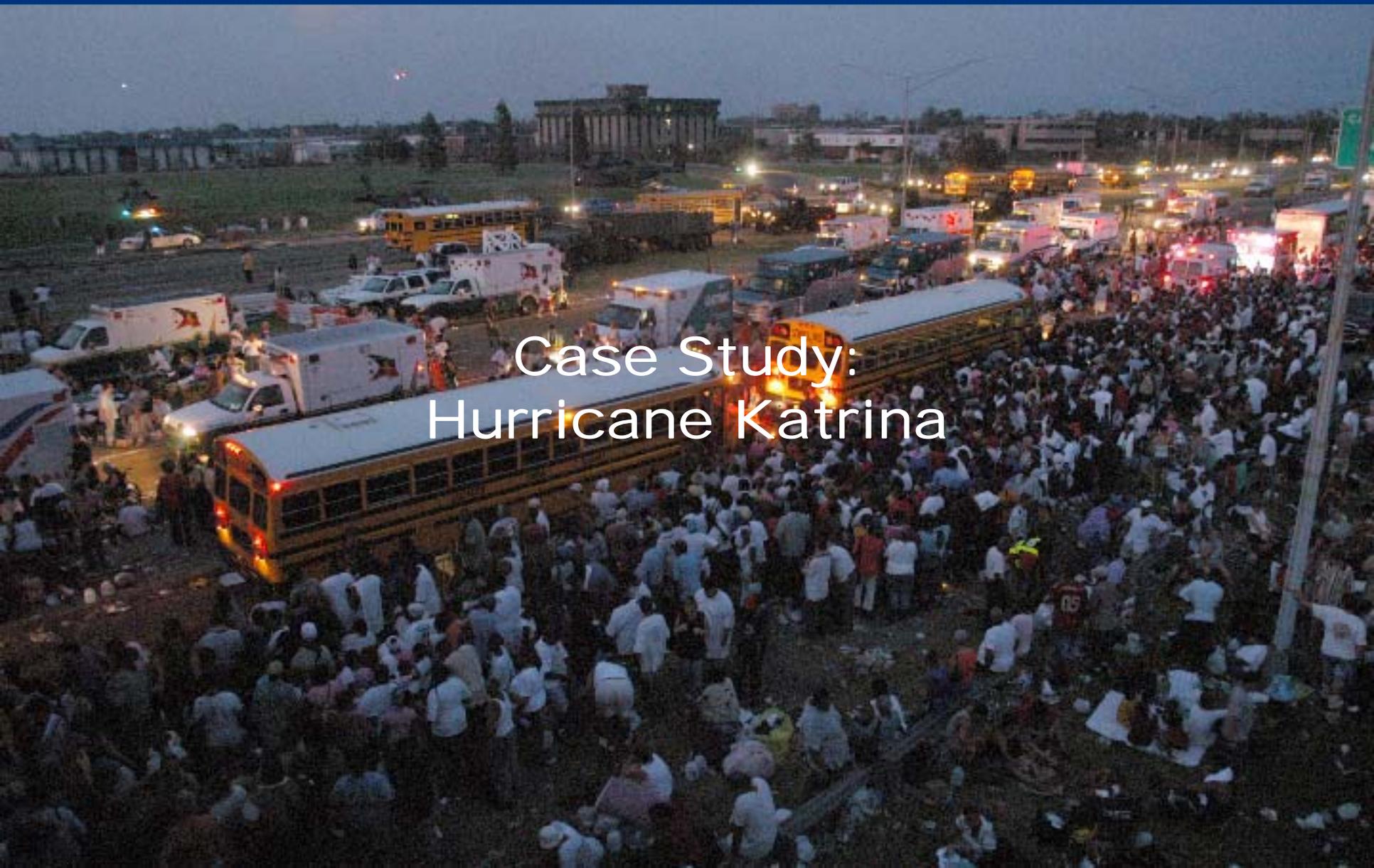




# Perspectives on Disaster Responses



Case Study:  
Hurricane Katrina



# The First Four Days

- Tropical Depression Twelve
- Tropical Storm Katrina
- Category 1 hurricane
- Weakens to tropical storm
- Strengthens to Category 2 over Gulf of Mexico



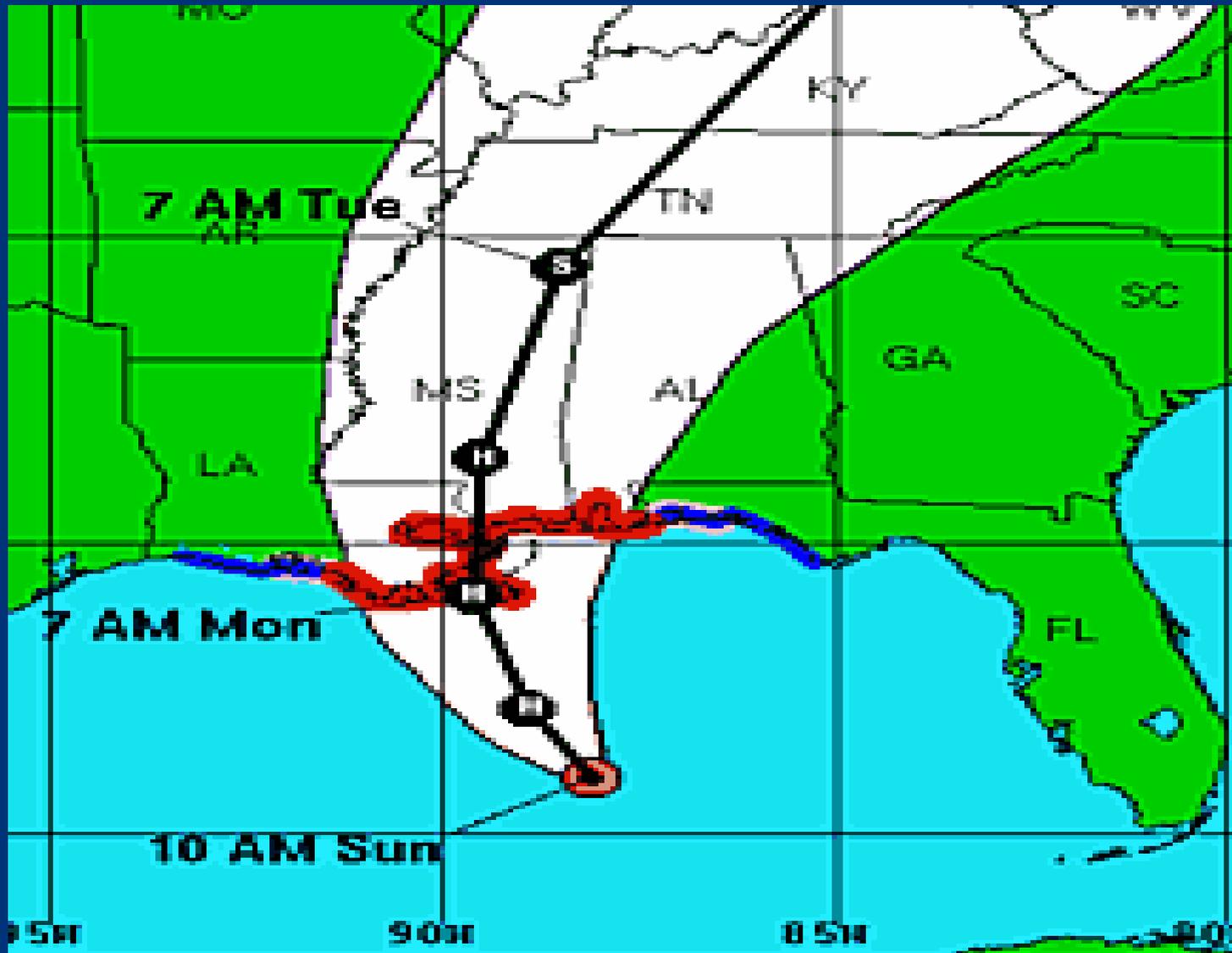


- Strengthens to Category 3, and doubles in size
- Louisiana implements Evacuation Plan
- Highway contra-flow on key routes
- Evacuation orders
- Shelters begin opening
- Staging disaster resources
- Activating disaster response teams
- Presidential emergency declarations





- Upgraded to a Category 5
- Turns toward Mississippi and Louisiana
- Mayor orders evacuation of New Orleans
- Alabama and Mississippi evacuate low-lying areas
- Hurricane Katrina affects evacuations
- Contra-flow ceases
- 1.2 million people evacuated in Louisiana
- Many shelters opened
- Superdome becomes “shelter of last resort”
- Federally deployed teams
- Federal commodities staged





# Monday August 29th

- Landfall as a Category 4 hurricane
- Moves inland and weakens
- Storm surge
- Fatalities
- Damage
- Transportation impact
- Power outage
- Communications outage
- Damage to medical facilities
- Superdome roof damaged
- Levees overtopped and breached
- Pumping stations incapacitated
- Lack of information
- Search and rescue is top priority







Tuesday August 30th

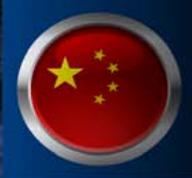
- Levee breaches confirmed
- New Orleans floods
- Facilities damaged
- Communications impact on response
- Establishing incident command structure
- Key response missions
- Drinking water and wastewater facilities
- Search and rescue
- “Lily pads”





# Post-Landfall Evacuation

- State and local officials organize a mass evacuation
- The Superdome
- FEMA requests
- Department of Transportation responds
- Other locations
- Evacuee airlift





# Other Challenges

- Looting
- Law enforcement challenges
- Impact on response operations
- Impact on service restoration
- Federal law enforcement assistance
- Basic concept of incident management
- Adapting to local impact
- Military control
- Joint task force established
- Military response figures





- Federal communication resources
- Communication industry recovery
- Ongoing response resource needs
- Fuel for generators
- Supplies for responders
- Additional federal response supplies
- Providing public reassurance





# Perspectives on Disaster Responses



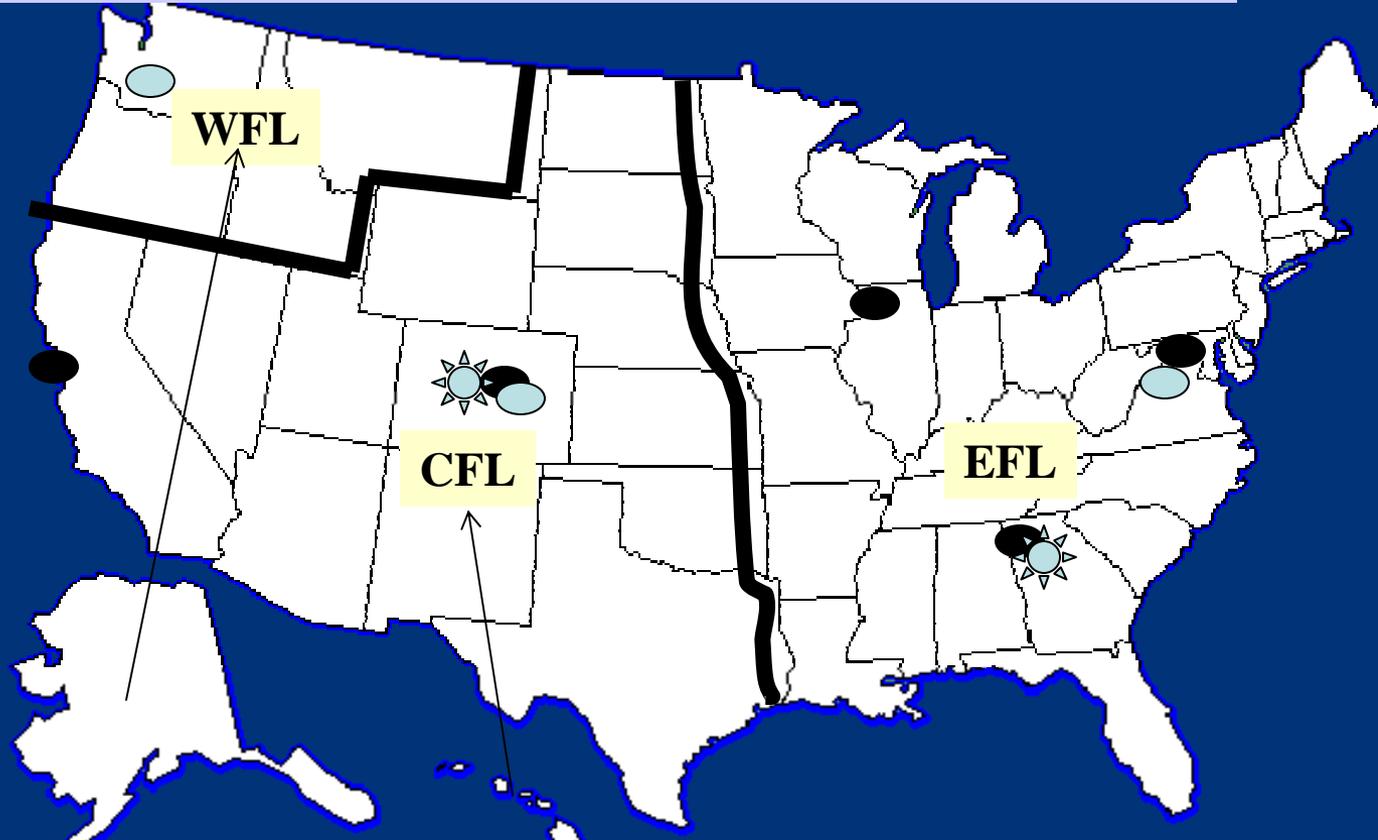
Highways



# FHWA Organization

- Approximately 2900 employees
  - 900 in headquarters/2000 in field offices

- 1 office in each state capital
- 3 federal lands highway offices
- 5 resource centers
- ☀ 2 admin support teams



Puerto Rico

**Daily interface with State highway agencies/DOT**



- **Obtain and maintain situational awareness**
- **Facilitate communications**
- **Conduct damage assessments**
- **Provide technical advice and assistance**
- **Administer the emergency relief funding program**
- **Provide personnel to support DOT, FEMA, and State operations**



# Katrina: Louisiana



- I-10 and US-11 bridges destroyed

- Major projects still under construction

- FHWA approved \$1.211 billion dollars



# Katrina: Mississippi



- US Highway 90 and major bridges destroyed
- Ferry service initiated
- Major projects completed in 2009
- FHWA approved \$1.074 billion dollars



# Perspectives on Disaster Responses



Transit



# The Role of Transit in Disaster Response/Emergency Evacuation



- **6000 agencies receive funding from Federal Transit Administration**
- **Public transportation is important during disasters, especially for evacuations**
- **Especially for the disabled and those who cannot self-evacuate**



# Transit Challenges During Hurricane Katrina



## **Local transit vehicles:**

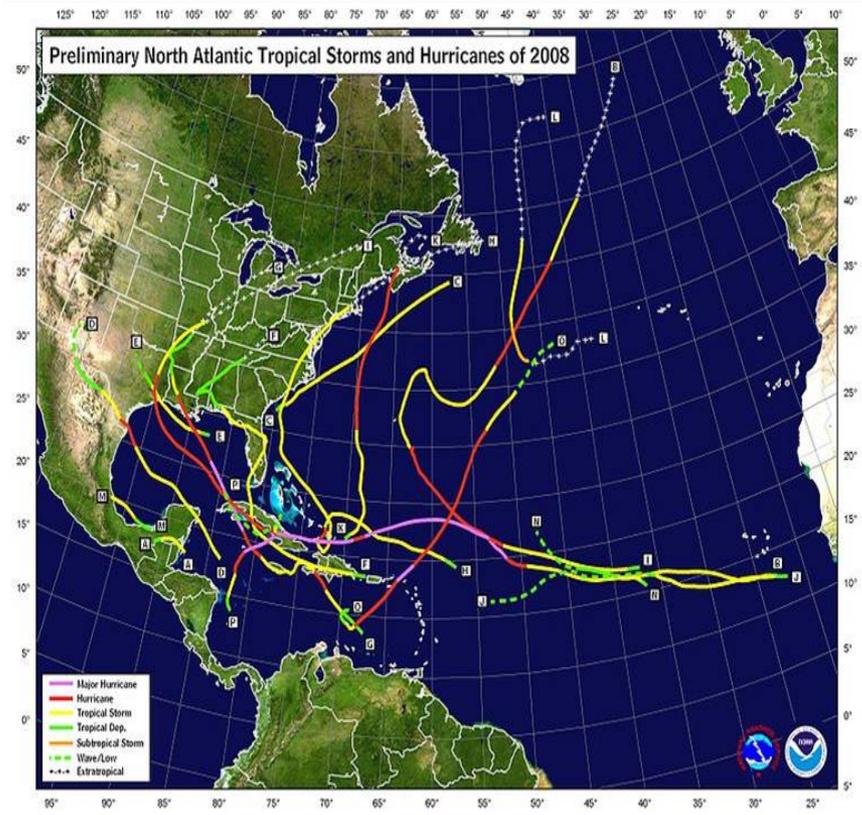
- Moved to high ground, but stranded by high water when the levees broke
- Most operators had evacuated

## **Challenges with outside vehicles:**

- Finding them
- Finding/training operators willing to go into harm's way
- Organizing/coordinating various offers
- Providing food, shelter and supplies for operators
- Protecting vehicles and equipment
- Union and insurance issues
- Ensuring adequate communication between vehicles/transit systems



# The Role of Transit in Disaster Response/Emergency Evacuation



## More Recent Storms:

- 2008 – 3<sup>rd</sup> most costly hurricane season, behind 2004/2005
- 4<sup>th</sup> busiest season since 1944
- Up to \$44 billion in damage (2008 USD)
- The first time 4 or more Category 4 storms have formed in one year since 2005 (which had 5)

## Transit's Role:

- Transit played a larger, well-coordinated role in evacuation
- Preparing for the Storm/Securing Affected Transit Fleets
- Facilitating/participating in evacuations
- Local shuttling of evacuees to pickup points/staging areas for the long-haul evacuation by ground/air
- Assisting in movement of evacuees at shelter locations
- Re-establishing transit routes after a storm

# Lessons Learned from Hurricane Katrina and Applied Later



The transit agency was now an integral part of the New Orleans City Assisted Evacuation Plan (CAEP)

- New Orleans RTA used 40 transit buses to move 9,000+ people over two days
- 17 pickup points throughout New Orleans, then moved evacuees to the long haul evacuation site at the Union Passenger Terminal (UPT)
- Transit agencies in evacuation destination cities also helped with local movement of evacuees
- The role of transit in movement of evacuees is critical – **especially for the disabled and others who cannot self-evacuate**
- Transit should have a role in emergency management plans -
- Transit should be represented at emergency operations centers (EOCs)
- The Importance of Mutual-aid Agreements between transit systems – **following the model of the utility industry - FTA/APTA ERPP example ([www.aptaerpp.com](http://www.aptaerpp.com))**



# Perspectives on Disaster Responses



Railroads













# What Did FRA Do for Katrina?



- **FRA established a series of conference calls the day after Katrina**
- **Provided advice, regulatory relief and coordination:**
  - emergency preparedness and coordination for large railroads
  - hours of service
  - equipment handling
  - Embargoes (line closures for safety conditions)
  - 24/7 crisis management communications
  - federal relief efforts
- **Developed Emergency Contact List for affected Short Lines**



# What Did FRA Learn From Katrina?

- **There were 26 short line railroads in the affected area and 12 of them suffered damage ranging from several thousand dollars to \$60 million dollars, totaling overall to \$85 - \$90 million**
- **Despite pre-panning, several areas of improvement were documented:**
  - FEMA coordination with railroads and local responders
  - Positioned materials and gasoline for recovery
  - Access to rail properties in restricted areas
  - Submerged equipment and locomotives
  - Accounting for Haz Mat cars
  - Backup communication plans
  - Debris removal
  - Federal relief dollars



# What Did FRA Do for Rita?

- **Developed Emergency Contact Plan to keep in constant communication with affected Short Lines**
- **Coordinated info and activities with Feds and Class 1 railroads**
  - Longer lead time in instructions on moving Haz Mat and locomotives
  - Remaining equipment moved to high ground and secured
  - Inventory and tracking of all Haz Mat
  - 24/7 communications with FRA at USDOT CMC
  - Stratified coordination with Feds, Military and States



# How Did Katrina Help Us With Rita?

- **There were 16 short line railroads in the affected area and 3 of them suffered serious damage**
- **We learned and planned better:**
  - Good coordination with railroads and local responders
  - Materials and gasoline for recovery were available in limited quantities
  - Immediate access to rail properties in restricted areas
  - No reported submerged equipment or locomotives
  - Haz Mat cars were accounted for and secured out of harm's way
  - Backup communication plans worked in almost all cases
  - Debris removal coordinated through FEMA and States
  - Federal relief dollars from single-purpose grant from Congress



# Perspectives on Disaster Responses

An aerial photograph capturing a massive evacuation operation at night. The scene is filled with a dense crowd of people, many wearing white shirts, gathered on a large open area. Numerous yellow school buses and white ambulances are visible, with their headlights and emergency lights illuminating the scene. In the background, a large, classical-style building with many columns is visible under a dark sky. The overall atmosphere is one of organized chaos and large-scale emergency response.

## The Evacuation of New Orleans



# Evacuation

- **No pre-existing Federal capability**
- **NRP federal role is advisory**
- **No National Response Plan agency roles**
- **No pre-existing contracts or plans**
- **Largest civilian population movement in US history**



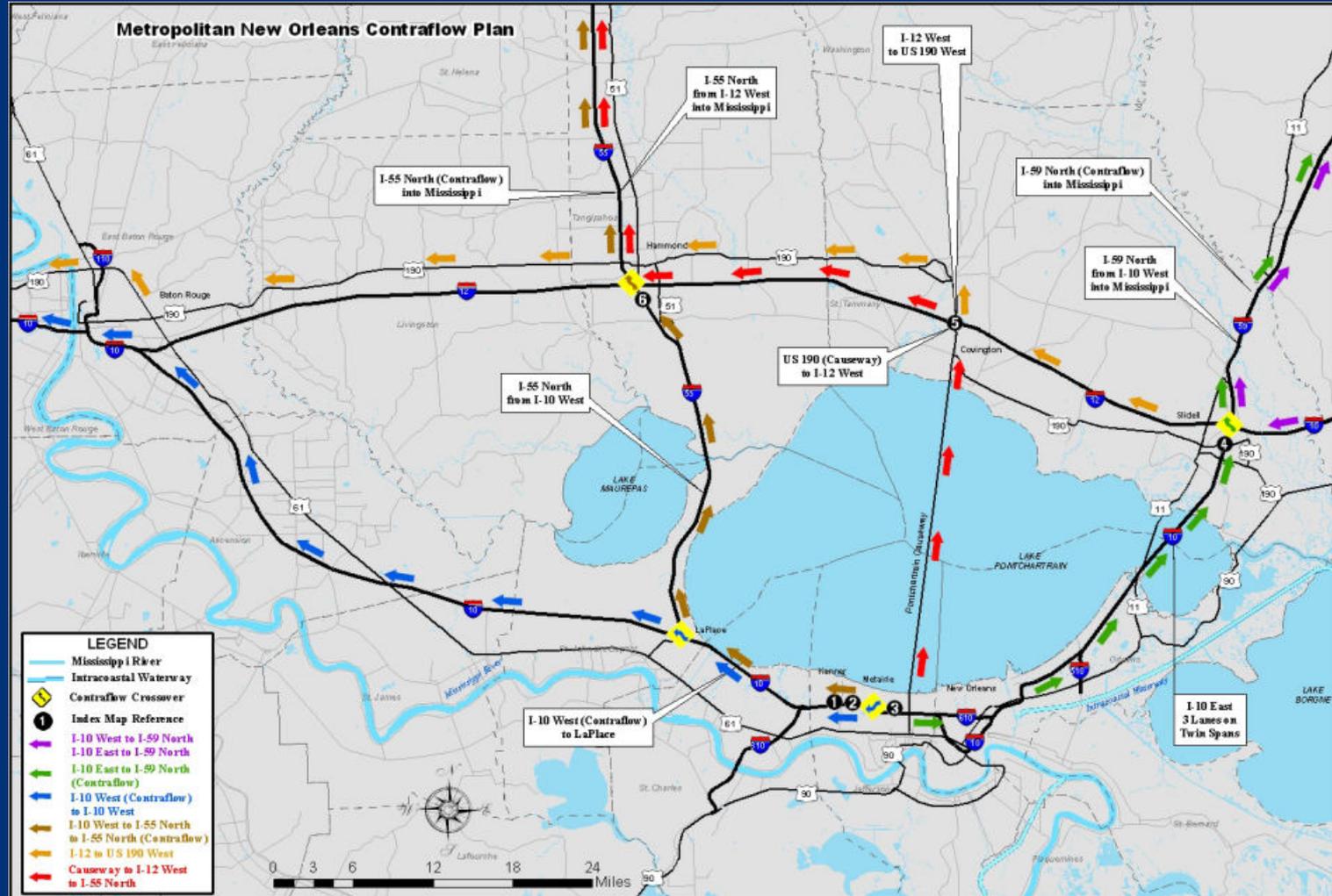
- **Few verifiable numbers**



- Superdome
- Media estimates
  - **80% of New Orleans evacuated**
  - **90,000 people remain**



# Self-Evacuation





And then levees broke...



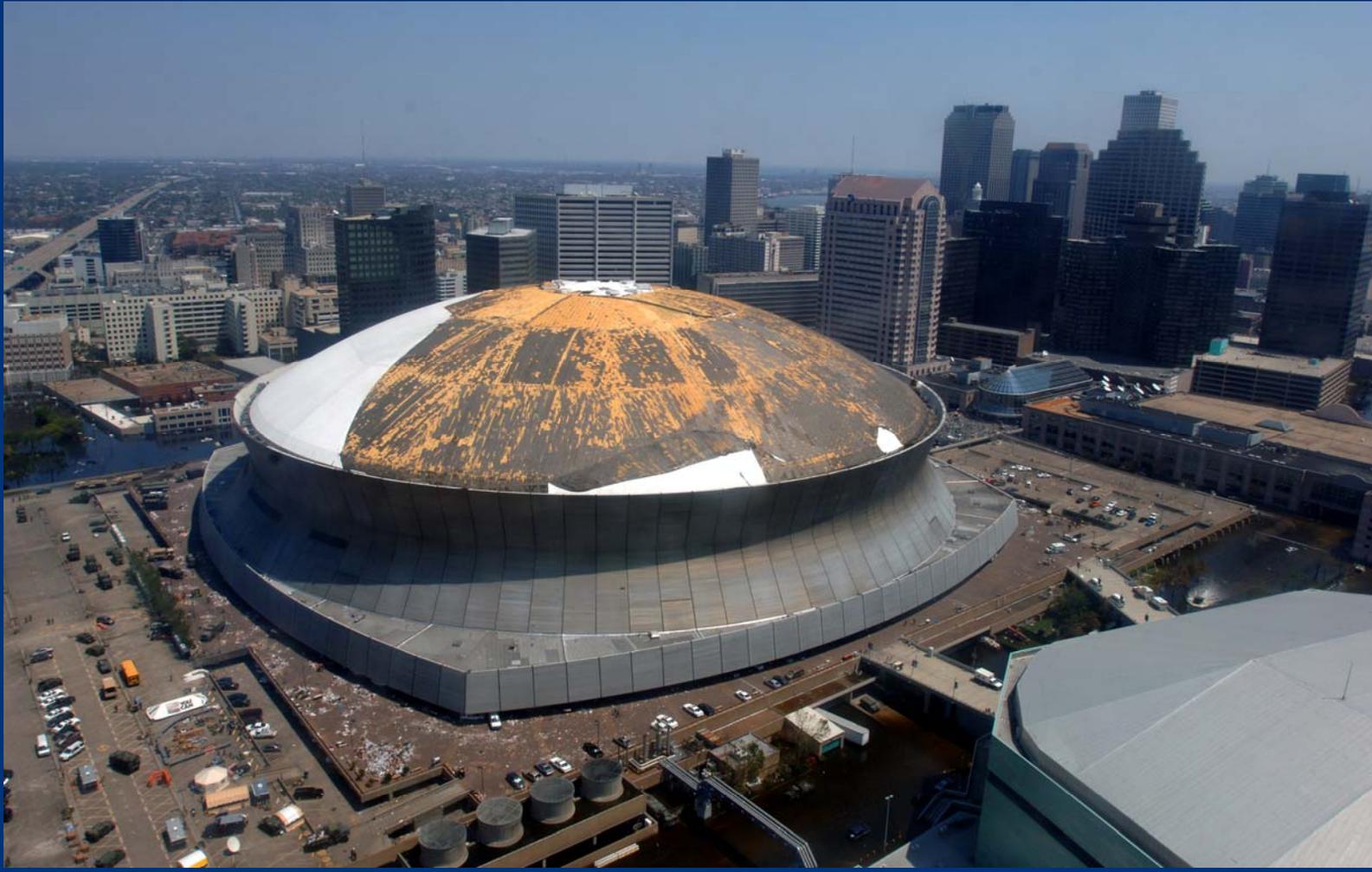


- **Wednesday, August 31**

- Request for buses
- DOT tasked
- Airport accepting emergency flights
- Buses and a fleet manager are onsite.
- DOD tasked
- Airport opens two runways
- 194-201 buses onsite



# The Superdome





# Evacuees





# Supplies to the Superdome





# The Challenge – Destinations





- **Thursday, September 1**
  - FAA teams
  - FEMA tasks DOT
  - Two military flights.
  - DOT coordinates air evacuation
  - Tasking for buses increases
  - 27,700 by bus



# Airport Conditions





# Commercial Air Operations



- **Timeframe**
- **“Operation Air Care”**
- **Charter flights**
  
- **17 Air carriers**





# Destinations

- **21 States**
- **38 locations**



# Airlift Partners

- **FAA**
- **DOT**
- **DOD**
- **TSA**
- **LANG**
- **Various**
- **FEMA**
- **Airlines and charters**
- **Others**



- **Space**
- **Schedule**
- **Loading**
- **Destinations not ready**
- **Communications with destinations**
- **Simultaneous medical evacuation**
- **Uncoordinated volunteer flights**
- **Search and rescue air operations**
- **VIP visits**
- **Pets**



# Medical Evacuation





# Airlift Evacuee Estimate



- **08 Sep**                    **712**
- **07 Sep**                    **605**
- **06 Sep**                    **1856 (est)**
- **05 Sep**                    **1890**
- **04 Sep**                    **6151**
- **03 Sep**                    **8837**
- **02 Sep**                    **4680**



# Bus Marshalling

- **I-10 at Mile Marker 218.5**
- **Eastbound I-10 Weigh Station**
- **Exit 209 Texaco Truck Stop**



# I-10 and Causeway





# Bus Staging





# Bus Fleet Size

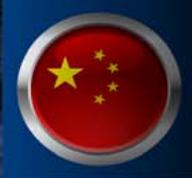


*THE NEW GREYHOUND  
WE'RE ON OUR WAY*



# More Buses





# Evacuation Train





# Animals

- **People wouldn't leave**
- **“Variety”**
- **Cleanup**





# Completion

- Airport opens
- Air evacuation complete



- **25,000 by air and 215,000 by bus**
- **5-day period**
- **Cost**
- **Contracts**
- **Planning**