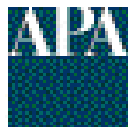


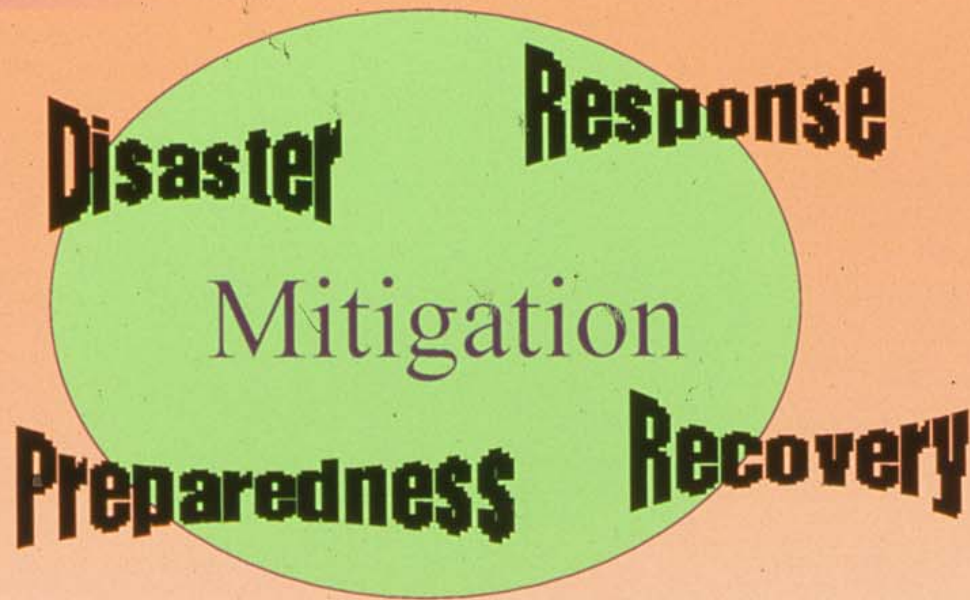
# The Evolution of American Planning for Recovery After Disasters

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11 August 2008  
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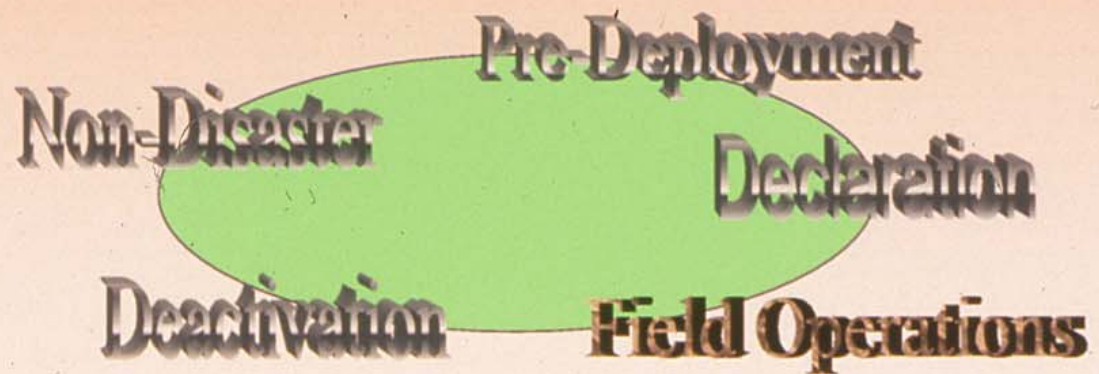


American Planning Association

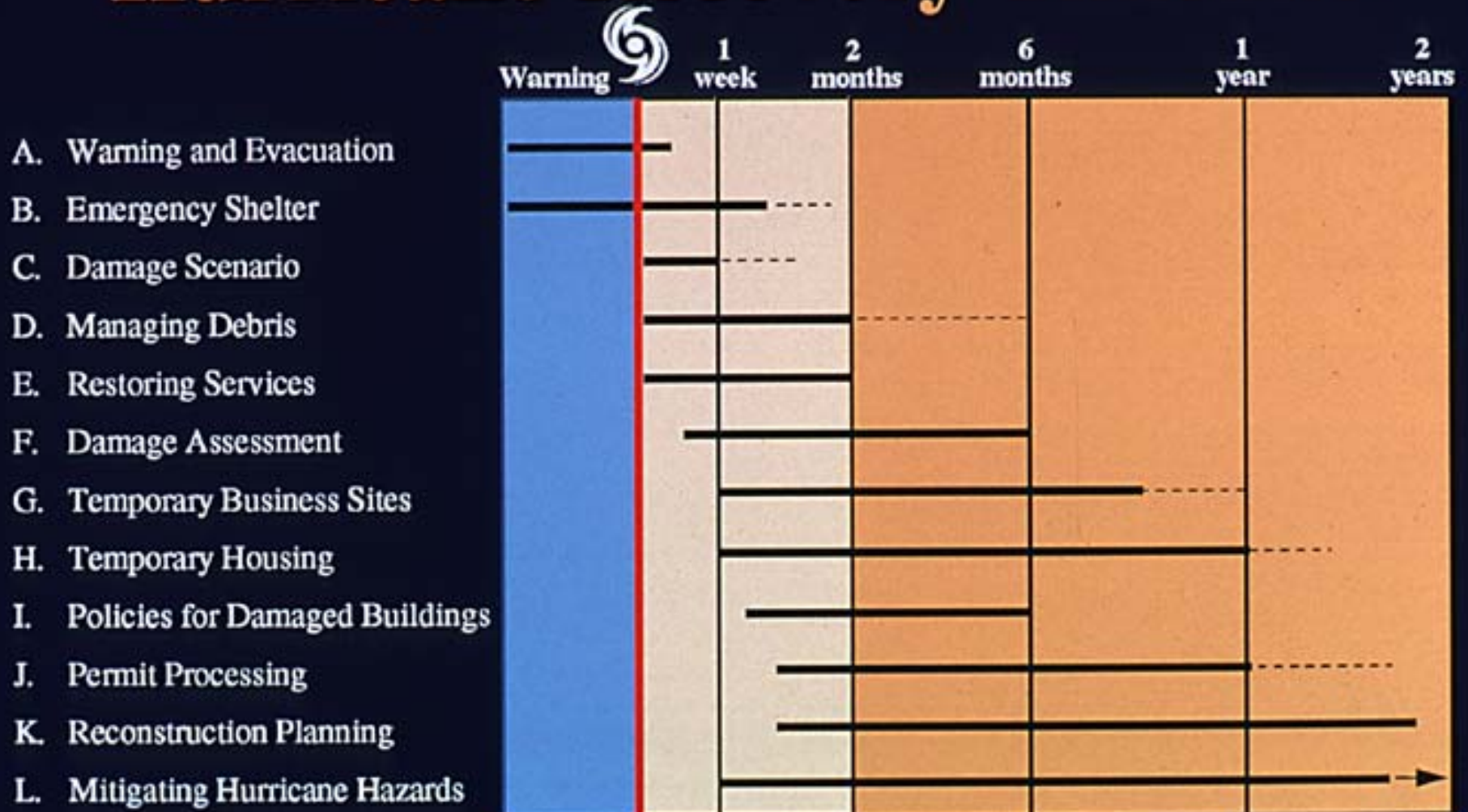
*Making great communities happen*



Phases of  
Emergency  
Management



# Hurricane Recovery Timeline

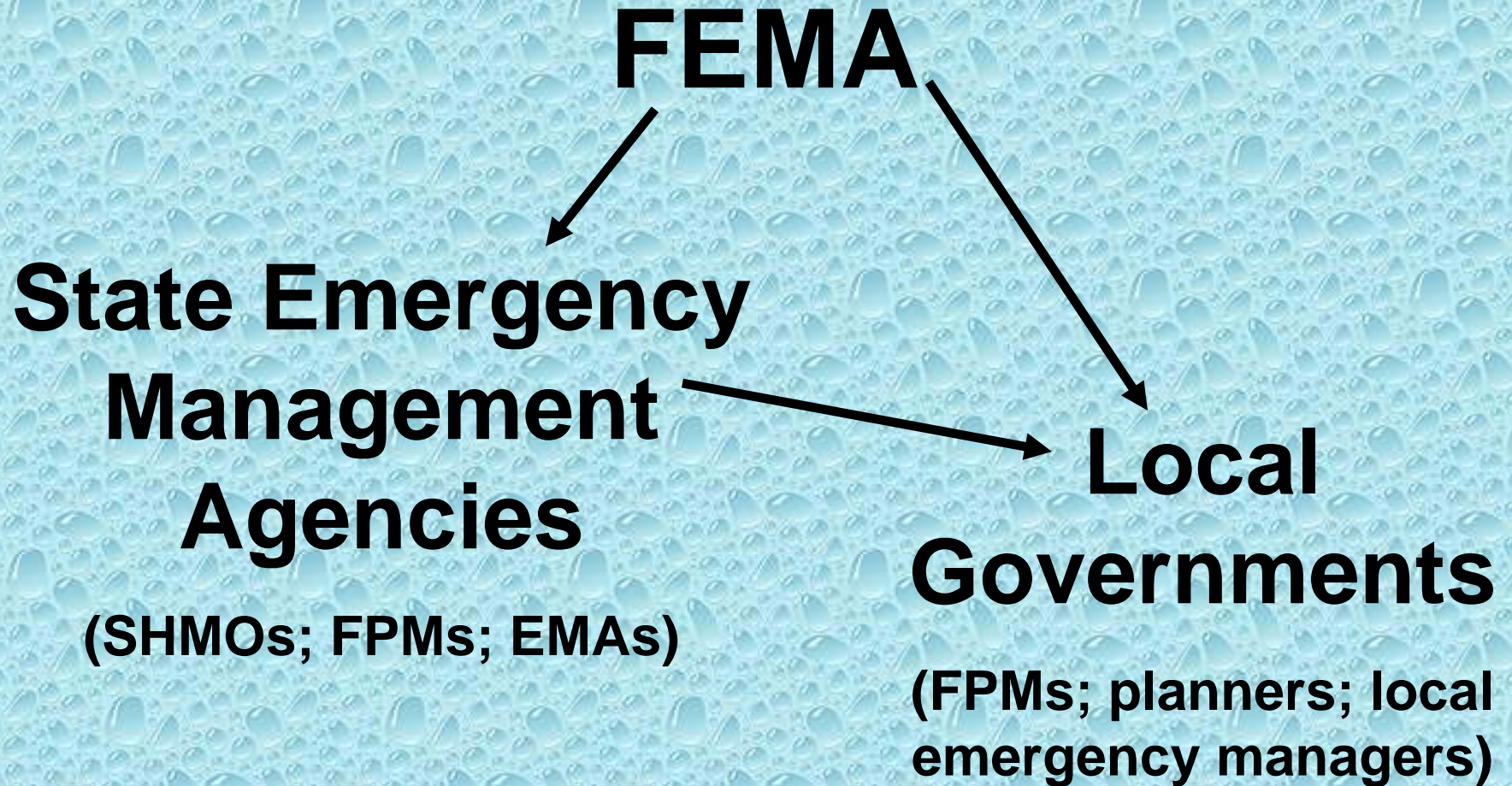




**New Orleans  
after  
Hurricane  
Katrina, 2005**



# Shared Authority: FEMA



# 1980-2005 Billion Dollar U.S. Weather Disasters

(Damage Amounts in Billions of Dollars and Costs Normalized to 2002 Dollars Using GNP Inflation / Wealth Index)



1980	Drought / Heat Wave e \$48.4 ~10,000 Deaths				
1983	Hurricane Alicia \$5.9 21 Deaths	Florida Freeze ~ \$4.0 No Deaths	Gulf Storms / Flooding ~ \$2.2 ~ 50 Deaths	W Storms / Flooding ~ \$2.2 ~ 45 Deaths	
1985	Florida Freeze ~ \$2.2 No Deaths	Hurricane Elena \$2.4 4 Deaths	Hurricane Juan \$2.8 63 Deaths		
1986	Drought / Heat Wave \$2.3 ~100 Deaths				
1988	Drought / Heat Wave e \$61.6 ~7,500 Deaths				
1989	Hurricane Hugo > \$13.9 86 Deaths	N Plains Drought > \$1.5 No Deaths			
1990	S Plains Flooding > \$1.4 13 Deaths				
1991	Hurricane Bob \$2.1 18 Deaths	Oakland CA Firestorm ~ \$3.5 25 Deaths			
1992	Hurricane Andrew ~ \$35.6 61 Deaths	Hurricane Iniki ~ \$2.4 7 Deaths	Nor'easter \$2.0 19 Deaths		
1993	E Storm / Blizzard \$7.0 ~ 270 Deaths	SE Drought / Heat Wave ~ \$1.3 > 16 Deaths	Midwest Flooding ~ \$26.7 48 Deaths	CA Wildfires ~ \$1.3 4 Deaths	
1994	SE Ice Storm ~ \$3.7 9 Deaths	Tropical Storm Alberto ~ \$1.2 32 Deaths	Texas Flooding ~ \$1.2 19 Deaths	W Fire Season ~ \$1.2 No Deaths	
1995	CA Flooding > \$3.6 27 Deaths	SE / SW Severe Wx \$6.8 32 Deaths	Hurricane Marilyn e \$2.5 13 Deaths	Hurricane Opal > \$3.6 27 Deaths	
1996	Blizzard / Flooding ~ \$3.5 187 Deaths	Pacific NW Flooding ~ \$1.2 9 Deaths	S Plains Drought ~ \$6.0 No Deaths	Hurricane Fran > \$5.8 37 Deaths	
1997	Midwest Flood / Tornadoes e \$1.1 67 Deaths	N Plains Flooding ~ \$4.1 11 Deaths	W Coast Flooding ~ \$3.4 36 Deaths		
1998	New England Ice Storm > \$1.5 16 Deaths	SE Severe Wx > \$1.1 132 Deaths	MN Severe Storms / Hail > \$1.7 1 Death	S Drought / Heat Wave \$8.3 > 200 Deaths	Hurricane Bonnie ~ \$1.1 3 Deaths
	Hurricane Georges e \$6.5 16 Deaths	Texas Flooding ~ \$1.1 31 Deaths			
1999	AR - TN Tornadoes ~ \$1.4 17 Deaths	OK - KS Tornadoes > \$1.7 55 Deaths	E Drought / Heat Wave > \$1.1 e 502 Deaths	Hurricane Floyd e > \$6.5 77 Deaths	
2000	Drought / Heat Wave e > \$4.2 ~ 140 Deaths		Western Fires > \$2.1 No Deaths		
2001	Tropical Storm Allison e ~ \$5.1 > 43 Deaths	Midwest / OH Valley Hail / Tornadoes > \$1.9 > 3 Deaths			
2002	30-State Drought e > \$10.0 No Deaths		Western Fires > \$2.0 ~21 Deaths		
2003	Severe Wx / Hail > \$1.6 3 Deaths	Severe Wx / Tornadoes > \$3.4 51 Deaths	Hurricane Isabel ~ \$5.0 55 Deaths	S California Wildfires > \$2.5 22 Deaths	
2004	Hurricane Charley e ~ \$15.0 35 Deaths	Hurricane Frances e ~ \$9.0 48 Deaths	Hurricane Ivan e > \$14.0 57 Deaths	Hurricane Jeanne e > \$7.0 28 Deaths	
2005	Hurricane Dennis e > \$2.0 > 15 Deaths	Hurricane Katrina e ~ \$125.0 > 1833 Deaths	Hurricane Rita e ~ \$16.0 119 Deaths	Midwest Drought e > \$1.0 No Deaths	Hurricane Wilma e ~ \$16.0 35 Deaths

Source:  
NOAA's National Climatic Data Center  
Asheville, NC 28801-5001  
[www.ncdc.noaa.gov/oa/reports/billionz.html](http://www.ncdc.noaa.gov/oa/reports/billionz.html)



e = estimated > = greater than/at least ~ = approximately/about

< 5 5-20 20-30 30-40 > 40

Amounts in Billions of Dollars

# Major U.S. Disaster Costs 1989-1995

## **HURRICANE HUGO (1989)**

**Location: South Carolina**

**\$9 BILLION**

## **LOMA PRIETA EARTHQUAKE (1989)**

**Location: Northern California**

**\$7 BILLION**

## **EAST BAY HILLS WILDFIRE (1991)**

**Location: Oakland/Berkeley, California**

**\$1.5 BILLION**

## **HURRICANE ANDREW (1992)**

**Location: Dade County, Florida, and Southeastern Louisiana Parishes**

**\$30 BILLION**

## **HURRICANE INIKI (1992)**

**Location: Kaua'i Island, Hawaii**

**\$1.8 BILLION**

## **MIDWEST FLOODS (1993)**

**Location: Upper Mississippi Valley**

**\$12-16 BILLION**

## **NORTHRIDGE EARTHQUAKE (1994)**

**Location: Southern California**

**\$28 BILLION**

IT'S BIG,  
REALLY BIG.

PLANNING  
FOR  
POST-DISASTER  
RECOVERY  
AND  
RECONSTRUCTION

FEMA

APA

Paul  
Miller  
Observer  
'99



# Further Considerations: Relocation

- Evolving context in U.S. since late 1970s move of Soldiers Grove, Wisconsin
- All moves have been voluntary efforts to conserve entire communities
- Assistance packages have often been complex and somewhat ad hoc
- Related movement toward sustainable post-disaster redevelopment

# Soldiers Grove Relocation Funding: State/Local Sources

- Regional Planning Commission (\$4,000)
- State Planning Office (\$2,700)
- Dept. Local Affairs & Dev. (\$13,200)
- Local businesses (\$3,300)
- General obligation borrowing (\$90,000)
- Dept. Natural Resources (\$42,000)
- Governor's discretionary (\$167,684)
- Village borrowing—TIF startup (\$235,000)
- Farmers Home Admin. (\$1,663,000)
- Total: \$2,220,884

# Soldiers Grove Relocation Funding: Federal Sources

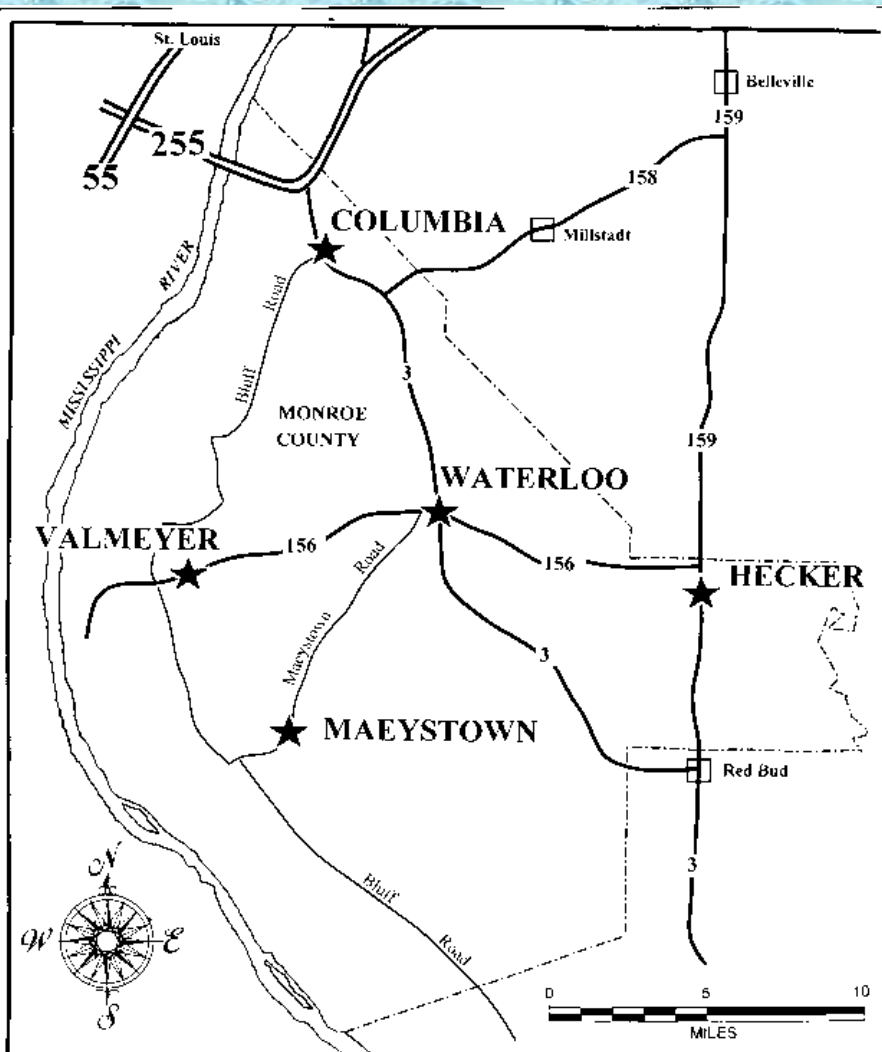
- Housing & Urban Development-CDBG (\$3,261,900)
- Community Services Admin. (\$40,000)
- Economic Development Admin. (\$500,000)
- Dept. of Interior-LAWCON [parks acquisition] (\$646,147)
  - Total: \$4,455,247

# Oakland, California

## Rebuilding after the 1991 wildfire



# Valmeyer, Illinois Relocation Project



# Main Points

- Disasters create opportunities as well as loss and destruction
- Few better opportunities exist to rethink a community's pattern of development
- Recovery from one disaster is preparation for the next disaster
- Goal: Create a new community that is safer and stronger than the old

# **Arkadelphia Reconstruction Design Principles: Central Business District**

- ***1. Pedestrian activity and civic spaces are needed.***
- ***2. Civic identity elements are needed.***
- ***3. Diversity of mix and building type is encouraged.***
- ***4. Consider increases in density of downtown development.***
- ***5. Downtown parking should be considered in the aggregate.***
- ***6. Downtown landscaping and open space are included.***

# Arkadelphia Reconstruction

## Design Principles:

### Residential District

- *1. Creation of a neighborhood requires a community of houses.*
- *2. Creation of proximity and privacy between units is desirable.*
- *3. Provide rear access parking.*
- *4. Inclusion of sidewalks and porches creates neighborhoods.*
- *5. Provide housing diversity within neighborhoods.*
- *6. Landscaping and siting are essential to neighborhoods.*





# Hurricane Floyd, 1999



# Other U.S. Experiences in Federal Aid for Local Planning for Post-Disaster Recovery

- Missouri and Illinois tornadoes
  - Heavy destruction of three small towns earlier in this decade
  - FEMA supported a town recovery manager to assist replanning in each case
- Florida hurricanes in 2004
  - Four storms criss-crossed state in six weeks
  - Five central Florida counties assisted with recovery plans
  - Strong guidance role provided by Florida DCA

# National Response Plan

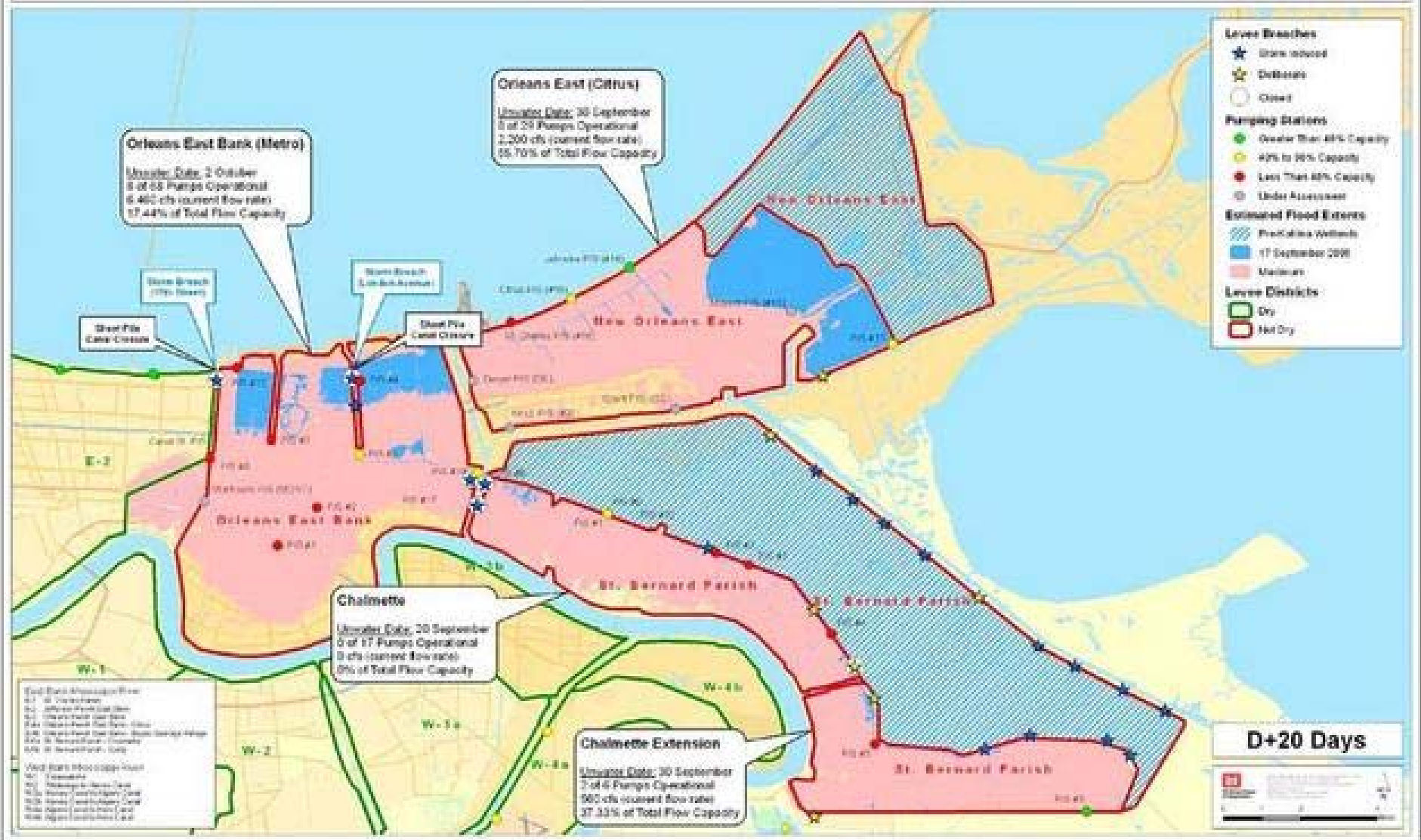
- Adopted by FEMA December 2004 (now National Response Framework)
- Added three new Emergency Support Functions (ESF)
- Support for Long-Term Community Recovery became ESF-14, led by FEMA
- First test for ESF-14:
  - Hurricanes Katrina and Rita
  - Affected states had weak state planning rules and generally poor DMA compliance



# Post-Katrina Flooding in New Orleans

Maximum and Current Estimated Flood Extents

Hurricane Katrina  
Current as of 17 Sep 05 - 0900hrs



# View: NASA Observatory Photo







# Whither ESF-14?

- Some fear about future role for this function based on Katrina/Rita experience
- Much may depend on philosophy of new administration regarding disaster policy
- Mitigation and recovery seen by many as drifting apart at FEMA operational level
- Need to recognize role of state planning function as vital element in success

# Tsunami Impacts in Sri Lanka:

**This?**



**Or . . .**



# Tsunami Impacts in Sri Lanka

**This?**

