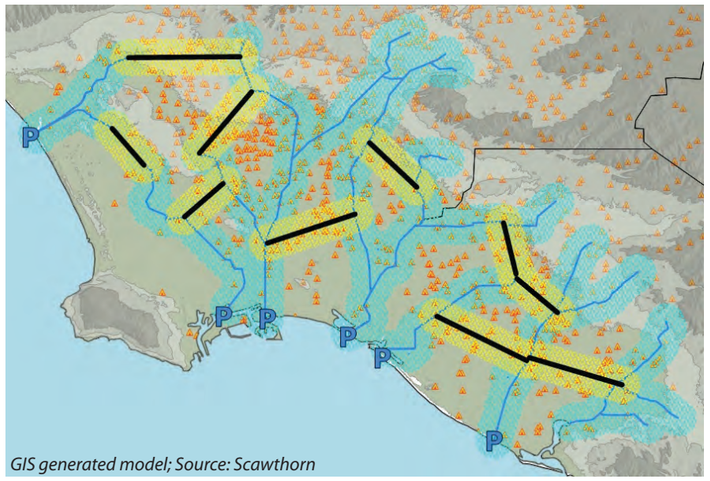
SALTWATER HIGH PRESSURE SYSTEMS

as alternative sources of water

San Francisco has already developed and maintains a high pressure seawater-supplied Auxiliary Water Supply System (AWSS). SF recently, in June 2010, approved a $412 million bond issue to enhance their system.



GIS generated model; Source: Scawthorn

Central Los Angeles and Orange County could benefit from building a saltwater high pressure system since they are at great risk due to fire following earthquake.

This map shows Los Angeles and Orange County high pressure salt water system pipe network in storm drain channels (blue lines) with proposed connectors (black lines) overlaid on ShakeOut scenario ignitions. The pipe network is supplied from pump stations (P). Blue and yellow buffer zones around pipelines would be areas reachable by a PWSS.

One of the larger drain channels in LA; Source: hcn.org

PEER

Pacific Earthquake Engineering Research Center

for more information, download PEER Report 2011/08

Water Supply in regard to Fire Following Earthquake by Charles Scawthorn

at:

www.seismic.ca.gov

OR

http://peer.berkeley.edu/publications/peer_reports_complete.html

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2010 San Bruno Gas Pipeline Explosion; Source: National Geographic Pictures

FIRE FOLLOWING EARTHQUAKE

will water be there for firefighters?

Fire following earthquake (FEE) is a significant problem in California. Fire services in California have not been tested by a major earthquake since 1906. This study shows that a major earthquake in major metropolitan cities in California will result in simultaneous ignitions and water distribution breaks.

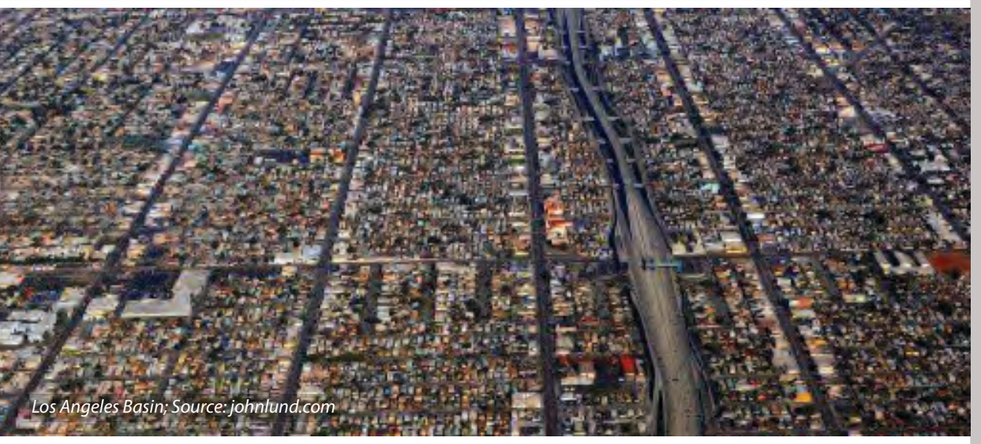
STATE OF CALIFORNIA Seismic Safety Commission SSC

CAL EMA

PEER

2008 ShakeOut Exercise M_w 7.8 San Andreas earthquake analysis found that

APPROXIMATELY 1,600 IGNITIONS OCCUR IN SOUTHERN CALIFORNIA, WITH THE CENTRAL LA BASIN EXPERIENCING HUNDREDS OF LARGE FIRES.



Los Angeles Basin; Source: johnlund.com

MOST FIRE AND WATER DEPARTMENTS IN CALIFORNIA

could be BETTER INFORMED about the specifics of their earthquake risk

generally believe most municipal water supplies are UNRELIABLE in a major earthquake

do NOT FULLY UNDERSTAND water department system vulnerabilities

Source: Survey of fire and water agencies conducted by PEER, 2011

Tokyo oil refinery following the 2011 Mw 9.0 earthquake; Source: daehanilbo.co.kr

CALIFORNIA IS HIGHLY EXPOSED

there are about **9.5 million** residential properties

1 MILLION commercial property insurance policies in CA

$4.7 trillion is the total value of insured property

guidance provided by the insurance industry for adequacy of public water supplies **DOES NOT** mention or consider **EARTHQUAKES**

Source: Statistics from the CA Department of Insurance, 2009

there is a crucial need for post-earthquake fire fighting water supply in California.

this problem should be **highlighted** in joint meetings between key figures in the California Fire Service and key water agencies. State-wide plans for post-earthquake fire fighting should be developed and implemented.

Recommendations from PEER Report 2011/08 sponsored by the CA SEISMIC SAFETY COMMISSION

THREE STEPS FOR SUGGESTED FURTHER STUDY:

1 Develop a standardized California Portable Water Supply System (PWSS) to be deployed in major urban areas. This PWSS would suffice for the San Francisco Bay Area.

2 Develop a saltwater high pressure system for LA and Orange Counties to be used with the PWSS. This is quite feasible if existing large storm drain channels could be used for pipeline rights-of-way.

3 Develop and deploy neighborhood equipment container caches to enhance post-disaster fire-fighting capabilities. These would be used by NERT, CERT, and other volunteers.

Portable Water Supply System (PWSS), Vallejo FD; Source: Scawthorn

Berkeley FD BAWSS 12 inch Ultra LDH; Source: Berkeley FD