, and improve the health of the community”.

Community Health Services

“... To provide population based public health services and public health clinics in order to assure healthy communities in Los Angeles County through the services of Public Health Nurses, Public Health Investigators, and others.”

Environmental Health Services

“... To protect health, prevent disease, and promote health for all persons in Los Angeles County through the management of potentially harmful chemical, physical, or biological agents in the environment.”

Department of Mental Health

The Department of Mental Health (DMH) will coordinate and provide mental health services to community disaster victims and disaster workers throughout the entire duration of the disaster and its recovery period. DMH will augment the Department of Health Services by providing disaster mental health services.

Department of Public Social Services:

The Department of Public Social Services (DPSS) is responsible, in partnership with the American Red Cross, to ensure that residents receive appropriate emergency shelter. DPSS is the County's liaison with Emergency Network Los Angeles/LA Voluntary Agencies Active in Disaster (ENLA/LAVOAD). In a disaster, DPSS will communicate community needs to this agency.

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Department of Children and Family Services

The Department of Children and Family Services (DCFS) is responsible for the safety and well-being of the children in its care, and the children otherwise known as “unaccompanied minors” who may be left unsupervised as a result of a disaster.

Department of Community and Senior Services

The Department of Community and Senior Services (CSS) will manage and staff emergency shelters; contact high-risk IHSS clients; implement the Federal Repatriation Program; staff Disaster Services Centers using volunteers and contract agencies; provide public information through the Information and Referral network; and perform outreach and disaster assistance services through grants received from the California Departments of Aging and Social Services.

VULNERABILITY

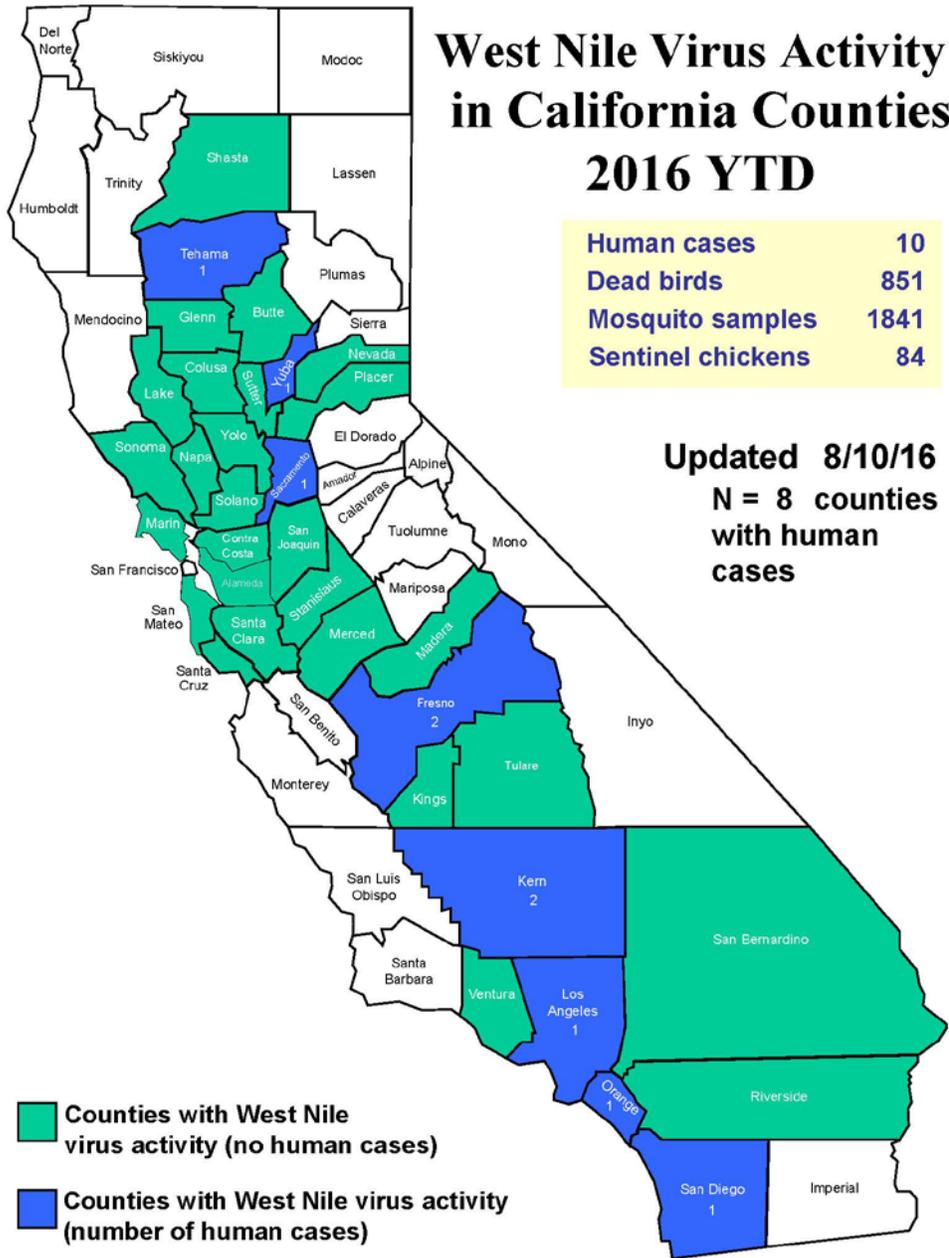
Health Hazards

Schools and school support systems have always been, and will continue to be, vulnerable to biological and health hazards, just by their nature as a gathering place for people from all around. Los Angeles County’s population is mobile, not only locally, but globally; and the potential for introduction of disease is great. In schools, the public health system starts with teachers and parents. Schools experiencing unusual absenteeism because of a sickness or health issues must report these incidents to public health authorities. Epidemics have been averted because of early detection of a health problem in school children. On the other hand, if an epidemic or pandemic event occurs in one school, history has shown that it will affect the entire area unless drastic measures are taken to quarantine or stop the event.

West Nile Virus

West Nile virus (WNV) is a mosquito-borne disease first found common in Africa , west Asia and the Middle East. West Nile virus was first detected in the United States in New York in 1999. Since then, WNV has spread throughout the United States, Canada and Mexico. California has seen a marked increase in WNV cases with the greatest rate of increase in 2011-2012.

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Human Infection

People usually get WNV from the bite of an infected mosquito. There is also evidence that WNV can be acquired via a blood transfusion or organ transplant from an infected donor.

Symptomatic Cases						
Year	Total # of Cases	West Nile Neuroinvasive Disease	West Nile Fever	Other/ Unknown	Asymptomatic Infections	WNV-related Fatalities
Total (2003-2016)	6030	3408	2464	158	569	248
2016*	442	329	113	0	41	19
2015	783	585	198	0	77	53
2014	801	561	240	0	91	31
2013	379	241	138	0	54	15
2012	479	313	158	8	48	20
2011	158	111	47	0	18	9
2010	111	73	38	0	20	6
2009	112	67	45	0	17	4
2008	445	293	148	4	53	15
2007	380	156	220	4	30	21
2006	278	83	190	5	14	7
2005	880	305	534	41	55	19
2004	779	289	395	95	51	29
2003	3	2	0	1	0	0

WNV affects the central nervous system. However, symptoms vary:

Serious symptoms in a few people. Less than one percent of individuals (about 1 in 150 people) infected with WNV will develop severe illness. The severe symptoms can include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. These symptoms may last several weeks, and neurological effects may be permanent. WNV infection can be fatal.

Milder symptoms in some people. Up to 20 percent of the people (about 1 in 5) who become infected will display symptoms which can include fever, headache, body aches, nausea, vomiting, and sometimes swollen lymph glands or a skin rash on the chest, stomach and back. Symptoms generally last for just a few days, although even previously healthy people have been sick for several weeks.

No symptoms in most people. Approximately 80 percent of people (about 4 out of 5) who are infected with WNV will not show any symptoms. California has a long history of conducting surveillance for mosquito-borne viruses and has taken active steps to ensure early detection of WNV. Due to ongoing collaboration between over 70 local mosquito and vector control agencies and state public agencies, California is well prepared to detect, monitor, and respond

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to WNV. These agencies use a variety of scientific techniques and products to control mosquitoes in their earliest stages and play a key role in reducing the risk of WNV. Also California has launched a statewide public education effort about personal protection measures and reporting dead birds.

People over the age of 50 have a higher chance of getting sick and are more likely to develop serious symptoms when infected with WNV. Being outside, especially at dawn or at dusk, increases the risk of being bitten by an infected mosquito. Precautions to avoid mosquito bites should be taken if a lot of time is spent outside, either working or playing. Risk of transmission through medical procedures is very low. All donated blood is checked for WNV before being used. The risk of getting WNV through blood transfusions and organ transplants is very small, and should not prevent people who need surgery from having it.

The public is encouraged to assist in the efforts to detect and monitor WNV by calling the WNV hotline if they find a crow, raven, magpie, jay, sparrow, finch, or hawk that has been dead for about a day. Birds play an important role in maintaining and spreading this virus. Mosquitoes acquire the virus from infected birds, and then transmit the virus to people. Evidence of the virus in dead birds is often the first indication that WNV has been introduced into a new region.

Vector Control

A surveillance program adequate to monitor WNV activity levels associated with human risk must be in place. Detection of epizootic transmission of enzootic arboviruses typically precedes detection of human cases by several days to 2 weeks or longer. If adequate surveillance is in place, the lead time between detecting significant levels of epizootic transmission and occurrence of human cases can be increased, which will allow for more effective intervention practices. Early-season detection of enzootic or epizootic WNV activity appears to be correlated with increased risk of human cases later in the season. Control activity should be intensified in response to evidence of virus transmission, as deemed necessary by the local health departments.

Such programs should consist of public education emphasizing personal protection and residential source reduction; municipal larval control to prevent repopulation of the area with competent vectors; adult mosquito control to decrease the density of infected, adult mosquitoes in the area; and continued surveillance to monitor virus activity and efficacy of control measures.

Severe Acute Respiratory Syndrome (SARS)

Los Angeles County and the city of Santa Monica are part of a major transportation corridor between Canada and Mexico, and as such diseases anywhere in the world constitute a potential threat.

The worldwide outbreak of SARS that occurred between November 2002 and July 2003 most likely originated in China and then spread through travel. During this outbreak 22 potential SARS cases were investigated in Los Angeles. Seven were considered probable SARS but none of these cases had a specimen that was positive for SARS-CoV infection. The investigation and monitoring required for 22 potential cases was considerable.

It is possible that SARS may re-emerge; therefore, it is important that Los Angeles County be prepared to immediately identify cases and contain the disease.

The California Health and Safety Code (H&S), the California Code of Regulations (CCR) and the Los Angeles County Code grant the Los Angeles County Health Officer authority to collect records and data with respect to communicable disease, initiate disease control measures, control property and manage persons (including isolation and quarantine).

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Mad Cow Disease (Creutzfeldt-Jakob disease (vCJD))

New variant CJD (vCJD) is a rare, degenerative, fatal brain disorder in humans. Although experience with this new disease is limited, evidence to date indicates that there has never been a case of vCJD transmitted through direct contact of one person with another. However, a case of probable transmission of vCJD through transfusion of blood components from an asymptomatic donor who subsequently developed the disease has been reported.

There has never been a case of vCJD that did not have a history of exposure within a country where this cattle disease, BSE, was occurring. It is believed that the persons who have developed vCJD became infected through their consumption of cattle products contaminated with the agent of BSE. There is no known treatment of vCJD and it is invariably fatal.

Since 1996, evidence has been increasing for a causal relationship between ongoing outbreaks in Europe of a disease in cattle, called bovine spongiform encephalopathy (BSE, or "mad cow disease"), and a disease in humans, called variant Creutzfeldt-Jakob disease (vCJD). Both disorders are invariably fatal brain diseases with unusually long incubation periods measured in years, and are caused by an unconventional transmissible agent.

On December 23, 2003, the U.S. Department of Agriculture (USDA) announced a presumptive diagnosis of bovine spongiform encephalopathy (BSE, or "mad cow" disease) in an adult Holstein cow from Washington State. The diagnosis was confirmed by an international reference laboratory in Weybridge, England, on December 25. Preliminary trace-back based on an ear-tag identification number suggests that the BSE-infected cow was imported into the United States from Canada in August 2001.

Influenza (Flu) and Bird Flu H1N1

Epidemics of influenza typically occur during the winter months and have been responsible for an average of between 3,000 and 56,000 deaths/year in the United States during 2000–2013. Influenza viruses also can cause pandemics, during which rates of illness and death from influenza-related complications can increase dramatically worldwide. Influenza viruses cause disease among all age groups. Rates of infection are highest among children, but rates of serious illness and death are highest among persons aged ≥ 65 years and persons of any age who have medical conditions that place them at increased risk for complications from influenza.

Influenza vaccination is the primary method for preventing influenza and its severe complications. In this report from the Advisory Committee on Immunization Practices (ACIP), the primary target groups recommended for annual vaccination are 1) groups that are at increased risk for influenza-related complications (e.g., persons aged ≥ 65 years and persons of any age with certain chronic medical conditions); 2) the group aged 50–64 years because this group has an elevated prevalence of certain chronic medical conditions; and 3) persons who live with or care for persons at high risk (e.g., health-care workers and household contacts who have frequent contact with persons at high risk and who can transmit influenza to persons at high risk). Vaccination is associated with reductions in influenza-related respiratory illness and physician visits among all age groups, hospitalization and death among persons at high risk, otitis media among children, and work absenteeism among adults. Although influenza vaccination levels increased substantially during the 1990s, further improvements in vaccine coverage levels are needed, chiefly among persons aged <65 years who are at increased risk for influenza-related complications among all racial and ethnic groups and among blacks and Hispanics aged ≥ 65 years. ACIP recommends using strategies to improve vaccination levels, including using reminder/recall systems and standing orders programs. Although influenza vaccination remains the

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cornerstone for the control and treatment of influenza, information is also presented regarding antiviral medications, because these agents are an adjunct to vaccine.

Influenza Epidemic

The influenza (flu) epidemics that happen nearly every year are important events. Influenza is a respiratory illness that makes hundreds of thousands of people sick each year. The illness can cause severe health problems for the elderly and younger people with diseases, such as diabetes, heart or lung disease, and illness that can weaken the immune system. Typical primary influenza illness lasts about a week and is characterized by abrupt onset of fever, muscle aches, sore throat, and nonproductive cough. In some persons, severe malaise and cough can persist for several days or weeks.

Influenza infection not only causes primary illness but also can lead to severe secondary medical complications, including influenza viral pneumonia, secondary bacterial pneumonia, worsening of underlying medical conditions, such as congestive heart failure, asthma, or diabetes, or other complications such as ear infections (i.e., otitis media) in children.

Elderly persons (i.e., those 65 years and over) and persons with certain underlying medical conditions, such as chronic heart or lung disease, are at increased risk for developing complications from influenza infection. These complications increase the risk for hospitalization or death.

One of the most important features about influenza viruses is that their structure changes slightly but frequently over time (a process known as “drift”), and that this process results in the appearance of different strains that circulate each year. The composition of the flu vaccine is changed each year to help protect people from the strains of influenza virus that are expected to be the most common ones circulating during the coming flu season.

The ability of the vaccine to protect against influenza during a particular season depends on several factors, but particularly 1) the match between influenza strains in the vaccine and strains circulating in the community, and 2) the ability of each person’s immune system to mount a protective response as a result of the vaccination. Although the vaccine may not prevent everyone who takes it from getting sick, it does reduce the risk of severe illness, hospitalization, and death. That’s why it is so important for anyone who wants to reduce his or her risk of getting severely ill from influenza to receive the vaccine each year.

Influenza Pandemic

By contrast to the more gradual process of drift, in some years, the influenza virus changes dramatically and unexpectedly through a process known as “shift.” Shift results in the appearance of a new influenza virus to which few (if any) people are immune. If this new virus spreads easily from person to person, it could quickly travel around the world and cause increased levels of serious illness and death, affecting millions of people. This is called influenza pandemic.

Fortunately, pandemics don’t occur very often. There has not been an influenza pandemic since 1968. In 1997, however, a flu virus, that had previously infected only birds, caused an outbreak of illness in humans.

Avian Influenza (Bird Flu)

Influenza viruses that infect birds are called “avian influenza viruses.” Only influenza A viruses infect birds. All known subtypes of influenza A virus can infect birds. However, there are substantial genetic

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differences between the subtypes that typically infect both people and birds. Within subtypes of avian influenza viruses there also are different strains (described in “Strains”).

Avian influenza H5 and H7 viruses can be distinguished as “low pathogenic” and “high pathogenic” forms on the basis of genetic features of the virus and the severity of the illness they cause in poultry; influenza H9 virus has been identified only in a “low pathogenicity” form. Each of these three avian influenza viruses (H5, H7, and H9) can theoretically be partnered with any one of nine neuraminidase surface proteins; thus, there are potentially nine different forms of each subtype (e.g., H5N1, H5N2, H5N3, H5N9).

Below is summary information about these three prominent subtypes of avian influenza virus:

Influenza A H5

Potentially nine different subtypes

Can be highly pathogenic or low pathogenic

H5 infections have been documented among humans, sometimes causing severe illness and death

Influenza A H7

Potentially nine different subtypes

Can be highly pathogenic or low pathogenic

H7 infection in humans is rare, but can occur among persons who have close contact with infected birds; symptoms may include conjunctivitis and/or upper respiratory symptoms

Influenza A H9

Potentially nine different subtypes

Documented only in low pathogenic form

Three H9 infections in humans have been confirmed.

Spread of Avian Influenza Viruses among Birds

Avian influenza viruses circulate among birds worldwide. Certain birds, particularly water birds, act as hosts for influenza viruses by carrying the virus in their intestines and shedding it. Infected birds shed virus in saliva, nasal secretions, and feces. Susceptible birds can become infected with avian influenza virus when they have contact with contaminated nasal, respiratory, or fecal material from infected birds. Fecal-to-oral transmission is the most common mode of spread between birds.

Most often, the wild birds that are host to the virus do not get sick, but they can spread influenza to other birds. Infection with certain avian influenza A viruses (for example, some H5 and H7 strains) can cause widespread disease and death among some species of domesticated birds.

Avian Influenza Infection in Humans

Although avian influenza A viruses do not usually infect humans, several instances of human infections and outbreaks of avian influenza have been reported since 1997. Most cases of avian influenza infection in humans are thought to have resulted from contact with infected poultry or contaminated surfaces. However, there is still a lot to learn about how different subtypes and strains of avian influenza virus might affect humans. For example, it is not known how the distinction between low pathogenic and highly pathogenic strains might impact the health risk to humans. Of the documented cases of human infection with avian influenza viruses, illnesses caused by highly pathogenic viruses appear to be more severe.

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Small Pox

Smallpox virus is a high-priority "Category A" agent that poses a risk to Los Angeles County and to national security. It can be easily disseminated and transmitted from person to person, results in high mortality rates and has the potential for major public health impact, might cause public panic and social disruption, and requires special action for public health preparedness.

Vaccination

The federal government has not yet provided definitive guidance on the extent of preparedness vaccination (smallpox vaccination of persons prior to a confirmed case of smallpox). It is anticipated that the guidance will be forthcoming in the near future. Such guidance, and release of sufficient quantities of smallpox vaccine, may be for: (1) specified first responders only, (2) a larger group of health care workers, law enforcement, and emergency responders, or (3) the entire population on a voluntary basis. Guidance may be provided in a phased manner for these, or other, groups over time.

Monkey Pox

The Centers for Disease Control and Prevention (CDC) and state and local health departments continue to investigate cases of monkeypox among persons who had close contact with wild or exotic mammalian pets or persons with monkeypox. Results of serologic testing, polymerase-chain-reaction analysis, viral culture and gene sequencing performed at the CDC indicate that the causative agent is monkeypox virus, a member of the orthopoxvirus group of viruses. CDC is updating previous interim guidance concerning infection control precautions and exposure management in the health-care and community settings. The guidance will be further updated as additional information about the epidemiology of disease transmission is better understood.

Limited data on transmission of monkeypox virus are available from studies conducted in Africa. Person-to-person transmission is believed to occur primarily through direct contact and also by respiratory droplet spread. Transmission of monkeypox within hospitals has been described, albeit rarely. Extrapolating from smallpox for which airborne transmission has been clearly described, airborne transmission of monkeypox virus cannot be excluded, especially in patients presenting with cough.

To date in the United States there has been no evidence of person-to-person transmission of monkeypox. However, recovery of monkeypox virus from skin lesions and tonsillar tissue demonstrates the potential for contact and droplet transmission, and at least a theoretical risk for airborne transmission.

Hoof & Mouth Disease

In the United States we usually call it "Hoof and Mouth Disease." In the U.K. they call it "Foot and Mouth Disease." But, wherever it appears, and whatever it's called, this highly contagious livestock disease means trouble. The outbreak of the disease in Great Britain quickly spread to the European

continent, and British officials even considered eradicating that country's entire livestock population. The last major outbreak in the U.S. was in 1929.

Hoof and mouth disease is a viral infection that afflicts animals with cloven hooves such as cattle, pigs, and sheep. Onset of the disease is characterized by fever, which is followed by the development of blisters inside the mouth and on the feet. It is transmitted easily among animals through fluids such as blood, saliva, and milk. Fluid from broken blisters has especially high concentrations of the virus. The

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disease is not necessarily fatal, and symptoms can clear up after several weeks, but the disease generally leaves animals underweight and sometimes disabled. Because of the highly infectious nature of the disease, and the condition in which it leaves animals even after they have recovered, farmers almost always destroy infected animals and burn their carcasses.

Hepatitis

Hepatitis is inflammation of the liver. Several different viruses cause viral hepatitis. They are named the hepatitis A, B, C, D, and E viruses.

All of these viruses cause acute, or short-term, viral hepatitis. The hepatitis B, C, and D viruses can also cause chronic hepatitis, in which the infection is prolonged, sometimes lifelong.

Other viruses may also cause hepatitis, but they have yet to be discovered and they are obviously rare causes of the disease.

Hepatitis A

The hepatitis A virus is found in the stool of people with hepatitis A. It is spread from person to person by putting something in your mouth that has been contaminated with the stool of an infected person. Therefore, hepatitis A is most commonly transmitted in drinking water or food contaminated with the stool containing the virus.

Hepatitis A occurs sporadically and epidemically worldwide, with a tendency to cyclic recurrences. Epidemics are uncommon in developing countries where adults are generally immune. Improved sanitation and hygiene conditions in different parts of the world leave large segments of the population susceptible to infection, and outbreaks may result whenever the virus is introduced.

Common-source epidemics, related to contaminated food or water, may evolve explosively, as did the largest mollusk-linked epidemic in Shanghai, in 1988, involving about 300 000 people.

Worldwide, HAV infections account for 1.4 million cases annually.

Hepatitis B

HBV is spread when blood, semen, or vaginal fluids (including menstrual blood) from an infected person enter another person's body. Symptoms appear an average of 60 to 90 days (although they can appear 45 to 180 days) after you have contact with the hepatitis B virus (incubation period). Blood, semen, and vaginal fluids (including menstrual blood), whether fresh or dried, are highly contagious (HBV can be easily spread) during this period and for several weeks after the onset of symptoms.

- Blood contains the highest quantities of the hepatitis B virus.
- Blood and other body fluids that contain the virus can remain contagious for at least a week and possibly much longer, even if they are dried.

Hepatitis B is less prone to become epidemic. Most adults who get hepatitis B have it for a short time and then get better. This is called acute hepatitis B. One can have hepatitis B and not know it. The infected person may not have symptoms at all or sometimes symptoms can be mistaken for flu, but as long as a person has the virus, it can be spread to others. Sometimes the virus causes a long-term

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infection, called chronic hepatitis B. Over time, it can damage the liver. Babies and young children infected with the virus are more likely to get chronic hepatitis B.

Hepatitis C

Hepatitis C is caused by the hepatitis C virus. It is spread by contact with an infected person's blood and therefore is not prone to become an epidemic.

There are two phases of hepatitis C. The first form is called **acute** hepatitis C. It means that a person recently became infected with the virus. The second form is called **chronic** hepatitis C. It means that the person has had an infection for more than 6 months.

Right after one is infected with hepatitis C, they enter the acute stage. Some people fight off the virus and never have any liver problems. But up to 85% of people who are infected will go on to have chronic hepatitis C

Long-term hepatitis C often causes tiny scars in the liver. If there are a lot of these scars, it becomes hard for the liver to work well. About 25% of people who develop chronic hepatitis C eventually have more serious liver problems such as cirrhosis or liver cancer, usually over a period of 20 or more years.

The nearly 4 million Americans chronically infected with the hepatitis C virus (HCV) can transmit the infection to others through blood and other bodily fluids. The route of transmission can usually be determined in over 90% of new cases.

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Strain	Disease Spread	People at Risk	Prevention	Treatment
Hepatitis A	Primarily through food or water contaminated by feces from an infected person. Rarely, it spreads through contact with infected blood	International travelers; people living in areas where hepatitis A outbreaks are common; people who live with or have sex with an infected person; during outbreaks, day care children and employees, men who have sex with men, and injection drug users	The hepatitis A vaccine, also, avoiding tap water when traveling internationally and practicing good hygiene and sanitation	Hepatitis A usually resolves on its own over several weeks
Hepatitis B	Through contact with infected blood, through sex with an infected person, and from mother to child during childbirth	People who have sex with an infected person, men who have sex with men, injection drug users, children of immigrants from disease-epidemic areas, infants born to infected mothers, people who live with an infected person, health care workers, hemodialysis patients, people who received a transfusion of blood or blood products before July 1992 or clotting factors made before 1987, and international travelers	Hepatitis B vaccine	For chronic hepatitis B: drug treatment with alpha interferon, peginterferon, lamivudine, or adefovir dipivoxil. Acute hepatitis B usually resolves on its own. Very severe cases can be treated with lamivudine
Hepatitis C	Primarily through contact with infected blood, less commonly, through sexual contact and childbirth	Injection drug users, people who have sex with an infected person, people who have multiple sex partners, health care workers, infants born to infected women, hemodialysis patients, and people who received a transfusion of blood or blood products before July 1992 or clotting factors made before 1987	There is no vaccine for hepatitis C; the only way to prevent the disease is to reduce the risk of exposure to the virus. This means avoiding behaviors like sharing drug needles or sharing personal items like toothbrushes, razors, and nail clippers with an infected person	Chronic hepatitis C: drug treatment with peginterferon alone or combination treatment with peginterferon and the drug ribavirin. Acute hepatitis C: treatment is recommended if it does not resolve within 2 to 3 months
Hepatitis D	Through contact with infected blood. This disease occurs only in people who are already infected with hepatitis B	Anyone infected with hepatitis B: injection drug users who have hepatitis B have the highest risk. People who have hepatitis B are also at risk if they have sex with a person infected with hepatitis D or if they live with an infected person. Also at risk are people who received a transfusion of blood or blood products before July 1992 or clotting factors made before 1987	Immunization against hepatitis B for those not already infected; also, avoiding exposure to infected blood, contaminated needles, and an infected person's personal items.	Chronic hepatitis D: drug treatment with alpha interferon
Hepatitis E	Through food or water contaminated by feces from an infected person. This disease is uncommon in the United States	International travelers; people living in areas where hepatitis E outbreaks are common; and people who live or have sex with an infected person	There is no vaccine for hepatitis E; the only way to prevent the disease is to reduce the risk of exposure to the virus. This means avoiding tap water when traveling internationally and practicing good hygiene and sanitation	Hepatitis E usually resolves on its own over several weeks or months

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Risk

Environment Association

Although the risks of developing chronic diseases are attributed to both genetic and environmental factors, 70 to 90% of disease risks are probably due to differences in environments. Yet, epidemiologists increasingly use genome-wide association studies (GWAS) to investigate diseases, while relying on questionnaires to characterize “environmental exposures.” This is because GWAS represent the only approach for exploring the totality of any risk factor (genes, in this case) associated with disease prevalence. Moreover, the value of costly genetic information is diminished when inaccurate and imprecise environmental data lead to biased inferences regarding gene-environment interactions. A more comprehensive and quantitative view of environmental exposure is needed if epidemiologists are to discover the major causes of chronic diseases.

Disaster-related Disease Association

The relationship between natural disasters and communicable diseases is frequently misconstrued. The risk for outbreaks is often presumed to be very high in the chaos that follows natural disasters, a fear likely derived from a perceived association between dead bodies and epidemics. However, the risk factors for outbreaks after disasters are associated primarily with population displacement. The availability of safe water and sanitation facilities, the degree of crowding, the underlying health status of the population, and the availability of healthcare services all interact within the context of the local disease ecology to influence the risk for communicable diseases and death in the affected population.

The sudden presence of large numbers of dead bodies in the disaster-affected area may heighten concerns of disease outbreaks, despite the absence of evidence that dead bodies pose a risk for epidemics after natural disasters. When death is directly due to the natural disaster, human remains do not pose a risk for outbreaks. Dead bodies only pose health risks in a few situations that require specific precautions, such as deaths from cholera or hemorrhagic fevers.

The risk for communicable disease transmission after disasters is associated primarily with the size and characteristics of the population displaced, specifically the proximity of safe water and functioning latrines, the nutritional status of the displaced population, the level of immunity to vaccine-preventable diseases such as measles, and the access to healthcare services. Outbreaks are less frequently reported in disaster-affected populations than in conflict-affected populations, where two thirds of deaths may be from communicable diseases. Malnutrition increases the risk for death from communicable diseases and is more common in conflict-affected populations, particularly if their displacement is related to long-term conflict

A systematic and comprehensive evaluation should identify 1) endemic and epidemic diseases that are common in the affected area; 2) living conditions of the affected population, including number, size, location, and density of settlements; 3) availability of safe water and adequate sanitation facilities; 4) underlying nutritional status and immunization coverage among the population; and 5) degree of access to healthcare and to effective case management.

- Water-related Communicable Diseases

Access to safe water can be jeopardized by a natural disaster. Diarrheal disease outbreaks can occur after drinking water has been contaminated and have been reported after flooding and related displacement.

- Diseases Associated with Crowding

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Crowding is common in populations displaced by natural disasters and can facilitate the transmission of communicable diseases such as measles, meningitis, and acute respiratory infections.

- **Vector Borne Diseases**

Natural disasters, particularly meteorological events such as cyclones, hurricanes, and flooding, can affect vector-breeding sites and vector borne disease transmission. While initial flooding may wash away existing mosquito-breeding sites, standing water caused by heavy rainfall or overflow of rivers can create new breeding sites. This situation can result (with typically some weeks' delay) in an increase of the vector population and potential for disease transmission, depending on the local mosquito vector species and its preferred habitat. The crowding of infected and susceptible hosts, a weakened public health infrastructure, and interruptions of ongoing control programs are all risk factors for vector borne disease transmission.

- **Other Diseases Associated with Natural Disasters**

Tetanus is not transmitted person to person but is caused by a toxin released by the anaerobic tetanus bacillus *Clostridium tetani*. Contaminated wounds, particularly in populations where vaccination coverage levels are low, are associated with illness and death from tetanus.

An unusual outbreak of coccidiomycosis occurred after the January 1994 Southern California earthquake. The infection is not transmitted person to person and is caused by the fungus *Coccidioides immitis*, which is found in soil in certain semiarid areas of North and South America. This outbreak was associated with exposure to increased levels of airborne dust subsequent to landslides in the aftermath of the earthquake.

Disaster-related deaths are overwhelmingly caused by the initial traumatic impact of the event. Disaster-preparedness plans, appropriately focused on trauma and mass casualty management, should also take into account the health needs of the surviving disaster-affected populations. The health effects associated with the sudden crowding of large numbers of survivors, often with inadequate access to safe water and sanitation facilities, will require planning for both therapeutic and preventive interventions, such as the rapid delivery of safe water and the provision of rehydration materials, antimicrobial agents, and measles vaccination materials.

Plague

Plague is transmitted to humans by fleas or by direct exposure to infected tissues or respiratory droplets; the disease is characterized by fever, chills, headache, malaise, prostration, and leukocytosis that manifests in one or more of the following principal clinical forms:

- Regional lymphadenitis (bubonic plague)
- Septicemia without an evident bubo (septicemic plague)
- Plague pneumonia, resulting from hematogenous spread in bubonic or septicemic cases (secondary pneumonic plague) or inhalation of infectious droplets (primary pneumonic plague)
- Pharyngitis and cervical lymphadenitis resulting from exposure to larger infectious droplets or ingestion of infected tissues (pharyngeal plague)

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Brucellosis

Brucellosis is an infectious disease caused by the bacteria of the genus *Brucella*. These bacteria are primarily passed among animals, and they cause disease in many different vertebrates. Various *Brucella* species affect sheep, goats, cattle, deer, elk, pigs, dogs, and several other animals. Humans become infected by coming in contact with animals or animal products that are contaminated with these bacteria. In humans brucellosis can cause a range of symptoms that are similar to the flu and may include fever, sweats, headaches, back pains, and physical weakness. Severe infections of the central nervous systems or lining of the heart may occur. Brucellosis can also cause long-lasting or chronic symptoms that include recurrent fevers, joint pain, and fatigue.

Brucellosis is not very common in the United States, where 100 to 200 cases occur each year. But brucellosis can be very common in countries where animal disease control programs have not reduced the amount of disease among animals.

Botulism (Food-borne)

Ingestion of botulinum toxin results in an illness of variable severity. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.

Botulism (Wound)

An illness resulting from toxin produced by *Clostridium botulinum* that has infected a wound. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.

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MODERATE RISK Human-Caused Hazards

Aviation Disaster

SMMUSD and SMC are surrounded by airports and lay under their plan patterns. They recognize the risk, but are unable to have any direct control over mitigation strategy.

PROFILE

Airline Incidents

Because of the tremendous volume of transportation (commercial and private) into and out of LA County, the potential for a disastrous transportation-related event exists. Generally, transportation accidents are incidents that are handled by local jurisdictions or by jurisdictional mutual aid responses. A transportation accident, combined with a volatile hazardous substance or a large number of people, has the potential for becoming an event that requires a major mobilization of local, county, state and federal agencies.

According to the Department of Transportation, from 2009 to 2013 there were more than 1,200 fatal tractor-trailer accidents in the state, and from 2014 to 2017 more than 230 train accidents. Airline crashes are listed as a less significant hazard because individually they are less likely to result in a state or federal disaster declaration. However, it is recognized that the severity of these incidents, as shown by the examples below, often lead to deaths and injuries.

Most Recent Accidents in California

USAir Flight 1493 collided while attempting to land with a plane attempting to take off on the same runway in Los Angeles, California on February 1, 1991.

75 passengers on board **Aerolíneas Argentinas Flight 386** fell ill with cholera after eating contaminated shrimp on 20 February 1992 between Lima, Peru and Los Angeles. One person died.

Alaska Airlines Flight 261 went down on January 31, 2000, in the Pacific Ocean about 2.7 miles (4.3 km) north of Anacapa Island, California. The two pilots, three cabin crew members, and 83 passengers on board were killed, and the aircraft was destroyed.

JetBlue Airways Flight 292 executed an emergency landing on September 21, 2005, in Los Angeles International Airport after the nose wheels of the landing gear jammed in an abnormal position. No one was injured.

Southwest Airlines Flight 1455 overran the runway upon landing at Burbank-Glendale-Pasadena Airport on March 5, 2000.

Asiana Airlines Flight 214 crashed upon landing at San Francisco International Airport on July 6, 2013. Of the 307 people aboard, three were killed and 181 injured.

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Los Angeles County Airports & Airfields

Airport/Airfield	Location
Agua Dulce Airpark	Agua Dulce Canyon Rd, Saugus
Brackett Field (POC)	1615 McKinley Av, La Verne 91750 (909) 593-1395
Brian Ranch	Palmdale
Burbank-Glendale-Pasadena (BUR)	2627 N Hollywood Way, Burbank
Catalina (AVX)	Avalon
Catalina Air & Sea Terminal	Berth 95, San Pedro
Compton (CPM)	901 W Alondra Blvd, Compton 90220 (310) 631-8140
El Monte Airport (EMT)	4233 Santa Anita Av, El Monte 91731 (626) 448-6129
General William J. Fox Airfield (WJF)	4555 W Avenue G, Lancaster 93536 (661) 940-1709
Goodyear Blimp Base	19200 S Main St, Carson
Hawthorne Municipal (Jack Northrop Field) (HHR)	12101 Crenshaw Av, Hawthorne
Long Beach Municipal Airport (LGB)	4100 Donald Douglas Dr, Long Beach
Los Angeles International Airport (LAX)	World Way, Los Angeles
Palmdale Regional Airport	39516 N 20th St E, Palmdale 93550 (661) 266-7602
Palmdale Production Flight/Test Installation Plant 42	Palmdale
Santa Monica Municipal (SMO)	3200 Airport Dr, Santa Monica
Torrance Municipal (Zamperini Field) (TOA)	3115 Airport Dr, Torrance
Van Nuys (VNY)	16461 Sherman Way, Van Nuys
Whiteman Airport (WHP)	12653 Osborn St, Pacoima 91331 (818) 896-5271

VULNERABILITY

Because the City of Santa Monica is well within the approach and takeoff pattern for Los Angeles International Airport, the committee determined that school sites and college educational facilities are at moderate risk to aviation accidents. Though the very low probability exists, the result of an air disaster involving the jurisdiction would be catastrophic.

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Terrorism & Weapons of Mass Destruction (WMD)

PROFILE

The complexity, scope, and potential consequences of a terrorist threat or incident require that there be a rapid and decisive capability to resolve the situation. The resolution to an act of terrorism demands an extraordinary level of coordination of crisis and consequence management functions and technical expertise across all levels of government. No single Federal, State, or local governmental agency has the capability or requisite authority to respond independently and mitigate the consequences of such a threat to national security. The incident may affect a single location or multiple locations, each of which may be a disaster scene, a hazardous scene and/or a crime scene simultaneously.

Differences Between WMD Incidents and Other Incidents

As in all incidents, WMD incidents may involve mass casualties and damage to buildings or other types of property. However, there are several factors surrounding WMD incidents that are unlike any other type of incidents that must be taken into consideration when planning a response. First responders' ability to identify aspects of the incident (e.g., signs and symptoms exhibited by victims) and report them accurately will be essential to maximizing the use of critical local resources and for triggering a Federal response.

1. The situation may not be recognizable until there are multiple casualties. Most chemical and biological agents are not detectable by methods used for explosives and firearms. Most agents can be carried in containers that look like ordinary items.
2. There may be multiple events (e.g., one event in an attempt to influence another event's outcome).
3. Responders are placed at a higher risk of becoming casualties. Because agents are not readily identifiable, responders may become contaminated before recognizing the agent involved. Additionally, first responders may be targets for secondary releases or explosions.
4. The location of the incident will be treated as a crime scene. As such, preservation and collection of evidence is critical. Therefore, it is important to ensure that actions on-scene are coordinated between response organizations to minimize any conflicts between law enforcement authorities, who view the incident as a crime scene, and other responders, who view it as a hazardous materials or disaster scene.
5. Contamination of critical facilities and large geographic areas may result. Victims may carry an agent unknowingly to public transportation facilities, businesses, residences, doctors' offices, walk-in medical clinics, or emergency rooms because they don't realize that they are contaminated. First responders may carry the agent to fire or precinct houses, hospitals, or to the locations of subsequent calls.
6. The scope of the incident may expand geometrically and may affect mutual aid jurisdictions. Airborne agents flow with the air currents and may disseminate via ventilation systems, carrying the agents far from the initial source.
7. There will be a stronger reaction from the public than with other types of incidents. The thought of exposure to a chemical or biological agent or radiation evokes terror in most people. The fear of the unknown also makes the public's response more severe.
8. Time is working against responding elements. The incident can expand geometrically and very quickly. In addition, the effects of some chemicals and biological agents worsen over time.
9. Support facilities, such as utility stations and 911 centers along with critical infrastructures, are at risk as targets.
10. Specialized State and local response capabilities may be overwhelmed.

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State of California Terrorism Guidance

The catastrophic attacks on the World Trade Center Building in New York City and the Alfred P. Murrah Federal Building in Oklahoma City shocked the nation into the reality that there are no domestic safe havens from acts of terrorism. These two apparently unrelated events punctuate our nation's vulnerability, and highlight California's risk of similar attack against its public officials, private and multi-national corporations, public infrastructure, and government facilities.

Historically, California has had a long experience combating terrorist groups, both domestic and international. Domestic terrorist groups in the state have been largely issue-oriented, while the few known internationally based incidents have mostly targeted the state's émigré communities and been related to foreign disputes. Today, however, both groups are more likely to be aligned nationally and/or internationally through electronic networking. The issues and politics of these groups remain essentially unchanged but now include increasing expressions of hatred for existing forms of government. The World Trade Center Incident demonstrates that international terrorist groups have the potential to operate with deadly effectiveness in this country. Such groups may offer no allegiance to any particular country but seek political or personal objectives that transcend national/state boundaries.

There is appropriate concern that such attacks as witnessed in Tokyo, New York City, and Oklahoma City could occur in California. A terrorist acting alone or in concert with any of the known national or international groups could readily commit acts of terrorism in California. The open availability of basic shelf-type chemicals and mail order biological research materials, coupled with an access to even the crudest laboratory facilities, could enable the individual extremist or an organized terrorist faction to manufacture proven highly lethal substances or to fashion less sophisticated weapons of mass destruction. The use of such weapons could result in mass casualties, long term contamination, and wreak havoc to both the state and national economies.

The freedom of movement and virtually unrestricted access to government officials, buildings, and critical infrastructure afforded to California's citizens and foreign visitors, presents the terrorist with the opportunity and conditions of anonymity to deliver such devastation and its tragic consequences with only the crudest devices of nuclear, chemical, or biological content.

Terrorist incidents create a unique environment in which to manage emergency response. Local responders are typically the first on scene during an actual incident and local government has primary responsibility for protecting public health and safety. Ordinarily, the local first response will be conducted under California's Standardized Emergency Management System (SEMS), which forms the basis of California's concept of operations for managing any kind of emergency or disaster, including terrorist incidents. The local responders will manage all aspects of the incident until the FBI assumes command, by virtue of its legal authority, of the law enforcement aspects relating to identifying, apprehending, and neutralizing the terrorists and their weapons. Local and state authorities always maintain control of their response resources and continue to operate utilizing SEMS.

Los Angeles County Terrorism Early Warning (TEW) Group

Effective and rapid dissemination of indications and warnings to local emergency response agencies is an essential yet problematic element of terrorism management efforts. For bio-terrorist threats, such efforts must integrate ongoing real-time surveillance efforts. Terrorism Early Warning Groups are a multilateral, multidisciplinary effort to monitor open source data to identify trends and potential threats, monitor potential threat information during periods of heightened concern, assess potential targets and perform net assessments to guide decision making during actual events. TEW provides integrated threat and net assessment from a multi-jurisdictional perspective. City and county fire departments work together with emergency management, FBI, local law enforcement agencies, Department of Health Services, as well as other state and federal offices. The formation of TEW groups supports field response in the preparation for and response to acts of terrorism.

The Los Angeles Operational Area TEW Group provides Unified Command Structure with the impact of an attack on the operational area, gauges resource needs and shortfalls, continuously monitors and

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assesses situational awareness and status, and acts as the point of contact for inter-agency liaison in order to develop options for courses of action for incident resolution. TEW is an Emerging Threat Workspace (Civil Battle Lab) for stimulating National Strategy for emerging threat issues:

- Terrorism and Infrastructure Protection
- Public Order (Riots/Disturbances)
- Civil-Military Interoperability for Urban Operations
- Civilian Police (CIVPOL) for Peace Officers
- Networked Threats and Emerging Threats
- Counterterrorism Technology Test Bed

VULNERABILITY

Biological & Chemical Terrorism

The Public Health Response to Biological and Chemical Terrorism: Interim Planning Guidance for State Public Health Officials (hereafter referred to as the Planning Guidance) outlines steps for strengthening the capacity of the public health system to respond to and protect the nation against the dangers of a terrorism incident. Although the Planning Guidance focuses on the biological and chemical terrorism preparedness efforts of state-level health department personnel, it can be used as a planning tool by anyone in the response community, regardless of his or her position within that community or level of government.

The public health community at large also can use this document to improve its terrorism preparedness and develop terrorism response plans. The preparedness program outlined in this Planning Guidance, once implemented, should improve the ability of all public health agencies to respond to emergency situations arising from all sources, not just terrorism.

The Planning Guidance focuses on the capabilities that state health departments are likely to need to respond effectively to a terrorism incident. Despite the public health focus of this document, the terrorism plan ultimately should not be agency-specific. Instead, the terrorism plan should be integrated, outlining the roles and responsibilities of all agencies that participate in a response. This coordinated terrorism plan should then be annexed to the states all-hazard Emergency Operations Plan (EOP).

Background

The intentional release of sarin, an organophosphate nerve agent, into the Tokyo subway system helped to focus the United States on its need to prepare for what was once unthinkable. Aum Shinrikyo, the group responsible for the Tokyo incident, disbursed botulinum toxin and anthrax bacteria, and the group attempted to obtain Ebola (1).

The World Trade Center and Oklahoma City bombings confirm that terrorism is not an event that occurs only on foreign soil. Terrorism incidents or threats involving *Salmonella* (2) and ricin (3) amply demonstrate that the United States is vulnerable not only to bombs but to biological and chemical threats as well.

These and other events caused health departments across the country to consider their ability to respond to a terrorism incident. In addition to their more traditional responsibilities in disease surveillance and management, health departments are defining their roles to respond effectively to an intentional release of biological organisms or hazardous chemicals into an unsuspecting population.

Because states differ in size, population, risks, needs, and capabilities, terrorism preparedness and response efforts inevitably must differ. This document does not establish a one-size-fits-all model; rather, it addresses important areas of preparedness and response that can be tailored to meet the

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needs of individual jurisdictions. Health department officials should consider the information contained in this guidance, identify the health and medical effects that an explosion or the intentional release or threatened release of a biological organism or hazardous chemical could have on the population, and prepare to address the public health consequences of those effects.

Well-developed surveillance and epidemiologic capacity is the foundation on which health departments will detect, evaluate, and design effective responses to terrorism events. Not only will this capacity facilitate the initial detection and response in a terrorism event, it will be essential to monitoring the impact of these events and the effectiveness of public health responses. Detection of acute or insidious terrorism attacks using biological (or certain chemical) agents also will require linking of data from a variety of sources. An effective public health response will depend on the timeliness and quality of communications among numerous public health agencies at local, state, and federal levels; clinicians; laboratories; poison centers; medical examiners; and other health response partners.

Complementing the need for accurate and timely case reports is the need for expertise to analyze the information properly. Epidemiologic expertise is critical to judging whether the incident involves biological or chemical agents or is a consequence of a natural phenomenon, an accident, or terrorism. Expertise also is critical in determining the likely site and time of the exposure; size and location of the population exposed; prospect for delayed exposure or secondary transmission of an infectious agent; and whether any people should receive prophylaxis (either medications or vaccines) and, if so, which population groups.

Timely and accurate information and analysis must be coupled with effective and rapid dissemination of information to those who need to know (e.g., response partners and the public) to instill confidence in both the short- and long-term response of the affected community.

Targeting Information (CONFIDENTIAL INFORMATION)

The following are listed in the Los Angeles County All-Hazard Mitigation Plan as High Risk Terrorist Targets. Because of their proximity to Santa Monica-Malibu Unified School District facilities and Santa Monica College facilities, the committee elected to show them here.

Santa Monica Promenade

Third Street & Santa Monica Blvd.

Lat: 34.01 North **Long:** -118.49 West

Santa Monica Pier

Lat: 34.00 North **Long:** -118.49 West

In recent history, schools have become high profile targets to terrorists. Domestic terrorism activity on school grounds draws a great deal of public attention and is a source of major concern for all communities. The potential for disastrous consequences is high, however, terrorism on school grounds does not generally elevate into disaster proportions and is usually handled by the local jurisdictions affected.

For the school district and for the college, an act of terrorism involving one or more facilities is considered a high risk priority.

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Terrorism Mitigation

Because the primary mechanism for past terrorist incidents has been bombings and because of the potential for mass casualties from a WMD terrorist event, the primary focus of the state's hazard mitigation strategy for terrorism is on mitigation measures that reduce risk from bomb blast and nuclear, biological, and chemical attacks to critical state facilities and population.

Measures include:

Hardening (construction/retrofitting)

- Relocation/retrofitting of air intakes
- Ventilation system upgrade/retrofit
- Protect tower bases of bridges
- Seismic retrofitting
- Upgrade/retrofit water main system
- Blast guard window film/glazing, frames
- Egress improvements

Barriers and Fencing

- Fencing around air intakes
- Fencing around fuel supplies
- Vehicle barriers, bollards, popup gates, hydraulic barriers
- Waterfront security systems
- Perimeter fencing

Redundant systems

- Fire protection system
- Communications systems
- Information technology
- Utility (Gas/Heat/Water/Electric)

Security Measures

- Security systems/early warning systems
- Warning and alarms systems directly related to system protection/shut down
- Smart utility management systems on all critical services

Planning/Studies

- Telecommunications plans
- IT disaster recovery plans
- Business continuity/resumption plans
- Intelligence gathering and sharing
- Threat, vulnerability, and risk assessments
- Evacuation plans
- Site security planning
-

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Seismic Study

- Retrofitting
- Interior lighting
- Exterior lighting
- Staging areas

Secure Access & Entry Points

- Card swipe system
- Magnetometer
- Metal detectors
- Surveillance cameras & closed circuit TVs
- Personnel detection equipment
- Vehicle detection equipment
- Radar systems
- Building access system
- Motion detectors
- Replacing door locks and keys

IT Systems

- Security management system
- Building access system
- Employee identification system
- Coding protocol for sensitive records

These above-listed measures are already being used in many communities and situations and have proven effective in reducing or eliminating hazard risk. Each of these measures directly meets an objective stated in the state's Hazard Mitigation Strategy.

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Active Shooter

PROFILE

From 2013 through 2015 the tracking of gunfire in schools and at college and universities include public reports that a firearm was discharged inside a school building or on school or campus grounds 160 times, including fatal and nonfatal assaults, suicides, and unintentional shootings.

INTRODUCTION

In all, these incidents resulted in 59 deaths and 124 non-fatal gunshot injuries. Regardless of the individuals involved in a shooting, or the circumstances that gave rise to it, gunfire in schools and at colleges and universities undermines the sense of security that all students should have in their learning environments.

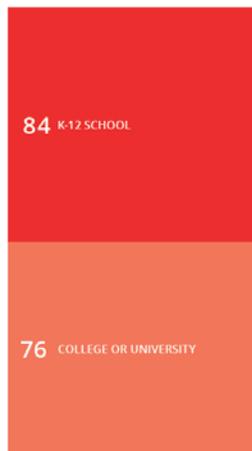
- Of shootings perpetrated by minors at primary and secondary schools and for which the source of the firearm was known, **more than half of the kids obtained the gun at home — likely because an adult did not store it locked and unloaded.**
- **Twenty-four shootings — nearly one in six — occurred after a confrontation or verbal argument intensified,** because of the presence of a gun rather than in spite of it.

Incidents were classified as school shootings when a firearm was discharged inside a school building or on school or campus grounds, as documented by the press or confirmed through further inquiries with law enforcement. Incidents in which guns were brought into schools but not fired, or were fired off school grounds after having been possessed in schools, were not included.

The U.S. Department of Education produces statistics annually on the number of students killed on-campus per year — approximately 15 homicides and 5 suicides annually. But they only track shootings at primary and secondary schools (not higher education institutions), do not distinguish between the weapons used, and omit shootings outside of regular school hours.

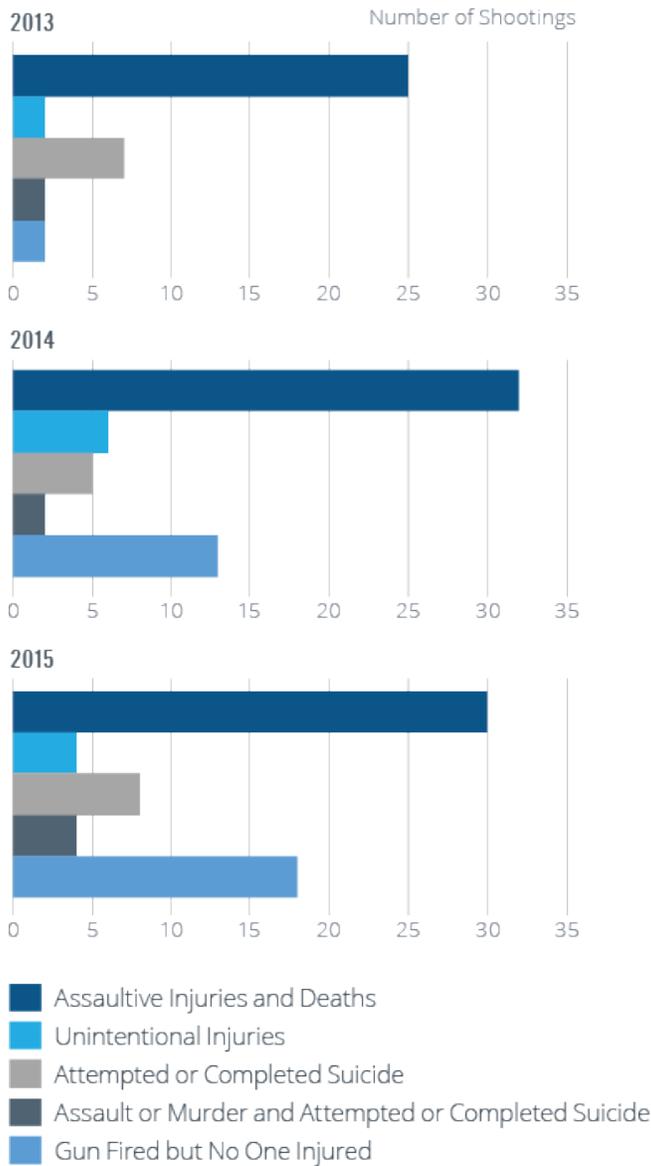
To fill this gap, reports generated by the media and confirmed through law enforcement identified 160 school shootings across 38 states. Nearly 53 percent of the identified shootings took place at K-12 schools, and 47 percent took place on college or university campuses.

SHOOTINGS BY TYPE OF SCHOOL, 2013-2015



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ANNUAL SCHOOL SHOOTINGS BY INTENT



In 95 incidents — over half — the perpetrator(s) intentionally injured or killed at least one other person with a gun. In eight of those incidents, the shooter then shot and killed him or her; in 20 separate incidents, the shooter attempted or completed suicide without first attacking someone else. Twelve shootings were purely unintentional in nature, and in 33 other incidents, a gun was discharged but no one was injured.

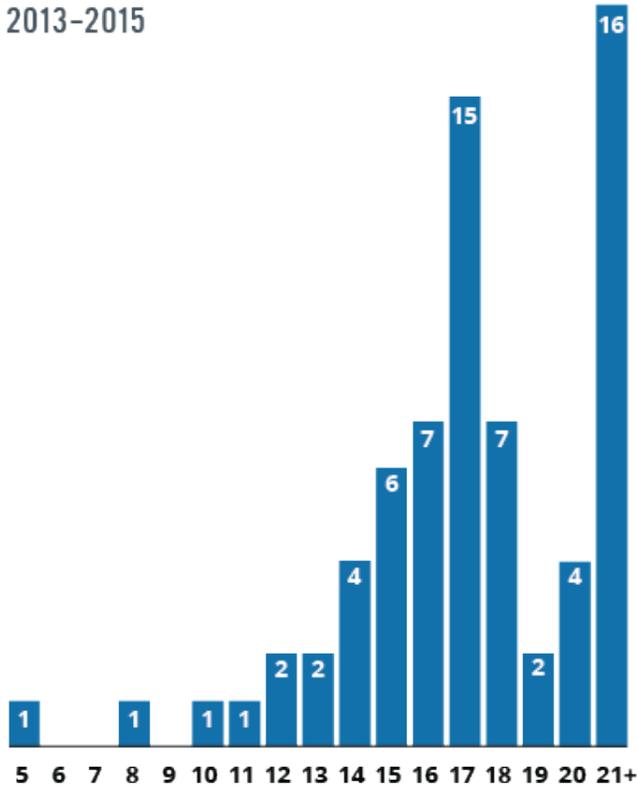
The number of identified incidents was relatively stable over the three years with the exception of incidents in which a gun was fired on campus and no one was injured, which rose each year. It is possible that press coverage of those incidents became more comprehensive over the period of observation.

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Regardless of the individuals involved in a shooting or the circumstances that gave rise to it, gunfire in schools undermines the sense of security that all students should have in their learning environments. There is evidence these shootings have long-term impacts on the school community as a whole: a recent analysis of school shootings found that those involving a homicide reduced student enrollment in the affected schools, and depressed students' standardized test scores by nearly five percent.

K-12 SCHOOL SHOOTINGS IN FOCUS

**K-12 SCHOOL SHOOTERS BY AGE,
2013-2015**



Between 2013 and 2015, an average of two school shootings took place at K-12 schools each month. Among shootings at K-12 schools in which the age of the shooter was known, 56 percent (39 of 70) were perpetrated by minors.

Many of the students who perpetrated these shootings had easy access to guns at home. In some cases investigators declined to comment on the source of the firearm because the incidents were under active investigation, but in the 24 incidents where the source of the firearm could be determined, 13 of the shooters (54 percent) used a gun they obtained from home.

This is consistent with an analysis of school-associated violent deaths between 1992-99 by the U.S. Centers for Disease Control and Prevention, which found that 56 percent of students involved directly in a school-associated homicide or suicide used a firearm, and of those guns for which the source could be determined, 79 percent were obtained from the shooter's home or that of a friend or relative.³

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**SHOOTINGS AT K-12 SCHOOLS
BY SCHOOL-TYPE, 2013-2015**



Unsecured firearms frequently make their ways to school. A recent press analysis found that nationwide, a child brought a gun onto school property almost daily during the academic school year. And a survey by the Department of Education found that, during the 2009-2010 school year, one in every thirty K-12 schools took serious disciplinary action against at least one student for use or possession of a firearm on school property. School shootings involving unsecured firearms brought from home included the following:

November 10, 2015 – Lecanto High School, Lecanto, Florida: During his morning English class, a 15-year-old boy walked to the front of the classroom, pulled out his father’s 9mm semi-automatic handgun, and shot himself in the head. He was taken to an area hospital in critical condition and survived.

August 25, 2015 – Hornsby Elementary School, Augusta, Georgia: An unidentified male third-grader brought his father’s gun to school, and while playing with the gun inside his desk, he unintentionally discharged the weapon and hit a female student sitting next to him, injuring her.

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October 24, 2014 – Marysville Pilchuck High School, Marysville, Washington: Fifteen-year-old Jaylen Fryberg walked into the school cafeteria and shot five students, killing four, before fatally shooting himself. The gun used in the incident belonged to Fryberg's father.

January 14, 2014 – Berrendo Middle School, Roswell, New Mexico: Mason Campbell, age 12, walked into his school gym and pulled out a 20-gauge shotgun that he'd taken from home. The boy opened fire on his fellow students, critically wounding an 11-year-old boy, seriously injuring a 13-year-old girl, and slightly wounding an adult staff member. A teacher persuaded the boy to put the gun down.

October 21, 2013 – Sparks Middle School, Sparks, Nevada: Shouting "Why are you laughing at me? Why are you doing this to me?" 12-year-old Jose Reyes fatally shot a teacher and wounded two other 12-year-old students with a 9mm semiautomatic Ruger handgun. His parents told investigators that the gun had been stored in an unlocked case on a shelf above the refrigerator.

January 10, 2013 – Taft Union High School, Taft, California: Sixteen-year-old Bryan Oliver walked into his science classroom with a 12-gauge Winchester shotgun that belonged to his brother, aimed at a 16-year-old classmate he said had bullied him, and fired a single shot that struck the boy in the chest, injuring him.

School Confrontations Lead to Shootings

Between 2013 and 2015, at least 14 shootings on college or university campuses — nearly a quarter of total documented incidents there — occurred after a confrontation or verbal argument intensified to gunfire. Among the shootings that occurred on college campuses after an altercation escalated:

October 9, 2015 – Northern Arizona University, Flagstaff, Arizona: Following a fight outside of a dormitory shortly after midnight, 18-year-old freshman Steven Jones ran to his car, grabbed a handgun, and shot and killed freshman Colin Brough, and shot and injured three other students.

April 16, 2014 – Stillman College, Tuscaloosa, Alabama: After two students began arguing over a bet they had made over a video game, one pulled out a small caliber handgun and shot the other student twice in the torso. The victim was rushed to a hospital but did not die, and the other student turned himself in and was charged with attempted murder.

June 7, 2013 – Santa Monica College, Santa Monica, California. After murdering his father and brother the former Santa Monica College student carjacked a vehicle taking a person hostage. The subject fired upon a bus, entered the campus and killed three individuals before being neutralized by three officers.

January 22, 2013 – Lone Star College, Houston, Texas: A confrontation that began when two young men bumped into each other in the doorway of an academic building ended when one fired at least 10 shots. Three people were wounded, including two students and a 55-year-old maintenance worker who was shot in the leg.

January 16, 2013 – Chicago State University, Chicago, Illinois: A fight broke out after a basketball game and spilled into the parking lot. In the confusion 17-year-old Tyrone Lawson was shot twice in the back, killing him. Two older men were later charged with the crime.

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VULNERABILITY

Based on the fact that Santa Monica College experienced a shooting on June 7, 2013 and the fact that incidents of school shootings are on the rise in the United States we believe that this is a moderate risk. The fear of campus shootings is real, and creating a campus free of the fear of crime is essential to the mission of our educational institutions.

Much of the mitigation steps that we are taking for a WMD situation would be used in an active shooter incident. Please see the above information regarding active shooter.

SCHOOL SHOOTINGS IN AMERICA

2013–2015

			ATTACK ON OTHER PERSON(S) RESULTING IN INJURY OR DEATH	ATTEMPTED OR COMPLETED SUICIDE WITH NO INTENT TO INJURE OTHER PERSON	GUN FIRED UNINTENTIONALLY RESULTING IN INJURY OR DEATH	GUN FIRED BUT NO ONE INJURED
1/7/13	FORT MYERS, FL	Apostolic Revival Center Christian School	X			
1/10/13	TAFT, CA	Taft Union High School	X			
1/15/13	HAZARD, KY	Hazard Community and Technical College	X			
1/15/13	ST. LOUIS, MO	Stevens Institute of Business & Arts	X			
1/16/13	CHICAGO, IL	Chicago State University	X			
1/22/13	HOUSTON, TX	Lone Star College North Harris Campus	X			
1/31/13	ATLANTA, GA	Price Middle School	X			
2/1/13	ATLANTA, GA	Morehouse College	X			
2/7/13	FORT PIERCE, FL	Indian River State College	X			
2/13/13	SAN LEANDRO, CA	Hillside Elementary School	X			
2/27/13	ATLANTA, GA	Henry W. Grady High School				X
3/18/13	ORLANDO, FL	University of Central Florida		X		
3/21/13	SOUTHGATE, MI	Davidson Middle School		X		
4/12/13	CHRISTIANSBURG, VA	New River Community College	X			
4/13/13	ELIZABETH CITY, NC	Elizabeth City State University	X			
4/15/13	GRAMBLING, LA	Grambling State University	X			
4/16/13	TUSCALOOSA, AL	Stillman College	X			
4/29/13	CINCINNATI, OH	La Salle High School		X		
5/3/13	HATTIESBURG, MS	University of Southern Mississippi				X
6/7/13	SANTA MONICA, CA	Santa Monica College	X			
6/19/13	WEST PALM BEACH, FL	Alexander W. Dreyfoos School of the Arts	X			
8/15/13	CLARKSVILLE, TN	Northwest High School	X			
8/20/13	DECATUR, GA	Ronald E. McNair Discovery Learning Academy				X
8/22/13	MEMPHIS, TN	Westside Elementary School				X

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8/23/13	SARDIS, MS	North Panola High School	X	
8/30/13	WINSTON-SALEM, NC	Carver High School	X	
9/21/13	SAVANNAH, GA	Savannah State University	X	
9/28/13	GRAY, ME	Gray-New Gloucester High School		X
10/4/13	PINE HILLS, FL	Agape Christian Academy	X	
10/15/13	AUSTIN, TX	Lanier High School		X
10/21/13	SPARKS, NV	Sparks Middle School	X	
11/1/13	ALGONA, IA	Algona High/Middle School		X
11/2/13	GREENSBORO, NC	North Carolina A&T State University	X	
11/3/13	STONE MOUNTAIN, GA	Stephenson High School	X	
11/21/13	RAPID CITY, SD	South Dakota School of Mines & Technology		X
2/4/13	WINTER GARDEN, FL	West Orange High School	X	
12/13/13	CENTENNIAL, CO	Arapahoe High School	X	
12/19/13	FRESNO, CA	Edison High School	X	
1/9/14	JACKSON, TN	Liberty Technology Magnet High School	X	
1/14/14	ROSWELL, NM	Berrendo Middle School	X	
1/15/14	LANCASTER, PA	King Elementary School		X
1/17/14	PHILADELPHIA, PA	Delaware Valley Charter High School		X
1/20/14	CHESTER, PA	Widener University	X	
1/21/14	WEST LAFAYETTE, IN	Purdue University	X	
1/24/14	ORANGEBURG, SC	South Carolina State University	X	
1/28/14	GRAMBLING, LA	Grambling State University	X	
1/28/14	NASHVILLE, TN	Tennessee State University	X	
1/31/14	PHOENIX, AZ	Cesar Chavez High School		X
1/31/14	DES MOINES, IA	North High School	X	
2/7/14	BEND, OR	Bend High School		X
2/10/14	SALISBURY, NC	Salisbury High School	X	
2/11/14	LYNDHURST, OH	Charles F. Brush High School		X
2/12/14	JACKSON, TN	Union University	X	
2/20/14	RAYTOWN, MO	Raytown Success Academy	X	
3/2/14	WESTMINSTER, MD	McDaniel College		X
3/7/14	TALLULAH, LA	Madison Parish High School	X	
3/8/14	OSHKOSH, WI	University of Wisconsin - Oshkosh		X
3/23/14	NEWARK, DE	University of Delaware		X
3/30/14	SAVANNAH, GA	Savannah State University		X
4/2/14	KENT, OH	Kent State University		X
4/11/14	DETROIT, MI	East English Village Preparatory Academy	X	
4/21/14	GRIFFITH, IN	St. Mary Catholic School	X	
4/21/14	PROVO, UT	Provo High School		X
4/26/14	COUNCIL BLUFFS, IA	Iowa Western Community College	X	
5/2/14	MILWAUKEE, WI	Marquette University	X	
5/3/14	EVERETT, WA	Horizon Elementary	X	
5/4/14	AUGUSTA, GA	Paine College		X
5/5/14	AUGUSTA, GA	Paine College	X	
5/8/14	LAWRENCEVILLE, GA	Georgia Gwinnett College		X
5/8/14	GEORGETOWN, KY	Georgetown College		X

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5/21/14	MILWAUKEE, WI	Clarke Street School Playground	X	
6/5/14	SEATTLE, WA	Seattle Pacific University	X	
6/10/14	TROUTDALE, OR	Reynolds High School	X	
6/23/14	BENTON, MO	Kelly High School		X
6/27/14	MIAMI, FL	University of Miami		X
8/13/14	FREDRICK, MD	Heather Ridge High School		X
8/14/14	NEWPORT NEWS, VA	Saunders Elementary School	X	
9/2/14	POCATELLO, ID	Idaho State University		X
9/5/14	SAVANNAH, GA	Savannah State University	X	
9/10/14	LAKE MARY, FL	Greenwood Lakes Middle School		X
9/11/14	TAYLORSVILLE, UT	Westbrook Elementary School		X
9/27/14	NASHVILLE, TN	Tennessee State University	X	
9/29/14	TERRE HAUTE, IN	Indiana State University	X	
9/30/14	LOUISVILLE, KY	Fern Creek High School	X	
9/30/14	ALBERMARLE, NC	Albermarle High School	X	
10/3/14	FAIRBURN, GA	Langston Hughes High School	X	
10/8/14	ELIZABETH CITY, NC	Elizabeth City State University		X
10/13/14	NASHVILLE, TN	Tennessee State University		X
10/18/14	LANGSTON, OK	Langston University	X	
10/21/14	MEMPHIS, TN	A. Maceo Walker Middle School		X
10/24/14	MARYSVILLE, WA	Marysville Pilchuck High School	X	
11/20/14	TALLAHASSEE, FL	Florida State University	X	
11/23/14	ANNAPOLIS, MD	St. John's College	X	
12/5/14	CLAREMORE, OK	Rogers State University	X	
12/17/14	WATERVILLE, ME	Benton Elementary School		X
12/17/14	PITTSBURGH, PA	Sunnyside Elementary School	X	
1/15/15	MILWAUKEE, WI	Wisconsin Lutheran High School	X	
1/16/15	OCALA, FL	Vanguard High School	X	
1/20/15	MOBILE, AL	Williamson High School	X	
1/26/15	ROSEVILLE, MN	Hand and Hand Montessori School	X	
2/2/15	MANKATO, MN	Minnesota State University		X
2/4/15	FREDERICK, MD	Frederick High School	X	
2/4/15	COLUMBIA, SC	University of South Carolina	X	
2/15/15	LITTLE ROCK, AR	Lawson Elementary School	X	
2/15/15	MERCED, CA	Tenaya Middle School	X	

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2/15/15	ATHENS, GA	University of Georgia				X
2/23/15	DAYTONA BEACH, FL	Bethune-Cookman University	X			
3/9/15	COON RAPIDS, MN	Northwest Passage High School		X		
4/2/15	BEAVER FALLS, PA	Community College of Beaver County			X	
4/2/15	JACKSON, TN	Lane College	X			
4/4/15	EVERETT, WA	Everett Community College				X
4/13/15	GOLDSBORO, NC	Wayne Community College	X			
4/17/15	SEGUIN, TX	Seguin High School		X		
4/18/15	DOVER, DE	Delaware State University	X			
4/19/15	DOVER, DE	Delaware State University				X
4/19/15	CHARLOTTE, NC	Johnson C. Smith University	X			
4/22/15	LAS VEGAS, NV	Rute Deskin Elementary School				X
4/27/15	LACEY, WA	North Thurston High School				X
5/4/15	CLEVELAND, OH	Willow Elementary School	X			
5/4/15	OREM, UT	Utah Valley University			X	
5/5/15	CONYERS, GA	Conyers Middle School				X
5/12/15	TEMPE, AZ	Corona del Sol High School		X		
5/20/15	ROBINSON, TX	Robinson High School		X		
5/24/15	FLINT, MI	Southwestern Classical Academy	X			
5/27/15	EVERGLADES CITY, FL	Everglades School	X			
6/4/15	FRANKLIN, NC	South Macon Elementary School				X
6/23/15	FORT CALHOUN, NE	Fort Calhoun Elementary School				X
7/5/15	DALLAS, TX	Coppell Middle School East	X			
7/24/15	CONVERSE, TX	Elof Elementary School	X			
7/27/15	GAINESVILLE, FL	University of Florida				X
8/8/15	WICHITA, KS	Wichita State University	X			
8/8/15	PARADISE, TX	Paradise High School				X
8/23/15	RICHMOND, TX	William Velasquez Elementary School				X
8/25/15	AUGUSTA, GA	Hornsby Elementary School			X	
8/26/15	HOUSTON, TX	Texas Southern University	X			
8/27/15	SAVANNAH, GA	Savannah State University	X			
9/3/15	SACRAMENTO, CA	Sacramento City College	X			
9/11/15	LAFAYETTE, LA	Northside High School	X			
9/14/15	CLEVELAND, MS	Delta State University	X			
9/22/15	STATESVILLE, NC	Central Elementary School	X			

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9/28/15	BUTTE, MT	Montana Tech of the University of Montana		X
9/30/15	HARRISBURG, SD	Harrisburg High School	X	
10/1/15	ROSEBURG, OR	Umpqua Community College	X	
10/2/15	UNIVERSITY CITY, MO	University City High School		X
10/6/15	HOUSTON, TX	Texas Southern University	X	
10/9/15	FLAGSTAFF, AZ	Northern Arizona University	X	
10/9/15	HOUSTON, TX	Texas Southern University	X	
10/11/15	TAMPA, FL	University of Southern Florida		X
10/15/15	LANGSTON, OK	Langston University		X
10/15/15	SAN ANTONIO, TX	Wagner High School		X
10/22/15	NASHVILLE, TN	Tennessee State University	X	
10/24/15	SAN ANTONIO, TX	Ed White Middle School	X	
10/25/15	DURHAM, NC	North Carolina Central University	X	
11/1/15	WINSTON-SALEM, NC	Winston-Salem State University	X	
11/5/15	MOULTRIE, GA	Vereen School		X
11/10/15	LECANTO, FL	Lecanto High School	X	
11/11/15	SULPHUR ROCK, AR	Sulphur Rock Magnet School		X
11/29/15	COLUMBUS, OH	Ohio State University	X	
12/18/15	JACKSON, TN	Lane College		X
12/29/15	GREELEY, CO	Aims Community College	X	

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Economic Disruption

PROFILE

Los Angeles County is the most populous county in the nation. With approximately 10 million residents, it is home to about 30 percent of the state's population. The county has grown by nearly 2 million residents in the past 20 years, including more new immigrants than any other region of the country except the New York City area. Today, the county's population is 48 percent Latino, 22.5 percent non-Latino white, 13.5 percent Asian, and 8.5 percent black—similar to the racial/ethnic profile that state demographers predict for California by 2040. The county is also home to large numbers of low-income residents. Reflecting the size and diversity of the county, local government is large and complex, as are the problems of delivering local services to residents. In recent years, local governments in Los Angeles County have confronted difficult issues such as providing health care for the uninsured, reducing air pollution, improving low-performing schools, coping with racial/ethnic tensions involving police actions, and coming to terms with local efforts to secede from the city of Los Angeles. There are also housing, transportation, land use, and environmental issues relating to population growth and development. These factors tend to contribute negatively, on a large scale, to any economic downturn or disruption in the community.

"...Los Angeles County's suburban areas, like Orange County, are becoming so densely settled that they could be said to be urbanizing. Financial and social elites are withdrawing from civic leadership. "People think that most countries and cities and societies are moving away from industrialization," he says. "The notion of a postindustrial society is just wrong."

For example, the rise and decline of manufacturing jobs in American cities has taken a surprising twist in Los Angeles. The Chicago model of urban development assumed a growing industrial base. But in the 1960's and 70's, the traditional assembly-line factories that employed so many urban workers succumbed to cheaper labor overseas.

In the 1980's, the Pentagon's military buildup buoyed L.A.'s aerospace and defense companies and insulated the region from the industrial decline. After the cold war ended, however, cutbacks in defense spending hit Southern California particularly hard and deepened the recession of the early 1990's...."

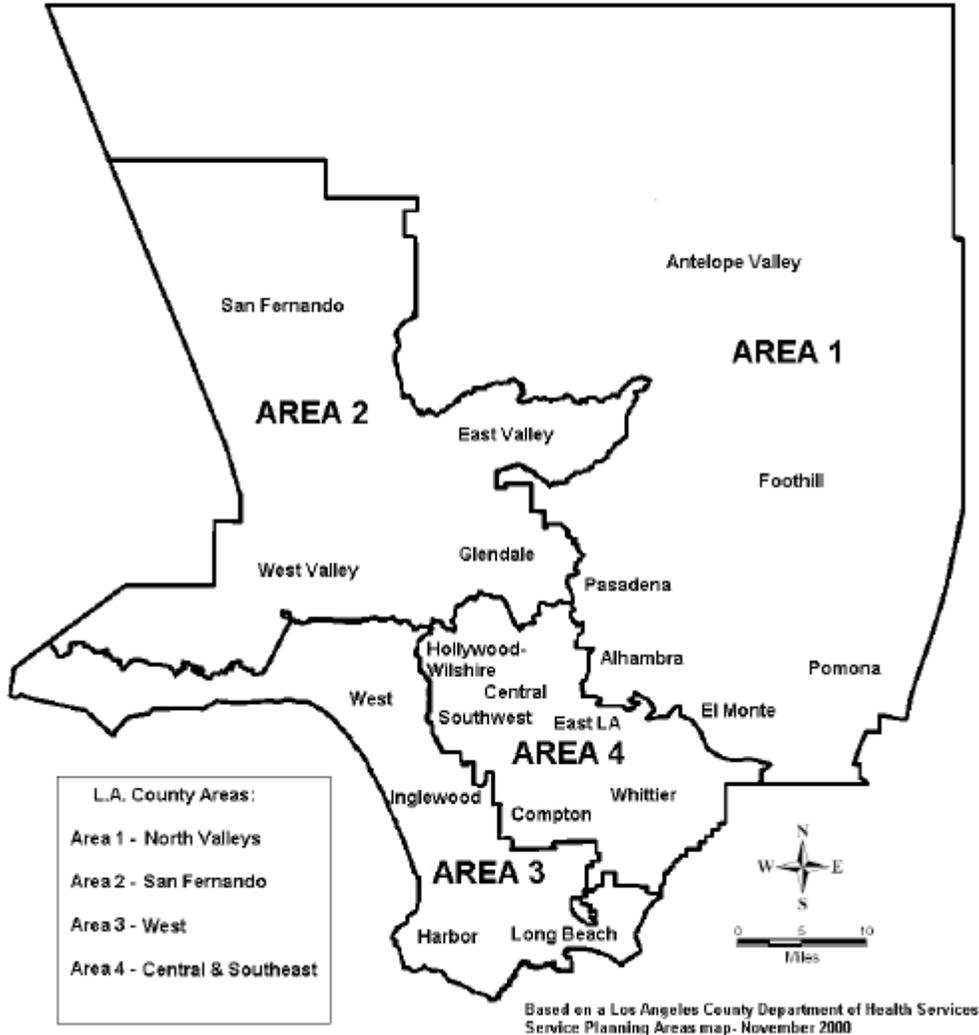
"The New Urban Studies"; Los Angeles scholars use their region and their ideas to end the dominance of the 'Chicago School';
By D.W. MILLER.

Recession

Although Los Angeles County's economy has improved, along with the rest of the country, since the beginning of 2016, fears of the next recession remain. In a Reuters Poll of Los Angeles County residents, only 45 percent of voters pronounce themselves satisfied with the current economy. When asked about their personal financial situations, 57 percent of voters said they had just enough money to maintain their standard of living, while 22 percent described themselves as getting ahead financially and 19 percent said they were falling behind. With 76 percent of respondents stating they had just enough or too little money to maintain their standard of living, fears of another recession remains strong.

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Los Angeles County



Government Perceptions

Economic and social conditions — as well as the lingering effects of recent secession efforts — are also affecting attitudes about local government. Seventy-one percent of residents say that the county government is fair (49%) or poor (22%) at solving problems, while only 24 percent rate it as excellent or good. San Fernando area residents (28%) are more likely than others to view county government in a negative light. While more residents (39%) say their city governments are excellent or good at solving problems, a majority (54%) still gives them low ratings. Residents of LA City are far more critical than others. Given their disenchantment with government, LA residents are open to a number of proposals for reform. Given the vast differences in attitudes among racial and ethnic groups in LA County, it is not surprising that many residents are concerned about the state of race relations in the region. A majority of residents (53%) believes race relations are not so good (39%) or poor (14%) in

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the county today. Blacks (65%) are more negative than Latinos (58%), whites (50%), or Asians (45%).

Percent seeing the issue as a big problem in their part of Los Angeles County	All Adults	County Area			
		North Valleys	San Fernando	West	Central / Southeast
Traffic congestion on freeways and major roads	67%	64%	69%	70%	63%
Availability of housing that you can afford	54	47	52	57	59
Crime	41	32	36	38	55
Lack of opportunities for well-paying jobs	40	37	35	36	49
Population growth and development	38	34	43	37	37
Air pollution	37	30	34	32	47

VULNERABILITY

Overall Outlook

Los Angeles County residents are in a sour mood when it comes to the state of the economy in California, the county, and their local areas. Two in three county residents predict bad economic times for California during the next 12 months. This is a considerably higher percentage than we found in PPIC Statewide Surveys in 2000, 2001, and 2002. These pessimistic views are shared across geographic, racial/ethnic, demographic, and political groups.

“Turning to economic conditions in California, do you think that during the next 12 months we will have good times financially or bad times?”

	Los Angeles County Adults			
	Feb 00	Jan 01	Feb 02	Mar 03
Good times	77%	50%	38%	25%
Bad times	16	39	52	67
Don't know	7	11	10	8

When asked to evaluate the Los Angeles County economy today, only 24 percent of resident's rate it as excellent or good—48 percent say it is fair, and 27 percent rate it as poor. The low ratings are consistent across geographic areas and demographic groups.

As for their parts of Los Angeles County, half of county residents report their areas are now in a mild (12%), moderate (25%) or serious (14%) recession. The Central/Southeast area has the highest percentage of residents (58%) who say their part of the county is in a recession. Higher percentages of Latinos (58%) and blacks (57%) than whites (44%) say their areas are in a recession. Residents with lower incomes and less education and immigrants are also more likely than others to share this view.

Residents are divided about their overall outlook for the county: Forty percent say that Los Angeles County is headed in the right direction, and 43 percent believe that it is headed in the wrong direction. As for the future, 32 percent think the county will be a better place to live than it is today, 32 percent

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think it will be a worse place to live, and 31 percent think it will be about the same as now. Whites, blacks, and San Fernando area residents are more negative than others about the county’s overall outlook. Concerning quality of life, 61 percent of Los Angeles County residents say things are going well, and 36 percent say they are not. More than one-third of residents in all four areas believe things are going badly. Although 51 percent see themselves living in the same neighborhood five years from now, 22 percent expect to be living elsewhere in the county, and 17 percent expect to be living outside the county. Younger and more educated residents are most likely to say they will move out of the county in the next five years.

“Do you think that things in Los Angeles County are generally going in the right direction or the wrong direction?”

	All Adults	County Area			Central / Southeast
		North Valleys	San Fernando	West	
Right direction	40%	41%	37%	42%	41%
Wrong direction	43	40	49	42	42
Don't know	17	19	14	16	17

State Budget Deficit and Local Tax Increases

Only 3 percent of county residents identify the state budget deficit as the most important issue facing Los Angeles County. Nevertheless, 92 percent of county residents say they are very concerned (71%) or somewhat concerned (21%) that the state budget deficit will cause severe cuts in areas such as city and county government and local schools. This concern is shared across the county’s major areas and racial/ethnic groups. Women tend to be more concerned than men that the deficit will cause severe cuts in local services: 77% are very concerned, compared to 64% of men. Majorities in all partisan groups are concerned about potential cuts. However, Democrats (78%) are more likely than independents (68%) and Republicans (66%) to be very concerned.

Los Angeles County residents are willing to raise certain new taxes to fund some local services in light of the large state budget deficit. For example, 64 percent of county residents favor new taxes on alcoholic beverages and cigarettes in order to fund county-level public health and medical emergency services. However, there are large partisan differences: 69 percent of Democrats, 60 percent of independents, and 52 percent of Republicans support new alcohol and cigarette taxes. Women (69%) are much more likely than men (60%) and those under age 35 (68%) are more likely than those ages 55 and older (57%), to favor these so-called “sin taxes”. Some six in 10 residents in each of the four geographic areas would support this tax increase to fund county-level services.

Public Policy Institute of California; Special Survey of Los Angeles in collaboration with the University of Southern California; Mark Baldassare, Research Director & Survey Director

Impact

Economic downturns have a direct impact on schools and colleges. Every financial aspect is affected: (budgets, salaries, class sizes, instructional quality, special programs, learning materials, facility maintenance, new construction, personnel). Indirect affects include crime and behavior problems.

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Water/Waste Water Emergency

Profile

Water

With a growing population and economy, increasing environmental concerns and vibrant agriculture industry at play, how we choose to collect, store, distribute, use and dispose of water has never been more critical.

Every drop of water not used by a household, farm or business can be used to create higher river flows to benefit fisheries and floodways. Likewise, recycled water stored in new reservoirs can be used to recharge over-drafted groundwater aquifers. In short, new and innovative ideas are on the table that will help California rework its waterworks so that it is not necessary to choose between the environment, the economy, and people's livelihoods and lifestyles.

From the northern reaches to the San Joaquin Delta, which provides two-thirds of the state's residents with their drinking water, California is under the gun to reconstruct and rehabilitate its water and wastewater systems. The challenge is being met on many fronts. On these pages you will find a summary of the water and wastewater challenges California faces today, along with the lowdown on solutions in the works.

Problems

Our groundwater basins are over-drafted and our existing surface storage cannot meet future water demands, particularly in times of drought.

The gap between water supply and demand in California is predicted to total 2.4 million acre feet during drought years and up to 6.2 million acre feet in drought years by 2020. (An acre foot is enough to meet the annual needs of between one and two households.) Six million feet is roughly triple the amount of water the Bay Area uses in a year. At the same time, growers, manufactures and businesses are demanding more reliable and better quality water.

It can take 20 years or longer to develop and finance a supplemental water supply for new developments. About 894 gallons of water are needed to grow the food for the daily diet of an average person. On an annual basis, an individual's water use is about 326, 310 gallons. Some of our cities rely on water mains and sewers that are more than 100 years old.

During May 2014 to April 2015 California officials issued more than 50 beach closings and an unknown number of local health advisories due to sewage spills and overflows. Spills and overflows typically happen because wastewater systems have not been upgraded to facilitate new growth, and sewer pipes have not been replaced in time to avert a main line break. When it rains, at times as little as one-quarter inch, the volume of combined runoff and wastewater becomes too great for sewage treatment plants to handle, and the flow is diverted to outfall points that discharge raw sewage, toxic industrial waste and floatables such as garbage and syringes. California needs an estimated \$8.4 billion for local wastewater treatment improvements.

To offset water shortages, the state's water recycling program needs more investment. In 2013, the last year it revised its state Water Plan, the California Department of Water Resources identified three themes regarding water resources in California. The third Update 2013 theme focuses on the need for stable, effective funding sources to invest in water innovation and infrastructure (natural and built).

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All-Hazard Mitigation Plan

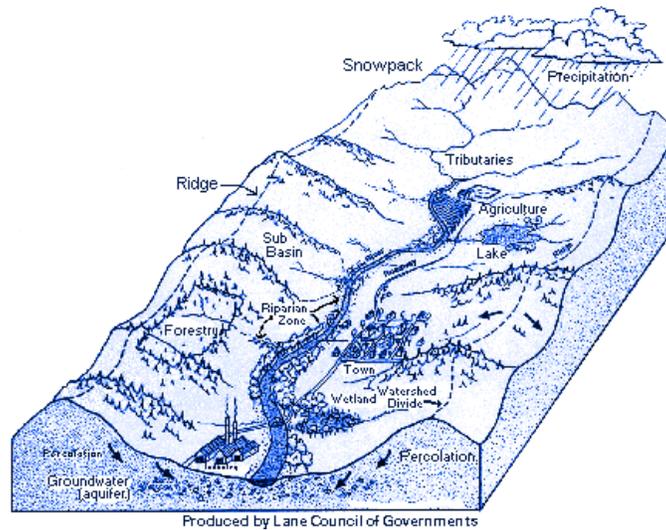
This theme recognizes that State and federal funding totaling approximately \$20 billion is spent on the maintenance and operation of existing water treatment and supply equipment and facilities per year. The plan also recognizes that it will take hundreds of billions of dollars of additional investments over the next few decades to reduce flood risk, provide reliable and clean water supplies, recover over drafted groundwater basins, and restore degraded ecosystems – in other words, to achieve sustainable water management.

Water Sheds

A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place. John Wesley Powell, scientist geographer, put it best when he said that a watershed is:

"that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."

Watersheds come in all shapes and sizes. They cross county, state, and national boundaries. No matter where you are, you're in a watershed!



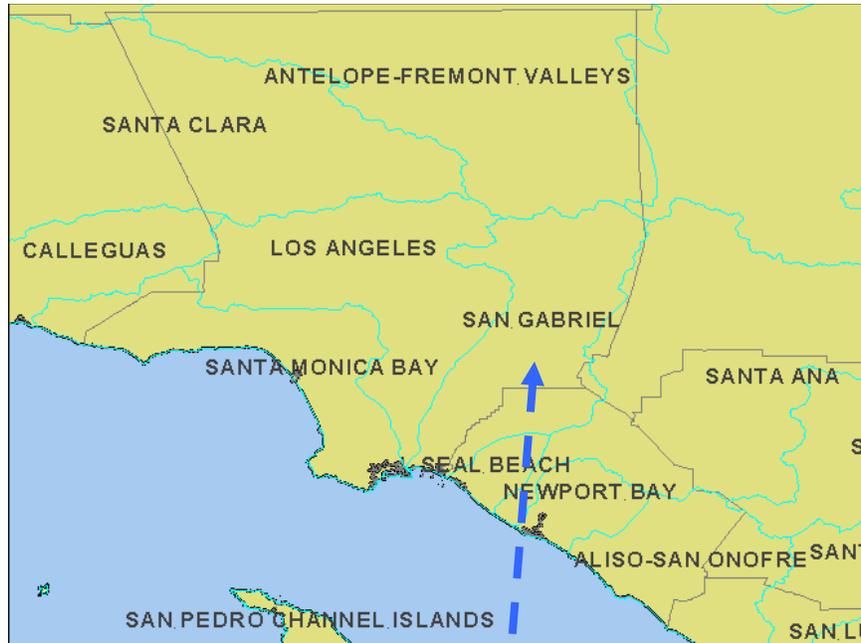
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There are 6 water sheds serving Los Angeles County; Antelope-Fremont Valleys, Santa Clara, Los Angeles, San Gabriel, Santa Monica Bay, and San Pedro/Channel Islands (see map on next page). The map below shows the area of South Coast Water Sheds.

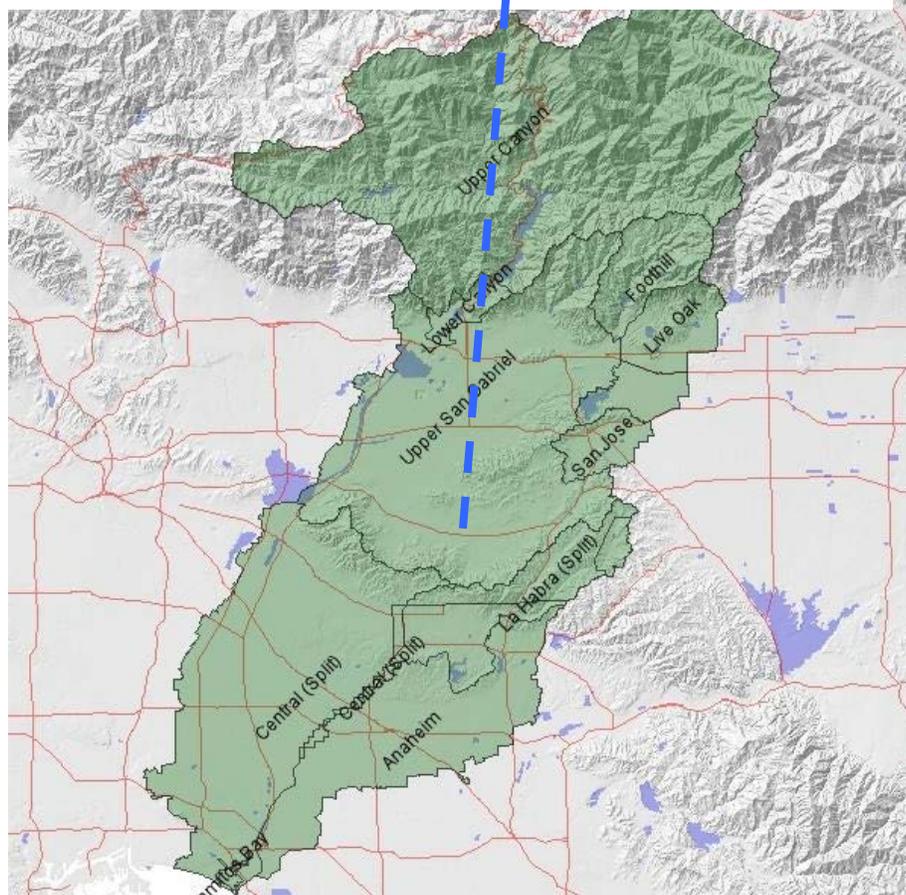


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Watersheds in Los Angeles County



San Gabriel Water Shed



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Water System Emergency Response Plans

All water systems serving a population of 3,300 or more (1,000 connections or more) must update their Emergency Response Plan (ERP) and send a completed certification form to EPA within 6 months of completing their Security Vulnerability Assessment (Security VA). All water systems are required to have an Emergency Notification Plan (ENP). CRWA is putting on a series of FREE ERP classes, which will include a free manual and a free CD that will assist you in updating or creating an Emergency Response Plan for your water system. It also includes a special section on how to prepare a Drought Response Plan as a key component of your ERP. All systems no matter what size are invited to attend and will benefit from this class, and attendees will earn contact hours for Distribution and Water Treatment certification renewal.

Ground Water

Ground water is an important component of our nation's fresh water resources. The use of ground water is of fundamental importance to human life and is also significant to economic vitality. Inventories of ground water and surface water use patterns in the United States emphasize the importance of ground water. The United States Geological Survey (USGS) compiles national water use information every 5 years and publishes a report that summarizes this information.

Groundwater is a hidden resource. At one time, its purity and availability were taken for granted. Now contamination and availability are serious issues. The following should be considered:

- Scientists estimate groundwater accounts for more than 95% of all fresh water available for use.
- Approximately 50% of Americans obtain all or part of their drinking water from groundwater.
- Nearly 95% of rural residents rely on groundwater for their drinking supply.
- About half of irrigated cropland uses groundwater.
- Approximately one third of industrial water needs are fulfilled by using groundwater.
- About 40% of river flow nationwide (on average) depends on groundwater.

Thus, groundwater is a critical component of management plans developed by an increasing number of watershed partnerships.

VULNERABILITY

Threats to Ground Water

An increased quantity of groundwater is being withdrawn to meet the demands of a growing population. Some of the typical threats associated with this include overdraft, drawdown and subsidence.

Overdraft occurs when groundwater is removed faster than recharge can replace it. This can result in

- A permanent loss of a portion of its storage capacity
- A change that can cause water of unusable quality to contaminate good water in coastal basins, salt water intrusion can occur.

Generally, any withdrawal in excess of safe yield (the amount that can be withdrawn without producing an undesirable result) is an overdraft.

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Drawdown differs significantly from overdraft. It results in a temporarily lowered water table generally caused by pumping. In this situation, the water table recovers when the supply is replenished.

Subsidence is one of the dramatic results from over-pumping. As the water table declines, water pressure is reduced. This causes the fine particles that held water to become compacted. In addition to permanently reducing storage capacity, the land above the aquifer can sink ... from a few inches to several feet ... causing a sinkhole. This can damage property and fields.

Inorganic compounds, pathogens and organic compounds can harm water quality, affecting the health of humans, fish and wildlife. Scientists continually learn more about contaminants, their sources and prevention practices.

Each state is responsible for designating uses for groundwater, surface waters, wetlands, etc. Designated uses include fishable, swimmable, drinkable, recreational, agricultural, aquatic life, and more. Each state is also responsible for developing water quality standards for each use. For example, while most rivers are designated to be used for fishing, a few river sections are designated to be used for drinking water. The same is true for groundwater. Uses are defined and standards identified. A few groundwater uses and standards are:

- Drinking water
- Meet MCL* for pollutants
- Industrial process
- Quality & quantity criteria
- Stream base flow
- Discharge quantity & quality

*MCL: Maximum Contaminant Level

Note that, for most groundwater uses, quality and quantity are important, while for surface water uses, generally quality is the primary concern (with the realization the quantity affects quality).

Inorganic Compounds include all compounds that do not contain carbon. Nutrients (nitrogen and phosphorus) and heavy metals are two examples.

- *Nitrates* can cause problems in drinking water or marine waters
- *Phosphorus* can reduce uses of fresh surface waters
- *Heavy metals* include selenium, arsenic, iron, manganese, sulfur, cadmium and chromium and others
- Some (iron, manganese and arsenic) occur naturally

Pathogens, including bacteria and viruses, have been credited with causing more than 50% of the waterborne disease outbreaks in the U.S. *Cryptosporidium Parvum* and *Giardia* both commonly cause illnesses when consumed.

Organic Compounds include Volatile Organic Compounds (VOCs) like benzene, toluene, xylene; semi-volatile compounds like naphthalene and phenol; PCBs and pesticides.

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Potential Sources

Point sources are easily identified because they usually come out of a "pipe". Examples include sewage treatment plants, large injection wells, industrial plants, livestock facilities, landfills, and others. Regulated by the state water quality agency and the U.S. EPA, point sources are issued a National Pollutant Discharge Elimination System (NPDES) permit when they meet regulations.

Many point sources were established generations ago, before the threat they posed was understood. Some of these sources have been "grandfathered" into compliance with some regulations. Thus, you may find some point sources located in areas that would be considered inappropriate now.

Nonpoint sources refer to widespread, seemingly insignificant amounts of pollutants, which, cumulatively, threaten water quality and natural systems. Examples of nonpoint sources include septic systems, agriculture, construction, grazing, forestry, recreational activities, careless household management, lawn care, and parking lot and other urban runoff.

Nonpoint sources are not required to have a permit. Individually, each may not be a serious threat, but together they may be a significant threat.

Other sources that aren't classified under point or nonpoint sources include underground petroleum storage systems and many large and small businesses like dry cleaners, restaurants, and automotive repair shops. Although a large number of underground storage tanks have been removed or upgraded, a significant number remain. Businesses can threaten groundwater with a wide variety of potentially contaminating substances.

Groundwater Contaminant Sources

Source	Contaminant
Salting practices & storage	Chlorides
Snow dumping	Chlorides
Agricultural fertilizers	Nitrates
Manure handling	Nitrates, pathogens
Home fertilizer	Nitrates
Septic systems	Nitrates, pathogens
Urban landscapes	Hydrocarbons, pesticides, pathogens
Agricultural dealers	Hydrocarbons, pesticides, nitrates
Agricultural feedlots	Nitrates, pathogens
Solid waste landfills	Hazardous materials
Industrial uses RCRA 'C'	Hazardous materials
Industrial uses RCRA 'D'	Hazardous materials
Small quantity generators	Hazardous materials
Households	Hazardous materials
Gas stations	Hydrocarbons
Auto repair shops	Hydrocarbons
Recycling facilities	Hydrocarbons
Auto salvage yards	Hydrocarbons
Underground storage tanks	Hydrocarbons
Industrial floor drains	Hydrocarbons
Injection wells	Hydrocarbons
Junkyards	Hydrocarbons

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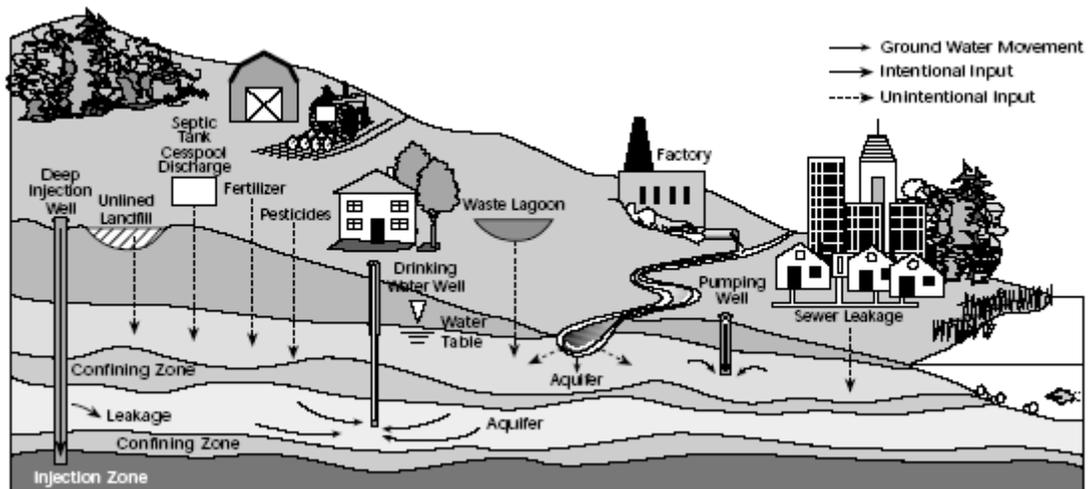
Sources of Ground Water Contamination

Ground water quality may be adversely impacted by a variety of potential contaminant sources. It can be difficult to identify which sources have the greatest impact on ground water quality because each source varies in the amount of ground water it contaminates. In addition, each source impacts water quality differently.

An EPA/state workgroup developed a list of potential contaminant sources and requested each state to indicate the 10 top sources that potentially threaten their ground water resources. States added sources as was necessary based on state-specific concerns. When selecting sources, states considered numerous factors, including:

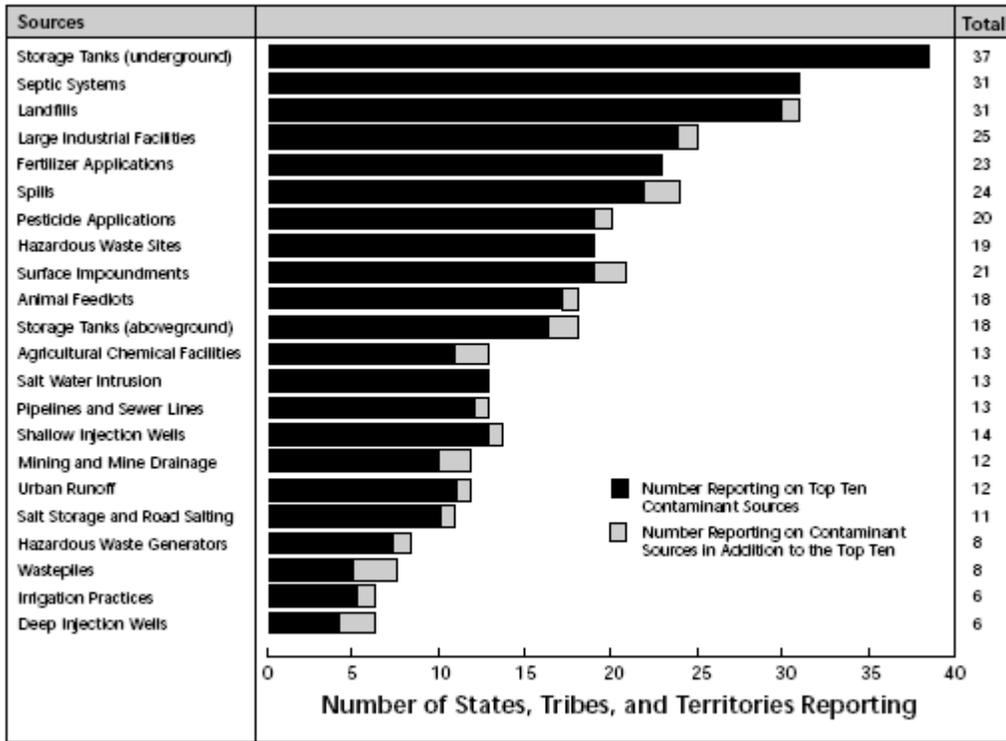
- The number of each type of contaminant source in the state
- The location relative to ground water sources used for drinking water purposes
- The size of the population at risk from contaminated drinking water
- The risk posed to human health and/or the environment from releases
- Hydrogeological sensitivity (the ease with which contaminants enter and travel through soil and reach aquifers)
- The findings of the state's ground water assessments and/or related studies

Sources of Ground Water Contamination



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Major Sources of Ground Water Contamination



EPA,
"National Water Quality Inventory"

Methyl Tertiary Butyl Ether (MTBE)

Senate Bill 521 was introduced February 24, 1997 in response to a growing awareness of the possible environmental and health effects associated with the use of Methyl Tertiary Butyl Ether (MTBE) as an oxygenate blending agent in gasoline fuels throughout California (Appendix A). Since 1979, MTBE had been used in the State as a replacement for tetraethyl lead and as an octane booster. Although used in California since 1979 in volumes ranging from 0.5 to 3.5 percent, the volumes of MTBE in gasoline have increased to 11 percent since 1996. SB 521, which became effective January 1, 1998, called for the University of California to perform an assessment of the benefits and risks associated with the uses of MTBE in California.

This assessment report addresses: 1) the current impacts of MTBE to the state's groundwater used for drinking; 2) risks to the state's groundwater resources associated with MTBE leaking from storage tanks and other petroleum storage and conveyance facilities; and 3) potential future risks to the state's groundwater should MTBE continued to be used.

The general approach was to compile statewide data on the occurrence of MTBE groundwater contamination. The data consisted of MTBE detections and concentrations at leaking underground storage tank sites from Regional Water Quality Control Boards and MTBE detections and concentrations in water supply wells based on information from the Department of Health Services, Local Primacy Agencies, and Regional Water Quality Control Boards. We used various modeling approaches to then assess potential future impacts of MTBE on groundwater resources, focusing primarily on plume behavior in aquifer systems consisting of alluvial materials (i.e., sand, gravel, silt and clay). This report also includes specific information on MTBE impacts on groundwater in the Tahoe Basin.

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A recent investigation into the impacts of MTBE on California groundwater by Happel et al. (1998) provided an important foundation for this study. The analysis of groundwater impacts contained herein complements the work of Happel et al. (1998) by accumulating more recent statewide information with broader geographic coverage. Moreover, we use plume length statistics compiled by Happel et al. (1998) as a basis for calibrating models that simulate future MTBE plume growth.

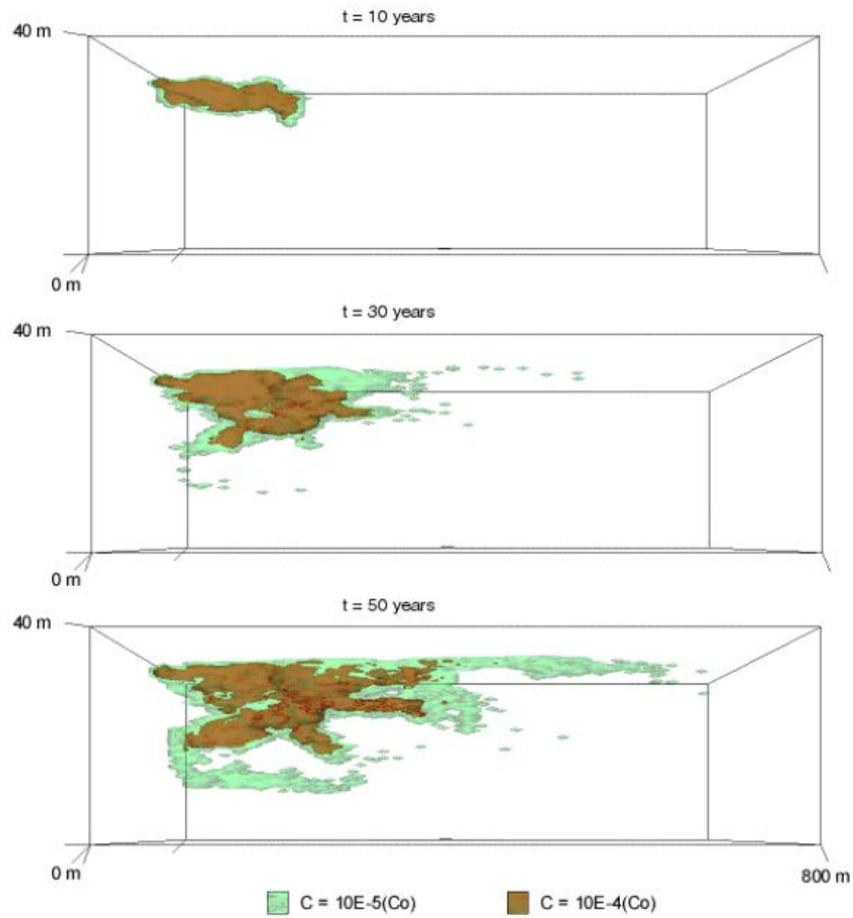
The use of MTBE in gasoline has increased steadily since it was first approved for use in gasoline by the United States Environmental Protection Agency (USEPA) in 1979. MTBE is produced from isobutene, a waste product of the petroleum refining process. In 1994, MTBE was ranked as the eighteenth most produced chemical in the United States. By 1995 it was ranked twelfth, and by 1997 it was ranked second (OEHHA, 1998). MTBE was used in California's lead phase out program in 1979 at volumes up to 2 percent as a lead substitute and octane booster.

The US EPA approved use of MTBE in 1981 up to 10 percent and in 1988 approved its use up to 15 percent by volume (CAEPA, 1998). As early as 1988, MTBE use in southern California had begun to increase. In 1988, a refiner introduced an environmentally clean fuel in California that included 6 to 8 percent MTBE by volume. This refiner reportedly supplied 30 percent of the fuel in California of which approximately 20 percent of this refiner's sales was the environmentally clean fuel. This fuel was sold principally in southern California (D. Simeroth, personal communication, 1998).

The complete phase out of lead in fuel occurred in 1992, at which time the Winter Time Oxygenate Program began in California. There was an increased use of MTBE in the southern part of the state, with longer wintertime intervals and an earlier commencement of the year-round oxygenate program starting in 1995 rather than 1996. After March 1, 1996, all gasoline sold in California was Phase 2 reformulated gas containing 11 percent by volume MTBE. Approximately, 92 billion gallons of MTBE was produced in 1997 (Zogorski et al., 1998). California is reportedly the third largest worldwide consumer of MTBE, second only to the rest of the United States and the former Soviet Union (OEHHA, 1998).

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Impacts of MTBE on Groundwater



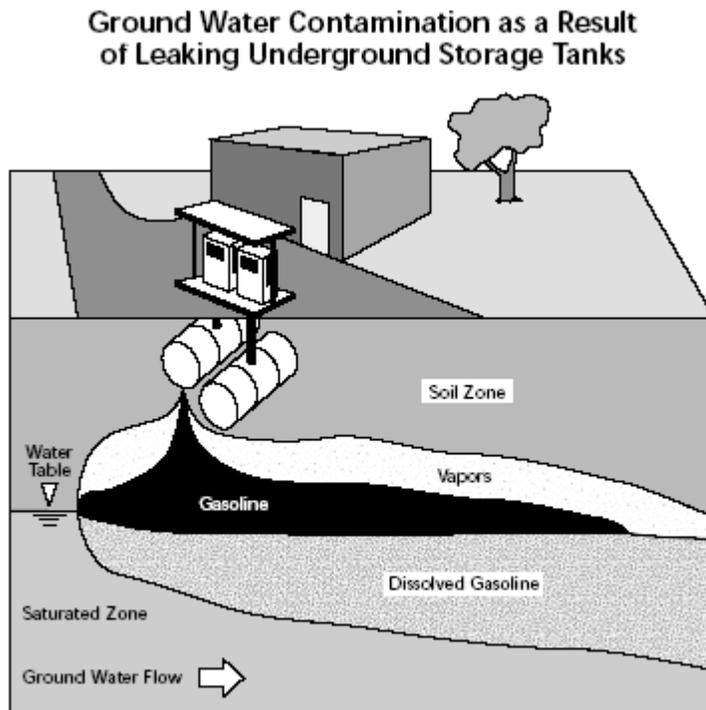
3-D simulated MTBE plume snap shots at (top to bottom) 10, 30, and 50 yr. Total thickness of the box is 40.5 m, and total length is 810 m. Regional flow is left to right. Screened interval of the pumping well is located in the center of the domain at a depth of 20 m.

University of California at Davis; "Impacts of MTBE on California Groundwater"

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Sources of MTBE in Groundwater

MTBE sources of groundwater contamination include leaking underground storage tanks (LUST's), above ground storage tanks, farm tanks, leaking petroleum fuel pipelines, underground storage tanks containing fuels other than gasoline, surface spills due to automobile or tanker truck accidents, surface spills due to abandoned or parked vehicles, MTBE contaminated surface water, and precipitation. The LUST sites are numerous, widely dispersed, proportional to the state's population, and involve enormous volumes of fuel products. As of April 1, 2017 there were approximately 1,500 known sites where chemical compounds, including gasoline and non-gasoline products, were discharged to the environment from underground storage tanks. Ninety percent of these discharges involve petroleum products.

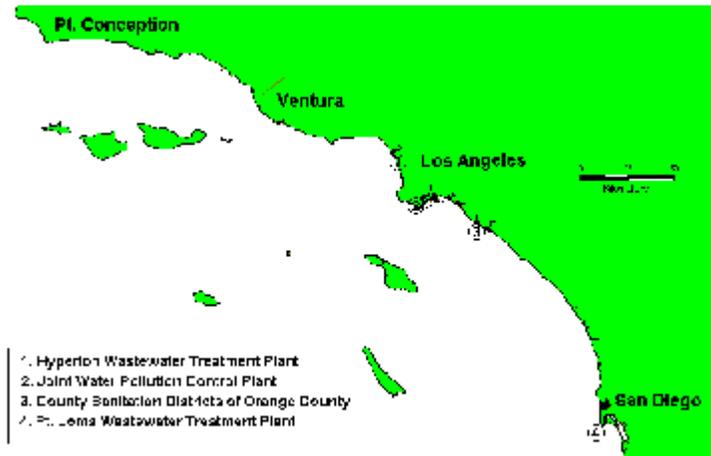


Waste Water

Characteristics Of Effluents From Large Municipal Wastewater Treatment Facilities

Effluents from the Hyperion Treatment Plant (HTP) of the City of Los Angeles, the Joint Water Pollution Control Plant (JWPCP) of County Sanitation Districts of Los Angeles County (CSDLAC), Wastewater Treatment Plants 1 and 2 of County Sanitation Districts of Orange County (CSDOC), and Point Loma Wastewater Treatment Plant (PLWTP) of the City of San Diego comprise 90% of municipal wastewater discharged directly to the Southern California Bight. These agencies have routinely measured the characteristics of their effluents for at least two decades. Each year during this period, the Southern California Coastal Water Research Project (SCCWRP) has summarized these measurements and reported on discharge and constituent trends.

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Failure of treatment facilities, in delivery systems or in ground water purity has the potential for severely affecting SMMUSD schools and SMC facilities. All operations would most probably cease until services are restored.

Potable water is essential for educational facilities to function. Circumstances leading up to the discovery of a failure in the delivery system could result in widespread sickness.

Waste water failures could severely damage facilities and also could result in widespread sickness depending upon the circumstances.

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Civil Unrest/Disorder

PROFILE

Civil disturbances can occur almost anywhere. However, the most significant ones in California have historically taken place in large urban centers. Deaths and injuries occurred to individuals who were in or around the disturbances while they were happening. Damage was caused by thrown objects, fires, and looting. Educational facilities are thought to be especially vulnerable because of the nature of openness and the student populations it serves.

History of Civil Unrest in Los Angeles County

In 1992, the acquittal of four police officers accused of beating Rodney King was the match that ignited a city, setting off a wave of violence that left 53 dead, thousands injured and hundreds of businesses destroyed.

There was a lot of accumulated tinder to burn. Los Angeles was struggling with a faltering and de-industrialized economy that left too many without good jobs, a wave of demographic transition that caused ethnic and generational tensions, and a widening gap between rich and poor that was just beginning to emerge into public view — a bit like the U.S. today.

In the ensuing years, one South L.A. organization brought together residents to prevent the rebuilding of more than 150 nuisance liquor stores that had been magnets for crime. A joint labor-community effort emerged to fight for a living wage and then "community benefits agreements," in which private developers promised and delivered good jobs for locals. Other groups worked to expand bus service, and still others motivated and mobilized new and occasional voters.

Top-down approaches were complemented by bottom-up strategies. The Christopher Commission and federal police oversight were positive engines of official change, and they were matched with grass-roots pressure that has fundamentally transformed the Los Angeles Police Department.

Civil Unrest in Los Angeles County of 1992

Deaths and Injuries

Law enforcement officials indicate that between 44 to 52 deaths were directly related to the riots. Those killed included African Americans, Latinos, Asians and whites. Over three-fourths of the shooting victims were shot by someone other than the police or National Guard. By comparison, during the riots of 1965 in Watts, three-fourths of the shooting deaths (23 of the 31) were from police and soldier gunfire. As of June 2nd, 1992, law enforcement officials had made arrests in connection with nine of the deaths in the SCIA disorder. The riots also resulted in 248 critical and 2,077 noncritical injuries.

Property Damage

The County of Los Angeles estimates that the riots resulted in \$735 million in property damage in incorporated and unincorporated areas. It estimates that 1,573 buildings were damaged, of which 613 were completely destroyed. (Data from Los Angeles County Chief Administrative Officer, June 3rd, 1992.)

Arrests

After the riot, law enforcement officials continued to sort through arrests to determine which arrests should be characterized as riot-related rather than routine. As of June 8, 1992, law enforcement officials estimated that 9,000 people were arrested for riot activity. This is half of some published news reports. Some reporters apparently based the estimate of 18, 200 incorrectly on the number of arrest

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forms that law enforcement had distributed to personnel, rather than on actual arrests that officers made.

Of the persons arrested in the riots, approximately 40 percent had prior criminal records, and 30 percent were on probation or parole for criminal convictions. Of the 9,000 arrests, 4,800 were on felony charges and 4,200 were for misdemeanors. The majority of misdemeanor charges were for curfew violations.

Law enforcement agencies arrested people at unprecedented rates during the riots. Furthermore, many law enforcement officials were not able to take the time from riot patrol to process arrest reports. These factors lengthened holding times for suspects before they were formally arraigned.

Prior to the riots, state law required the judicial system to provide persons arrested for felonies with arraignment hearings before a judge within two working days. Senate Bill 11 17 (Roberti) allowed judges, between May 5th and June 1st, 1992, to extend the deadline for arraignment hearings from two to 10 days. SB 1117 allowed for these extensions under special circumstances, including times when large numbers of people are arrested. State Supreme Court Chief Justice Lucas on May 5, 1992, extended the two-day deadline for arraignment hearings to 10 days, as provided in SB 1117. Jail populations increased by 26,000 after the Los Angeles riots.

VULNERABILITY

Two decades since those verdicts resulted in what are commonly known as the L.A. Riots, misconceptions linger about the nature of the uprising. Getting that history right is essential to understanding why, and how, Los Angeles is moving toward a brighter future.

The most misleading and harmful myth, hardened into apocryphal legend by the sensational images broadcast around the world, is that those six days in 1992 were best defined as a racialized conflict between African-Americans and Koreans.

The undeniable reality of it is that poverty and economic distress -- not race -- were the primary factors in the upheaval. Indeed, we are determined to see that history records the unrest for the "rainbow uprising" it was: a multiracial affair that involved Whites, African Americans, Latinos and Koreans in the violence, but more importantly, also in the subsequent drive to responsibly rebuild our communities.

Whatever role race relations did play in the uprising, twenty years of hard work have put them on a steady march away from the city's troubled history. According to a USC Dornsife/Los Angeles Times poll, the percentage of Los Angeles County voters who consider race relations in their neighborhoods good has swelled from 34 percent in 1997 to nearly 75 percent in 2015.

This new era is attributed in no small part to the fact that several multiracial organizations committed to social justice -- Community Coalition, Strategic Concepts in Organizing Policy Education (SCOPE), Strategic Actions for a Just Economy (SAJE), Labor Strategy Community Center and L.A. Alliance for a New Economy (LAANE), Community Build among them - began or grew in their capacity and professionalism directly after the 1992 riots. Their increased access to resources resulted in successful campaigns that impacted land use policy, living wages, community benefit agreements, jobs and economic development in South Los Angeles.

While this change didn't come quickly, demographic shifts and relationship-building efforts are what actually delivered truth to power, and allowed people to make grassroots-level changes that transformed communities.

Historically, schools and college campuses have been origins of the beginnings of civil unrest. Civil unrest frequently erupts during demonstrations. Everything from lack of jobs, perceived government brutality (police incidents), racial strife, rising prices, etc. are causes for activists and demonstrations. School and College administrations are responsible for the safety and well-being of their students and staffs.

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Gangs in Los Angeles County

Comparatively, Santa Monica-Malibu Unified School District and Santa Monica College are relatively free of gang activity; however, there have been instances where gangs have influenced activities around school grounds and college campuses.

There are **88 incorporated cities** and dozens of other unincorporated places in Los Angeles County (LAC). In doing this research on the proliferation of gangs within Los Angeles, each of these places is or has been affected by some kind of gang activity.

Gang Legislation

Since the 1980s many states have adopted legislation and laws specifically drafted to combat street gangs and to make it easier to prosecute their offenses. California has led the nation in laws written to prosecute gangs, but many US states have their own laws. This section will focus on California, City of Los Angeles, and the County of Los Angeles' laws related to gang activity.

CALIFORNIA

California 186.20, also known as the "California Street Terrorism Enforcement and Prevention Act" or STEP Act.

California 186.22(a)

California 186.22(b)(c)(d) , Gang participation

California 186.22(e)(f), Gang definitions

California 186.22(b)(4) , Gang enhancement

California 189, Drive-by Shootings; Murder; Carjacking

California 190.2(a)(22), Shooting from a Motor Vehicle

California 213, Robbery

California 246, Discharging a weapon from a car

California Code 666.7, Sentence enhancement

California 12022.55, Shooting from a Motor Vehicle

California 12034, Driver's responsibilities

Graffiti Prohibition

County of Los Angeles

Title 13 PUBLIC PEACE, MORALS AND WELFARE Chapter 13.12 GRAFFITI PREVENTION, PROHIBITION AND REMOVAL 13.12.020. Definitions.

13.12.030. Unlawful to apply graffiti -- Prohibition of defacement

13.12.040. Possession of graffiti implements by minors prohibited

13.12.050. Possession of graffiti implements prohibited in designated public places

13.12.060. Limiting access to graffiti implements -- Furnishing to minors prohibited

13.12.060. Limiting access to graffiti implements -- Furnishing to minors prohibited

13.12.070. Display for sale -- Requirements

13.12.090. Graffiti declared public nuisance

13.12.100. Removal of graffiti by perpetrator

13.12.110. Removal provisions

13.12.120. Rewards for information

13.12.130. Penalties and civil liability of parents

13.12.140. Violations--Civil remedies available

13.12.150. Severability

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Special Event

PROFILE

Large crowds, gathered for special events, represent disaster hazards in the following ways:

- Viable targets for a terrorists
- Concentration of people in a relatively small, enclosed area during earthquakes
- Site for mass casualties in the event of an aviation disaster
- Challenge to egress in the event of a large fire elevating the risk of mass casualties
- Depending on the event, could be prone to civil disobedience or riots

VULNERABILITY

Santa Monica Bay

Santa Monica Bay spans about 20 miles (32 km) between two of the richest communities in California - Malibu and Palos Verdes. It's truly the "Gold Coast" of the Golden State, and its shores have some of the finest beaches anywhere, including Topanga, Santa Monica, and Venice on through Manhattan, Hermosa, Redondo, and Torrance. American surfing, and the youth culture it spawned, was born here. In the movies, these fabled beaches have stood in for everything from Guadalcanal and Tahiti to Shangri-la. The rows of mammoth palms along the Santa Monica promenade cliffs epitomize California. Access to the Pacific along the beaches - whether by ferry to Catalina Island, surfing, taking a gondola cruise through the canals of Long Beach, or just popping into the local waves from a newly discovered favorite strand - is bountiful. Take the plunge! Santa Monica's main attraction however, is Santa Monica Pier, which offers sundry entertainment options and a lively carnival atmosphere.

Malibu Adamson House & Malibu Lagoon Museum

Located on a bluff overlooking the Malibu Lagoon, this Spanish Colonial-style mansion was built by Rhoda Rindge Adamson and her husband, Merritt, in 1928. The complex showcases hand-painted ceramic tiles manufactured by Malibu Potteries, owned by the Rindge family. The Ridges also built the Malibu Colony, a celebrity enclave now home to Tom Hanks and Barbra Streisand. The Malibu Lagoon Museum next to the Adamson House chronicles Malibu's history, from its Chumash Indian origins to its position as movie star Shangri-la.

23200 Pacific Coast Hwy, Malibu

Santa Monica Pier

For a variety of entertainment, visit Santa Monica Pier. Where else can you hop on to a historic carousel, visit an aquarium, or ride a roller coaster? California's oldest amusement pier (built in 1908) also marks the western terminus of Route 66. Its oldest attraction is the 1916 Hippodrome, a merry-go-round that has made many movie appearances. Its newest, Pacific Park, a compact amusement park, anchored by a solar-powered Ferris wheel. Tucked beneath the pier, the Santa Monica Pier Aquarium is a small, family-oriented facility where you can observe and pet local marine life.

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Bergamot Station Arts Center

This former historic trolley station has been imaginatively recycled into an industrial-flavored complex of nearly three dozen galleries, shops, artists' studios, and a cafe. A highlight is the Santa Monica Art Museum, exhibiting cutting-edge artists, many of whom work in non-traditional media including video installations. It also organizes lectures, workshops, and other events designed to involve the community in the creative process.

Third Street Promenade

Downtown Santa Monica's main artery, this three-block mall is one of the most pleasant walking areas in L.A. The product of a hugely successful revitalization effort in the late 1980s, it is flanked by upscale shops, movie theaters, and eclectic restaurants, bars, and cafes. Street musicians from around the globe shower strollers with flamenco, jazz, and hip hop. On Wednesday and Saturday mornings, the farmers market attracts large crowds.

Venice Boardwalk

It is perhaps fitting that Venice Beach, masterminded by an eccentric visionary named Abbot Kinney, is LA's epicenter of counterculture. The circus-like scene reigning along the seaside boardwalk (officially known as "Ocean Front Walk") must be seen to be believed.

Venice Canals

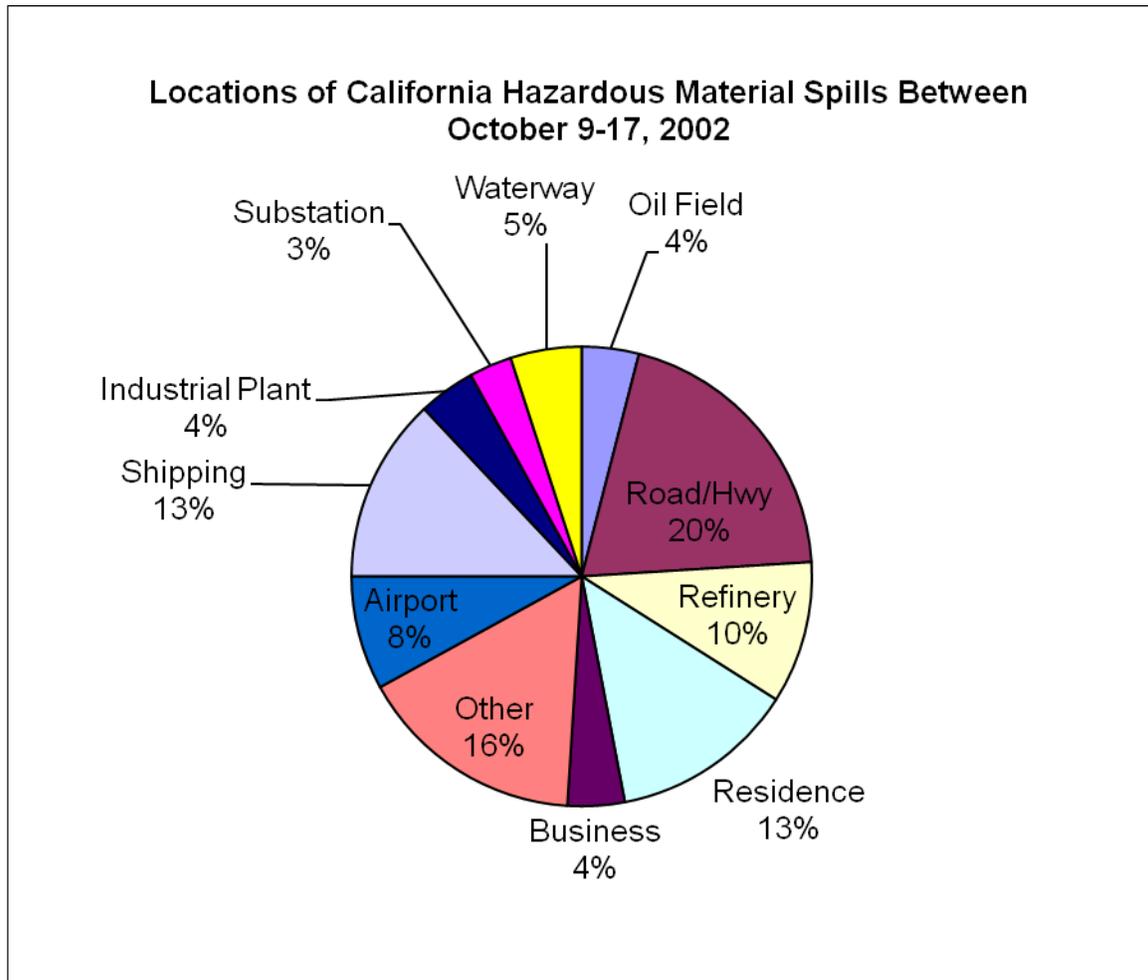
Abbot Kinney's Venice of America was once laced with 16 miles (26 km) of canals. The area languished until the 1960s when beatniks such as Stuart Perkoff discovered its unique charm, dragging flower children - most famously Jim Morrison - in their wake. In 1994, the city restored 3 miles (5 km) of canals, which have since become a beautiful, upscale neighborhood. A narrow walkway, known as the Venice Canal Walk, threads through here.

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Hazardous Materials

PROFILE

Hazardous materials are everywhere and are accidentally released or spilled many times during any given day. The attached chart lists the most common sites for spills in California based on an analysis of 173 reports for spills.



Regulatory Programs

Hazard analysis and risk assessments are performed by businesses at individual facilities. They are also conducted by specific industries or organizations for processes common to all operators in that industry. Transporters of hazardous materials also conduct these activities, whether the materials are moved by road, rail, water, air, or pipeline.

There are a number of legally mandated programs requiring businesses to conduct hazard analysis and risk assessment. Some of the existing requirements include:

California Accidental Release Prevention Program (Ca1ARP) required pursuant to H&SC 25531, et seq. implements the federal Accidental Release Prevention program with additional California-specific

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requirements. This program requires any business with more than a threshold quantity of a regulated substance in a process, unless exempted, to implement an accidental release prevention program. There are three levels for the program with businesses subject to levels two and three required to conduct a hazard assessment. Businesses may be required to prepare and implement a Risk Management Plan (RMP). A map of facilities that have prepared a Risk Management Plan or Ca1ARP Document follows this section of the Emergency Plan. This map was developed through the Environmental Protection Agency (EPA) for facilities that submitted RMP documents to EPA by June 21, 1999. A map is provided in attachment 10, along with a list of Certified Unified Program Agency (CUPA) & Participating Agencies (PA's) in LEPC Region 1.

VULNERABILITY

Hazardous Materials Transportation

Federal emergency planning requirements include the formation of local emergency planning committees (LEPCs). The LEPC is required to evaluate facilities using threshold quantities of extremely hazardous substances (EHS), and determine which facilities are at risk of a release or subject to additional risk due to their proximity to another facility using EHS. The LEPC is also required to identify hazardous materials transportation routes. This requirement has led Region I LEPC to develop a specific transportation element to its plan. The following represents the Region I transportation element:

Transportation of hazardous materials by air, land, or water poses a significant need to plan and coordinate emergency resources necessary to respond to hazardous materials spills and releases. These types of incidents could affect several million Californians and are potentially hazardous to both the local community, and those traveling near the incident site. First, we will discuss the different modes of transportation and the unique challenges presented for planners and emergency responders. Then will follow a discussion of the effects of a hazardous materials incident occurring in a highway scenario.

Air

The southern California region has several major air transportation facilities. In some instances, there may be hazardous materials incidents involving air cargo either on the aircraft or on the ground. Initial response to these incidents would be provided by airport emergency response personnel. The need may arise for additional resources to respond. Response efforts must be coordinated to ensure all personnel are made aware of the material involved and of the potential hazards. In the event of a crash of an aircraft, the major hazardous materials concerns will be fuel from the aircraft, hydraulic fluid, and oxygen systems. The threat posed by onboard hazardous cargo will be minimal. Regulations on hazardous materials shipments by air are found in 49 CFR Section 175.

Water

Two major ports serve the southern California region. These are the Port of Los Angeles and the Port of Long Beach. The prime concern for these two major ports would be releases of petroleum products from both oil tankers and other large ocean going vessels. Not only is there a significant potential from fire and explosion, the environmental effects could be catastrophic. Additionally many other types of hazardous materials may be shipped by bulk or containerized cargo. Planners must recognize potential risks associated with vessels and port facilities in their hazard assessment. Response to water related incidents is coordinated through the Coast Guard and the California Department of Fish and Game. Regulations governing transportation of hazardous materials by vessel are found in 49 CFR Section 176.

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Ground

Ground transportation provides the largest movement of hazardous materials and will generate the majority of incidents, which will be confronted by local emergency response personnel. The three modes of ground transportation are rail, highway, and pipeline.

Rail is unique in both the quantity and types of hazardous materials, which can be involved in one incident. Collisions, derailments, and mechanical failure, as well as loading and unloading, can all result in very serious hazardous materials incidents. A critical consideration for planners is a careful evaluation of the rail traffic in their jurisdiction. Rail companies as well as product manufacturers have emergency response teams available to assist local emergency responders. The United States Department of Transportation governs the transportation of hazardous materials by rail. The regulations are found in 49 CFR Section 174. Additional oversight is provided in California by the Public Utilities Commission

Highway related hazardous materials incidents account for the vast majority of situations faced by local responders. Highway incidents range from minor releases of diesel fuel, to multiple vehicle accidents involving large quantities of multiple types of hazardous materials. A concern for planners is the fact that these incidents can occur anywhere throughout the region. Multiple agency coordination is essential for successful control and mitigation of these incidents. Section 2454 of the California Vehicle Code mandates authority for incident command at the scene of an on highway hazardous substance incident in the appropriate law enforcement agency having primary traffic investigative authority on the highway where the incident occurs (local agencies). The local governing body of the city may assign the authority to the local fire protection agency.

Pipeline incidents will typically involve compressed natural gas, or petroleum products. An important aspect for planners to consider is that pipelines are frequently out of sight and out of mind. Southern California region is honeycombed with underground pipelines ranging from a few inches to several feet in diameter. Pipelines transport products from as far away as Texas for use by local consumers. An important source of information on underground pipelines is Dig Alert. Regulation of pipeline activity is governed by the U.S. Department of Transportation and the California Public Utilities Commission.

Potential Effects of a Hazardous Materials Incident

As previously mentioned, highway accidents and incidents will constitute the majority of emergency response situations. There are two distinct facets, which must be addressed in a local emergency action plan. Planners must consider the local community with fixed facilities and those individuals in transit. The following is illustrative of typical concerns, which planners will encounter in addressing hazardous material occurrences.

Residential and Business Community

Chemical spills on streets and highways can impact schools in one or more of the following ways:

- Shelter-in-place
- Evacuations
- Restriction or detour of local traffic
- Damage
- Injury, illness or death

Because of these potentially dangerous situations, it is necessary for emergency responders to be familiar with requirements for hazmat spill notification and to obtain and direct the resources necessary

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to protect public health and the environment. The following requirements address immediate spill notification:

- California Health and Safety Code Section 25507
- California Vehicle Code 2453
- California Government Code 8574.17
- 42 U.S.C. 9602

In addition, provisions for response recovery are provided if the National Response Center is contacted (refer 40 CFR Part 310). All agencies within LEPC Region 1 are encouraged to report all spills and releases to the Office of Emergency Services and National Response Center when there is any significant or potential threat to the public. Additionally, public information through the news media to the public is a priority of California OES and Region 1 Local Emergency Planning Committee.

Commuter/Delivery Traffic

In addition to the surrounding locale, travelers going through or near transportation incidents may be impacted in several ways:

- Exposure to harmful or flammable chemicals resulting in injury or illness
- Delayed travel
- Accidents
- Vehicle damage due to chemical contact

Agencies with on highway responsibility in LEPC Region 1 should become familiar with shipping corridors and traffic patterns. The California Highway Patrol has designated Maps 12 through 13A (13 CCR Section 1152.2-3.1) as required hazardous materials inspection stop locations and areas for Safe Stopping Places.

Hazardous material transporters are also required to report incidents involving hazardous materials or wastes pursuant to the following regulations: Title 13 California Code of Regulations, Section 1166 2. Title 49 Code of Federal Regulations, Part 17

Region 1 Transportation Needs

Research has indicated that the majority of hazardous materials incidents occur in the transportation arena. This fact strongly suggests that the region make the following recommendations for further transportation planning assessment:

- Identify surface transporters within the region
- Determine level of training as it relates to transportation routes and notification requirements
- Evaluate emergency response resources for both public and private hazardous materials response teams
- Prioritize response resources in areas unable to respond to a proportionally higher number of incidents.
- Develop standard guidelines for evacuation of populations impacted by transportation related incidents.
- Evaluate the need to perform Transportation Risk Assessment for selected high priority areas.

Emergency planning principles and practices indicate that emergency plans include all the hazards existing within a jurisdiction. California OES has developed the Emergency Planning Guidance for Local Government to assist local government in conducting emergency planning. Information on hazard analysis is also included in this guidance document.

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LOW to NO RISK Human-Caused Hazards

Explosions were deemed to be a LOW to NO Risk Human-caused Hazard by the Santa Monica Unified School District/Santa Monica College Hazard Mitigation Planning Committee during the Hazard Mitigation Plan Update Process of 2013.

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Hazard Mitigation Strategy

Goals & Objectives

The information in the hazard vulnerability analysis and loss estimation information was used as a basis for developing mitigation goals and objectives. Mitigation goals are defined as general guidelines explaining what Santa Monica-Malibu Unified School District (SMMUSD) and Santa Monica College (SMC) wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing District-wide visions. Objectives are statements that detail how each goal will be achieved, and typically define strategies or implementation steps to attain identified goals. Other important inputs to the development of District-level goals and objectives include performing reviews of existing local plans, policy documents, and regulations for consistency and complementary goals, as well as soliciting input from the public.

The City of Santa Monica and Malibu have completed their Hazard Mitigation Plans. The school districts will evaluate the cities' mitigation strategies and how to implement or network to ensure the maximum implementation for mitigation.

Identification and Analysis of Mitigation Actions

Updated mitigation actions that address the goals and objectives developed in the previous step were identified, evaluated, and prioritized. These actions form the core of the mitigation plan. SMMUSD and SMC reviewed their capabilities assessment, which consisted of reviewing existing local plans, policies, and regulations for any other capabilities relevant to hazard mitigation planning. The capability to carry out these implementation measures with an eye toward hazard and loss prevention was reviewed and updated. The capabilities assessment required reviewing the inventory of the jurisdictions legal, administrative, fiscal and technical capacities to support hazard mitigation planning.

After completion of the capabilities assessment update, SMMUSD and SMC re-evaluated and prioritized its proposed mitigations. The jurisdictions reviewed the social, technical, administrative, political, legal, economic, and environmental opportunities and constraints of implementing mitigation actions. This step resulted in an updated list of acceptable and realistic actions that address the hazards identified in each jurisdiction.

A full suite of updated goals, objectives and action items for the jurisdictions is presented in this Plan. SMMUSD and SMC then reviewed and re-prioritized actions with the highest short to medium term priorities. An implementation schedule, funding source and coordinating individual or agency is identified for each prioritized action item.

In their review, the jurisdictions are supportive of the following hazard mitigation strategies. The City shall make every effort, given appropriate funding, to implement these strategies as conditions warrant.

Mitigation Responsibilities

SMMUSD's Business Services, Pupil Services, Maintenance & Operations, Risk Management, Food Services, and Administration contribute to mitigation in their immediate responsibilities for the school's safety.

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Long Term Goals & Objectives

Santa Monica-Malibu Unified School District & Santa Monica College have updated the following Long Term Goals for their Hazard Mitigation Plan Program.

The Santa Monica-Malibu Unified School District & Santa Monica College (SMMUSD & SMC) updated the following broad list of objectives and actions to assist in the implementation of each of their identified long-term goals. The District developed objectives to assist in achieving their hazard mitigation goals. For each of these objectives, specific actions were developed that would assist in their implementation.

Goal 1: Continue promoting disaster-resilient future construction.

Objective 1: Facilitate the development or updating of disaster related plans, which relate to hazard mitigation.

Action 1: Update

Action 2: Attract and retain qualified, professional, and experienced staff.

Action 3: Identify high hazard areas and facilities.

Facilitate the implementation inspection standards and practices that protect existing assets and restrict placing new facilities in hazard areas.

Action 4: Review hazard mitigation strategies every 3 years.

Objective 2: Facilitate consistent implementation of plans, safe school guidelines, and inspection standards.

Objective 3: Limit facility placement in hazardous areas

Action 1: Placement should be in harmony with existing topography.

Action 2: Placement patterns should respect environmental characteristics.

Action 3: Placement should be limited in areas of known geologic hazards.

Action 4: Ensure that jurisdictions in high fire hazard areas provide adequate access for emergency vehicles and the evacuation of students and staff.

Objective 4: Address identified data limitations regarding the lack of information about facility placement and build-out potential in hazard areas.

Action 1: Coordinate existing Geographic Information Systems (GIS) capabilities to identify hazards throughout the SMMUSD & SMC.

Action 2: Develop the data sets that are necessary to test hazard scenarios and Mitigation tools including HAZUS MH

Action 3: Utilize the Internet as a communication tool, as well as an educational tool.

Objective 5: Increase public understanding, support, and demand for hazard mitigation for placement of new facilities.

Action 1: Continue gaining public acceptance for avoidance policies in high hazard areas.

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Goal 2: Continue to increase public understanding and support for effective hazard mitigation.

Objective 1: Educate the public to increase awareness of hazards and opportunities for mitigation actions.

- Action 1: Publicize and encourage the adoption of appropriate hazard mitigation actions
- Action 2: Provide information to the public on the SMMUSD & SMC website
- Action 3: Heighten public awareness of hazards by using the SMMUSD & SMC Public Relations Officer
- Action 4: Gain public acceptance for avoidance policies in high hazard areas

Objective 2: Gain public interest by supporting already existing public programs

- Action 1: Identify hazard specific issues and needs.
- Action 2: Help create demand for hazard resistant construction and site planning.

Objective 3: Promote partnerships between the SMMUSD & SMC, County Office of Education, Federal, state, county, cities, and local governments to identify, prioritize, and implement mitigation actions.

- Action 1: Develop, maintain, and improve lasting partnerships.
- Action 2: Support jurisdictional Safety Councils.

Objective 4: Monitor and publicize the effectiveness of mitigation actions Implemented district-wide.

- Action 1: Use the SMMUSD & SMC website to publicize mitigation actions.
- Action 2: Utilize existing risk data.
- Action 3: Establish budgets and identify funding sources for mitigation outreach.
- Action 4: Develop and distribute brochures, CDs and other publications promoting safe schools and mitigation actions.

Objective 5: Provide education on hazardous conditions.

- Action 1: Support public and private sector symposiums.
- Action 2: Coordinate production of brochures, informational packets and other handouts.

Goal 3: Continue enhancing hazard mitigation coordination and communication with federal, state, and local governments.

Objective 1: Encourage other organizations to incorporate hazard mitigation activities.

- Action 1: Leverage resources and expertise that will further hazard mitigation efforts.
- Action 2: Update the SMMUSD & SMC All-hazard mitigation plan on a regular basis
- Action 3: Encourage all school sites to implement All-Hazard Mitigation Plan Strategies
- Action 4: Streamline policies to eliminate conflicts and duplication of effort where feasible

Objective 2: Improve SMMUSD & SMC's capability and efficiency at administering pre- and post-disaster mitigation.

- Action 1: Maintain coordination, communication, and cooperation with the Local Operational Area in administering recovery programs.
- Action 2: Continue to exchange resources and work with local and regional partners.

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Objective 3. Coordinate with the County Operational Area to enhance recovery activities while restoring and maintaining school services.

Objective 4: Utilize the newly developed Santa Monica-Malibu Unified School District & Santa Monica College Business Continuity Plan to prioritize the restoration and maintenance of SMMUSD & SMC services.

Goal 4: Continue working toward reducing the possibility of damage and losses to existing assets and future assets, including people, critical facilities/infrastructure, due to Severe Weather.

Objective 1: Develop a comprehensive approach to reducing the possibility of damage and losses due to severe weather conditions

Action 1: Encourage and require water conservation wherever feasible

Action 2: Explore the development of new water resources

Action 3: Encourage the Federal Government to complete the decontamination of all underground water resources currently identified as Superfund sites

Objective 2: Encourage district-wide participation in mitigation strategies

Goal 5: Continue working toward reducing the possibility of damage and losses to existing and future assets, including people, critical facilities/infrastructure, and public facilities due to earthquakes.

Objective 1: Develop a comprehensive approach to reducing the possibility of damage and losses due to earthquakes.

Action 1: Maintain Inspection Standards to reflect current earthquake standards.

Action 2: Encourage and participate in community awareness meetings.

Action 3: Distribute printed publications to the schools concerning hazards.

Objective 2: Protect existing assets with the highest relative vulnerability to the effects of earthquakes.

Action 1: Identify hazard-prone structures through GIS modeling.

Action 2: Design critical facilities to ensure that they function after a major earthquake.

Action 3: Encourage and continue the study of ground motion, landslide, and liquefaction relative to existing and new facilities.

Objective 3: Coordinate with and support existing efforts to mitigate earthquake hazards

Action 1: Identify projects for pre-disaster mitigation funding.

Action 2: Design and implement an ongoing district-wide seismic risk assessment program.

Action 3: Collaborate with Federal, State, universities, and local agencies' mapping efforts.

Objective 4: Address identified data limitations regarding the lack of information about the relative vulnerability of assets from earthquakes.

Action 1: Assess utility infrastructure with regard to facilities and earthquake risk, including public and private utilities.

Action 2: Encourage district-wide preparation and maintenance of a 3-day preparedness kit for home and classroom for all hazards

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Goal 6: Continue reducing the possibility of damage and losses to existing assets, including people, critical facilities/infrastructure, and public facilities due to floods.

Objective 1: Develop a comprehensive approach to reducing the possibility of damage and losses due to floods.

- Action 1: Review and compare existing flood control standards, zoning and building requirements with existing and new facilities.
- Action 2: Identify and update flood-prone areas by using GIS.

Objective 2: Protect existing assets with the highest relative vulnerability to the effects of floods within the 100-year floodplain.

- Action 1: Assure adequate funding where feasible to restore damaged facilities to 100-year flood design.
- Action 2: Update storm water system plans and improve storm water facilities that affect high-risk assets.
- Action 3: Ensure adequate evacuation time in case of major hazard event.

Objective 3: Minimize repetitive losses caused by flooding.

- Action 1: Identify those facilities that have recurring losses.
- Action 2: Develop project proposals to reduce flood damage and improve control of facilities in flood prone areas.
- Action 3: Seek pre-disaster mitigation funding.

Objective 4: Address identified data limitations regarding the lack of information about the relative vulnerability of assets from flooding.

- Action 1: Encourage district-wide preparation and maintenance of a 3-day preparedness kit for home and classroom.
- Action 2: Maintain, develop, and implement hazard awareness programs.

Goal 7: Continue reducing the possibility of damage and losses to existing assets, including people, critical facilities/infrastructure, and public facilities due to structural fire/wildfire.

Objective 1: Develop a comprehensive approach to reducing the possibility of damage and losses due to structural fire/wildfire.

- Action 1: Meet the Fire Code.
- Action 2: Utilize GIS and the Internet as information tools.

Objective 2: Protect existing assets with the highest relative vulnerability to the effects of structural fire/wildfire.

- Action 1: Maintain Standardized Defensible Space Clearance distances.

Objective 3: Coordinate with and support existing efforts to mitigate structural fire/wildfire.

Objective 4: Address identified data limitations regarding the lack of information about the relative vulnerability of assets from structural fire/wildfire.

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- Action 1: Continue to identify and update facilities within Urban/wildland fire interface areas.
- Action 2: Use GIS to map facilities in fire risk areas.
- Action 3: Implement district-wide education programs to address fire dangers and corrective measures.

GOAL 8: Enhance organizational resilience and build business continuity practices to lessen the impact of disruption of services and to promote recovery.

Objective 1: Develop a business continuity standards to identify priority organizational activities, resources, and services.

Action 1: Develop a Business Continuity Plan for SMMUSD and SMC.

Objective 2: Promote engineering and architectural design that is all-hazard resilient and adaptable to both chronic and acute stressors.

Action 1: Incorporate emergency committee personnel in plan check process to review for potential improvements in structural resilience.

Objective 3: Build redundancy and recovery procedures for vital information services, risk management, human resources, and financial services.

Action 1: Develop a Business Continuity Plan critical internal departmental processes identified.

Objective 4: Promote community wellbeing through occupational health, safety, wellness, crisis intervention and environmental practices

- Action 1: Ensure health and safety regulatory standards are maintained.
- Action 2: Engage risk management, legal, and human resources in emergency committees risk reduction learning session once per year.

Objective 5: Provide staff, students, and parents opportunities for education and training, including emergency drills

- Action 1: Hold at least one emergency drills/exercises per year involving some interagency coordination between SMC/SMMUSD.
- Action 2: Maintain, develop and implement hazard awareness programs.

GOAL 9: Maintain mass notifications systems to mitigate potential staff, student, and public exposure to and reduce damaging effects of natural and man-made hazards.

Objective 6: Promote/Educate students, staff, faculty and the community on how the mass notification system will work.

- Action 1: Provide training and drills to ensure the system works and is efficient and effective.
- Action 2: Attend trade shows and seminars in order to research new technology that may be beneficial to our system and overall campus community.

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Constraints

Many constraints face SMMUSD and SMC in direct mitigation for prevention or impact caused by disasters. They depend on fire protection from Los Angeles City and County Fire Departments and the City of Santa Monica Fire Department. Los Angeles County Sheriff's Department, the Los Angeles Police Department and the City of Santa Monica Police Department are responsible for law enforcement response and protection. California Highway Patrol is responsible for traffic control and law enforcement on the major roadways. This impacts SMMUSD and SMC concerning evacuation routes and transportation loss/incidents.

In addition, private utility and telecommunication companies are outside the school districts control for electrical and data/telecommunication service. Water and wastewater companies operate independently from the school district and college.

Therefore, direct mitigation is beyond the school district and college's control. SMMUSD and SMC have developed mitigation strategies within their infrastructure for services provided by outside agencies.

Santa Monica-Malibu USD schools and facilities are located in the Cities of Santa Monica and Malibu. The Cities and Los Angeles County are responsible for law enforcement and fire protections. Santa Monica College is located in the City of Santa Monica with 6 off site repeater towers. SMMUSD and SMC are not directly in control of 1st Responder action or mitigation.

Transportation Loss greatly impacts both school districts. The ability for students to travel to and from school is important from both an evacuation and economic standpoint. The school districts are dependent on city, county, and state roadways, plus freeways to transport students to and from schools.

Aviation Disasters is a constant threat to all the facilities for SMMUSD and SMC. The below airports are located and operate near the school grounds. Their flight patterns are over the schools.

- Los Angeles Airport: LAX
- Van Nuys Airport
- Ontario Airport
- John Wayne Airport
- Hawthorne Airport
- Long Beach Airport
- Santa Monica Airport

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The City of Santa Monica Hazard Mitigation Plan identifies state regional, state, and federal resources that have a role in natural hazards and natural hazard mitigation.

Prioritization and Implementation of Action Items

Once the comprehensive list of SMMUSD & SMC goals listed above was updated, the proposed mitigation actions items were prioritized by the Planning Committee. This step resulted in a list of updated and realistic specific actions that address the hazards identified in the SMMUSD & SMC Service Area.

The Disaster Mitigation Action of 2000 (at 44 CFR Parts 201 and 206) requires the development of an action plan that not only includes prioritized actions but one that includes information on how the prioritized actions will be implemented. Implementation consists of identifying who is responsible for which action, what kind of funding mechanisms and other resources are available or will be pursued, and when the action will be completed.

The updated top eight prioritized mitigation action items, as well as an implementation strategy for each are:

Action Item 1: Continue development and maintenance of the All-Hazard DMA 2000 plan by coordinating all SMMUSD & SMC Departments as well as all other Stakeholders.

- Potential Funding Source: FEMA Grants / General Funds.
- Implementation Timeline: 1 Year

Action Item 2: Review and update plans that would include coordination with cities, special districts and the County.

- Potential Funding Source: SMMUSD & SMC General Fund/ State and Federal Grants

Action Item 3: Update the SMMUSD & SMC Safety Plan every three years.

- Implementation Timeline: 1 - 3 years
- Potential Funding Source: State Grants

Action Item 4: Publicize and encourage the adoption of appropriate hazard mitigation actions.

- Potential Funding Source: General Fund/Federal or State grants.
- Implementation Timeline: 1 - 3 years

Action Item 5: Implement all new facility specifications and inspection guidelines to reflect current earthquake standards.

- Implementation Timeline: 2 - 5 years

Action Item 6: Review and compare existing flood control standards, zoning and building requirements with existing and planned facilities.

- Coordinating Individual school sites and school departments
- Potential Funding Source: General Fund/Federal or State Grants

- Implementation Timeline: 1 - 3 years

Action Item 7: Develop a Business Continuity Plan for SMMUSD & SMC District Office,

- Potential Funding Source: General Fund/Federal or State Grants.
- Implementation Timeline: 1 - 3 years

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Action Item 8: Encourage every school to prepare and maintain a 3-day preparedness kit for the classroom and personal kits for home and work.

- Coordinating Individual/Organization: Public Relations / IT Departments.
- Potential Funding Source: General Fund/Federal or State grants
- Implementation Timeline: 1 - 3 years

Specific Goals & Objectives (updated)

Listed below are Santa Monica-Malibu Unified School District & Santa Monica College's updated specific hazard mitigation goals and related potential actions. For each goal, one or more action items have been identified that provide strategies to attain the goal. Where appropriate, the District has identified a range of specific actions to achieve the long-term objective and goal.

Goal 1 - Promote Disaster-resistant Schools and educational facilities.

Goal 2 - Increase public understanding and support for effective hazard mitigation.

Goal 3 - Build and maintain schools making a concerted commitment to become less vulnerable to hazards.

Goal 4 - Estimate potential dollar losses to vulnerable structures.

Goal 5 - Enhance hazard mitigation coordination and communication with federal, state, and local governments.

Goal 6 - Reduce the possibility of damage and losses to existing and future assets, particularly people, critical facilities/infrastructure, and District/College-owned facilities, due to the following HIGH RISK hazards:

- Earthquake
- Wild Land/Urban Interface Fire
- Landslide
- Severe Weather
- Flood
- Drought

Project Prioritization Discussion

The goals and actions were prioritized by considering the risk assessment findings, localized hazard identification and loss/exposure estimates, and an analysis of the jurisdiction's current Capabilities Assessment. These preliminary goals and actions were developed to represent a vision of long-term hazard reduction or enhancement of capabilities.

Santa Monica-Malibu Unified School District & Santa Monica College use their school policies and business practices approved by their governing boards to incorporate future mitigation strategies into their existing planning mechanism.

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Implementation of Mitigation Actions

Santa Monica-Malibu Unified School District Specific Mitigation Actions

Strategy Number	Strategy Description	2017-18 Completed / Pending	New (Update)	Priority 1 (High)	Priority 2 (Mod)	Priority 3 (Low)	Estimated Cost	Financing	Timeline (yrs)	Responsible Agency or Dept	Related Hazard
ALL HAZARDS (AH)											
AH1	Procure and distribute sanitation supplies to reduce the risk of disease after a disaster	P	X	X			15,000	General Fund	1	M&O	All Hazards
AH2	Satellite Telephone Replaced with emergency cell phones - COMPLETED	C	X	X			5,000	General Fund	2	Purchasing	All Hazards
AH3	CANCELLED										
AH4	Standardize emergency supplies for each site	P	X	X			+100,000	General Fund	1	M&O	All Hazards
AH5	CANCELLED										
AH6	Nextel Phones Replaced with emergency cell phones - COMPLETED	C	X	X			75,000	Grants		M&O	All Hazard
AH7	Out of state 800 phone line/MCI alert system	P		X			45,000	Grants	3	Purchasing	All Hazards
AH8	COVERED IN AH4 Revision										
AH9	Establish alternate EOC mobile Center to ensure communications and data are available during disaster response and if District Office is unsafe or compromised	P			X		150,000	Grants	3	Information Services	All Hazards
AH10	Update Emergency Operation Plan annually	P	X	X			500	General Fund	1	Risk Mgmt	All Hazards
AH11	Ongoing NIMS Training for staff	P	X	X			1,000	General Fund	1	Risk Mgmt	All Hazards
AH12	COVERED IN AH4 Revision										

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Strategy Number	Strategy Description	2017-18 Completed / Pending	New (Update)	Priority 1 (High)	Priority 2 (Mod)	Priority 3 (Low)	Estimated Cost	Financing	Timeline (yrs)	Responsible Agency or Dept	Related Hazard
AH13	District Credit Card Emergency Procurement Procedures during disasters	C		X			1,000	General Fund	½	Purchasing	All Hazards
AH14	Establish a line of credit for Emergency Procurement during disasters	P		X			1,000	General Fund	½	Purchasing	All Hazards
AH15	CANCELLED										
AH16	CANCELLED										
AH17	Develop Post-disaster Business Recovery Plan	P		X			85,000	Grants	2	Fiscal/Information Services	All Hazards
AH18	COVERED IN AH4 Revision										
AH19	Develop vendor list for disaster-related purchases with vendors	P	X	X			1,000	General Fund	1	Purchasing	All Hazards
AH20	Install break-away lock access to Food Services	P			X		1,000	General Fund	1	Food Services	All Hazards
AH21	Procure adequate generators to power operations for an extended period in the event of disaster and loss of utilities	P			X		2,000,000	Grants	5	M&O	All Hazards
AH22	Provide Light Search & Rescue Training services to selected staff	P	X		X		20,000	General Fund	1	Pupil Services	All Hazards
AH23	COVERED IN AH9 Revision										
AH24	Install Surveillance Camera Systems District wide to provide site monitoring for M&O and outside entities	P	X		X		2,000,000	Grants	2	M&O	All Hazards
AH25	CANCELLED										
AH26	Procure and install Automatic External Defibrillators (AEDs) throughout the District	P	X		X		25,000	Grants	2	Pupil Services	All Hazards
AH27	CANCELLED										
AH28	Install a portable water filtration system to provide an additional method of hydration in the event water	P			X		10,000	Grants	3	Food Services	All Hazards

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Strategy Number	Strategy Description	2017-18 Completed / Pending	New (Update)	Priority 1 (High)	Priority 2 (Mod)	Priority 3 (Low)	Estimated Cost	Financing	Timeline (yrs)	Responsible Agency or Dept	Related Hazard
	supplies are diminished or corrupted										
AH29	Procure training for District counselors on post disaster counseling	P	X		X		10,000	Grants	3	Pupil Services	All Hazards
AH30	Develop GPS capabilities for tracking transportation and assets	C				X	15,000	General Fund	5	Business Svcs Telecommunications	All Hazards
AH31	Install Aerial Identification with Latitude & Longitude on all district facilities to enhance emergency response by aircraft resources	P				X	20,000	Grants	2	M&O	All Hazards
AH32	CANCELLED										
AH33	CANCELLED										
AH34	CANCELLED										
AH35	CANCELLED										
AH36	CANCELLED										
AH37	CANCELLED										
AH38	CANCELLED										
AH39	CANCELLED										
EARTHQUAKE (EQ)											
EQ1	COVERED IN AH4 Revision										
EQ2	Procure and distribute water packets and food bars for emergency food services during earthquake disaster response	C	X				25,000	General Fund	½	Food Services	Any hazards resulting in sheltering in place
EQ3	Continue on-going furniture tie-down program	C	X				50,000	General Fund	1	M&O	
EQ4	Procure and install automatic gas shut-off systems for district facilities	P	X				300,000	Grants	3	M&O	Wild Fire
EQ5	Procure portable generator for M&O disaster response operations	P	X				75,000	Grants	2	M&O	Utility Loss
EQ6	Procure and distribute bicycles to allow for the	P	X			X	1,000	General	1	Transportation	Transportation Incident/Loss

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Strategy Number	Strategy Description	2017-18 Completed / Pending	New (Update)	Priority 1 (High)	Priority 2 (Mod)	Priority 3 (Low)	Estimated Cost	Financing	Timeline (yrs)	Responsible Agency or Dept	Related Hazard
	communication of information between ICPs of selected locations when vehicles access is restricted or unavailable during an earthquake disaster response							Fund			
EQ7	Procure and distribute chemical toilets as required during an earthquake disaster response	P				X	30,000	Grants	1	M&O	Water/Wastewater Disruption
EQ8	CANCELLED										
EQ9	Retain structural engineer to clear buildings for occupancy with minimal downtime during an earthquake disaster response	P	X	X			50,000	Grant	2	M&O	
WILD LAND URBAN INTERFACE FIRE (WF)											
WF1	CANCELLED										
WF2	CANCELLED										
WF3	Contract services to provide fire watch for sites when Fire Monitoring System is not functioning due to power loss	P	X	X			10,000	Grant	2	M&O	All Hazard
WEAPONS OF MASS DESTRUCTION/TERRORISM (WT)											
WT1	Train additional M&O staff in First Responder training for HAZMAT incidents brought on by terrorist activity or other disaster	P	X	X			3,000	Grant	1	Pupil Services	HAZMAT
WT2	Install in new construction remote retro-fitted damper closers for HVAC systems on district facilities in the event of airborne HAZMAT threat brought on by terrorist activity	P	X			X	5,000,000	Bonds	5	M&O	HAZMAT
DATA TELECOMMUNICATIONS (DT)											
DT1	Procure and install data back-up system for disaster recovery	P		X			150,000	Grant	2	Information Svcs	All Hazards
DT2	Procure services and equipment to upgrade the information services network for the District to make it	P			X		150,000	Grants	½	Information Svcs	All Hazards

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Strategy Number	Strategy Description	2017-18 Completed / Pending	New (Update)	Priority 1 (High)	Priority 2 (Mod)	Priority 3 (Low)	Estimated Cost	Financing	Timeline (yrs)	Responsible Agency or Dept	Related Hazard
	more resilient to damage from disasters										
DT3	Contract services to provide an off-site data storage back-up system critical District data	C			X		150,000	Grants	2	Information Svcs	All Hazards
DT4	Phone system enhancement to provide intercom function at the District Office	P	X	X			20,000	General Fund	1	Information Svcs	All Hazard
ECONOMIC DISRUPTION (ED)											
ED1	Establish mutual aid agreements (where there is a clear benefit to the District) with private schools and organizations that have large assembly rooms	P	X		X		3,000	General Fund	1	Fiscal Services	All Hazards
BIOLOGICAL HEALTH/DISEASE (BH)											
BH1	Eliminate all outside standing water pools caused from inadequate drainage to reduce risk of biological and vector-related diseases	P	X			X	30,000	General Fund	3	M&O	
BH2	Procure IR camera to detect moisture intrusion into District facilities which may lead to dangerous mold or mildew growth within walls and flooring areas	P	X			X	8,000	Grants, ASCIP or other	2	M&O	
SEVERE WEATHER/WINDS (SW)											
SW1	Roof inspection and repair – Annual contract	C	X	X			50,000	General Fund		M&O	Biological Health
SW2	Implement window retro-fitting program to reduce property damage and ensure building safety during severe weather	P	X		X		5,000,000	General Fund	1	M&O	Earthquake
SW3	Secure contract arrangement with board up contractor to provide board up services for windows and opening of facilities during severe weather	P	X			X	1,000	General Fund	1	M&O	Tsunami
FLOOD (FL)											
FL1	Upgrade storm drains to assist in water removal and prevent flooding of District facilities and properties	P		X			800,000	Grants	2	M&O	Biological Health/Disease Tsunami

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Strategy Number	Strategy Description	2017-18 Completed / Pending	New (Update)	Priority 1 (High)	Priority 2 (Mod)	Priority 3 (Low)	Estimated Cost	Financing	Timeline (yrs)	Responsible Agency or Dept	Related Hazard
FL2	CANCELLED										
FL3	CANCELLED (duplicated from FL2)										
FL4	CANCELLED										
FL5	Install sump pumps to remove water from areas that are below grade with the chance of flooding	C	X		X		10,000	Grant	3	M&O	Tsunami
FL6	Procure and distribute hot air blowers as required to reduce danger of mold and mildew when recovering from a flood disaster	P	X		X		3,000	Grant	2	M&O	Tsunami
FL7	Procure and distribute dehumidifiers to assist in drying facilities when recovering from a flood disaster	P	X		X		8,000	Grant	2	M&O	Tsunami
CIVIL UNREST/DISORDER (CU)											
CU1	Establish information sharing with the Cities of Santa Monica and Malibu, Los Angeles County Fire Department and California Highway Patrol to assist in mutual disaster response operations	P		X			1,500	General Fund	1	Fiscal Services	All Hazards
CU2	Procure and install entry control gates at district facilities to provide barriers to prevent intruders from access to school sites during civil unrest disasters	P			X		500,000	General Fund	2	M&O	School Shooting
SCHOOL SHOOTING											
SS1	Train all staff and students in active shooter response procedures	P	X	X			5,000	General Fund	1	Student Services	Civil Unrest
SS2	Coordinate active shooter drills with local law enforcement	P	X	X			1,000	General Fund	1	Student Services	Civil Unrest
SS3	Improve visitor screening and badging utilizing automated equipment	P	X			X	30,000	Grants	2	Student Services	
SS4	Standardize all school fencing height to prevent	P	X		X		+200,000	General	5	M&O	Civil Unrest

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Strategy Number	Strategy Description	2017-18 Completed / Pending	New (Update)	Priority 1 (High)	Priority 2 (Mod)	Priority 3 (Low)	Estimated Cost	Financing	Timeline (yrs)	Responsible Agency or Dept	Related Hazard
	unauthorized entry							Fund			
UTILITY DISRUPTION/LOSS (UL)											
UL1	Upgrade electrical panels to accept generator connections at selected District facilities to safely allow generators to supply emergency power to schools and other facilities when power is out for an extended period	P	X	X			250,000	Grant	5	M&O	All Hazards
UL2	Procure and install emergency generator for freezer and refrigerators in Food Services facility to keep food available for emergencies and prevent spoilage during power outages	P	X	X			50,000	Grant	3	Food Services	All Hazards

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Capabilities Assessment for Santa Monica Malibu USD

The Santa Monica-Malibu Unified School District identified current capabilities available for implementing hazard mitigation activities. The Capability Assessment portion of the Operational Area mitigation plan identifies administrative, technical, legal, and fiscal capabilities. This includes a summary of departments and their responsibilities associated to hazard mitigation planning as well as codes, ordinances, and plans already in place associated to hazard mitigation planning. The second part of the Assessment provides fiscal capabilities that may be applicable to providing financial resources to implement identified mitigation action items.

Existing Institutions, Plans, Policies and Ordinances

The following is (1) a summary of existing positions, their responsibilities related to hazard mitigation planning and implementation; and (2) a list of existing planning documents and regulations related to mitigation efforts within the District. The administrative and technical capabilities, as shown in the table below, provides an identification of the staff, personnel, and department resources available to implement the actions identified in the mitigation section of the Plan. Specific resources reviewed include those involving technical personnel such as planners/engineers with knowledge of land development and land management practices, engineers trained in construction practices related to building and infrastructure, planners and engineers with an understanding of natural or human-caused hazards, floodplain managers, surveyors, personnel with GIS skills and scientists familiar with hazards in the community.

Administrative & Technical Capacity (SMMUSD)

Position	Y/N	Department/Agency
Planner(s) or engineer(s) with knowledge of land development and land management practices	N	Business Services or Contract Services
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Consultants as needed
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	Y	Consultants as needed
Floodplain manager	N	Contract Services
Surveyors	Y	Consultants as needed
Staff with education or expertise to assess the community's vulnerability to hazards	Y	DMA 2000 Hazard Mitigation Planning Committee
Personnel skilled in GIS and/or HAZUS	N	City of Santa Monica/City of Malibu
Scientists familiar with the hazards of the community	N	Outside Expertise
Emergency manager	Y	Pupil Services
Grant writers	N	In Services/Business Services

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Regulatory Tools (SMMUSD)

The legal and regulatory capabilities of each jurisdiction are shown in the table below, which presents the existing policies and regulations that affect the physical or built environment of SMMUSD.

Regulatory Tools (ordinances, codes, plans)	Y/N	Comments
Building code	Y	Division of State Architect
Zoning ordinance	N	Refer to City of Santa Monica/Malibu
Subdivision ordinance or regulations	N	N/A
Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	N	N/A
Growth management ordinances (also called "smart growth" or anti-sprawl programs)	N	N/A
Site plan review requirements	N	
General or comprehensive plan	N	
A capital improvement plan	Y	Developing Master Plan at this time
An economic development plan	Y	In Process
An emergency response plan	Y	Risk Management
A post-disaster recovery plan	N	
A post-disaster recovery ordinance	N	SEMS Compliant
Real estate disclosure requirements	N	Not Applicable/State Compliant
Habitat Management Plan	N	Not Applicable/State Compliant
Master Drainage, Sewer, Water, & Reclaimed Water	N	Not Applicable
Redevelopment Master Plan	N	Currently Updating

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Fiscal Resources (SMMUSD)

The table below shows specific financial and budgetary tools available to the District.

Financial Resources	Y/N	Comments
Community Development Block Grants	N	
Capital improvements project funding	Y	Grants and Bonds
Authority to levy taxes for specific purposes	Y	General Election
Fees for water, sewer, gas, or electric service	N	N/A
Impact fees for homebuyers or developers for new developments/homes	Y	
Incur debt through general obligation bonds	Y	
Incur debt through special tax and revenue bonds	Y	
Incur debt through private activity bonds	N	
Withhold spending in hazard-prone areas	N	

* Subject to grant from State

** Subject to voter approval

Capabilities Assessment for Santa Monica College

The Santa Monica College identified current capabilities available for implementing hazard mitigation activities. The Capability Assessment portion of the Operational Area mitigation plan identifies administrative, technical, legal, and fiscal capabilities. This includes a summary of departments and their responsibilities associated to hazard mitigation planning as well as codes, ordinances, and plans already in place associated to hazard mitigation planning. The second part of the Assessment provides fiscal capabilities that may be applicable to providing financial resources to implement identified mitigation action items.

Existing Institutions, Plans, Policies and Ordinances

The following is (1) a summary of existing positions their responsibilities related to hazard mitigation planning and implementation; and (2) a list of existing planning documents and regulations related to mitigation efforts within the College. The administrative and technical capabilities of each jurisdiction, as shown in the table below, provides an identification of the staff, personnel, and department resources available to implement the actions identified in the mitigation section of the Plan. Specific resources reviewed include those involving technical personnel such as planners/engineers with knowledge of land development and land management practices, engineers trained in construction practices related to building and infrastructure, planners and engineers with an understanding of natural or human-caused hazards, floodplain managers, surveyors, personnel with GIS skills and scientists familiar with hazards in the community.

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Administrative & Technical Capacity (SMC)

Position	Y/N	Department/Agency
Planner(s) or engineer(s) with knowledge of land development and land management practices	N	Consultants as needed
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	N	Consultants as needed
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	N	Consultants as needed
Floodplain Manager	N	Not applicable
Surveyors	N	Consultants as needed
Staff with education or expertise to assess the community's vulnerability to hazards	Y	SMC Hazard Mitigation Planning Committee
Personnel skilled in GIS and/or HAZUS	N	City of Santa Monica
Scientists familiar with the hazards of the community	N	
Emergency Manager	Y	Emergency Preparedness & Safety Coordinator
Grant writers	Y	

**Santa Monica-Malibu Unified School District & Santa Monica College
All-Hazard Mitigation Plan**

Regulatory Tools (SMC)

The legal and regulatory capabilities of each jurisdiction are shown in the table below, which presents the existing ordinances and codes that affect the physical or built environment of College

Regulatory Tools (ordinances, codes, plans)	Y/N	Comments
Building code	Y	Division of State Architect
Zoning ordinance	N	Refer to City of Santa Monica
Subdivision ordinance or regulations	N	
Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	N	
Growth management ordinances (also called "smart growth" or anti-sprawl programs)	N	
Site plan review requirements	Y	Facilities Dept.
General or comprehensive plan	Y	Facilities Dept.
A capital improvements plan	Y	Facilities Dept.
An economic development plan	N	
An emergency response plan	Y	Risk Management
A post-disaster recovery plan	Y	Risk Management
A post-disaster recovery ordinance	N	SEMS Compliant
Real estate disclosure requirements	N	Not Applicable
Habitat Management Plan	N	Not Applicable
Master Drainage, Sewer, Water, & Reclaimed Water	N	Not Applicable
Redevelopment Master Plan	N	Modernization Plan

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All-Hazard Mitigation Plan**

Fiscal Resources (SMC)

The table below shows specific financial and budgetary tools available to the College.

Financial Resources	Y/N	Comments
Community Development Block Grants	N	
Capital improvements project funding	Y	State and Local
Authority to levy taxes for specific purposes	Y	Bonds/Measures
Fees for water, sewer, gas, or electric service	N	
Impact fees for homebuyers or developers for new developments/homes	N	
Incur debt through general obligation bonds	Y	Bonds/Measures
Incur debt through special tax and revenue bonds	Y	Bonds/Measures
Incur debt through private activity bonds	N	
Withhold spending in hazard-prone areas	N	

Benefit-Cost Analysis

Benefit-cost review (BCR) is an abbreviated quantitative method of comparing the projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness. A modified process called "STAPLEE" will be used to methodically review the benefit as opposed to the cost of each strategy and action listed where that information was attainable. The STAPLEE process considers the following:

S	SOCIAL	Community Acceptance	Effect on Segment of Population		
T	TECHNICAL	Technical Feasibility	Long-term Solution	Secondary Impacts	
A	ADMINISTRATIVE	Staffing	Funding Allocated	Maintenance/Operations	
P	POLITICAL	Political Support	Local Champion	Public Support	
L	LEGAL	State Authority	Existing Local Authority	Potential Legal Challenge	
E	ECONOMIC	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required
E	ENVIRONMENTAL	Effects on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental Goals
					Consistent with Federal Laws

Because projects are planned for 1-3+ years in the future, jurisdictions decided that it would not be efficient to do full-blown benefit-cost review software process at this stage. BCRs using the STAPLEE process will be conducted when funding is earmarked and scheduling is firm for mitigation projects.

The action plan must be prioritized according to a benefit/cost analysis of the proposed projects and their associated costs (44 CFR, Section 201.6(c)(3)(iii)). The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost review was not of the detailed variety required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) grant program. A less formal approach

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was used because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time. Therefore, a review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

Cost ratings were defined as follows:

High—Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).

Medium—The project could be implemented with existing funding but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.

Low—The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.

Benefit ratings were defined as follows:

High—Project will provide an immediate reduction of risk exposure for life and property.

Medium—Project will have a long-term impact on the reduction of risk exposure for life and property, or project will provide an immediate reduction in the risk exposure for property.

Low—Long-term benefits of the project are difficult to quantify in the short term. Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-beneficial and are prioritized accordingly.

Plan Implementation

The effectiveness of the hazard mitigation plan depends on its implementation and incorporation of its action items into the jurisdiction's existing plans, policies and programs. Together, the action items in the plan provide a framework for activities that the jurisdictions can implement over the next 5 years. The planning team has established goals and objectives and have prioritized mitigation actions that will be implemented through existing plans, policies, and programs.

The information on hazard, risk, vulnerability, and mitigation contained in this plan is based on the best science and technology available at the time this plan was prepared. The plan development process provided the jurisdictions with the opportunity to review and expand on policies contained within these planning mechanisms. The planning team used their strategic plans and the hazard mitigation plan as complementary documents that work together to achieve the goal of reducing risk exposures. An update to a comprehensive plan may trigger an update to the hazard mitigation plan.

All planning partners are committed to creating a linkage between the hazard mitigation plan and their individual comprehensive plans by identifying a mitigation initiative as such and giving that initiative a high priority. Other planning processes and programs to be coordinated with the recommendations of the hazard mitigation plan include the following:

- Emergency response plans
- Capital improvement programs
- Board Policies
- Facility design guidelines
- Water-efficient landscape design guidelines
- Storm water management programs
- Water system vulnerability assessments
- Fire protection plans

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Some action items do not need to be implemented through regulation. Instead, these items can be implemented through the creation of new educational programs, continued interagency coordination, or improved public participation. As information becomes available from other planning mechanisms that can enhance this plan, that information will be incorporated via the update process.

Plan Maintenance

Monitoring, Evaluating & Updating

Plan Maintenance

This section of the Plan describes the formal process that ensures that the Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the Plan periodically and producing a plan revision every five years.

This section also describes how the Santa Monica-Malibu Unified School District & Santa Monica College integrates public participation throughout the plan maintenance process. Finally, this section includes an explanation of how jurisdictions make considerations for the mitigation strategies outlined in this Plan into existing planning mechanisms.

SMMUSD & SMC are responsible for monitoring the plan periodically for updates to jurisdictional goals, objectives, and action items. If needed, these are coordinated through the SMMUSD & SMC's Hazard Mitigation Planning Committee to integrate these updates into the Plan. The Risk Management Offices of SMMUSD and SMC are responsible for monitoring the overall Plan for updates. The Chairman reconvenes the Planning Committee as needed to make these updates.

The Plan is evaluated by Santa Monica-Malibu Unified School District & Santa Monica College at least every two years to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The Plan is re-evaluated by SMMUSD & SMC representatives based upon the initial Plan criteria used to draft goals, objectives, and action items for this Plan.

Action items are reviewed to determine their relevance to changing situations in the District, Los Angeles County Operational Area, as well as changes in State or Federal regulations and policy. SMMUD and SMC Committee Members assess each portion of the Plan to determine if this information needs modification or updating.

SMMUSD and SMC committee members are the responsible group for updates to the Plan. All participants are responsible to provide the Committee Chairperson with department-level updates to the Plan when/if necessary as described above. Every five years the updated plan is submitted to the State of California and FEMA for review.

SMMUSD & SMC has the opportunity to implement recommended action items through existing programs and procedures that are deemed appropriate. Upon adoption of the Plan, it is used as a baseline of information on the hazards that impact the District.

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Continued Public Involvement

The Santa Monica-Malibu Unified School District & Santa Monica College are dedicated to involving the public directly in review and updates of the Plan. Representatives from the Planning Committee are responsible for monitoring, evaluating, and updating the Plan as described above. During all phases of plan maintenance, the public has the opportunity to provide feedback.

A copy of the Plan is published and available for review on the Santa Monica-Malibu Unified School District & Santa Monica College websites. In addition, copies of the plan are catalogued and kept at appropriate locations within the jurisdictions. The existence and location of these copies is posted on the websites. These sites contain contact information for the Santa Monica-Malibu Unified School District & Santa Monica College DMA 2000 Hazard Mitigation Planning Committee to which people can direct their comments and concerns.

A press release requesting public comments is issued after each evaluation or when deemed necessary by the Planning Committee. The press release directs people to the websites or appropriate locations where the public can review proposed updated versions of the Plan. This provides the public an outlet for which they can express their concerns, opinions, or ideas about any updates/changes that are proposed to the Plan. Committee members assure the resources are available to publicize the press releases and maintain public involvement through web pages and other appropriate means.

Plan Update Resource List

SMMUSD Resource List

#	Title	Source	Date
1	Injury/Illness Prevention Program	Risk Management updates as needed	2012
2	Emergency Operation Plan	Risk Management updates annually	Jan. 2017
3	SMMUSD Safety Committee Minutes	Risk Management	To 7/2017
4	HMP Preparedness Stakeholder Survey	SMMUSD, update pending	2017-2018
5	Property Appraisal	American Appraisal	2015
6	Business Stakeholder Participation Input	SMMUSD, Pending	Fall, 2017
7	Board action "Approval of Hazard Mitigation Vulnerability Analysis and Program Plan	SMMUSD, Pending	Sept. 2017
8	Santa Monica Boundary Map/School Sites	SMMUSD	2017
9	Malibu Boundary Map/School Sites	SMMUSD	2017
10	School District Logo	SMMUSD	
11	Student Enrollment Data	Student Services, SMMUSD	2017
12	Staffing Data	Human Resources, SMMUSD	2017

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SMC Resource List

#	Title	Source	Date
1	SEMS Organization Chart	SMC	
2	Injury & Illness Prevention Program	SMC	2/05
3	Emergency Preparedness Manual Draft	SMC	1/19/04
4	"The Lookout" Public Notice; Press Release for HMP Public Input Questionnaire	SMC	3/1/05
5	Space Inventory Report Building Summary Report	Santa Monica Community College District	3/1/2004
6	Five-year Construction Plan 2006/07-2010-11	Santa Monica Community College District	7/01/2004
7	SMC Facilities Update December 1,2003	Facilities Planning SMC	Dec. 2003
8	Property & Casualty Administration; Site Statement of Values	Keenan & Associates	7/14/04
9	College Logo	SMC	3/21/05
10	SMC Campus Site Map Aerial	WWCOT	2004
11	History of SMC Financing and Means of Financing	SMC	
12	Malibu: College Programs, Park & Recreation Master Plan, and current issues	SMC	
13	SMC Campuses drawing	SMC	

General Resources (included as appendices)

#	Title	Source	Date
1	City of Santa Monica DMA 2000 Plan	City of Santa Monica	2004/05
2	City of Malibu Emergency Operations Plan	City of Malibu	