

# **Next big quake on Hayward Fault could have serious implications in S.J.**

**Alex Breitler, Stockton Record, 10-18-09**

STOCKTON - The land rolled like water across an open rail yard and jolted the station. Andy Shapiro watched his 40,000-pound fire engine "dance around" the parking bay.

Loma Prieta frightened many San Joaquin County residents, and understandably so. But the 1989 quake's epicenter on the San Andreas Fault was 110 miles distant, and the calls Shapiro responded to that night were not so serious.

"I do recall a lot of shaken people," the firefighter said.

Today, scientists warn that a quake just as strong will probably jolt the Bay Area in the next three decades, most likely on the "tectonic time bomb" that is the Hayward Fault.

That's much closer to home than Loma Prieta.

Some experts say the Central Valley is not the seismic safety zone it's often thought to be. It is threatened not only by Bay Area quakes but by temblors in the flatland, too.

"Stockton is in big earthquake country," State Geologist John Parrish said. "You are not immune."

But you have to dig into the past to see what might happen in the future.

## **The first 'Great Quake'**

On Oct. 21, 1868, a magnitude 6.8 quake struck on the Hayward Fault, leaving in ruins portions of the East Bay. This was known as the "Great San Francisco Quake" until the 1906 blast four decades later.

The Hayward Fault hasn't ruptured since. When it does, the result is expected to be far worse than Loma Prieta: an estimated \$120 billion in damage and several hundred thousand people left homeless, according to U.S. Geological Survey estimates.

It could happen any day.

Newspaper accounts give us some idea what the 1868 quake was like in Stockton, only 50 or so miles away.

Chimneys collapsed. Windows shattered across town, and dishes were thrown from the shelves.

"The men at work in the flour mills found their way into the open air very speedily" was the euphemistic report from the Stockton Daily Independent.

People in Woodbridge felt ill from the rolling motion. In Sacramento, pedestrians staggered about as if drunk, the papers said.

But there is more in the historic record than the 1868 tremor.

A half-dozen other large quakes in the span of a few decades rattled our area, including a 6.0 quake in southwest San Joaquin County in 1866 - the county's largest on record.

Even the remote rattler that destroyed the high desert town of Lone Pine, more than 200 miles southeast of Stockton on the far side of the Sierra Nevada, woke up Stocktonians in the middle of the night, cracked plaster walls and churned water in Delta channels.

### **Fickle faults**

What's remarkable is that many of these quakes were not centered on high-profile faults such as the San Andreas or the Hayward.

The tremor near Tracy and two more near Vacaville, as well as a 1983 quake near Coalinga, are examples of dangerous earthquakes with epicenters in the Valley itself.

Faults running along the west side of the Valley, where the coastal mountains rise out of farmers' fields, may be our greatest danger, said Horacio Ferriz, geology program coordinator at California State University, Stanislaus.

Movement on these faults has been difficult to predict.

"Scientists are not soothsayers," Ferriz said. "Sometimes when a fault is moving, often we can come up with some sort of pattern. In this one, we have not."

Of all Valley communities, Stockton is most at risk, Ferriz says. Its high water table could cause sandy soils to liquefy during a quake, endangering the integrity of buildings and levees.

### **Delta risks**

Those levees might be the area's greatest worry. State officials found that as many as 20 of the Delta's agricultural islands could flood simultaneously in a major quake, at a cost of \$15 billion.

Such a collapse would suck billions of gallons of salty San Francisco Bay water into the Delta, tainting supplies for local farmers and two-thirds of Californians.

The state's conclusions are controversial. Local engineers charged with maintaining the levees believe the risk is overstated; no Delta levee is known to have failed in an earthquake.

That's because the levees haven't been tested, state officials say. Loma Prieta was far away, and when closer earthquakes were rocking the region in the 1800s, the Delta levees did not exist in their current form.

"This, of course, is the thing we're concerned about," said Dave Mraz, head of the state Department of Water Resources' Delta-Suisun Marsh office.

"We've have this period of quiescence," Mraz said, "and when it stops, we're going to get back into this period of activity again."

### **Slow rolling**

While the Valley may not experience the same violent jarring as Bay Area communities in the next big shake, we're likely to see ground motions that last a longer time - like if you jiggle a bowl of Jell-O.

Only recently have seismologists become concerned about structural damage from these "long-period wave" motions, said Parrish, the state geologist.

Some older homes and buildings still are not retrofitted for the next big quake.

But aggressive new building standards since Loma Prieta have helped alleviate the danger, he said.

"When we see a magnitude-5 earthquake in California, the big news headline is that it knocked bottles off a shelf in a store," Parrish said. "When that occurs in Pakistan or China, it kills 500 people and knocks down villages."

Firefighter Shapiro, who retired in 2007, said Loma Prieta left him with a feeling of vulnerability that no other disaster had.

As an emergency responder, there are some things you just can't prepare for.

"Not much you can do," Shapiro said, "until it happens."