



# DEPARTMENT OF CONSERVATION

*Managing California's Working Lands*

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### FOR IMMEDIATE RELEASE

NR#2012-09

September 25, 2012

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## CALIFORNIA GEOLOGICAL SURVEY ISSUES 13 NEW OR REVISED EARTHQUAKE FAULT HAZARD ZONE MAPS

SACRAMENTO – The California Geological Survey (CGS) has issued 13 new or revised regulatory maps that will impact where new construction can take place in five counties. The Alquist-Priolo Earthquake Fault Zone Maps establish zones around the surface traces of active faults that require a setback from active fault traces found, typically 50 feet, for new construction.

“Of the various hazards associated with earthquakes, building atop the surface trace of an active fault is the most easy to avoid,” noted Dr. John Parrish, State Geologist of California and head of CGS. “Setting buildings back from the fault protects lives and reduces losses in the event of an earthquake. It stands to reason that there’s a high likelihood that locations where faults have ruptured at the surface in the past will see that phenomenon again in the future.”

The Alquist-Priolo Earthquake Fault Zoning (AP) Act was passed into law following the destructive February 9, 1971 magnitude 6.6 San Fernando Earthquake. Currently there are 553 official maps affecting 36 counties and 104 cities. The latest release includes: a revised zone map in Alameda County, one new map in Ventura County; five revised zone maps in Riverside County, and 5 new and one revised zone map in Imperial County. One map overlaps Imperial and San Diego counties and one map overlaps Riverside and Imperial counties. The maps can be viewed here: [http://www.conservation.ca.gov/cgs/rghm/ap/Pages/official\\_release.aspx](http://www.conservation.ca.gov/cgs/rghm/ap/Pages/official_release.aspx)

CGS has not only the Alquist-Priolo zoning program, but also the Seismic Hazard Zonation Program, which establishes regulatory zones defining where earthquake-induced landslides and liquefaction (a phenomenon in which highly shaken, waterlogged soil becomes unable to support infrastructure) are most likely to occur. There is a real estate disclosure element for property in either an Alquist-Priolo or Seismic Hazard zone.

The newest Alquist-Priolo maps, which become official September 21, show both the Earthquake Fault Zones and any established landslide or liquefaction zones. This new format for portraying these regulatory

zones is called Earthquake Zones of Required Investigation. An electronic version of the zone maps, referred to as a geo-pdf file, can be viewed using Adobe Acrobat Reader. This geo-pdf file consists of multiple layers and gives the user greater flexibility in viewing and displaying the maps. For example, the geo-pdf file contains a shaded-relief map, a topographic contour map, and a standard U.S. Geological Survey topographic base map. These layers can be combined or displayed one at a time. Digital Geographic Information System (GIS) files for both Alquist-Priolo Earthquake Fault Zones and Seismic Hazard Zones released by CGS are considered the "Official Maps." Both GIS and geo-pdf files of the new and revised maps can be downloaded from the CGS website.

Local agencies must regulate most development projects within the zones. Single family wood-frame and steel-frame dwellings up to two stories that are not part of a development of four units or more are exempt. However, local agencies can be more restrictive than state law requires.

Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a California-licensed geologist. With the exception of disclosure, the zones do not affect existing developments unless extensive additions or remodeling are proposed.

Paper copies of Alquist-Priolo Earthquake Fault Zone maps can be studied at local planning departments or at offices of the California Geological Survey, located in Sacramento, Menlo Park and Los Angeles. These maps show most streets, drainages, and other features. Local government may have transferred Earthquake Fault Zone boundaries to parcel maps, so the relationship of the zone to each parcel can easily be determined.

There have been 26 earthquakes associated with surface faulting in California since the first Alquist-Priolo zone maps were issued in 1974. Although most of the ground surface displacement associated with these events was relatively minor, there have been seven earthquakes with surface fault offsets greater than a foot. Earlier earthquake records suggest that earthquakes with ground surface displacement equal to or greater than three feet occur once every 15 to 20 years in California.

"Surface rupture is a very real danger, but not all earthquakes are associated with surface fault rupture," said CGS Senior Engineering Geologist Bill Bryant, head of the Alquist-Priolo mapping program. "For example, surface faulting associated with the 1992 Landers Earthquake, in San Bernardino County, extended for 50 miles with displacements up to 20 feet. On the other hand, the 1994 Northridge earthquake caused major damage in the Los Angeles region but did not produce surface faulting because the Northridge fault is a blind thrust and does not reach the ground surface. In some areas, such as along the Hayward Fault, fault creep is as much a concern as a sudden rupture. But surface rupture almost always follows preexisting faults, which are zones of weakness, so Earthquake Fault zones are an acknowledgment that it's better to be safe than sorry."

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