

SUNSHINE REIGNS

Ukiah

High: 71 Low: 41

Santa Rosa

High: 74 Low: 42

Fort Bragg

High: 53 Low: 41

Details, Page B10

The Press

DEMOCRAT

TUESDAY, APRIL 18, 2006 • SANTA ROSA, CALIFORNIA

WHAT IF ...

THE SCENARIO: A magnitude 7.0 earthquake hits along the Rodgers Creek Fault in Santa Rosa



CRISTA JEREMIASON / The Press Democrat

ON THE FAULT: The Rodgers Creek Fault cuts through the heart of Santa Rosa, deep beneath residential streets such as St. Helena Avenue, above, in the historic McDonald neighborhood.

BY JEREMY HAY, *The Press Democrat*

It could be today. Perhaps around noon. In an event brutal, swift and seemingly from nowhere, the seismic fault running directly through Sonoma County's heartland ruptures, causing a massive earthquake.

A 7.0-magnitude earthquake on the Rodgers Creek Fault plows through the county like a subterranean freight train, following a path east of Highway 101 through the middle of Santa Rosa and on to central Windsor.

In places, it announces itself with a roar before impact. Elsewhere, things — from people to buildings to wine barrels — topple before a sound is heard.

About 180 people could die and 1,000 people could need medical care in the immediate aftermath of a midday quake, according to a draft county report on the potential consequences.

The checkerboard of damage could produce \$5 billion in direct economic losses, said the report, which contains this ominous warning: "This earthquake will impact the way of life in the county for years to come."

TURN TO QUAKE, PAGE A8

1906
A CENTURY LATER

ONLINE

For a multimedia retrospective of the 1906 earthquake in Sonoma County, visit pressdemocrat.com

THE AFTERMATH

There is a 16.6 percent chance of a magnitude 6.7 quake on the Rodgers Creek Fault in Santa Rosa within the next 25 years, according to the U.S. Geological Survey. The following is a scenario based on a magnitude 7.0 earthquake:

180 dead

Estimated number of deaths in Sonoma County. Another 1,000 people would need medical care.

1,400 homes

Number of single-family houses that would be destroyed. Also, 3,514 of the 8,000 mobile homes would be in ruin.

223 roads

Virtually all those that intersect with the fault would be undrivable or shut down. There could also be large-scale problems along Highway 101, especially on the Cotati Grade. The older sections of Highway 101 would be most vulnerable.

\$5 billion

Direct economic losses. County report also says, "This earthquake will impact the way of life in the county for years to come."

70 percent

County residents who could be without water for days, even months.

Sources: Draft of Sonoma County risk assessment; Association of Bay Area Governments forecast

1906 2006

QUAKE: Nightmare scenario would damage 1,400 homes, cripple supply of drinking water

The odds are frightening. A slightly smaller quake — magnitude 6.7 on the Rodgers Creek Fault — ranks first among the 10 major Bay Area quakes that are most probable within the next 25 years. The U.S. Geological Survey gives it a 16.6 percent chance of happening, either on its own, or as part of the larger Hayward Fault to which it connects.

It would be far larger than the 1969 quakes of 5.6 and 5.7 magnitude on the Rodgers Creek-Healdsburg Fault, and equal to the 1989 Loma Prieta quake, the epicenter of which was more than 100 miles away in Santa Cruz County.

"The county hasn't seen something equivalent," said Sandy Covall-Alves, the Sonoma County emergency services coordinator. "Maybe in 1906," she added, referring to the magnitude 7.8 quake that demolished most of Santa Rosa 100 years ago today.

This — an imagined series of events based on historical accounts, expert forecasts and disaster planning exercises — is what it might resemble.

Homes and housing

Rusted 20-penny nails squeal as a 1950s-built, two-bedroom house near Memorial Hospital — one of many such homes directly along or next to the fault — is jarred off its foundation.

"That whole neighborhood is going to shake like crazy," said general contractor Serafim Reis, whose company, QuakeSmart, specializes in seismic work and has bolted homes in that area to their foundations.

In Larkfield, a complex of four apartments built over a carport — such "soft-story" buildings are among the most vulnerable types of structures and there are hundreds in the county — slips sideways as a support wall cracks. In a first-floor unit, an unstrapped gas-powered water heater topples, exposing a pilot light, and flames spring up.

In a Windsor park, the shifting earth tosses two boys playing basketball to the ground. And as the slope beneath a hillside home being built on the city's eastern edge shifts, the unoccupied structure crashes down.

Along Santa Rosa and Mendocino avenues and Old Redwood Highway, mobile homes without earthquake bracing jump loose from their foundations.

A scenario named the Wine Country Wobbler — developed in 2002 using the FEMA loss estimation program — predicted that 3,514 of the nearly 8,000 mobile homes in Sonoma County would be destroyed.

Countywide, but mostly in the cities, the quake will leave about 1,400 single-family homes collapsed or nearly collapsed, under a 7.0 Rodgers Creek temblor scenario developed with a Federal Emergency Management Administration program for estimating disaster losses.

Hospitals

Memorial Hospital, like all the county's hospitals, will likely be damaged, although emergency officials say they expect the hospitals to remain open.

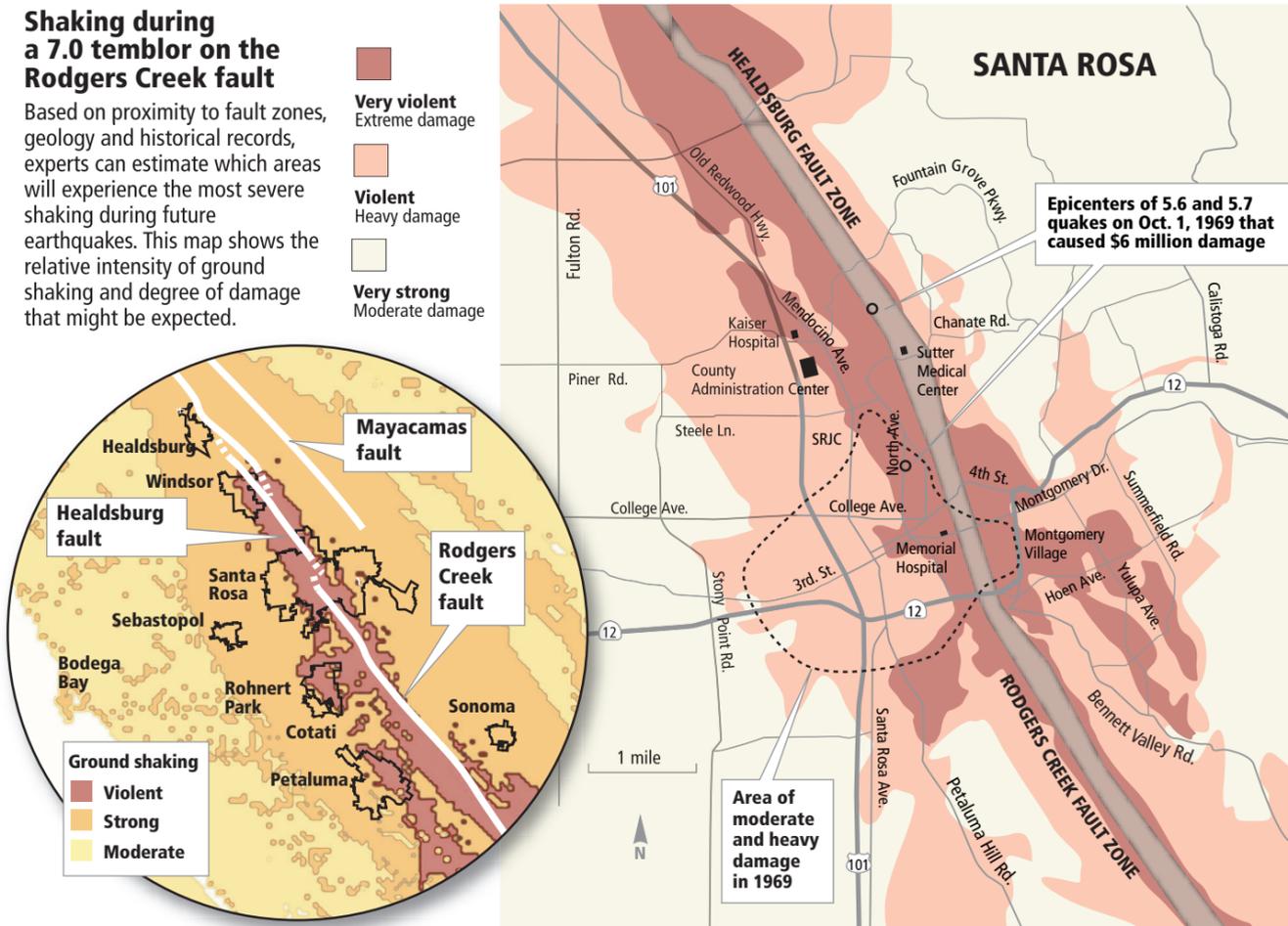
"We can anticipate that there's going to be significant damage to the hospitals," said Christopher Helgren, the county's deputy emergency services coordinator.

It's happened before . . . it will happen again

On October 1, 1969, two quakes reminded Santa Rosa residents that they lived on the Rodgers Creek fault. Nobody was killed in 1969, but the USGS predicts that this same fault has the highest risk of any of the Bay Area faults for a major quake in coming decades. The most common scenario is a magnitude 7.0 temblor that would cause vastly more damage than in 1969.

Shaking during a 7.0 temblor on the Rodgers Creek fault

Based on proximity to fault zones, geology and historical records, experts can estimate which areas will experience the most severe shaking during future earthquakes. This map shows the relative intensity of ground shaking and degree of damage that might be expected.



Sources: California Geological Survey; USGS, ABAG; "The Santa Rosa, California Earthquakes of October 1, 1969"

The Press Democrat



JEFF KAN LEE / The Press Democrat, 2000

Sutter Medical Center: The Santa Rosa hospital's east wing, built in 1936, would be especially vulnerable in a strong earthquake, according to a state report. It is now used only for administrative functions.

None is more at risk than Sutter Medical Center, which plans to build a new hospital north of Santa Rosa by 2013.

Five of Sutter's six Chanate Road buildings pose "a significant risk of collapse and a danger to the public after a strong earthquake," according to the Office of Statewide Health Planning and Development.

The hospital's oldest building, its east wing, was built in 1936 and is now used only for administrative functions. Its two other wings were built in 1956 and 1972, and the latter has steel framing. Additional bracing has been added over the years, hospital spokesman Mitch Proaps said.

Equipment in all buildings is anchored against seismic shaking, he said, and the hospital has in place an emergency satellite telephone, enhanced wireless connections, three days of food and water, emergency generators and lighting — and tools to dig out from rubble.

"Under most circumstances, we expect to be able to operate," Proaps said.

Roads and transportation

The earthquake would close 223 county roads, virtually all those that intersect with the fault, the Association of Bay Area Governments projects in a forecast based on the 1989 Loma Prieta and the 1994 Northridge earthquakes.

While most deaths and injuries are likely to occur in buildings and from falling objects, some will likely take place on the roads as events like the following occur:

On the Cotati Grade, 75 yards of northbound Highway 101 fall away into the median.

In Rohnert Park, the eastbound lanes of the Rohnert Park Expressway overpass collapse onto a highway stretch traveled by an average of 99,000 vehicles daily.

The overpass's eastbound lanes were the first built. "If I had to make an educated guess as an emergency manager, the oldest part would go first," said Rohnert Park Public Safety Lt. Dave Frazer, the city's emergency preparedness manager.

In Wikiup, 16 miles to the north, a driver hits a tree after veering sharply as Old Redwood Highway buckles eerily like a desert mirage.

As the havoc unfolds, from around the county, 50 or so department heads and public safety and emergency services staff rush to the county's Emergency Operations Center, a 4,400-square-foot, reinforced concrete block near the courthouse.

Beneath an elevated span of Highway 12 in front of the Veterans Memorial Auditorium, the earth liquifies — and across the concrete pilings under the roadway spreads a spiderweb of cracks.

The damage is spotted by a Santa Rosa CityBus driver on the No. 18 Route who calls it in. Police, fire, public works crews and other public employees around the county do the same. Their reports are routed to the Emergency Operations Center.

"They become our eyes and ears for initial damage," Helgren said.

At the Boyes Boulevard bridge — one of 10 in the county awaiting seismic upgrades — the 60-foot west span and the 20-foot east span shake loose from the concrete pier that joins them above Sonoma Creek.

County roads officials say about 6,000 vehicles a day cross the bridge. Its dislocation would be one of dozens likely to shock the county's transportation system — slowing emergency responses and creating a motorists' nightmare.

Commercial buildings

The county's draft report suggests that 150 commercial buildings would collapse or be left in near collapse — again, almost all of them in the cities.

Pedestrians scatter into streets and parking lots as windows shatter along Santa Rosa's Fourth Street, in Windsor's Lakewood Village Shopping Center, throughout Boyes Hot Springs and Agua Caliente.

Into Old Courthouse Square and the surrounding downtown Santa Rosa streets crash windows from the taller office buildings, while slabs of plaster whirl from building facades into the air and down.

Asked what the county's built-up landscape would look like after a major Rodgers Creek Fault temblor, Bud Malmanis, a civil engineer in Santa Rosa, said, "I don't think anyone could tell you, and here's why:

"Every earthquake has its own signature and every building has its own character, and the way the signature and the character come together will determine what degree of loss the building is going to have."

Sonoma County cities along the fault "are probably more prepared than most communities — they'll probably have less damage in a comparable earthquake," because of progressive seismic retrofit laws in place, said Malmanis, a partner at MKM & Associates, a structural engineering firm that specializes in seismic work.

Communications

As the disaster unfolds — interrupting both land-based and cellular telephone service — a volunteer network of about 130 ham radio operators goes into gear, connecting with each other and emergency operations centers around the county and forming a pre-arranged backup communications chain.

As hundreds of tons of books and canned food spill from shelves around the county, doz-

ON THE WEB

For information on preparing yourself for an earthquake:

- www.redcross.org
 - www.72hours.org
 - www.earthquakeinfo.com/
- To read more about the 1906 quake:
- <http://earthquake.usgs.gov/1906/>
 - www.usgs.gov/homepage/science_features/plw_1906.asp

ens of power and telephone poles topple — some felled by tree limbs — and water and sewer lines snap from Sonoma to Healdsburg.

About 70 percent of the county's 478,724 residents would be without water following a 7.0 quake, and 30 percent of those residents could still be without potable water after a month, the draft county report said.

Insurance

As the cleanup begins, it's almost certain that most residents — whether they are owners or renters — will not have earthquake insurance.

In Sonoma County, 9,620 homeowners, 440 condominium owners and 277 renters are insured through the California Earthquake Authority, a privately-funded but publicly run agency that provides residential earthquake insurance.

The state Department of Insurance does not currently have data on how many people have earthquake insurance through private insurers.

But statewide, just 13.8 percent of homeowners are insured, said Nancy Kincaid, the authority's director of public policy, mitigation and communications.

The authority estimates that a 7.0 Rodgers Creek quake would result in \$13 billion in insurance losses from residential damage and \$18 billion in losses due to commercial damage.

Look back

No one was killed in the two Rodgers Creek earthquakes, magnitudes 5.6 and 5.7 respectively, that struck Santa Rosa 90 minutes apart on Oct. 1, 1969.

But the recovery — from damage that included the eventual destruction of 74 buildings in downtown Santa Rosa — was grueling, recalled Ken Blackman, who was the city's planning director in 1969 and, in 1970, was named city manager.

"The magnitude of the project at that point seemed to be almost overwhelming," said Blackman, who retired in 2000. "What in the world were you going to do?"

One measure of the task — and perhaps the most illuminating — is this: In the months following the Oct. 1 earthquakes, Blackman's predecessor, as well as Santa Rosa's mayor, city engineer, finance director, chief building official and fire chief, left public service, at least two of them felled by stroke or heart attack.

"People were just dropping like flies," he said. "Tough, tough times — really terrible. I don't think it could miss but be the same."

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