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City suffers second disaster with levee breach

By ERIC BERGER

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Early today the Big Easy had reason to breathe easy. It had, more or less, just survived the third-most-intense hurricane ever to pound U.S. shores.

Then disaster struck — for the second time.

An hour or two after midnight, along a three-mile canal cut into the northern edge of New Orleans from Lake Pontchartrain, a 15-foot levee made of earth and concrete began breaking apart. The initial breach was probably small, perhaps just 10 feet.

If stragglers in the area noticed the water gushing into their homes, few had power or telephones to report it. Not until later that morning, when the breach had widened to more than 200 feet, did public works officials take notice.

At that time they were puzzled by the fact that, nearly a full day after the storm passed through, waters across much of New Orleans were still rising.

An effort to drop large sandbags into the breach this afternoon failed. By late today, Mayor Ray Nagin declared that much of the city would have to be evacuated because the breach at 17th Street Canal, which straddles Jefferson and Orleans parishes, could not be immediately closed.

The decision came after water in the canal, about 10 feet above sea level, poured for hours through the breach into land 6 to 10 feet below sea level.

"What you had, quite simply, is a waterfall," said Joseph Suhayda, retired director of the Louisiana Water Resources Research Institute.

After its initial attempt failed, the U.S. Army Corps of Engineers scrambled to conceive and execute a broader plan to close the breach.

Tonight they put the plan into action. They were filling 3,000-pound cargo containers full of sand, rock or other heavy materials. They intended to fly these containers and 180 concrete barriers by helicopter to the site, and place them into the breach.

Succeeding will be difficult from the air alone, engineers said. And, after the corps drops each cargo container and concrete barrier into the breach, water will flow through the remaining hole faster and with more force.

The stakes for fixing the breach quickly, though, are high. It makes little sense for the city to begin pumping out water until this breach is closed and the flow of water into New Orleans ebbs. Additionally, the corps does not want to gate off the entire canal from Lake Pontchartrain. A pumping station lies at the end of the three-mile canal, and without it the city won't be able to clear several square miles of flooded terrain.

Prior to today's breach, some areas east of New Orleans had flooded, Suhayda said, as well as low points west of the city near the airport. Much of this flooding was caused by storm-surge-driven water overtopping levees, or other, smaller and less critical, breaches.

Without the 17th Street Canal breach, it's likely New Orleans would have a much more manageable situation on its hands today, Suhayda said. Instead, the city is talking about further evacuations and, perhaps for a month or more, its residents will be barred at gunpoint from returning home.

Engineers developed several possible scenarios for what might have caused the catastrophic breach in a levee, which is essentially an earthen berm topped by several feet of concrete.

Corps of Engineers officials said their analysis indicated that a limited amount of water washed over the top of the levee in waves, scouring and weakening the foundation on the levee's dry side.

Suhayda said that's possible. But another possibility is that, during the half-day floodwaters built up in Lake Pontchartrain and the canal, water may have percolated through the earthen part of the berm, undermining it.

That effect, combined with the cumulative pressure over time, may have caused a breakthrough.

"There's no question that those kind of conditions might have just reached the limit of what that particular levee could handle," said James "Bob" Bailey, a flood and wind hazard risk expert with ABS consulting in Houston.

It's also possible the levee was older and had degraded as all earthen and concrete structures do, he said.

A final possibility is that an unknown, massive chunk of debris struck the levee at some point during the night, causing a breach.

Today's breach came after New Orleans had, almost miraculously, survived a hurricane many engineers feared would send water gushing over the long, 15-foot levee that protects the city's north shore from Lake Pontchartrain.

Hurricane Katrina moved so quickly, however, its powerful winds did not have enough time to push Gulf of Mexico water into the lake, filling it high enough to crash water over the levee and into bowl-shaped New Orleans.

Katrina's winds moving from east to west — and thus filling the lake — were soon replaced by winds moving from west to east as the storm moved inland, said Hassan Mashriqui, an assistant professor at Louisiana State University's Hurricane Center.

"A slow moving storm would have caused much more damage," he said.

Like other Louisianans, Mashriqui thought New Orleans was lucky when he went to bed Monday night, having dodged the very worst.

Unfortunately, like everyone else, he was mistaken.

eric.berger@chron.com