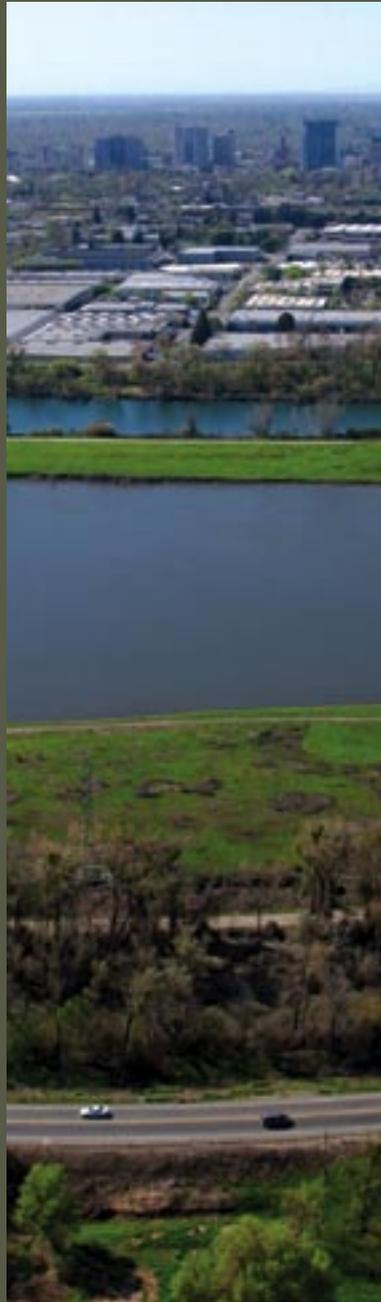


SPECIAL REPORT: THE COST OF DISASTER



*This is the first in a three-part series on regional flood preparedness.
Next month we'll examine the steps government is taking
to prevent flood-related disaster.*



Quantifying Havoc

A New Orleans-style flood in Sacramento could cripple our economy — and threaten the fiscal stability of the entire state and nation.

by Rich Ehsen



I

n most ways, the Sacramento region is as far removed from Las Vegas-style gambling as you can get. But when it comes to rolling the dice on our levees, Sacramento's lucky streak may be nearing an end. And as the entire world saw in 2005 after Hurricane Katrina devastated the Gulf Coast, foolishly challenging the awesome power of nature is a high-stakes gamble.

Many experts believe a significant flood caused by a single break or multiple breaks along the 1,600 miles of levees protecting the Sacramento region could cause economic losses projected well into the billions. Given the region's role in California's economy, the sixth largest in the world, a major flood here would wreak havoc not only on the economic well-being of the immediate area, but also on the fiscal health and stability of the entire state and nation.

According to the Sacramento Metropolitan Chamber of Commerce, the Sacramento region accounts for more than \$70 billion in annual gross productivity. While estimates vary, some analysts believe the ultimate direct

and indirect fiscal losses caused by a catastrophic flood could reach anywhere from \$28 billion to \$40 billion. Much of the direct fiscal impact would be the immediate loss of property in the flood zone.

There are almost half a million residents within Sacramento city boundaries, and more than 2 million within a six-county region. According to a study conducted in December by Sacramento-based David Ford Consulting Engineers for the state Department of Water Resources, a 200-year flood accompanied by a levee break — very bad, but nowhere near the worst-case scenario — would cover approximately 102 square miles with an average of 11 feet of water. That would inundate

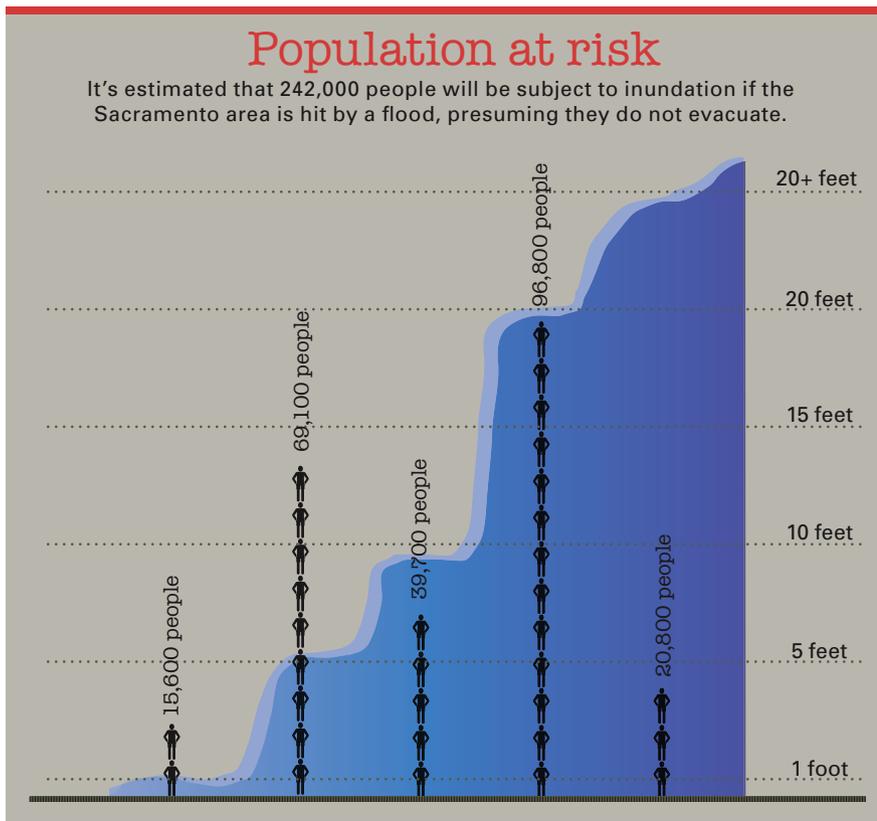


almost 64,000 homes, businesses, schools and public agencies, and displace up to half a million people. The Ford study estimates property damage alone could reach \$11.2 billion.

Metro Chamber representatives say such a sudden structural vaporization would likely cripple the workforce, even in areas not directly hit by flood, and estimate it could negatively affect up to a million jobs across the region. And because Sacramento is a convergence point for the state's main roadways, there would also be a tremendous state-wide impact on interstate shipping, an effect that would undoubtedly be felt hard outside of Sacramento.

"If we just look at this from the perspective of transportation infrastructure, Sacramento is the intersection of the state's two major interstate highways, I-5 and I-80," says Metro Chamber Vice President Dave Butler. "They connect the San Francisco Bay Area to all points east and Southern California, the rest of the state to the north, as well as Oregon and Canada. Losing that would have a significant impact, to say the least."

That is not even considering Highways 50 and 99, which also converge in Sacramento. This quartet of highways collectively connects every city from



SOURCE: DAVID FORD CONSULTING ENGINEERS

PREVIOUS PAGE: PHOTOS COURTESY OF CITY OF SACRAMENTO AND GETTY IMAGE NEWS



Heavy rains in 1850 put the city of Sacramento under 20 feet of water. A well-placed levee break today would place approximately 102 miles under 11 feet of water.

Los Angeles and San Francisco to Lake Tahoe and Redding, and each highway is vital to getting products and people from one point to the other. Whether a product is built or grown here, or comes into the country by boat or plane, it has to travel one or all of these highways at some point if it is to make it to market throughout the state or abroad.

The Port of Long Beach, for example, handles about 12 percent of the

“Depending on how long it takes for businesses to recover, the economy could actually shift.”

— David Ford,
David Ford Consulting Engineers

nation’s incoming international waterborne trade, about \$96 billion worth annually. But virtually everything it takes in leaves again via long-haul trucks, which fan out in all directions, both in state and across the country. To get where they are going, many of those trucks must eventually tool

through Sacramento. Ditto for all incoming freight at Bay Area ports in San Francisco and Oakland — if it is carried by truck, it will usually come this way.

Sacramento’s main airport won’t fare any better than its roadways. According to the Ford Consulting study, a major flood would place Sacramento International Airport under approximately 13 feet of water; Union Pacific and Amtrak rails would also go under several feet of water. In short, the use of planes, trains and automobiles would come to a crashing halt in the event of a well-placed levee break. That, says Sacramento Mayor Heather Fargo, would create “a fiscal impact that goes well beyond Sacramento.”

That impact would definitely be felt by consumers when they go grocery shopping. The Central Valley is a prime producer of agricultural and livestock-based products, to the tune of about \$2.6 billion a year. Much of that harvest is distributed throughout the nation and the world. If a significant flood knocks out transportation, or crops and animals directly, it would lead not only to a tremendous fiscal loss for California farmers and ranchers, but could also result in drastically increased consumer food prices in any place where those products are sold.

The indirect economic impact of a major flood in the Sacramento area is estimated to be as high as **\$15 billion.**

SOURCE: DAVID FORD CONSULTING ENGINEERS

“There are a whole set of indirect costs associated with a flood,” says David Ford of David Ford Consulting Engineers. “Any commerce that normally goes through Sacramento is simply not going to be able to do that. Someone in Washington state who goes to the supermarket to buy tomatoes that have come from Madera, for instance, is going to find themselves paying a lot more for those than they are used to. So while it won’t directly cost someone in Sacramento, it will definitely cost people in other parts of the country. That’s a cost that is really hard to get your hands around, but we know it exists.”

Ford notes it is difficult to get a grip on what a flood could mean for the health of producers here long after the flood has receded.

“Depending on how long the inundation lasts and how long it takes for those businesses to recover, the economy could actually shift,” he says. “Maybe Washington stops importing California tomatoes and starts buying them from Chile instead. There could be really big fallout that is virtually impossible to forecast.”

That fallout would likely have a dramatic impact on the state’s poorest residents. Unlike New Orleans, Sacramento is the seat of government in a state of almost 40 million people. Aside from all of the state constitutional officers and the 120 lawmakers who make up the Legislature, there are approximately 1,300 state agencies — employing more than 200,000 state workers — in this area. Millions of Californians depend on those agencies and other government entities for the rudi-

ments of their daily existence, from healthcare to food to transportation. It is almost impossible to calculate the impact of losing those services, even for a short time.

While some of those agencies have flood-contingency plans that include temporary offsite workspaces, there

“The state printing lab
— where all state checks
come from — is located
in a floodplain.”

— Sacramento Mayor Heather Fargo

is no way to ensure workers will be able to get to those sites, or that the temporary sites themselves won’t be underwater. And as Fargo notes, “The state printing lab is located in a floodplain. That is where all the state checks come from.”

That is — or should be — a significant concern to all Californians who draw a state pension, are on some form of public assistance, or work for a local arm of a state agency, regardless of where in the state they live. The same goes for companies that make a large chunk of their annual income from state contracts, or whose clients do.

Southern California has a major reason to worry about Northern California levees: drinking water. Besides supplying irrigation for around 85,000 acres of the most fertile farmland in

the world, the San Joaquin Delta also provides drinking water to about 22 million of California’s 36 million residents, and makes up about two-thirds of Southern California’s supply.

Much of the Delta is channeled through earthen levees that are highly susceptible to a multitude of potential destroyers, from storm surges to beavers. (Although no official cause has ever been determined, the 2004 Jones Tract levee break 10 miles west of Stockton, which flooded 12,000 acres of prime farmland and caused more than \$100 million in damage and repair costs, was most likely caused by a particularly industrious beaver.) But while those dangers are very real, the most potentially lethal force facing the state’s levee system is undoubtedly an earthquake.

A study conducted by the Department of Water Resources earlier this year laid out the risk in stark figures. That study, which examined the possibility of a 6.5-magnitude quake in or around Antioch or Rio Vista, concluded that such a trembler could take out as many as 50 levees — all that separate the fresh waters of the Delta from the salty San Francisco Bay — located on 21 islands along the Delta’s western border.

At a May press conference announcing the study’s results, Martin McCann Jr., a consulting professor of civil and environmental engineering at Stanford University, said those breaks, aside from placing hundreds of thousands of island residents in serious physical danger, could result in “an extensive intrusion of saltwater into the Delta, exceeding 400 billion gallons of saltwater from the San Francisco Bay.” McCann said that intrusion would ren-

Structures at risk

A large-scale levee breach would not only inundate four hospitals, 193 licensed-care facilities and 65 schools in the Sacramento area, it would also cause billions of dollars worth of property damage.

residential
\$9.2 billion

industrial
\$500 million

commercial
\$1.3 billion

public
\$200 million

\$11.2 billion*

* INCLUDES STRUCTURE AND CONTENTS. SOURCE: DAVID FORD CONSULTING ENGINEERS

der the Delta useless for drinking water for more than two years.

It would also be a major financial hit for the state. In all, about \$400 billion of the state's annual \$1.5 trillion economy is directly or indirectly tied to the Delta. Gov. Arnold Schwarzenegger's Strategic Growth Plan notes this, specifically citing that aside from the possible contamination of the state's drinking water supply, a 6.5 or greater earthquake that causes major levee breaks could lead to "economic losses of \$30-40 billion and 30,000 lost jobs."

Regardless of whether beavers, massive storms or shifting tectonic plates cause a levee to fail, the specter of the state's ultimate financial liability also now looms over every California resident. As determined by the courts in the 2003 *Paterno v. the State of California* decision, the state is fiscally accountable for losses suffered in those disasters. In that case, the state was found liable for a 1986 flood that ravaged the Yuba County town of Linda, to the tune of about \$450 million.

That judgment in essence makes the state the insurer of last resort, a role that could place the state on the hook for billions more in future flood claims. While that may provide some relief to flood victims, it also ensures that every taxpaying Californian, regardless of whether they live in a flood zone or not, is also on the hook for those claims.

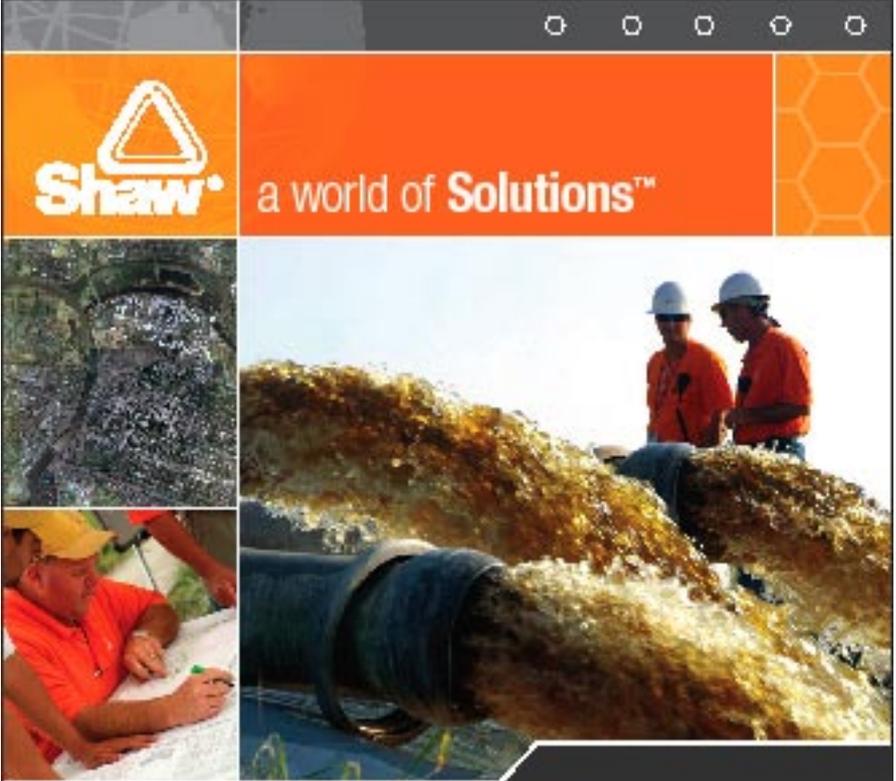
And as we saw in the aftermath of Katrina, there is also the very real pressure that an enormous number of disaster victims moving out of flooded areas will place on the communities where they end up.

Many cities all across America, including Sacramento, opened their arms to thousands of displaced Gulf Coast residents. Most took in only a handful of victims and suffered no ill effects, but others were not so fortunate. The communities that took in large numbers of Katrina evacuees reported a significant negative impact from that largesse, including grossly impacted job and housing markets, overwhelmed medical facilities and sharp increases in crime. Imagine Auburn or Grass Valley trying to take in a few hundred thousand former Sacramento Valley residents and you get the picture.

Perhaps no community has felt that strain more than Houston, where a sudden wave of new students forced the city to ramp up education spending by \$180,000 per day. The city also spent hundreds of millions of dollars of its own money on housing vouchers, police overtime and other relief-related expenses. The Federal Emergency Management Agency agreed to eventually

reimburse much of those costs, but that was little solace to city managers trying to keep the city financially afloat in the meantime.

All of this is, of course, the bad news. The better news is that after years of stops, starts and halfhearted efforts to address our creaky levees, a host of local, state and federal efforts are moving ahead to actually do something about



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them. At the forefront of that movement is a November ballot proposal to sell billions of dollars of bonds to finance numerous state infrastructure improvements, including levee upgrades. Much of this new push has been spurred in part by the Sacramento region's business community, which clearly sees the critical importance of acting sooner rather than later.

While everyone agrees stronger levees are a critical piece of the overall solution to Sacramento's flood danger,

Levee breaks could result in "an intrusion into the Delta exceeding 400 billion gallons of saltwater from San Francisco Bay."

— Martin McCann Jr.,
professor of engineering,
Stanford University

there is less agreement on other serious flood issues, most notably ongoing development in designated floodplains.

During the Metro Chamber's State of the Counties Forum in July, Department of Water Resources Director Lester Snow cited a major "disconnect" between good floodplain management and many recent land-use decisions in the Sacramento region, something he said must be rectified if we are to truly achieve protection from a disastrous flood.

That may not be so easy. While Sacramento officials say the city is better prepared to handle a flood event than ever before, the question of how, when or even if to build more housing in known floodplains continues to be a major debate, from city hall to the Capitol. How that debate is eventually resolved will undoubtedly shape the Sacramento region for generations to come.

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