

# Corps accepts fault in New Orleans flooding

**Katrina** | The Army Corps of Engineers' report says the flaws in the levees it built explain why the system failed

By **JOHN SCHWARTZ**  
NEW YORK TIMES NEWS SERVICE

In a sweeping new study of the causes of the disaster in New Orleans, the U.S. Army Corps of Engineers concludes that the levees it built in the city were an incomplete and inconsistent patchwork of protection, flawed in design and construction, and not built to handle a hurricane anywhere near the size of Katrina.

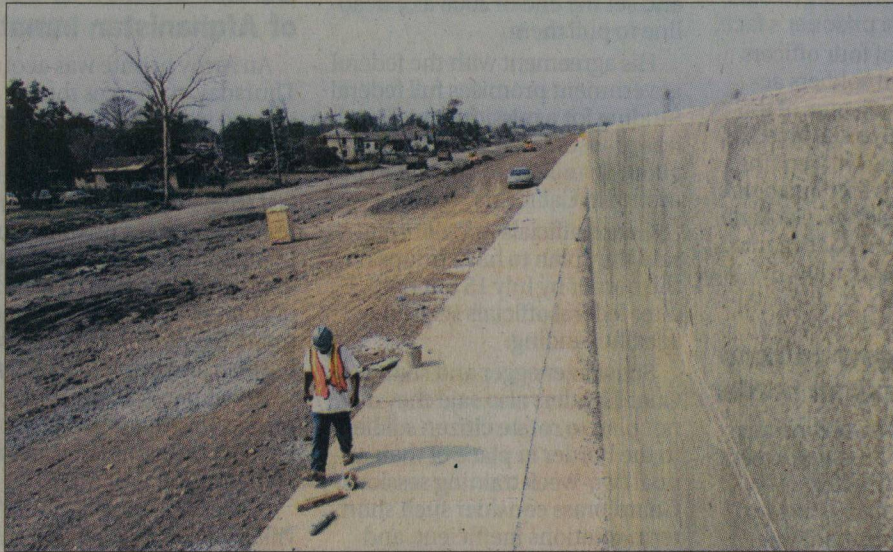
"The hurricane protection system in New Orleans and southeast Louisiana was a system in name only," said the draft of the nine-volume report, released Thursday.

Several outside engineering panels that have been critical of the Corps of Engineers have come to similar conclu-

sions and have found a more extensive chain of flaws in the design, construction and maintenance of the 350-mile levee system. But the 6,113-page report is remarkable for being a product of the corps' own official investigation, which brought together 150 experts from government, academia and business to study what went wrong and how to build better systems for the future.

The region's network of levees, floodwalls, pumps and gates lacked built-in resilience that would have allowed the system to remain standing and provide protection even if water flowed over the tops of levees and floodwalls, the report's investigators found. Flaws in the levee design that allowed breaches in the city's drainage canals were not foreseen, and those floodwalls failed even though the storm waters did not rise above the level that the walls were designed to hold.

Please see **LEVEES**, Page A4



OZIER MUHAMMAD/NEW YORK TIMES NEWS SERVICE

A construction worker walks along the rebuilt Industrial Canal levee Thursday in the Lower Ninth Ward of New Orleans. Homes damaged in the flooding caused by the levee breach after Hurricane Katrina still need repair (left).

# Levees:

## Structures don't handle sinking soil in region

Continued from Page One

But the system also was overwhelmed in significant ways by Hurricane Katrina, and some degree of flooding would have happened even if the floodwalls had not been breached by the surging waters, the report stated.

"Regardless of breaching or no breaching, there would have been massive flooding and losses" from the hurricane, Lewis Link, the director of the study and a senior research engineer at the University of Maryland, said in an interview. "The losses were increased because of the breaching that occurred," he said.

The investigators found no evidence of negligence or malfeasance by the corps or its contractors but said the corps had failed to take into account the tendency of the local soil to sink over time, leaving some sections of levee lower than they should have been. The corps did not re-examine the heights of the levees after it was told about the sinking soil, the report said.

Similarly, the Corps of Engineers designed the system to protect New Orleans against a relatively low-strength hurricane, the report found, and did not respond to warnings over the years from the National Oceanographic and Atmospheric Administration that a stronger hurricane should have been the standard.

The report suggested the corps has had trouble keeping up with the fast-changing world of geotechnical engineering and does not share critical information among its many parts. Although the corps had indications that the floodwalls might fail under intense storm conditions, "the pieces were not put together to solve the puzzle," the report said.

More must be done, it con-

cluded, to share information among those who do research and those who design and build systems.

The report warned that the area "remains vulnerable" to any storm with surge and wave conditions like Hurricane Katrina's.

The corps' chief engineer, Lt. Gen. Carl Strock, said in an interview that the report showed that "we missed something in the design," particularly in the construction of the drainage canal floodwalls that caused so much of the flooding.

According to the report, the corps designers did not anticipate the way the floodwalls would fail as water climbed high against them: In several breaches, including the one at the 17th Street Canal, the force of the water pushed the floodwall back slightly, opening a gap deep into the earthen levee be-

low that allowed water to course down under high pressure and push the wall aside.

Strock did not go so far, however, as to apologize on behalf of the corps for the decades of decisions that went into the system.

"It is what it is. Call it a mea culpa, or call it a dry recognition, or admission, or whatever — but we're not ducking our accountability and responsibility in this."

Nonetheless, he made it clear that he believed outside influences had played a role in the problems of the flood protection system, though he said that did not absolve the corps. As one example, he cited plans by the corps in the 1970s to put large barriers at the narrow openings between Lake Pontchartrain and the Gulf of Mexico.

The corps backed off from that plan after a court challenge from environmental groups and then

proposed floodgates at the city's drainage canals. But local officials of the levee boards and sewerage and water boards blocked that plan as well, and so the corps went with the next fallback plan of building floodwalls in the canals.

"Each time, we backed off," Strock said. "Each time we did that, we assumed an increment of risk. I don't think anybody looked back and said, 'Risk, risk and risk adds up to unacceptable levels.'"

He said this was not an attempt to lay blame at the feet of others, because ultimately the corps had responsibility for what it built.

"At the end of the day, we have to stand by the decisions," he said. If the corps builds floodwalls, he said, those floodwalls have to stand up to the test and the system has offer the intended level of protection.

"And we didn't get there."