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The Times-Picayune

Levee leaks reported to S&WB a year ago

Lakeview residents' complaints fell between the cracks

Friday, November 18, 2005

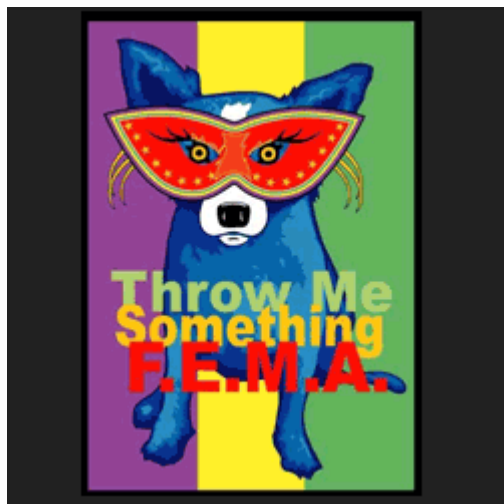
By Bob Marshall
Staff writer

A year ago Beth LeBlanc and her neighbors on Bellaire Drive had a problem no one could seem to fix. Their yards, which swept to the base of the 17th Street Canal levee, kept filling with water. Then on Aug. 29, as Hurricane Katrina moved out of the area, that levee collapsed and tumbled into their homes, allowing Lake Pontchartrain and a world of misery to pour into the city.

Now the residents of Bellaire Drive have questions.

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"We called Sewerage & Water Board, and one of their guys tested the water and said it was coming from the canal," LeBlanc recalled. "They sent repair crews out. They tore up sidewalks and driveways. Things got better, but it never got dry.

"So I keep wondering why no one ever came out to ask about it. No one from the Corps of Engineers. No one from the Levee Board. Sewerage & Water Board never came back."

The corps wonders as well.

"If someone had told us there was lake water on the outside of that levee -- or any levee -- it would have been a red flag to us, and we would have been out there, without question," said Jerry Colletti, operations manager for completed works at the corps' New Orleans office.

"We have nothing on that, nothing at all. That's something we should have been told about."

But investigators on forensic engineering teams probing the failures said they aren't surprised the corps didn't know about that leak -- or about numerous other leaks and problems with the levees that residents reported to them. That ignorance reflects a minefield of twisted bureaucratic jurisdictions, poor levee maintenance, missed opportunities and suspect engineering they say likely contributed to the costliest natural disaster in American history.

Interviews with Bellaire Drive residents, officials at the corps and engineers who investigated the breaks, as well as an investigation of Sewerage & Water Board work reports, paint a picture of a disaster that was bound to happen.

"Certainly, that kind of leaking is a warning sign that should have raised alarms, that something was wrong with an important component of the hurricane protection in the city," said J. David Rogers of the University of Missouri, a noted forensic engineer with a specialty on levees and floodwalls who led an inspection of the levee failures.

"But, sad to say," he said, "I'm not surprised if it was missed." He said most of those on the forensic teams investigating the levee failures "do not know who has responsibility for what in New Orleans. That's just the opposite for the rest of the country where levees and dams and such are concerned.

"The residents were right to be concerned."

'Coming from the canal'

They became concerned around Thanksgiving of last year, when LeBlanc's yard at 6780 Bellaire began to look like a wading pool. Her house is about 100 yards south of what would become the breach that flooded much of New Orleans.

"It was at least 6 inches deep the entire length of the yard -- 80 feet from the front to the levee in the back," said LeBlanc, who was left with half a house after the levee break. "At first we thought it was a broken pipe, so we called Sewerage & Water.

"The man in a truck that said 'Environmental' tested the water, and said it wasn't (drinking water or sewage), he said it was coming from the canal behind the levee."

The water spilled over into the yard of Pete and Mignon Marcello, her neighbors to the north. All that remains of their home is the concrete chain wall.

"I don't think they ever found anything," Mignon Marcello said of the S&WB search. "Eventually they just left."

During the next nine months, the yard became less wet, but it never fully dried. "If I went into my yard, especially in the back, my shoes got muddy, because it was always damp and moist," LeBlanc said. "This was as late as the week Katrina hit."

During the months LeBlanc was fighting the battle of the flooding lawn, neighbor Gary Breedlove, 6810 Bellaire, was noticing other changes on the block. A construction company demolished two old homes at 6818 and 6820 Bellaire -- which would be the center of the breach -- in the process uprooting several large oak trees adjacent to the levee. "They pulled them right out of the ground, roots and all," he said. "They were clearing the property for some type of building, I assumed."

Then, two weeks before Katrina visited, Breedlove felt his townhouse shaking as a pile-driving crew at the site began laying the foundation for a new building.

"They were pounding away and the ground really shook," he said. "I'm sure the levee shook, too. It was right before Katrina. But I didn't really think about it then."

LeBlanc, still fighting a soggy lawn when officials ordered the city evacuated, also didn't make a connection.

"Honestly, I never thought that much about it -- until that levee broke," she said. "Then I began to wonder if it was a warning sign."

Rogers and other geotechnical engineers who have investigated the breaks said it probably was.

"The catastrophic nature of the floodwall failures indicate this was a systemic problem, something that had been building for some time," Rogers said of the 17th Street Canal. "It tells us that, in all probability, these levees and the soil under the floodwall were already saturated before Katrina came along. This report of saturated yards only adds weight to that."

Water surfacing on LeBlanc's lawn could well have originated under the area that later failed, engineers said. In the weak, highly organic soils that compose the levee and support the floodwall, decomposition and settlement can create a maze of small cavities that become channels for water to migrate from the canals, channels that can run for hundreds of yards before surfacing. Not only does this saturate and further weaken soils, but it also can result in erosion and larger openings.

Signs ignored

It was a clear sign something was amiss, engineers said.

"If anyone thought there was water coming from that canal and turning up in yards, you'd want the (corps) to know about it right away," said Billy Prochaska, a geotechnical engineer who is on a state team investigating the failures. "That's a given."

Colletti said there is a system in place for quick action on such reports among the three agencies with direct responsibility: the Corps of Engineers, the Orleans Levee Board and the state Department of Transportation and Development. "If any one of us gets such a report, we inform the other two, and we move on it," he said. "I checked with (the other agencies) on this report, and neither has a record of it."

"I can only assume the Sewerage & Water Board dropped the ball."

Sewerage & Water Board officials did not respond to requests for interviews, but work reports show crews were called to 6780 Bellaire Drive on Dec. 7, 2004, and again Feb. 8, 2005, searching for what they suspected was a break in a 6-inch water main. No break was found, but a crew did find "water running in trench," according to the report. The history of the S&WB efforts end with the crew stating, "Need environmental to find source of problem," referring to the environmental section, which tests the composition of the water to help figure out its source by determining if it is drinking water, sewerage or lake water.

While LeBlanc and Marcello are unsure of the exact date, they remember a worker from the environmental section coming out. The S&WB could not produce records from its environmental section to determine the outcome of that request, or to say if the agency turned over its findings to the Levee Board or the corps.

It wasn't the first leak they missed, investigators said.

Bob Bea, a University of California-Berkeley engineering professor who helped lead a National Science Academy investigation of the levee failures, said his team received numerous calls from

homeowners along the 17th Street and London Avenue canals who claimed they had reported leaks, flooded yards or sand boils -- indications of water running under the surface -- to authorities after hurricanes, but never heard back from anyone. Bea said his team did not investigate any of the claims.

"Some of them said they contacted the Sewerage & Water Board, most contacted the Levee Board, but in all cases, no one even came out to investigate," Bea said. "These are all signs that something is wrong. In the case of the sand boils, that something is seriously wrong. It means your system is stressed.

"That levee may look strong and green, it may look benign, but these leaks, and boils, are signs that there are flaws imbedded in it you're not aware of, and when that system is stressed, it will go."

Because of the number of agencies involved, Bea, Rogers and other investigators said they are not necessarily shocked that the signs did not generate action on the part of the controlling authorities.

"It could have been serious, it could have been nothing, but as an engineer, any time you have water show up near the toe of a levee, you would at least want to monitor it," Rogers said. "But there's this complicated system of agencies in charge there you don't see anywhere else. Partially it's because you have so many levees built by so many different entities. You have layers of bureaucracy."

Blurring the lines

Nowhere is that more evident than along the canals that flooded the city. While the London Avenue and 17th Street canals originally were dug to help turn swamps into neighborhoods and drain rainwater from the city's streets, they have long since become the object of conflicting bureaucratic interests.

The Sewerage & Water Board, created in 1899, has always had authority to maintain the canals for drainage. But after the Mississippi River flood of 1927, the Orleans Levee District and its controlling board was given the responsibility of preventing the city from flooding, which meant building and maintaining levees and floodwalls -- including those that guarded the drainage canals.

Then, in 1965, Congress authorized the Lake Pontchartrain and Vicinity Hurricane Protection Project, making the Corps of Engineers responsible for preventing the canals from flooding the city in the event of a hurricane.

That has led to some very finely drawn jurisdictional lines.

For instance, because the corps is responsible for hurricane protection, it was charged with designing and supervising construction of the floodwalls to prevent the canals from overflowing during storms. The corps strictly regulates any activities that take place inside the canals between the floodwalls. Even work by the Sewerage & Water Board must pass regulatory muster of the corps, Colletti said.

But protecting the structural integrity of the levee the corps depends on to support those floodwalls is largely in the hands of the Levee District. The Levee District is in charge of policing the condition of the levees, as well as the permitting system that regulates what landowners adjacent to the levee and floodwalls can do within 250 feet of the levee.

This covers several activities that engineers say could weaken a levee by opening channels for water to run through the porous soils under the floodwalls and levees, such as digging holes for

swimming pools, driving pilings for buildings, clearing that involves pulling trees from the ground -- or allowing trees with potentially damaging root systems to grow too close to the levee.

Bea said the New Orleans rights-of-way were often clogged with trees and shrubs, signifying a lack of "rigorous maintenance" that probably contributed to the failures.

But Colletti, who has spent much of his 28 years at the corps dealing with such permit applications, said he cannot remember denying a permit, or seeing a request from the Levee District to deny one.

Once a year the corps does a visual inspection of the levee systems with Levee District personnel, usually in May or June, at the beginning of hurricane season. If they saw anything that concerned them last spring -- such as the soggy lawns at 6780 and 6804 Bellaire, or the new construction just down the block, or the large trees and numerous smaller shrubs that were growing near the toe of the levee -- there was no report made, Colletti said.

"You have to wonder -- especially after what happened -- how could they miss all this?" LeBlanc asked, standing in the ruins of her Bellaire Drive home.

Several investigators had the same question.

"We had no single, competent group who was charged with making this system work properly," Bea said, a comment repeated by many of his colleagues who have inspected the failures. "We had a diffusion of responsibilities, we had a confusion of those responsibilities, and the system appeared benign when it was warning us it was ready to fail.

"You often find that things like this could only have happened because people were not looking for it."

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