

## The 1868 Hayward Earthquake Alliance

Transforming Communities Through Seismic Awareness

**A**lthough social scientists are still studying how to communicate risk effectively, they have offered some guidance: Repetition of a consistent message is needed to achieve audience penetration. How carefully audience members consider the message “can affect what they remember . . . and their intent to comply with the message,” and careful consideration is more likely when the message is personally relevant to the recipient.<sup>1</sup>

Facing an unprecedented level of seismic risk in California’s San Francisco Bay Area, the 1868 Hayward Earthquake Alliance has carried out an effective risk-communication campaign much in keeping with such guidance. The Alliance, a Bay Area-wide coalition of 140 public- and private-sector organizations led by the U.S. Geological Survey (USGS), has used an array of channels to disseminate a consistent message about the urgent importance of earthquake preparedness, and has developed innovative tools to make this message resonate with the local populace.

### Seismic Risk in the Bay Area

A number of earthquake faults, including the San Andreas, cross portions of the San Francisco Bay Area, but scientists have determined that the Hayward Fault currently poses the greatest risk to the region. The Hayward extends for about 45 miles along the east side of San Francisco Bay, directly under the cities of Berkeley, Oakland, San Leandro, Hayward, and Fremont.

Two factors make this one of the most dangerous faults in the United States. First, recent USGS research indicates that the Hayward Fault is ripe for another large earthquake. Over the past seven centuries, five strong quakes have struck the Hayward, one every 140 years on average, and 140 years have now passed since the last big Hayward earthquake occurred in 1868. Modern analysis of the observations recorded in 1868 has shown just how widespread and damaging the effects of that quake were. Second, the Hayward is the most urbanized fault in the United States. More than 2.4 million people live in Alameda and Contra Costa Counties on or near the Hayward Fault, and the entire Bay Area is home to nearly 7 million



Major Bay Area faults. Yellow portion of Hayward Fault ruptured in 1868 earthquake. Map courtesy of USGS.

residents. In addition, the fault crosses under a variety of critical Bay Area infrastructure, including major roadways, the BART commuter rail system, and regional gas, water, and electrical lines.

### An Opportunistic Coalition

As USGS scientists were discovering that the Hayward Fault is a “tectonic time bomb,” the agency was already partnering with organizations to strengthen earthquake preparedness in the Bay Area. *Putting Down Roots in Earthquake Country: Your Handbook for the San Francisco Bay Region*,<sup>2</sup> published by USGS in 2005, promoted the “Seven Steps to Earthquake Safety” while noting that as of yet, fewer than 10 percent of Bay Area households had disaster plans, less than half had disaster supply kits, and fewer than 10 percent of homeowners had begun to retrofit their homes for seismic safety.

Contrasting this level of preparedness with the immense and imminent risk presented by the Hayward Fault, USGS and its partners seized the opportunity to use the 140<sup>th</sup> anniversary of the 1868 Hayward earthquake (and the 140-year interval between quakes) to further promote earthquake preparedness in the Bay Area. The Alliance

<sup>1</sup> Sue Lang, Lorna Fewtrell, and Jamie Bartram, “Risk Communication,” Chap. 14 in *Water Quality: Guidelines, Standards and Health*, ed. Lorna Fewtrell and Jamie Bartram, 317–32 (London, UK: IWA Publishing, 2001).

<sup>2</sup> Available online at <http://pubs.usgs.gov/gip/2005/15/>.

began meeting in the summer of 2007 to plan commemorative events spanning the months leading up to and following the 140th anniversary on October 21, 2008.

### It's Our Fault

The objective of the Alliance has been to raise awareness among those living and working in the Bay Area about the Hayward Fault, the serious risks that it presents, and what individuals, businesses, and communities need to do to lessen these risks. The Alliance membership, which includes research and scientific organizations, government emergency-service and planning agencies, schools and universities, local print and broadcast media, utilities and transit agencies, disaster- and risk-management companies, area employers, museums, and other partners, has carried this message to the community through an extraordinary range of activities.

Information about more than 70 such events is provided on the Alliance website, <http://1868alliance.org>. This ongoing series of activities, which got under way in the fall of 2007, has included earthquake and disaster drills; local preparedness fairs, how-to clinics, and home-retrofit workshops; public lectures and presentations to community groups; museum exhibits; field trips along the Hayward Fault; and scientific and emergency-services conferences. On October 21, 2008, the 140th anniversary of the Hayward earthquake was commemorated in a ceremony sponsored by the Alliance, and more than 250,000 Bay Area schoolchildren and workers participated in earthquake drills. In the days following, activities included the Silver Sentinel preparedness exercise, in which about 70 emergency-services organizations, transit agencies, and utilities coordinated a simulated response to a major Hayward quake, and the Third Conference on Earthquake Hazards in the Eastern San Francisco Bay Area, which attracted more than 200 earthquake professionals.

In addition to these and many other events, Alliance partners have used the mass media to disseminate their message. Since September 2007, more than 60 stories about the Hayward Fault and associated preparedness information have been broadcast or published by Bay Area television, radio, print, and online news sources. To prompt and

feed these stories, USGS and other Alliance partners have provided a variety of informational resources, including press conferences and expert spokespersons as well as fact sheets, news releases, and other publications.

### Grabbing the Audience

Several Alliance resources are particularly well designed for connecting the coalition's risk-communication message to its Bay Area audience. An online field guide shows where local citizens and school groups can go to see and touch evidence of the Hayward Fault and the ongoing ground movements it is causing.<sup>3</sup> Other innovations include a "virtual tour" of the Hayward Fault developed using Google Earth software, and a series of animated simulations of potential Hayward earthquakes. These have been featured extensively in Alliance press conferences and public presentations as well as in televised and online media coverage. They show to Bay Area residents in vivid images where the fault lies in relation to their homes and businesses and the urban infrastructure they depend on, as well as the ground shaking likely to be experienced in their communities during the next large Hayward quake. They are accessible to the public on the USGS website at <http://earthquake.usgs.gov/regional/nca/1868/>.

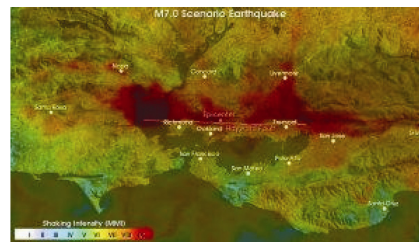


Image from animated quake simulation showing color-coded shaking intensities. Courtesy of USGS.

Using these and other resources, numerous community-based events, and the media coverage they have engendered, the Alliance has waged an awareness campaign tailored to the seismic risk now facing the Bay Area. This effort has turned an ominous but potentially overlooked anniversary into a potent motivational tool, a vehicle for driving home a consistent message having great relevance for Bay Area residents—**Prepare Now!**

<sup>3</sup> Stoffer, Philip W., *Where's the Hayward Fault? A Green Guide to the Fault*, USGS Open-File Report 2008-1135, Version 1.0, May 12, 2008; available at <http://pubs.usgs.gov/of/2008/1135/>.

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