= 1979 Coyote Lake earthquake =

The 1979 Coyote Lake earthquake occurred at 10 : 05 : 24 local time on August 6 with a moment magnitude of 5 @.@ 7 and a maximum Mercalli Intensity of VII (Very strong) . The shock occurred on the Calaveras Fault near Coyote Lake in Santa Clara County , California and resulted in a number of injuries , including some that required hospitalization . Most of the $ 500 @,@ 000 in damage that was caused was non @-@ structural , but several businesses were closed for repairs . Data from numerous strong motion instruments was used to determine the type , depth , and extent of slip . A mild aftershock sequence lasted throughout the remainder of the month that was of interest to seismologists , especially with regard to fault creep , and following the event , local governments evaluated their response to the incident .

= = Tectonic setting = =

Several strands of the San Andreas Fault System in the eastern region of the San Francisco Bay Area are the Hayward ? Rodgers Creek and Calaveras Faults . The Hayward Fault exhibits fault creep , but it also has potential for large earthquakes , like the 1868 M7 Hayward earthquake that occurred on its southern segment . The northern Calaveras Fault meets the Hayward Fault near the Calaveras Reservoir and can also produce large earthquakes . Except for a ~ M6.5 shock that occurred in 1911 , the central and southern segments might only produce smaller events and fault creep .

= = Earthquake = =

The earthquake originated (without foreshocks) on the Calaveras Fault near Coyote Lake in Santa Clara County . It was felt up to 120 mi (200 km) away (from Santa Rosa in the north to San Luis Obispo in the south) and made some high @-@ rise buildings sway in Reno , Nevada , but damage was mainly limited to the nearby towns of Gilroy and Hollister . The earlier M7 Hayward earthquake occurred about 31 mi (50 km) to the north and the 1911 shock was located near Mount Hamilton .

About fifty strong motion stations recorded the event , including an array of units along the rupture zone , and instruments at the Berkeley Seismological Laboratory (about 62 mi (100 km) away) . The records revealed that strike @-@ slip motion occurred over 8 @.@ 7 mi (14 km) on a vertical fault , and that the total amount of slip varied with depth , with more slip occurring in the shallower regions . The two closest stations at Coyote Creek and Gilroy , as well as the Berkeley stations , were used to refine the overall fault length , slip , and depth of faulting .

= = = Strong motion = = =

The event was captured on seismographs at distances of up to 71 miles (114 km) , including Richmond , with the unit 56 ft (17 m) " down hole " in bay mud . Other underground instruments on the BART Transbay Tube , as well as the Richmond site , showed accelerations that were very low . In San Juan Bautista , the U.S. Route 101 / State Route 156 overpass saw peak acceleration of .12g on the ground (with .29g on the structure) . Instruments on the gymnasium roof diaphragm at the campus of West Valley College in Saratoga provided records of interest . Of a number of dams that had instruments installed , the San Luis Dam at San Luis Reservoir had the strongest response . The highest acceleration of .42g was seen at the Gilroy Array within the fault zone .

= = = Damage = = =

In Gilroy and Hollister , sixteen people were injured , and damage totaled $ 500 @,@ 000 . Chimneys fell (especially on older homes in the downtown area of Gilroy) and glass was broken , but in Gilroy structural damage afflicted five buildings . A wall was cracked at city hall , and a court room ceiling collapsed . Damaged structural components at a Ford 's Department Store forced its

closure . In Hollister , a J. C. Penney had a hole and cracks in its ceiling and a parapet collapsed at a law office . At Casa de Fruta , a service station sustained structural damage , as did a fire station at Pacheco Pass .

An early estimate by the Small Business Administration put total damage in Gilroy at twice the amount of what was seen in Hollister . Ten victims were brought to Hazel Hawkins Memorial Hospital in Hollister for treatment of lacerations , a cardiac problem , and anxiety . In Gilroy , the Wheeler Hospital saw six similar cases and a patient with a fractured hip . Most of those that sought care (including four that were transported by ambulance) were treated and released , but six were admitted .

= = = Aftershocks = = =

The United States Geological Survey operated a network of seismograph stations in the region where the shock occurred since 1969 . A survey of the aftershock activity used data from these stations , along with a custom crustal velocity model , to narrow epicenter locations to within several tens of meters . The study indicated that the mainshock and the aftershocks were aligned with the strike and dip of the Calaveras Fault in that area and were classified into three distinct groups . The east @-@ dipping northeastern group , a diffuse middle group , and a shallow and nearly vertical southwestern group showed variations of slip , especially in the 18 months after the mainshock , when fault creep was significantly higher in the northeastern and middle groups .

= = Response = =

While none of the affected counties or cities declared a state of emergency following the event , the Small Business Administration did approve a request by the Office of Emergency Services for a disaster declaration in late September . This formality paved the way for low interest loans for commercial or residential properties that suffered damage , but only about 50 claims were expected . Local authorities had trained for disasters on a regular basis , and the response to the light damage was considered smooth , though some officials sought room for improvement . Discussions followed the event , with local governments focusing on telecommunication problems , emergency power systems , and seismic safety .