

The Lake O dike: 20 years of warnings

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Sunday, July 16, 2006

Two months ago, the Army Corps of Engineers reacted with anger when state consultants called the Herbert Hoover Dike "a grave and imminent danger" to human life.

The consultants likened the leak-prone dike around Lake Okeechobee to the levees that failed in New Orleans during Hurricane Katrina, saying only heroic repairs had staved off similar disasters in the Glades. The corps' leader in Florida, Col. Robert Carpenter, denounced those words as "sensationalism," "cavalier," even "downright irresponsible."

But the corps' own files are filled with more than 20 years of reports outlining the dike's dangers at times in words nearly as dire as the state's.

The documents warned of "a very serious risk of catastrophic failure," declared much of the dike "hazardous" at high lake levels and spoke of "the real potential for human suffering and loss of life" if the dike collapsed.

For cities along the lake, the corps wrote, "flooding of these communities would be severe and warning times would be limited." Emergency repairs in 1995 "may have prevented a breach," the corps' own outside experts reported three years later.

Corps leaders see no conflict between their past warnings and their recent assurances that they have the dike under control. They say they're intimately aware of its dangers but also confident they can handle them.

Still, hundreds of pages of federal and state reports dating to the mid-1980s offer an unsettling picture of the corps' issuing ever-stronger warnings of potential disaster, while the solutions remain decades in the future. As in New Orleans, the studies of the dike's dangers came much faster than the money to fix them:

- In 1984, the corps reported water seeping through the dike near Pahokee and South Bay. At the time, the lake was at 16.5 feet above sea level, well below the maximum the corps thought the dike could hold.

- In 1986, the corps reported that a section of dike near Port Mayaca failed to meet recommended safety standards for structures that hold water.

The same report warned of the dangers of seepage flowing through a dike. If not stopped, those kinds of leaks "will ultimately create a potential for the failure of the entire structure."

- In 1993, a more detailed study declared large portions of the dike at risk for various types of leaks and failures. From South Bay to Port Mayaca, it found "a high potential for instability of the levees due to seepage pressures."

- In 1998, the corps' expert panel called the dike "unsafe" and recommended that planning for repairs begin immediately. The corps itself echoed that recommendation a year later, warning that inaction would subject residents "to an unacceptable risk of dike failure and the catastrophic consequences of such a failure."

Then came the years of further studies, as the corps filed the legally required paperwork and designed, redesigned and re-redesigned the improvements that it says will make the dike safe for future generations.

But even today, the corps offers little hope for a lasting solution anytime soon. It finally began the long-promised dike improvements in December, saying it could finish the \$300 million-plus project by 2020 if the money from Washington keeps flowing. But construction flaws discovered in late spring put the work on indefinite hold.

U.S. Rep. Mark Foley, whose district includes the lake's north, west and southwest shores, said he was unfamiliar with any previous corps warnings that the dike posed a danger to human life. Since the state's report came out in May, he said, he's been trying to reconcile the differing versions of how immediate the peril is.

"Col. Carpenter pretty much bemoaned and belittled this report," said Foley, R-Fort Pierce. "If we find in their files that they've been issuing similar reports ... it's challenging their credibility as to which report I'm supposed to believe."

Even some fellow engineers have erupted in frustration at the corps' initial response to the state's findings.

"It sounds like we're dealing with a federal entity that doesn't yet recognize that there's a problem," complained Lennart Lindahl, a board member of the South Florida Water Management District, at a meeting June 7. The district is the corps' partner in managing the lake, as well as the agency that commissioned the state's dike report.

"I'm pretty much appalled at some of the public statements and the positions they've taken with regard to the dike," said Lindahl, a professional engineer from Tequesta. "You can't talk (about) this problem and make it go away. This is not a fairy tale."

District Executive Director Carol Wehle, also an engineer, had her own bemused reaction after Carpenter reassured South Bay residents in May that "we had four hurricanes in 2004, and that dike is still there. ... It's because God left it there."

The next day, Wehle e-mailed Gov. Jeb Bush: "Yes, Colonel Carpenter said God would protect the dike!"

Disaster plans late in making

The corps says it knows the dike's flaws are no fable, and it's not relying on divine intervention to fix them.

"Absolutely there's a problem," said Richard Bonner, the top civilian engineer at the corps' Florida headquarters in Jacksonville. "It's not a fairy tale.... If we have ever said anything to make people think we don't care about Lake Okeechobee, that's totally wrong. It's not the case. We're very concerned."

The corps strongly disputes specific portions of the state's report. For instance, the consultants' calculations that the dike has a 1-in-6 chance of failing in any given year. The consultants just as strongly stand behind their estimates and say years of living on the edge may have dulled the corps' sense of urgency.

Beyond those disputes, the Hoover dike offers a lesson in how bureaucracy deals with remote-seeming catastrophes: slowly.

Meanwhile, local emergency managers never drew up plans for evacuating lakeside residents before any hurricane that threatens the dike. Because of the state experts' warnings, the managers are designing those plans now.

In Palm Beach County, plans for responding to a dike breach had envisioned what emergency managers call a "sunny day" scenario, in which days of rising water and worsening leaks give them time to warn residents to leave. The state's report says they also should prepare for a breach occurring during a hurricane, when widespread flooding would hamper evacuations and repairs.

"Everyone here knew that when the lake got higher, that there was more chance of some greater seepage and leakage," Palm Beach County Public Safety Director Paul Milelli said. "But I didn't understand, and I don't think anybody here understood, that they were talking about a catastrophic break."

Clarence Anthony, who has been mayor of South Bay since 1984, said he had never heard the corps' earlier warnings that the dike is unsafe, even though the leaks of the 1990s made headlines at the time.

"The only time I ever thought about the dike was after Katrina," said Anthony, whose city of more than 4,000 people lies along the lake's southern flank. "It hadn't even passed my mind that I should be concerned about seepage and stability of the dike."

Many of the corps' strongest warnings were contained in engineering reports aimed at documenting the dike's flaws and winning approval from higher-ups in Washington for the leakproofing.

But the corps also published a glossy, 20-page brochure in 1999 that outlined the risks in layman's terms, warning: "The risk is unacceptable." In addition, the corps discussed the dike's woes at public meetings and made sure emergency managers near the lake knew about the risks, corps spokeswoman Nanciann Regalado said.

But the warnings didn't sink in for many of the people most in peril. One of the state's dike consultants, Colorado engineering consultant Steven Vick, called it an all-too-common plight when details of risky projects are wrapped in dense engineering jargon and files in secretive federal agencies.

"A lot of this is underground it's beyond public scrutiny," said Vick, who reviewed the decades of reports as part of his team's study. "The corps operates behind closed doors. The information we saw, we only saw because of the grace of God and the water management district."

Bonner said the corps has been open about the dike but is always reluctant to sensationalize dangers, concerned that people would tune out the warnings. He called it understandable that many people paid no attention to the dike's frailties.

"When you see that big pile of dirt out there, the first thing that comes to your mind is not that this thing is going to fail and you're going to drown," Bonner said. "It looks like one of the strongest things in the world."

It's not, as state and federal studies amply document.

Competition for money stiff

The corps has published myriad reports on the dike's flaws since 1984, a full 11 years before abnormally heavy rains and high lake levels spawned an outbreak of eroding leaks.

The agency says it has spent more than \$10 million patching the dike in emergency repairs during the past decade, in addition to the \$11 million a year it spends on routine maintenance.

The engineers have set up increasingly aggressive inspection programs for leaks, stockpiling 54,000 tons of rocks and other repair supplies in 16 sites along the dike, and have used their studies to help local emergency managers prepare flood maps.

The consequences of a dike breach could hardly be more ominous. The event that inspired the dike's construction, the 1928 hurricane that sashed Lake Okeechobee into Belle Glade, killed more than 2,500 people, possibly more than died in Katrina. Combining the 1928 storm and a 1926 hurricane that struck Moore Haven, the lake has killed roughly as many people as Al-Qaeda did on Sept. 11, 2001.

Even so, the dike has plenty of competition for money and attention. In the list of the nation's dikes, dams and levees most in need of upgrades, Bonner said, it would rank behind those in New Orleans, St. Louis and Sacramento, Calif.

The corps' needs in Florida also must compete with flood control, canal dredging, beach rebuilding and environmental projects around the country. Nationwide, the corps has a \$5 billion civil works budget to deal with a \$50 billion backlog of congressionally approved projects. And its Florida priorities include the \$10.5 billion Everglades restoration.

"We can say all we want to about what the corps does and doesn't do, but they don't do anything without any money," said retired Col. Terry Rice, who commanded the corps' Jacksonville office from 1994 to 1997.

Rice, now an environmental consultant in Stuart, acknowledged that all the years of Hoover dike studies might seem long to outsiders. But he said: "In the corps process, that's a short time. As one of my old friends used to say, a corps nanosecond is three years."

Rice was in command in 1995, when heavy rains pushed the lake to near-record water levels and caused the dike to spring leaks in at least 25 places. Several of those leaks contained muddy water, a sign that the dike was eroding from within.

The corps sandbagged and patched the dike. Those repairs may have kept the dike from breaching, a panel of corps consultants concluded in 1998. That same year, El Niño-spawned rains sprang still more leaks, and at least one of the repairs from 1995 didn't hold, the corps later reported.

"My reaction was let's get it fixed the best we can with whatever we've got, and let's get a plan in place to fix it permanently," Rice said of the 1995 leaks. "I was panicked that these kinds of things can be major problems if you don't do anything about them."

But six years and two colonels later, the lake's most immediate problem was a drought that plunged it to record-low water levels. That made leaks physically impossible. Instead, wildfires swept the lake bed.

Still, the corps continued working on plans for the dike's long-term leakproofing.

"Clearly the dike was one of the, say, 12 or 13 things that were always in the back of my mind," said retired Col. Greg May, who led the Jacksonville office from 2000 to 2003. "The dike was always an urgent, long-term thing."

Scientists from the U.S. Geological Survey studied the dike's potential for leaks in the 1960s, when water managers and the corps were talking about raising lake levels in the name of increased water storage.

The scientists predicted in 1971 that the higher lake levels could more than double seepage under the dike. But by then, Congress had already authorized the corps to raise the lake.

For decades, the dike had served as a levee, meant to protect property from occasional floods. Congress' action turned it into a de-facto dam, which safeguards lives from standing water. But as with New Orleans' levees, Congress never gave the corps the money or authority to upgrade the dike to dams' higher safety standards.

Then came Katrina and its televised images of collapsed levees, broken flood walls and rooftop rescues. Two months later, erosion during Hurricane Wilma gouged sections of the dike near Pahokee.

That's why the dike is getting so much attention now, the corps' Bonner believes.

"If you didn't have Katrina, would this be the biggest story now?" he said. "Of course Katrina has brought this a lot more to the forefront. And that's a good thing."