

New Approach to Hazards

Adopt systems approach:
geophysics:demographics:infrastructure

Accept responsibility
humans - not nature - cause disaster losses

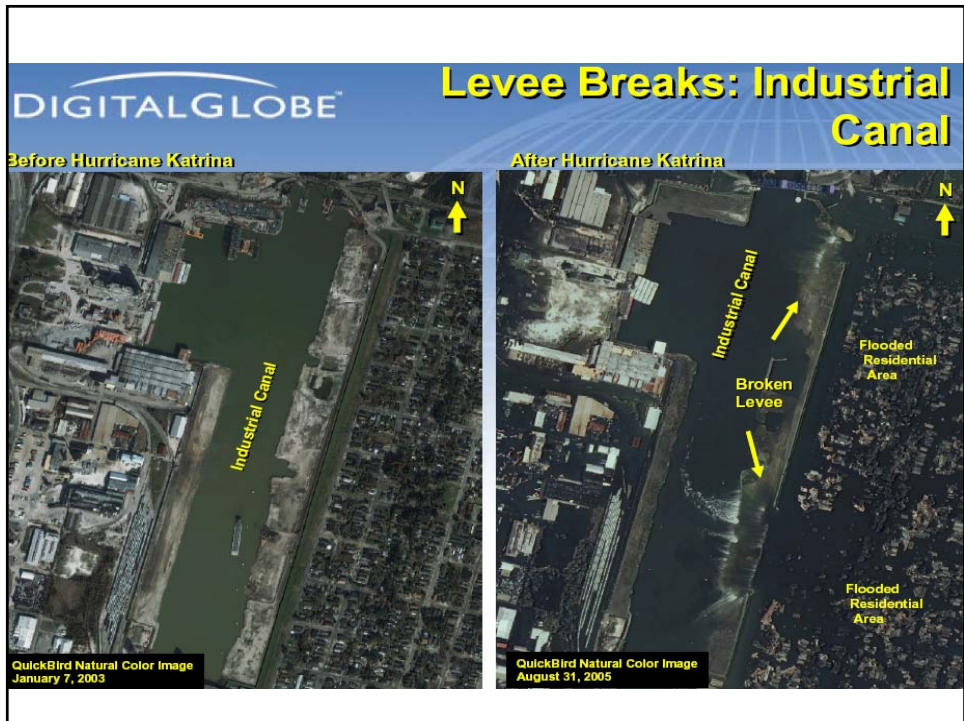
Anticipate ambiguity and change
yesterday's mitigation may not reduce future losses

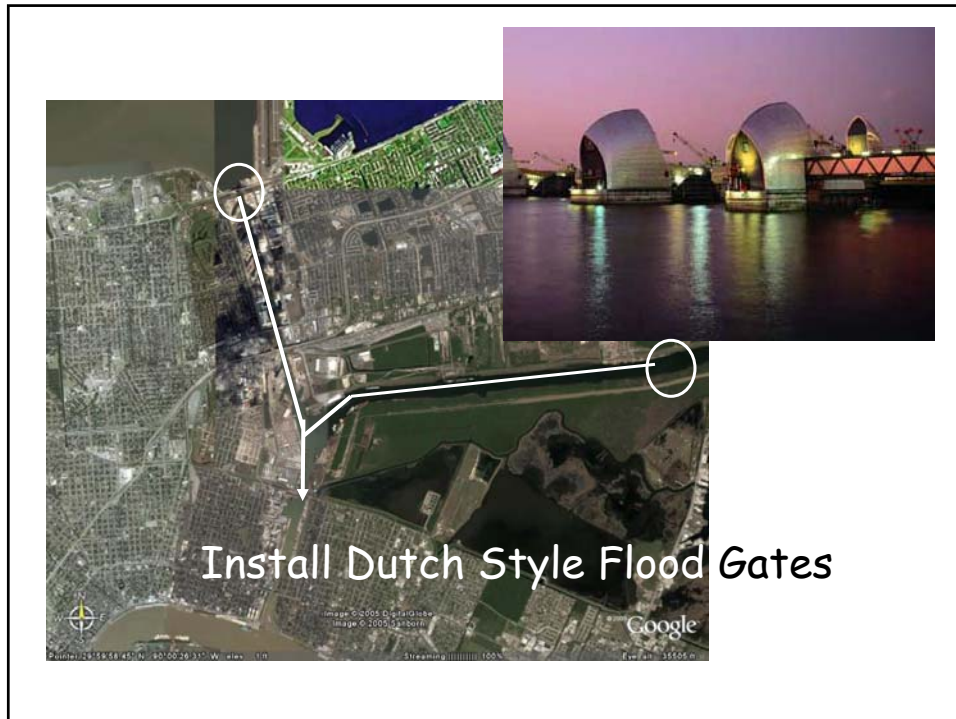
Reject short-term thinking
how will today's mitigation protect future generations

Account for social forces
mitigation must be a shared social value & responsibility

Redevelop SUSTAINABLY
mitigation should strengthen resiliency

DISASTERS
by Design





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The Walls Along New Orleans's Levees

Concrete floodwalls, installed over the last two decades along canals inside the city, collapsed in several places in the wake of the storm.

MAKING A LEVEE HIGHER

To enlarge a levee, engineers will either add dirt or construct an "I" or inverted "T" floodwall on top. When dirt is added, the levee can grow three times in width for its growth in height. This makes floodwalls more common in urban areas like New Orleans, so buildings won't have to be removed.

LEVEE ENLARGED WITHOUT FLOODWALL

"T" FLOODWALL



"I" FLOODWALL



LEVEE ENLARGED WITH FLOODWALL

WATER

U.S. Army Corps of Engineer manuals recommend that "I" floodwalls be no taller than seven feet. For taller floodwalls, they recommend the "T" floodwall with concrete that rests beneath the surface.



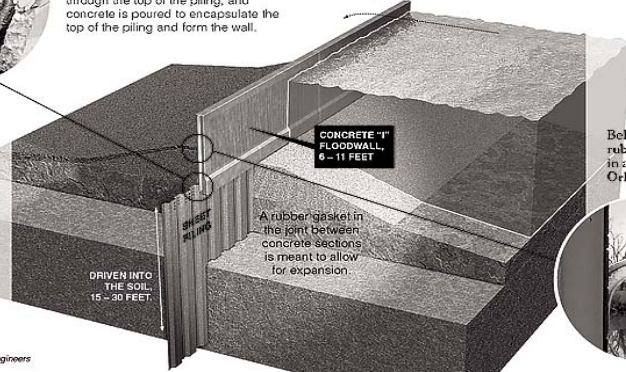
FLOODWALLS IN NEW ORLEANS

To form an "I" floodwall, sheet piling, a sort of steel fence, are driven into the compacted dirt of the levee. Then reinforcing steel rods are threaded through the top of the piling, and concrete is poured to encapsulate the top of the piling and form the wall.

HOW NEW ORLEANS'S LEVEES MAY HAVE FAILED

Engineers suspect that rising waters reached the top of the floodwalls, creating enough pressure to topple them. Other levee failures may have occurred when flood waters spilled over the top of floodwalls, eroding the soil at their base.

Above, the reinforcing steel in the broken connection between the sheet piling and concrete in a failed New Orleans levee.



Below, a failed rubber gasket in a New Orleans levee.



Sources: U.S. Army Corps of Engineers



no public space for wider berm
in Orleans Parish



Position: 30° 01' 02" 84" N, 90° 07' 15" 28" W, elev. 0m

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Shift. Investigators say 17th Street Levee was not overtopped, but "moved about 35 ft laterally." Also was site of construction problems.



In several locations the bases of concrete floodwall sections fractured away from sheetpile tops and reinforcing steel.