



FACT SHEET

50th Anniversary of the San Fernando (Sylmar) Earthquake

When: February 9, 1971, at 6:00:41 a.m. local time.

Where: In the foothills of the San Gabriel Mountains, about five miles north of the San Fernando Valley. Sylmar and Santa Clarita are the closest communities.

Magnitude: M 6.6. For comparative purposes, the 1989 Loma Prieta Earthquake in the San Francisco Bay Area was an M 6.9 and the 1994 Northridge Earthquake was an M 6.7. The strong shaking of the San Fernando Earthquake lasted for about 12 seconds. The most intense earthquake ground motion ever recorded to that time – stronger than the force of gravity -- occurred at Pacoima Dam in the San Gabriel Mountains.

Damage: 65 fatalities and 2,000 injured. The earthquake caused more than \$500 million in damage (about \$3.2 billion in 2021 dollars). Local hospitals were hit especially hard. About 80,000 people were evacuated downstream of the Lower Van Norman Dam, which almost failed completely. Some freeway interchanges in the greater Los Angeles area partially collapsed. Ground movement caused the thrust fault to break through to the Earth's surface (surface fault rupture), destroying underground pipes, numerous houses, and raising a nursing home about three feet above street level.

Source: The earthquake was centered on the San Fernando Fault -- a thrust fault that previously was not considered a threat to cause a large earthquake. The 1994 Northridge Earthquake, which had a similar magnitude, was also on a thrust fault. Several well-known and mapped faults surround the epicenter of the San Fernando Earthquake, including the San Andreas Fault to the north, the Santa Susana Fault to the west, and the Sierra Madre Fault to the southeast.

The California Geological Survey's (CGS) role: Legislation passed in response to the impact of the San Fernando Earthquake prompted the creation of new CGS programs designed to ensure the protection of lives and property in future earthquakes.

- Damage done to local hospitals prompted the Hospital Safety Act, which requires that all hospitals remain functional after large earthquakes. CGS reviews the seismic and geologic conditions when older hospitals are retrofitted and at all new hospital sites prior to construction to ensure they will not collapse due to poor soil conditions or other geologic conditions. The law was based on the Field Act, instituted after the 1933 Long Beach Earthquake that destroyed many schools. School siting reviews are also conducted by CGS.

- The Alquist-Priolo Earthquake Fault Zoning Act was enacted because of the extensive damage done by surface fault rupture. The Act regulates the construction of buildings across the traces of faults considered active by geologists. CGS establishes

Earthquake Zones of Required Investigation surrounding faults. Within these regulatory zones, local authorities must require appropriate geologic investigations prior to new construction to make sure buildings are not on top of a surface fault. California residents can determine whether their homes are in an Alquist-Priolo Earthquake Fault Zone or a Seismic Hazard Zone by visiting the California Earthquake Hazards Zone Application (EQ Zapp -- <https://www.conservation.ca.gov/cgs/geohazards/eq-zapp>).

- The Strong Motion Instrumentation Program (SMIP) was created to help seismologists and engineers better understand the effects of ground motion and how structures respond to earthquake shaking. SMIP operates a network of thousands of accelerographs around the state –including dams, bridges, high-rises, civic buildings, hospitals, and in the ground. The data SMIP instruments collect helps strengthen California's building codes and enables engineers to design structures that can better withstand earthquake impacts. The data can also help guide first responders to the hardest-hit areas after a quake, and many SMIP instruments have been upgraded to also collect and transmit near real-time data for California's earthquake early warning network, ShakeAlert.

The California Geological Survey is part of the [CA Department of Conservation](#). In the United States, only Alaska experiences more earthquakes than California. CGS scientists gather data on earthquakes and map earthquake faults and related hazards. This information is used to make buildings and structures that are better able to withstand earthquakes, minimizing loss of life and property damage. In addition, the Mineral Resources Program gathers, analyzes and distributes information on the state's mineral resources to help prevent valuable mineral deposits from being lost.