

San Francisco 25 years after Loma Prieta: Water under the bridge?

Janiele Maffei, S.E.

Chief Mitigation Officer

California Earthquake Authority



What causes damage? Fire following EQ





What causes damage? Ground Failure



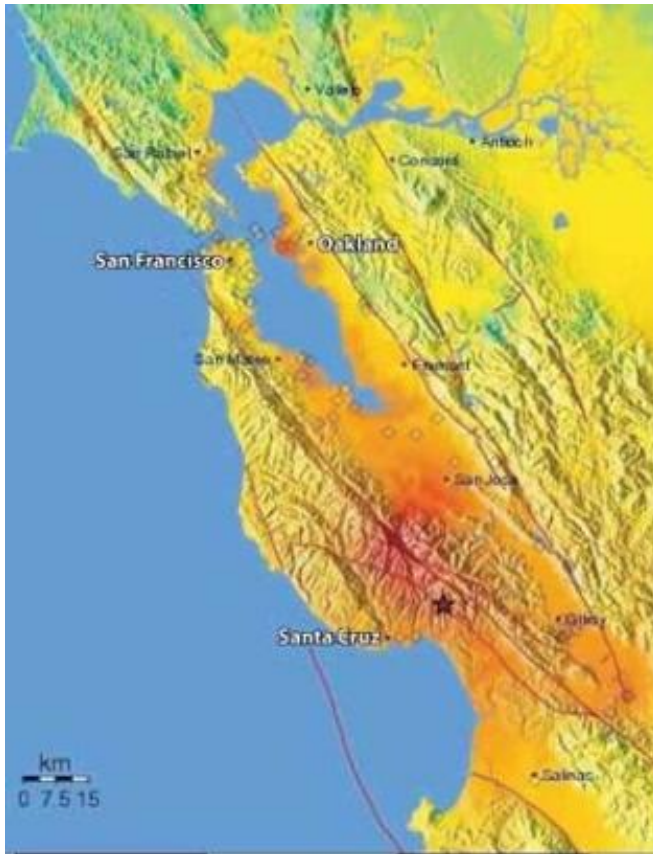


What causes damage? Ground Shaking



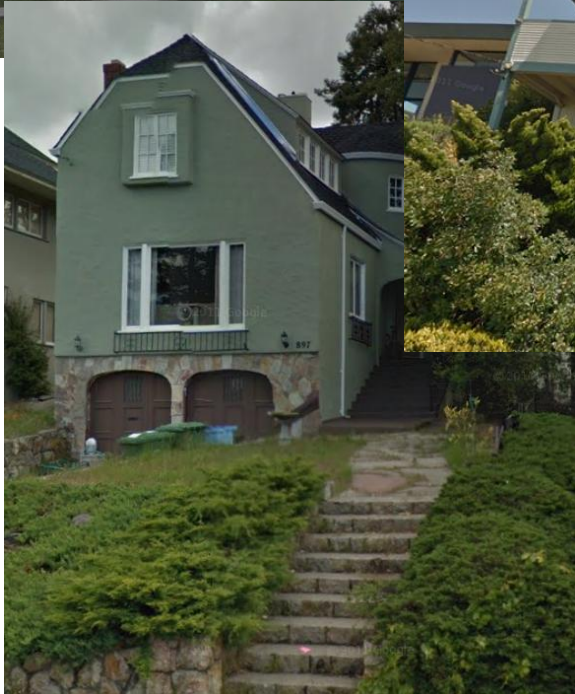
Hazard – Location and soil type

Loma Prieta EQ (USGS)



Hayward fault M 7.0 Scenario (ABAG)

Vulnerability – Type and age of structure



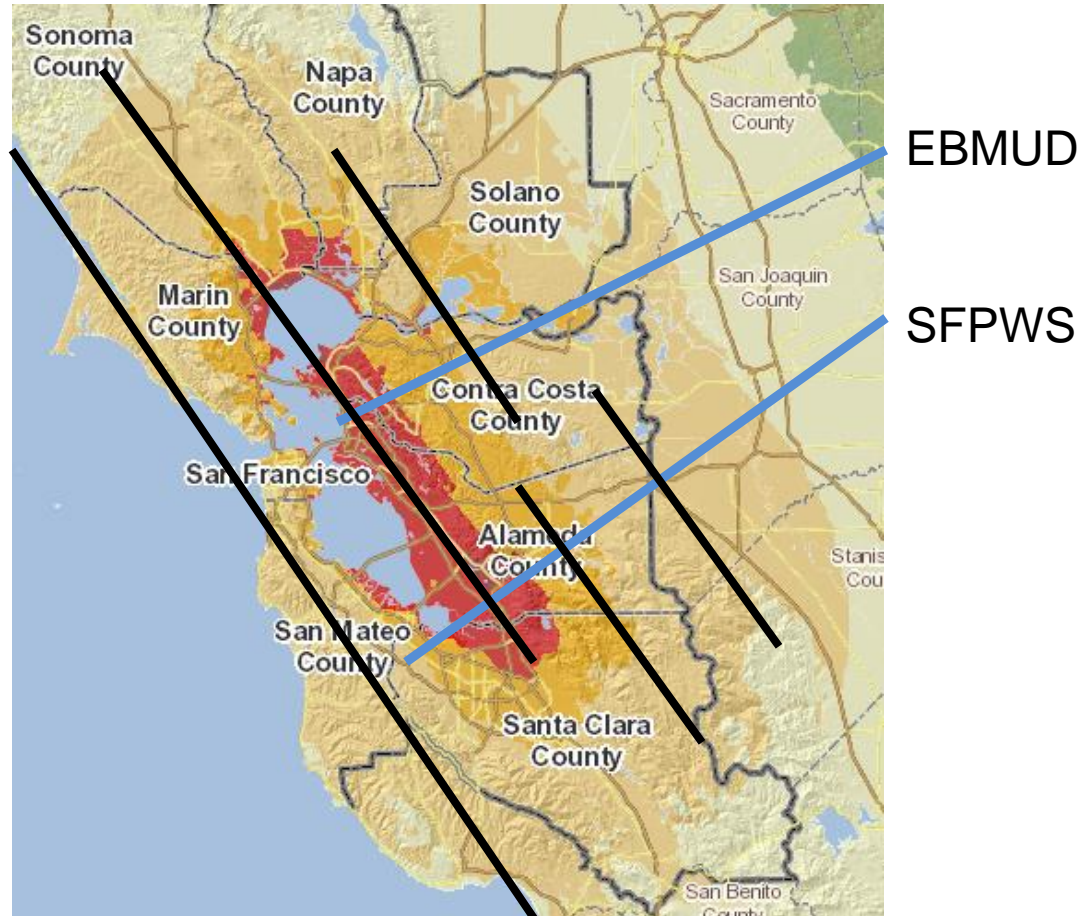
Source: Google Maps

Public Mitigation Programs



Source: USGS

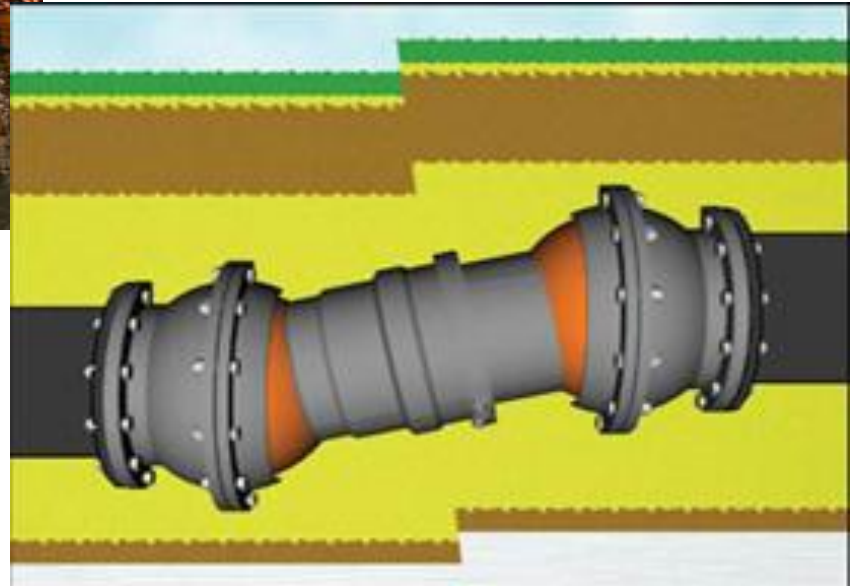
Water Delivery



Water Delivery Systems



Source: EBMUD



Source: SF Power Water Sewer

Bay Area Airports



Source: USGS

Maritime Ports



Transportation - BART



Transportation - Caltrans



Bay Bridge – Eastern Span



Source: USGS



Emergency Operations Centers



Fire Stations



City Hall Buildings



Hospitals – SB 1953



Higher Education

- University of California
- Stanford University
- California State University
- Community Colleges



Mitigation of Private Buildings – The Challenge for LP50



Public/Private: K-12 Schools



Unreinforced Masonry Building



“Retrofitted” URM



Owner Negotiation



Non-Ductile Concrete Buildings



Soft-Story Multi-Family Housing





Source: USGS



Soft-Story Single Family







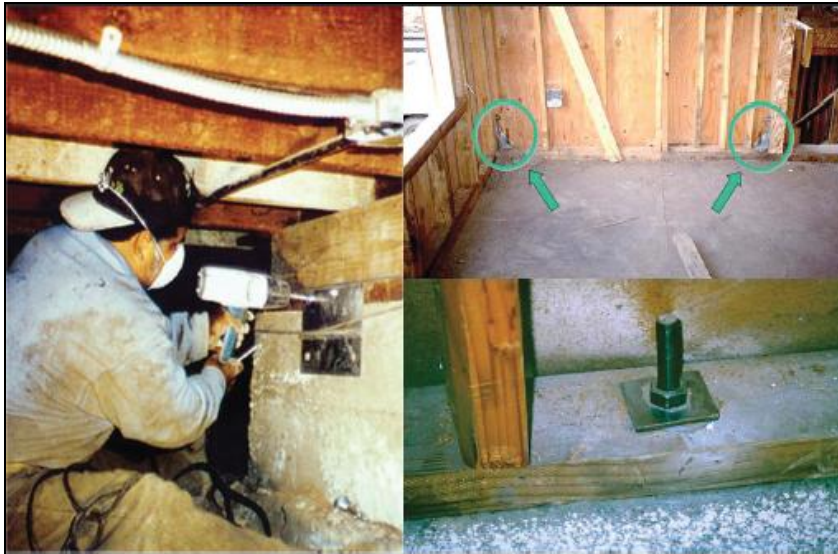
Living Space Over Garage



Hillside Homes



FEMA P-50 - Assessment Tool



Simplified Seismic Assessment of Detached, Single-Family, Wood-Frame Dwellings

FEMA P-50 / May 2012



FEMA



- Identifies seismic vulnerabilities
- Written for use by House Inspector (non-engineer)
- Partially funded by CEA

CEA and FEMA joined forces to create ATC 110

- Expanded prescriptive provisions for retrofit
- New provisions for use by engineer

Prestandard for the Evaluation and Seismic Retrofit of Single Family (1-4 units) Residential Buildings



FEMA



ATC Applied Technology Council



Earthquakebracebolt.com

Janiele Maffei

Executive Director

California Residential Mitigation Program

