

# STATE OF CALIFORNIA California Geological Survey Earthquake Zones of Required Investigation Cougar Buttes Quadrangle

THIS MAP SHOWS ALQUIST-PRIOLO EARTHQUAKE FAULT ZONES.  
SEISMIC HAZARD ZONES HAVE NOT BEEN PREPARED FOR THE COUGAR BUTTES QUADRANGLE

This map shows the location of Preliminary Alquist-Priolo (AP) Earthquake Fault Zones, also referred to here as Earthquake Zones of Required Investigation. These zones were prepared by the California Geological Survey (CGS) to assist cities and counties in fulfilling their responsibilities for protecting the public from the effects of surface fault rupture as required by the AP Earthquake Fault Zoning Act (Public Resources Code Sections 2621-2630). Though not present on this map at this time, CGS also prepares Zones of Required Investigation for earthquake-triggered landslides and soil liquefaction as required by the Seismic Hazard Mapping Act (Public Resources Code Sections 2690-2699.6). The purpose of releasing these Preliminary Zones before zone maps become official is to allow for

public review and comment as described in the Policies and Criteria of the State Mining and Geology Board (California Code of Regulations Section 3602). For information regarding the general approach and recommended methods for preparing these zones, see CGS Special Publication 42, *Fault-Rupture Hazard Zones in California*. Special Publication 42 also contains information regarding the scope and recommended methods to be used in conducting required site investigations in Appendix C, *Guidelines for Evaluating the Hazard of Surface Rupture*. For a general description of the AP Act, CGS zoning programs, and related information, please refer to the CGS website at [www.conservation.ca.gov/cgs/](http://www.conservation.ca.gov/cgs/).

## MAP EXPLANATION

### ALQUIST-PRIOLO EARTHQUAKE FAULT ZONES

#### Earthquake Fault Zones

Zone boundaries are delineated by straight-line segments; the boundaries define the zone encompassing active faults that constitute a potential hazard to structures from surface faulting or fault creep such that avoidance as described in Public Resources Code Section 2621.5(a) would be required.

#### Earthquake Fault Zones

(Not considered for this Preliminary Review)  
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#### Active Fault Traces

Faults considered to have been active during Holocene time and to have potential for surface rupture: Solid Line in Black or Red where Accurately Located; Long Dash in Black or Solid Line in Purple where Approximately Located; Short Dash in Black or Solid Line in Orange where Inferred; Dotted Line in Black or Solid Line in Rose where Concealed; Query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by fault creep.

### SEISMIC HAZARD ZONES

Seismic Hazard Zones, addressing Soil Liquefaction and Earthquake-Triggered Landslides, have not been evaluated for this area.

## ADDITIONAL INFORMATION

For additional information on the zones of required investigation presented on this map, the data and methodology used to prepare them, and additional references consulted, please refer to the following:

The Helendale Fault in Apple Valley North, Fairview Valley, Fifteenmile Valley, Lucerne Valley and Cougar Buttes 7.5 Minute Quadrangles, San Bernardino County, California: California Geological Survey, Preliminary Fault Evaluation Report FER-262.  
[http://www.conservation.ca.gov/cgs/rghm/ap/Documents/Preliminary\\_FER262\\_Report.pdf](http://www.conservation.ca.gov/cgs/rghm/ap/Documents/Preliminary_FER262_Report.pdf)  
[http://www.conservation.ca.gov/cgs/rghm/ap/Documents/Preliminary\\_FER262\\_Plates\\_1a\\_1e.pdf](http://www.conservation.ca.gov/cgs/rghm/ap/Documents/Preliminary_FER262_Plates_1a_1e.pdf)  
[http://www.conservation.ca.gov/cgs/rghm/ap/Documents/Preliminary\\_FER262\\_Plates\\_1j\\_1l.pdf](http://www.conservation.ca.gov/cgs/rghm/ap/Documents/Preliminary_FER262_Plates_1j_1l.pdf)  
[http://www.conservation.ca.gov/cgs/rghm/ap/Documents/Preliminary\\_FER262\\_Plates\\_1la\\_1le.pdf](http://www.conservation.ca.gov/cgs/rghm/ap/Documents/Preliminary_FER262_Plates_1la_1le.pdf)

For more information on the Alquist-Priolo Earthquake Fault Zoning Act please refer to: <http://www.conservation.ca.gov/cgs/rghm/ap/Pages/main.aspx>

## COUGAR BUTTES QUADRANGLE EARTHQUAKE FAULT ZONES

Delineated in compliance with  
Chapter 7.5 Division 2 of the California Public Resources Code  
(Alquist-Priolo Earthquake Fault Zoning Act)

## PRELIMINARY REVIEW MAP

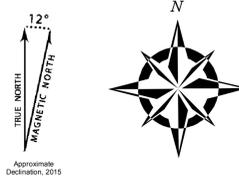
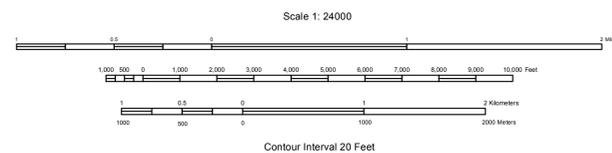
Released: December 10, 2015  
To Be Superseded on or About June 10, 2016

## IMPORTANT

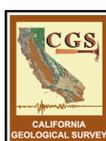
PLEASE NOTE THE FOLLOWING FOR ZONES SHOWN ON THIS MAP

- This map may not show all faults that have the potential for surface fault rupture, either within the Earthquake Fault Zones or outside their boundaries. Additionally, this map may not show all areas that have the potential for liquefaction, landsliding, strong earthquake ground shaking or other earthquake and geologic hazards. Also, a single earthquake capable of causing liquefaction or triggering landslide failure will not uniformly affect the entire area zoned.
- Faults shown are the basis for establishing the boundaries of the Earthquake Fault Zones.
- The identification and location of these faults are based on the best available data. However, the quality of data used is varied. Traces have been depicted as accurately as possible at a map scale of 1:24,000.
- Liquefaction zones may also contain areas susceptible to the effects of earthquake-induced landslides. This situation typically exists at or near the toes of existing landslides, downslope from rockfall or debris flow source areas, or adjacent to steep stream banks.
- Landslide zones on this map were determined, in part, by adapting methods first developed by the U.S. Geological Survey (USGS). Landslide hazard maps prepared by the USGS typically use experimental approaches to assess earthquake-induced and other types of landslide hazards. Although aspects of these new methodologies may be incorporated in future CGS seismic hazard zone maps, USGS maps should not be used as substitutes for these Official SEISMIC HAZARD ZONES maps.
- USGS base map standards provide that 90 percent of cultural features be located within 40 feet (horizontal accuracy) at the scale of this map. The identification and location of liquefaction and earthquake-induced landslide zones are based on available data. However, the quality of data used is varied. The zone boundaries depicted have been drawn as accurately as possible at this scale.
- Information on this map is not sufficient to serve as a substitute for the geologic and geotechnical site investigations required under Chapters 7.5 and 7.8 of Division 2 of the California Public Resources Code.
- Seismic Hazard Zones identified on this map may include developed land where delineated hazards have already been mitigated to city or county standards. Check with your local building/planning department for information regarding the location of such mitigated areas.
- DISCLAIMER: The State of California and the Department of Conservation make no representations or warranties regarding the accuracy of the data from which these maps were derived. Neither the State nor the Department shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.

PRELIMINARY  
EARTHQUAKE FAULT ZONES  
FOR REVIEW PURPOSES ONLY  
TO BE SUPERSEDED ON OR ABOUT  
JUNE 10, 2016



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White Horse Mountain	Grand View Mine	Fry Mountains
Lucerne Valley	Cougar Buttes	Old Woman Springs
Fawnskin	Big Bear City	Rattlesnake Canyon



Topographic base map from U.S. Geological Survey 1971 (revised 1994).