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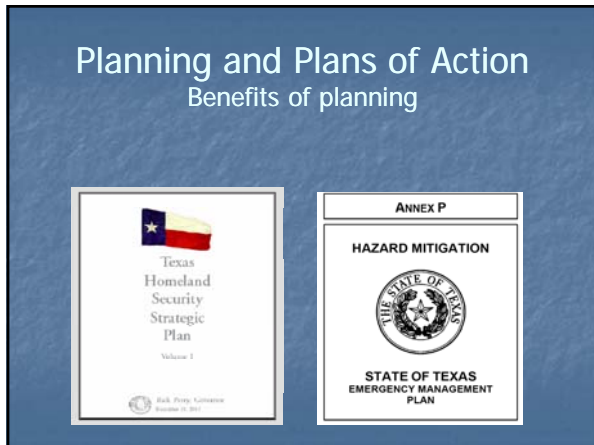
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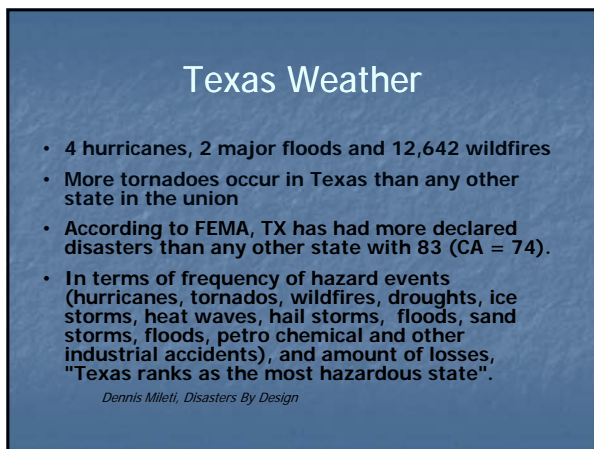
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## Actions Towards Success

for any disaster event

- Preplanning
- Practice/Training
- Mitigation
- Preparation
- Implementation\*
- Recovery\*
- Review & Improvements\*

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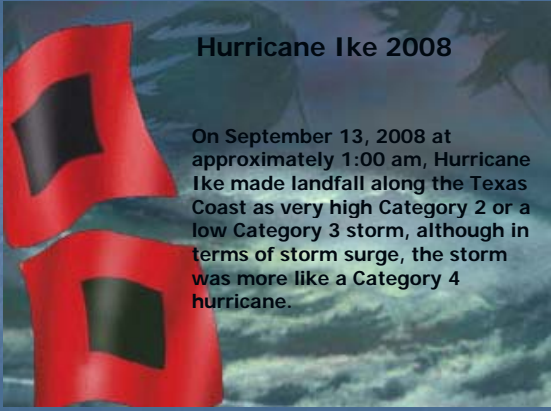
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## Hurricane Ike 2008

A satellite image of Hurricane Ike, showing a large, well-defined eye and a dense, swirling cloud structure. The hurricane is set against a dark background, with a red and black flag graphic overlaid on the left side.

On September 13, 2008 at approximately 1:00 am, Hurricane Ike made landfall along the Texas Coast as very high Category 2 or a low Category 3 storm, although in terms of storm surge, the storm was more like a Category 4 hurricane.

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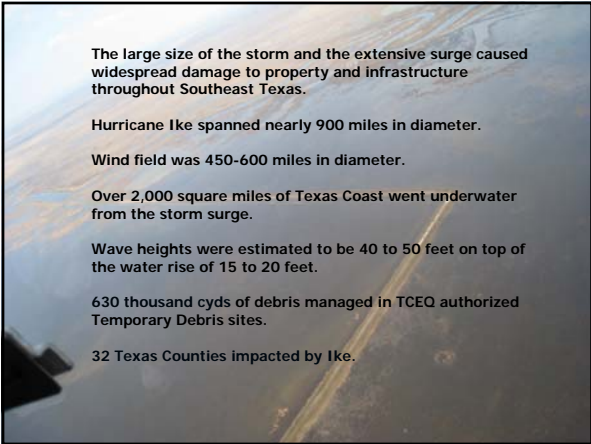
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Aerial view of a coastal area showing significant damage from Hurricane Ike. The image shows a mix of green vegetation, brown earth, and blue water, with a road and some structures visible in the foreground.

The large size of the storm and the extensive surge caused widespread damage to property and infrastructure throughout Southeast Texas.

Hurricane Ike spanned nearly 900 miles in diameter.

Wind field was 450-600 miles in diameter.

Over 2,000 square miles of Texas Coast went underwater from the storm surge.

Wave heights were estimated to be 40 to 50 feet on top of the water rise of 15 to 20 feet.

630 thousand cyds of debris managed in TCEQ authorized Temporary Debris sites.

32 Texas Counties impacted by Ike.

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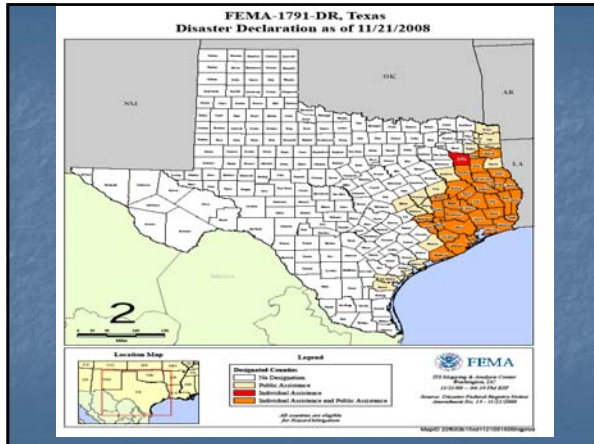
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## Impacted Counties

- **Directly impacted:**  
 Angelina, Aransas, Austin, Brazoria, Burleson, Chambers, Cherokee, Fort Bend, Galveston, Grimes, Hardin, Harris, Houston, Jasper, Jefferson, Liberty, Madison, Matagorda, Montgomery, Nacogdoches, Newton, Nueces, Orange, Polk, Rusk, Sabine, San Augustine, San Jacinto, San Patricio, Trinity, Tyler, Walker, Waller, and Washington Counties

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## Implementation

- Each event matures differently
  - Phase 1: Immediately prior to the event
  - Phase 2: During the event
  - Phase 3: Initial response post event
  - Phase 4: Recovery
  - Phase 5: Return to routine
  - Phase 6: Action Review and lessons learned

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## Response Structure

- Ike initial entry team in Galveston, then Port Arthur
- Established an Area Commands in cooperation with fellow responders
- Integrated into the Joint Incident Command
- Houston & Beaumont Regional Office staff infrastructure and Debris Management
- As a result, the response structure became:
  - Joint Incident Command (in Pasadena, Harris County, Tx)
  - Alpha Branch (Pasadena, Harris County, Tx)
  - Bravo Branch (Port Arthur, Jefferson County, Tx)
  - Charlie Branch (Galveston, Galveston County, Tx)

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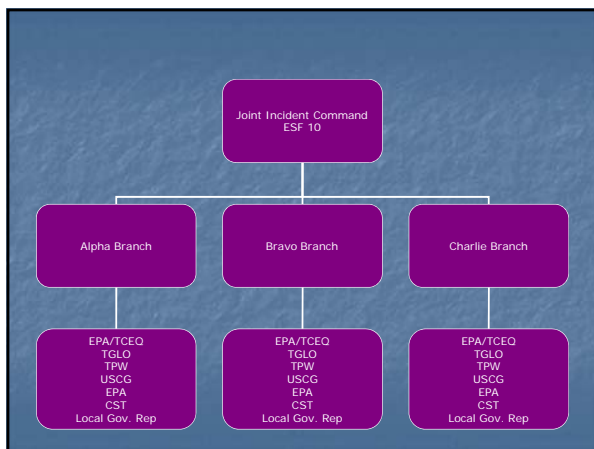
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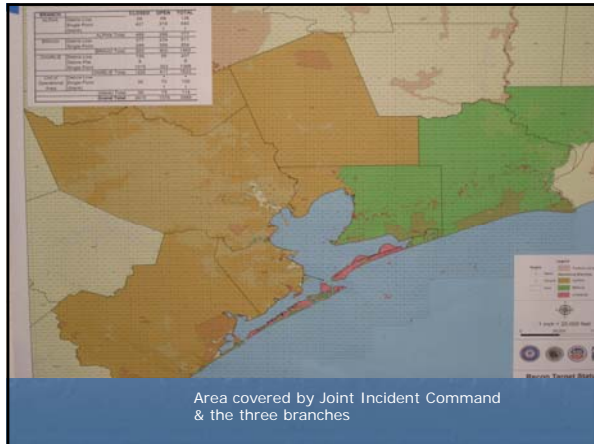
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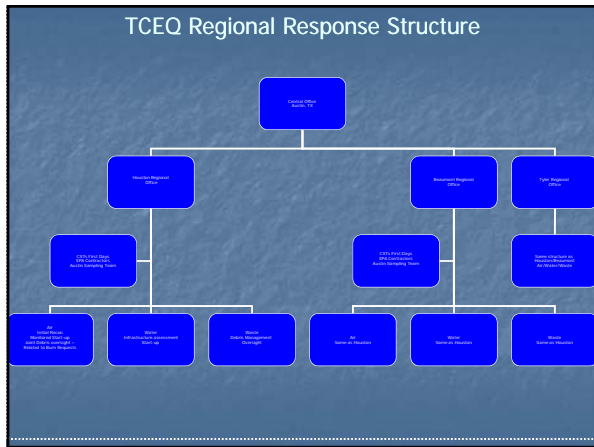
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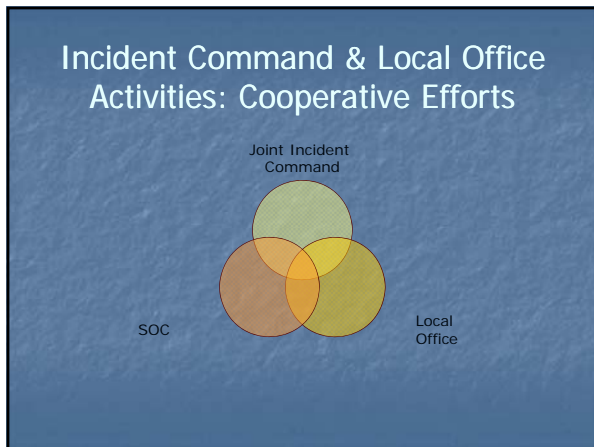
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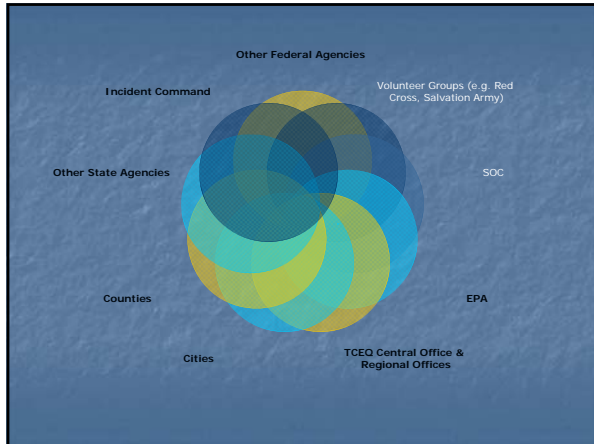
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## Challenges with Coordination

- Three branches to incident command response activities
- Three Regional Offices + Central Office + others agencies and governments
- Large area of impact
- Tools to assess impact – development and sharing
- Coordination of responders (federal, state, local)
- Public outreach/media
- Duration of incident command role
- Duration of response/expected actions
- Phase clarification within the recovery element

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Overflight 9/15/08 Bolivar Peninsula

**Some of the environmental damage caused by Hurricane Ike included:**

- Hazardous material spills, displaced containers and tanks;**
- Household Hazardous Waste;**
- Wastewater Plant shut-downs and spills;**
- Salt deposits left by storm surge--impact to water resources and agriculture;**
- Livestock & wildlife death, fish kills;**
- Debris (vermin harborage, insect breeding, physical hazards);**
- Contaminated Sediment (although limited).**

N 29° 30' 037" W 099° 31' 238" 202 ft 09/15/2008 4:23:03 PM

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## Recovery

- Temporary Authorizations for Landfills & Temporary Debris Management Sites
  - FEMA conditions
  - Monitoring the sites
  - Tracking
  - Renewal of authorization
  - Tools
  - Closure

What is involved with successfully overseeing a vast amounts of debris?

What counts as debris?

Who handled what?

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## Debris Handling for Post Ike

one element towards recovery

- Statewide Plan
- Tracking activities & reporting
- Information included
- Quick and standard format
- Coordination within impacted area & Central Office

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## Elements of Success

- Initial re-entry timeframe
- Infrastructure assessment
- Materials Recovery protocols
- Authorization, Monitoring, Documentation, Closure of large number of Debris sites across a significant area
- New procedures developed, tested and incorporated into overall state response actions
- Communication efforts

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## Debris Data

There were > 300 temporary debris storage/recovery site (TDSR) authorization issued over the three region area (TCEQ TDSR sites only)

Region	TDS #	# Active as of 12/2/09
Tyler	~30	0
Beaumont	~85	2
Houston	~203	18
	~320 sites	

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## Updates to Process as a result of Ike efforts

- Quick list of specifics – not complete
  - Revisions to the Hurricane Document on agency web page
  - Ensuring consistency across impacted area
  - Working with Councils of Governments (COGs) on training and planning tools
  - Regional updates to procedures and data management tools; cooperation with EPA/Coast Guard etc. on format
  - Regional planning and further staff development

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## Continued..

- Coordination of issuing Temporary Authorizations – more clearly defining roles/function
- Form, Documentation, Tracking, Reporting consistency efforts
- Improvements to the debris authorization, monitoring and closure process developed
- Revised first entry strategy
- Solicit input from all participating agency programs for a "Lessons Learned" post-disaster after action review.
- Define recovery stages with clear guidelines to move the recovery to completion (demobilization) and return to routine. Defining the end.
- Update the TCEQ Hurricane COOP based on the Post Disaster Review Report.

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