

In hardest slam since Katrina, New Orleans's levees stand firm

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...ater seemed endless and the whole city went dark, but 16 years after a historic failure of New Orleans's defenses against disaster, the levees held. When Hurricane Ida whipped through on Sunday night, America's most vulnerable city, half of which sits below sea level, was not inundated.

The \$15 billion federal rebuild of the earthen walls that protect New Orleans from storm-swept surges of water is a one-shot, and despite ever-fiercer storms and changing weather patterns, its ambitious design has not been replicated in many of the nation's stormiest regions.

Although residents still face weeks or even months without lights and cooling, the extreme flooding that made Katrina so devastating in 2005 was avoided this time both because of the massive investment in defenses and because this storm was not as direct a hit as Katrina, according to government officials, independent engineers and environmental activists.

Louisiana Gov. John Bel Edwards (D) on Monday called the performance of the

new levees “good news,” and a spokesman for the U.S. Army Corps of Engineers, Ricky Boyett, said the barrier system “did what it’s supposed to do. It performed as designed.”

Some of the nation’s top levee engineers were also pleased, but “I would certainly hold off on declaring victory” because it’s too soon to be certain that surges of water won’t flow into the city, said Ed Link, a University of Maryland research engineer who led the Army Corps of Engineers’ investigation into the levees’ failures during Katrina.

Still, Link was impressed that as he spent “too many hours on Sunday watching Weather Channel weathermen hanging onto street poles in 100 mph winds, they were all standing on dry ground — not up to their knees in water. So there was no huge flooding. That’s what success looks like.”

In 2005, about 1,500 people were killed as wind-whipped water overwhelmed the city’s defenses. President George W. Bush promised a quick and total overhaul of the levee system. The process was controversial, the price tag grew fivefold and engineers argued for years about exactly what to build, but in relatively short order, Congress coughed up the money and the Army Corps got the levees and pumps built.

“We have a good system now and I’m pretty confident it worked,” said Sandy Rosenthal, founder of [Levees.org](#), which pushed to enhance the city’s flood defenses after Katrina. “We found out what didn’t work at horrific human cost. This system is better, stronger and bigger.”

But success against one megastorm is cause for only limited celebration, according to engineers and advocates, for two big reasons: Ida was not the ultimate test of New Orleans’s new system, and thousands of miles of levees nationwide remain dangerously vulnerable to strong storms.

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“This was the first real test of the new structures on New Orleans’s west side,” Link said, “but Katrina only affected the city’s east side and Ida was 70 miles west of Katrina’s path.” So the new higher, stronger walls on that eastern side have not yet faced anything near a Katrina-level test, he said.

In addition, although Ida came ashore as a Category 4 hurricane, it was primarily a wind event and did not generate nearly the storm surge of water that Katrina did.

Exact numbers are still being gathered, but Boyett, the Army Corps spokesman, said initial data suggests that the surge “came in a good bit lower than was anticipated.” Ida didn’t push the defense system to its limit, he said.

The good news about the levees was also tempered by the fact that the great majority of the 62 percent of Americans who live in communities protected by levees have seen no overhaul of their systems in recent years, engineers said.

From California’s agricultural inland to Florida’s coastal cities, more than 2,300 miles of levees defend urban neighborhoods and rural farms from flooding. The cost of upgrading or replacing them is nearly incalculable, according to engineers who have worked on rebuilding projects.

“There is no other system around the country that had the money to implement this level of risk reduction,” Link said. “Unfortunately, as a country, we tend to go after these things one disaster at a time.”

In addition, the federal government controls only a small portion of the nation’s levees. Most are owned by state or local authorities, or by private concerns, and are not subject to federal design standards.

New Orleans is a special case, a low-lying basin on which a beloved and distinctive American city has been built, one that has long benefited from — and been plagued by — its intimate relationship with the Mississippi River

and been plagued by — its intimate relationship with the Mississippi River, Lake Pontchartrain and the Gulf of Mexico.

The new levee system isn't the only defense that may have affected Ida's path through New Orleans, said Emily Vuxton, policy director of the Coalition to Restore Coastal Louisiana. A concerted campaign since Katrina to restore the natural barrier islands and marshland that surround the city also probably helped blunt Ida's blow.

Through most of its modern history, New Orleans depended on its natural defenses — the coastal wetlands — for protection against powerful storms. But the steady loss of wetlands in recent decades — along with a gradual lowering of the ground level in the area — made the city more dependent on man-made protection. Now efforts to rebuild those natural barriers is part of the overall strategy.

“The barrier islands are going to attenuate some of the storm surge,” Vuxton said. “Those are the first line of defense.”

The big project, though, was the federal remake of New Orleans's levees. After their colossal and deadly failures in 2005, the barriers were raised — some had been as low as five feet and some now reach as high as 30 feet. Pump stations were remade to withstand winds of more than 200 mph. Levees were bolstered and redesigned so that even if water were to flow over the tops of the walls, it would no longer destroy those barriers.

The new system was not designed simply to withstand another Katrina; rather, engineers modeled a wide variety of storms of the kinds that have been popping up around the world in recent years as the climate shifts.

Still, New Orleans remains a delicate spot. “The Achilles’ heel of New Orleans now is heavy rainfall,” Link said. “These levees won’t disappear when they’re overtopped and they have good new pumps. But the drainage system that gets the water to those pumps is old infrastructure that can only handle half an inch of rainfall per hour.

“If you had 20 inches of water in a storm, the pumps would have a hard time keeping up. This time, they were lucky that Ida didn’t stall like Harvey did in Houston” in 2017, causing devastating flooding and more than 100 deaths.

However effective the post-Katrina protections prove to be in New Orleans, they will require a significant and continuing investment of tax dollars. Maintaining the system costs about \$1 billion a year, Rosenthal said.

All such projects, said J. David Rogers, a professor of geoengineering at Missouri University of Science and Technology, need upkeep. “No matter what you do, it’s a high-maintenance area,” he said.

The occasional successful defense of the city might lead politicians to conclude that there’s less urgency to appropriate money for repairs or upgrades, but that would be a mistake, Rogers said.

“This is not a system you can build and walk away from,” said Boyett, the Army Corps spokesman.

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