

Scientists: Quake that would drain O.C. of water is inevitable

By [RON SYLVESTER](#)

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The next earthquake to strike near San Francisco could siphon the flow of drinking water to Orange County for years.

It doesn't have to be a huge earthquake – a magnitude 6.0 or more. It just has to hit near a labyrinth of lakes and channels carved out of Northern California between the San Joaquin and Sacramento Rivers, where most people take their boats for the weekend and farmers work the sandy soils on a series of islands that dot the channels of fresh water. It also provides much of the fresh water for Irvine, and nearly all of what people drink in cities to the south, such as San Clemente and

Laguna Beach.

Scientists say the next earthquake will cause the islands that act as levies, holding back the salty sea from San Francisco Bay, to collapse. The tides will act as pumps to flood a million acres of the Sacramento-San Joaquin Bay Delta with salt water, rendering the supply undrinkable.

There's a plan to fix it, one that will only add about \$5 to most water bills. It's called the Bay Area Conservation Plan. But it depends on approval from state and federal agencies. The guardians of California's water supply say strong public support will be needed to make it a reality. And time is running out.

WHERE DOES YOUR WATER COME FROM?

Turn on your faucet and there's water. That's all most people think about water.

"I don't care if it's in Huntington Beach or San Jose, L.A. or San Diego, it doesn't matter. People don't know where their water comes from," said Rich Atwater, executive director of the Southern California Water Committee.

It doesn't really come from a faucet.

Nearly a third of the drinking water delivered across California comes from the Sacramento-San Joaquin Delta. But for people who live in Orange County, it's more important. Some cities import more than half of their water from hundreds of miles away. Over the past decade, 60 percent of water brought into Orange County has come from the delta, with 40 percent from the Colorado River.

As you move south of Irvine, it increases. For San Clemente residents, 90 percent of their water is imported. Few people even know about the delta as the source of their water.

"People in San Francisco don't know where the bay delta is," Atwater said.

Most people think of the delta as a place for fishing and recreational boating. But the waterways are much more than a recreational area. Water from the Sacramento and San Joaquin rivers is channeled to various parts of the state.

Cities such as Irvine and other parts of Orange County have developed sophisticated plants to treat, store and recycle the water and decrease dependence on the delta. Still, that's where the water that flows from the

faucets originates.

That water supply depends on levees built around small islands.

“And they're not islands as you normally think of them,” said David Mraz, principal delta levee engineer at the Department of Water Resources. “In the delta, the islands are actually bowls.”

The islands are densely farmed, part of an agricultural economy that produces \$500 million worth of crops each year. Farming and erosion have caused the bowls to become deeper over the years. Many sit 5-25 feet below sea level.

Jerry Meral, deputy director of the state Natural Resources Agency, stood in a conference room at the Irvine Ranch Water District and pointed to the ceiling.

“If we were standing on one of the islands, you could see an oceangoing boat passing on the ceiling,” he said.

The rims of the bowls act as levees, protecting the fresh water from the saltwater of the sea. The levee system dates back to the mid-19th century and is made mostly of sand, silt and peat.

“Almost every island has flooded once – some seven times,” Meral said.

They all haven't failed at once. Yet.

But scientists say that's only a matter of time.

'WE'RE JUST WAITING FOR THE EARTHQUAKE'

The Southern California water supply is as shaky as the ground it sits on.

The century-old engineering marvel that brings water from the Sacramento and San Joaquin rivers to Orange County is old and crumbling. Studies by the California Department of Water Resources say the next earthquake of 6.0 or more could cause the islands that act as levees – holding back the salty sea from San Francisco Bay – to collapse upon their own soft ground. The tides will act as pumps to flood a million acres of delta with saltwater, rendering the supply undrinkable for millions.

“It can literally shatter,” said David Mraz, delta levee engineer at the Department of Water Resources. “You'd have a million acre-feet of saltwater. The triggering is all set up. We're just waiting for the earthquake.”

The pumping of fresh water to other areas of the state, such as southern Orange County, where communities depend on imported water, would cease. Water wouldn't flow for at least a year. If the earthquake hit during a drought or other water shortage brought on by climate change, it could take even longer to repair.

“That could take years, maybe even a decade, to repair such a catastrophe,” said Jerry Meral, deputy director of the state Natural Resources Agency. The levees were built in the mid-19th century. The levees didn't fail in the San Francisco Earthquake of 1906. But over the years farming and erosion has weakened the levees, making them more vulnerable.

“We're living on 100-year-old infrastructure that needs to be modernized,” said Rich Atwater, executive director of the Southern California Water Committee. “It has to be able to meet the contemporary seismic standards and flood proofing, and we've got to adapt to climate change.”

PLAN BEARS CONTROVERSY, ANSWERS

There's a fish story about the water that got away.

Near the end of last year, rain had driven up the rivers of California. Water that people drink and that nourishes the rich agriculture throughout the state was plentiful. The number of salmon, smelt and other fish that had been endangered also began to rise. They also swam toward pumping plants in the south delta that sends water to Orange County. The pumps would kill the fish, so federal authorities shut down the pumps.

The result: 800,000 acre-feet of water couldn't be pumped out of the delta into storage facilities in Southern California for its residents.

"That's about the water supply for Orange County for a year," said Jerry Meral, deputy director of the state Natural Resources Agency. An acre-foot is one acre of water a foot deep.

Then it stopped raining for most of the next six months. The rivers dropped. There was no water to pump.

"We were really hammered," Meral said.

In March, the state unveiled a plan that would protect both the fish and people in Orange County. The Bay Delta Conservation Plan calls for a new way to move fresh water throughout the state. The plan would build two tunnels, 30 miles long and 150 feet below ground, to carry water from the southern end of the Sacramento River, north of where the endangered fish live, to the pumping plants near Tracy. The water would then go into canals supplying Southern California, including Orange County, the Santa Clara Valley and the San Joaquin Valley.

Those areas would no longer be as dependent for water on the delta. The fish would be better off, too. The plan would rebuild at least 100,000 acres of habitat for dozens of species of endangered plants and wildlife.

"You'd avoid all these fish problems, and if delta had a massive failure from an earthquake, you'd still have a water supply from the Sacramento River," Meral said.

The cost would be \$24.5 billion. But what sounds astronomical would amount to a \$5 increase in monthly water bills for the some 25 million people who get their water from the Sacramento-San Joaquin Delta.

The plan is not without controversy. Although it doesn't need a public vote, it does need permits from a plethora of state and federal agencies, including the U.S. Fish and Wildlife Service and the California Department of Water Resources.

The concept isn't new. It's about 60 years old. But the design and plan have taken shape over the past decade. Specifics have been in the works for three years with preliminary drafts of the final plan emerging this spring.

"We can study this for another 10 years and spend another half billion dollars, but I don't think we'll get any smarter," said Rich Atwater, executive director of the Southern California Water Committee. "We need to build things."

What's next?

Stages of project's development

For three decades, federal, state and local agencies have been struggling with how to meet demands for water from the delta. The Bay Delta Conservation Plan provides the best hope in years. With \$200 million spent so far to fund the project, here's how the plan could finally become a reality:

October: A final draft of the plan and an environmental impact report is scheduled to be published. Public comments will be gathered for at least 45 days.

Spring 2014: A revised plan will be submitted to regulating agencies for approval. A Record of Decision will be issued by the federal government, and a Notice of Determination would be issued by the state.

Later in 2014: Permits would be sought by the U.S. Army Corps of Engineers and the state Water Resources Control Board.

2015: Construction could begin on publicly owned lands.

Contact the writer: 714-796-7013 or rsylvester@ocregister.com

