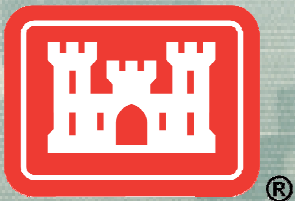


# New Orleans Hurricane and Storm Damage Risk Reduction System

Luis A. Ruiz, P.E.  
Hurricane Protection Office  
U.S. Army Corps of Engineers

August 27, 2009



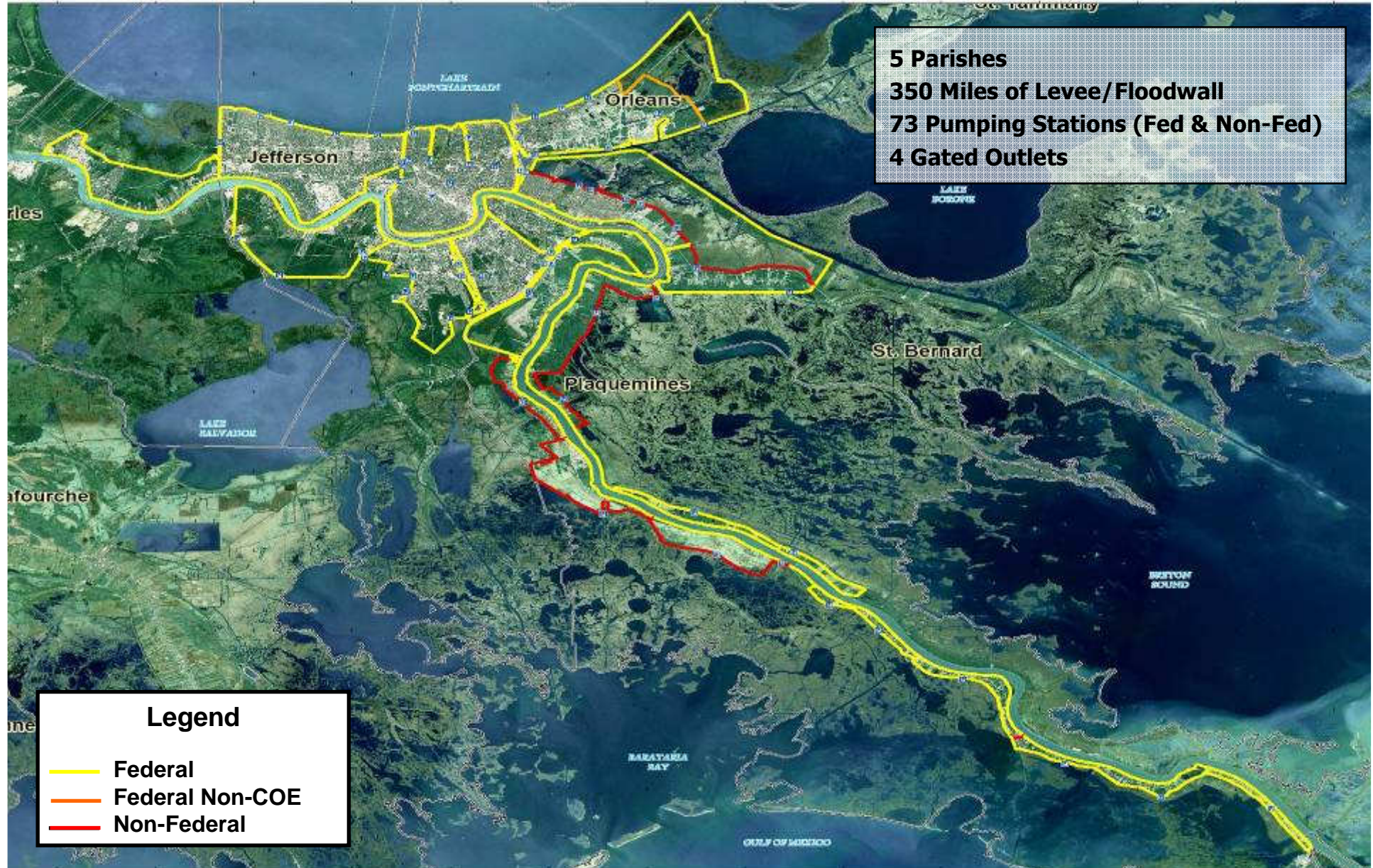
US Army Corps of Engineers  
**BUILDING STRONG**<sup>®</sup>



# New Orleans Area

## Hurricane Storm Damage Risk Reduction System

**5 Parishes**  
**350 Miles of Levee/Floodwall**  
**73 Pumping Stations (Fed & Non-Fed)**  
**4 Gated Outlets**



# HSDRRS: Our Mission and Commitment

- *Repair the damages, making what was there before whole again.*
- *By 1 June 2011, strengthen and improve the system and provide 100-year level of risk reduction capable of withstanding the effects of a storm having a 1% chance of occurring each year.*
- *Current funding level \$14.3 B (fully funded).*
- *Study and recommend solutions to provide higher levels of protection; restore and protect coastal wetlands (LACPR).*





# Program Stakeholders

## Local

- People of Metro New Orleans Area
- City of New Orleans
- 5 Parishes
- Sewerage & Water Bd.
- Business Community
- Neighborhood Associations
- And many more.....



## State

- State of Louisiana
- Governor's Office
- CPRA
- LA DOTD
- DNR
- Levee Authorities
- State Insurance Commissioner



## National

- Dept. of Homeland Security
- Gulf Coast Rebuilding
- OMB
- CEQ
- Federal Principles
- The White House
- The Congress

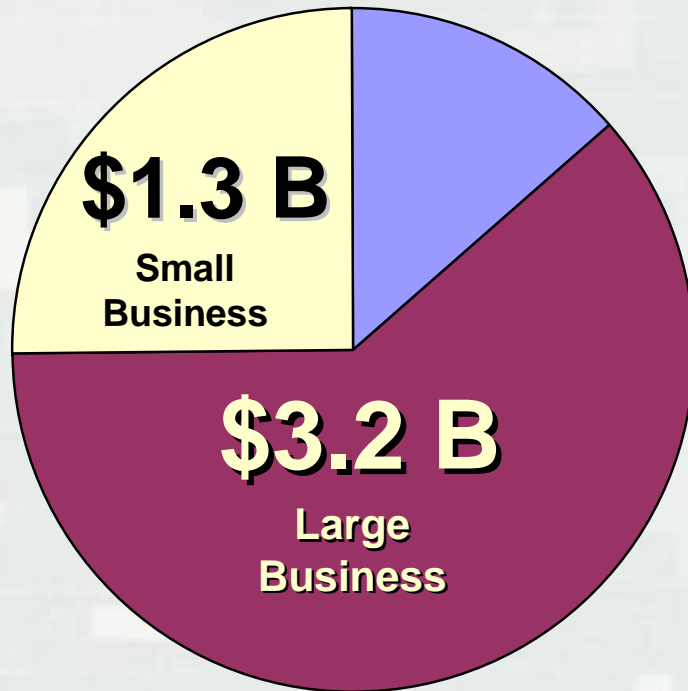


# Industry Interaction

- **Industry Days and Small Business Days:**  
Upcoming projects, concepts and innovations
- **Innovative Workshops:**  
Forums to discuss and gather information from industry to determine the best engineering solution



# Contractual Obligations



**Total Obligations:  
\$5.2 B**

- E&D, S&A, Real Estate, Work by Other Corps, etc
- Total Large Business Contracts
- Total Small Business Contracts

***30% of all contractual dollars have been awarded to small businesses***

**HSDRRS Contract Opportunities:**

[http://www.mvn.usace.army.mil/hps/hps\\_contract\\_info.aspx](http://www.mvn.usace.army.mil/hps/hps_contract_info.aspx)



# Construction Status

- **Total expected construction contracts: ~360**
- **Awarded 200 construction contracts for \$4.8B**
- **Overall Program Estimate: ~\$14.6B**
- **46 construction contracts worth \$3.9B ongoing**
- **154 construction contracts worth \$1B complete**

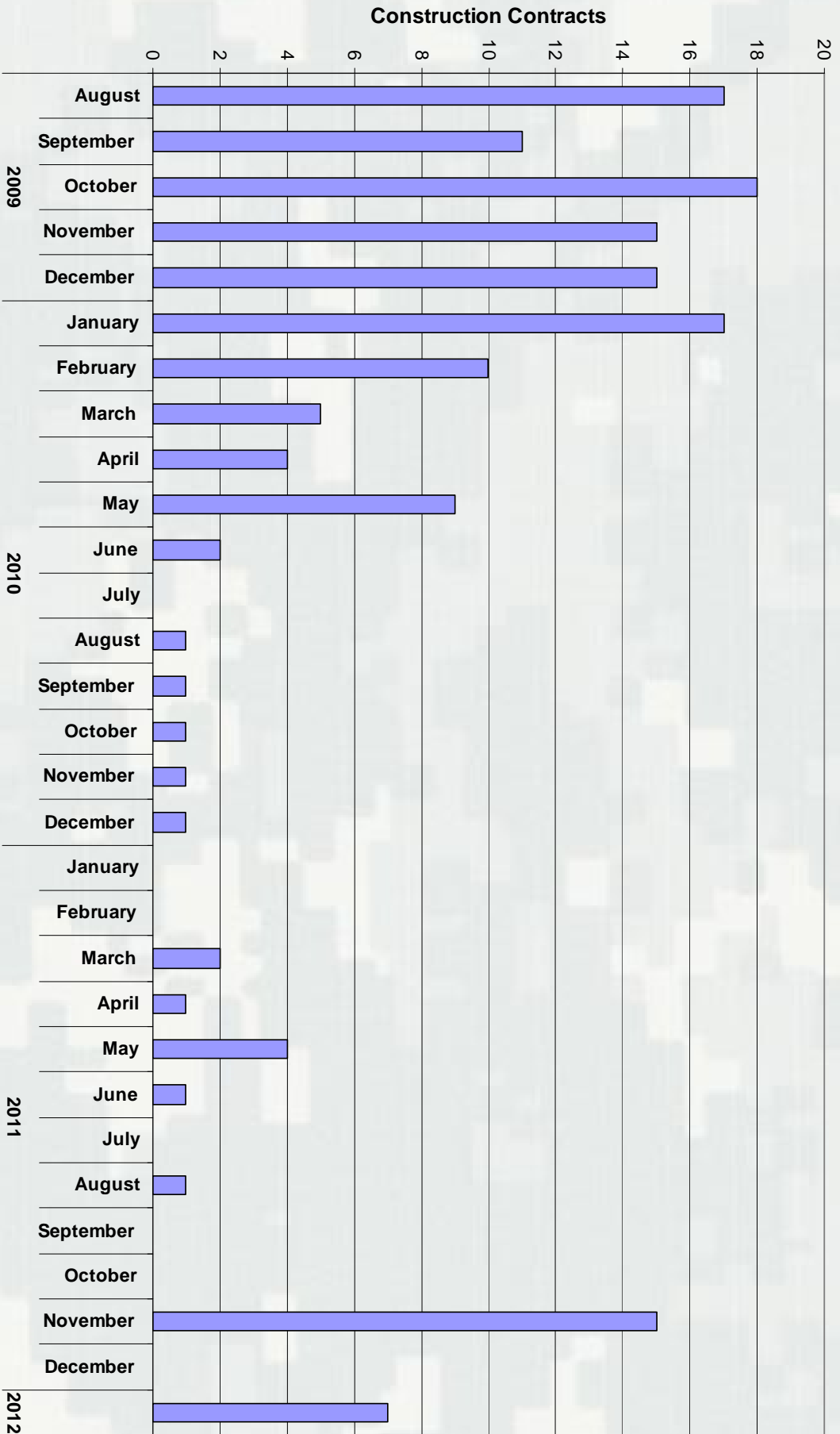
**2009**

- **Plan to award around 100 contracts for over \$3.2B**
- **70+ contracts – Levees and Floodwalls**
- **17 contracts – pump station repairs / improve**
- **3 contracts – SELA (interior drainage)**





# Future Construction Contract Awards



# Best Practices: System Program Management

- Acquisition Strategy
  - ▶ Design Build Contracts
  - ▶ Best Value Source Selection
  - ▶ Early Contractor Involvement (ECI)
  
- Construction Materials
  - ▶ Government Furnished Borrow and Borrow Supply
  - ▶ Supply Contracts for Foundation Piles
  
- Earned Value Management System (EVMS)
  
- Regional Resourcing



# Early Contractor Involvement (ECI)

## Contracts using ECI

- New Orleans East Back Levee - CSC RR to Michoud Canal
  - ▶ Raise Wall at Pump Station #15
  - ▶ New concrete T-wall and tie in structure
  
- Chalmette Loop Levee
  - ▶ Bayou Bienvenue to Bayou Dupre
  - ▶ Bayou Dupre to Highway 146
  - ▶ Highway 46 to Mississippi River (Verret to Caernarvon)
  
- GIWW - Western Closure Complex
  
- Lake Pontchartrain Surge Barrier (Seabrook)



# Design-Build

## Contracts using Design-Build

- IHNC Lake Borgne Surge Barrier
- Permanent Pump Stations
- Pump Station Repair

05/13/



# IHNC Surge Protection

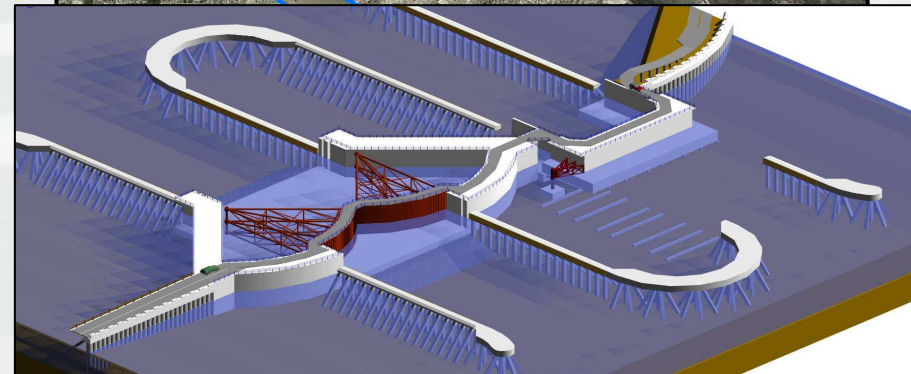
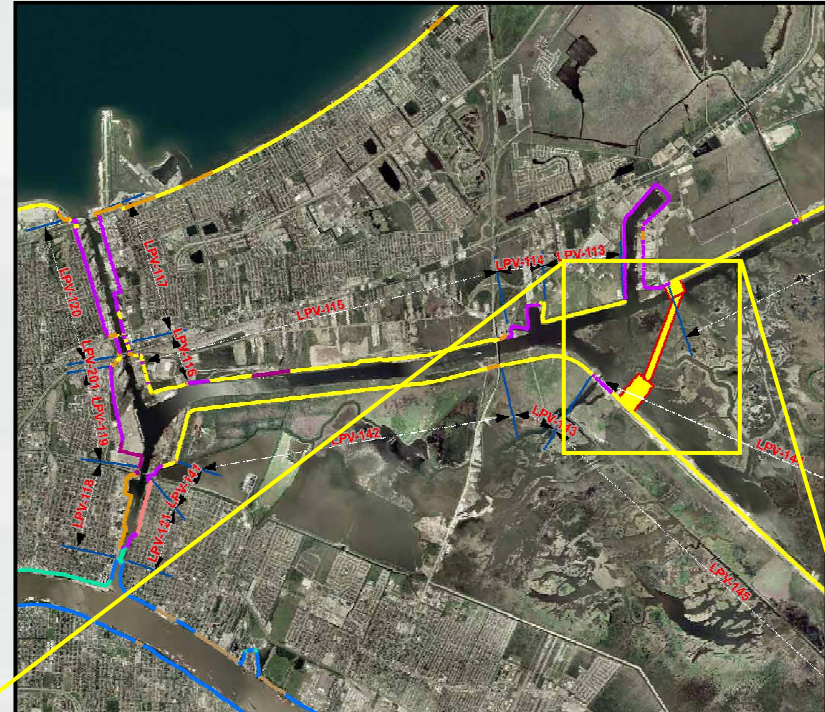
## Lake Borgne

### Objectives:

- Provide 1% event risk reduction to:
  - ▶ New Orleans East
  - ▶ New Orleans Metro
  - ▶ IHNC-MRGO
  - ▶ St. Bernard area
- Complete risk reduction project by June 2011

### Status:

- Awarded 3 Apr 08 design-build contract to Shaw E&I
  - ▶ Largest civil works project in Corps
- Construction ongoing



# IHNC Lake Borgne

## *Installation of Spun Cast Piles*



# IHNC Lake Borgne

## *Installation of Batter Piles*



# IHNC Surge Protection *Seabrook*

## Objectives:

- Provide 1% event risk reduction to:
  - ▶ New Orleans East
  - ▶ New Orleans Metro
  - ▶ IHNC-MRGO
  - ▶ St. Bernard

## Status

- NEPA for Seabrook out for Public Review Aug 2009
- NEPA Compliance – Oct 2009
- Notice to proceed Construction – Jan 2010
- Construction Complete – May 2011



***IHNC Seabrook Alternative Alignment***





# West Closure Complex

## Objectives:

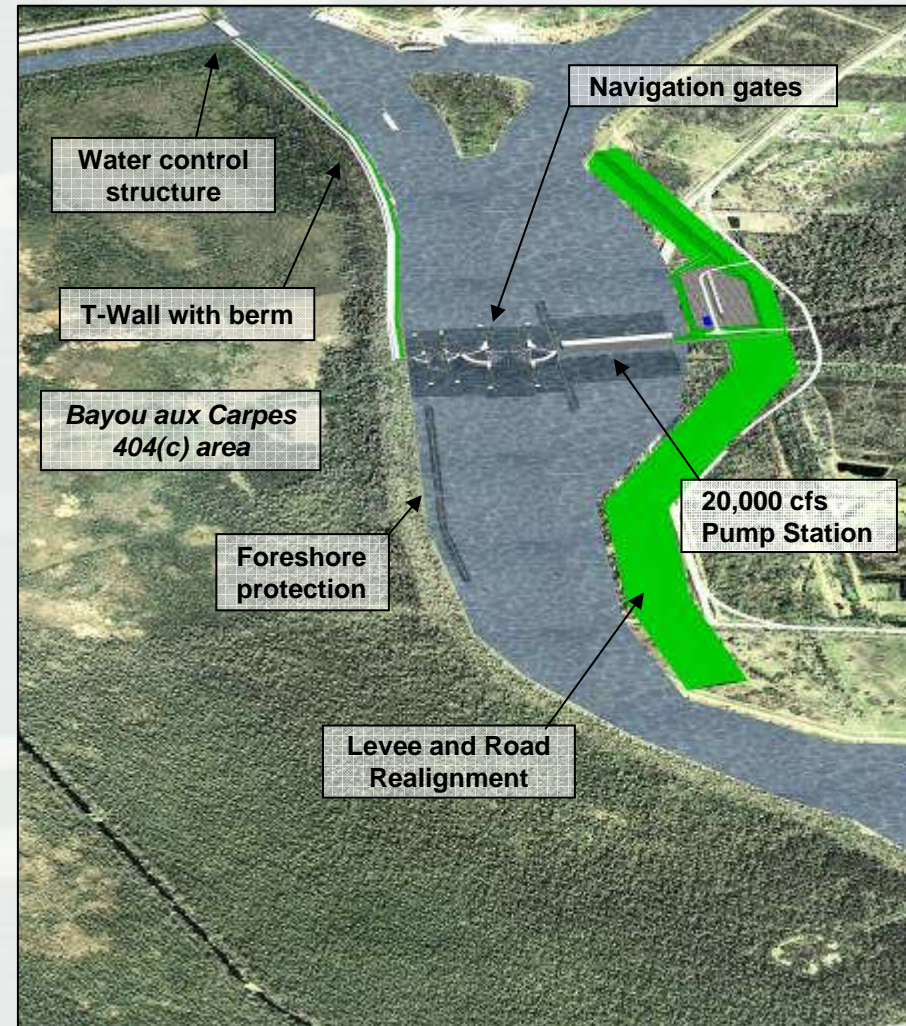
- Reduce risk to West Bank area by 2011.

## Features:

- 2 Navigable Floodgates
- 20,000 cfs pump station required to pump water from Algiers and Harvey Canals

## Status

- Awarded ECI Pre-Construction Services Contract 17 April 2009
  - ▶ Gulf Intracoastal Constructors
  - ▶ Kiewit Corporation
  - ▶ Traylor Bros, Inc
  - ▶ Boh Bros
  - ▶ Bertucci
  - ▶ MR Pittman
  - ▶ Phylway



# Permanent Pumps

## Objectives

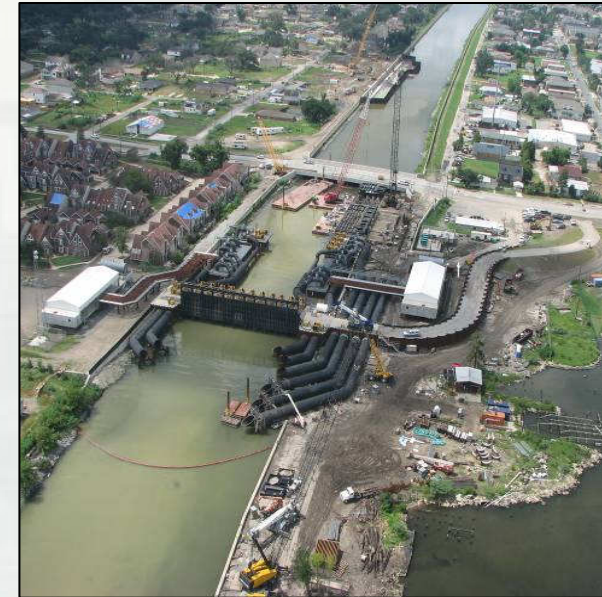
- Construct permanent pumping stations at the mouths of 17<sup>th</sup> St., Orleans and London Ave. canals concurrently or in series with existing pumping stations
- Complete project in 2013

## Status

- NEPA Compliance completed 30 Jun 2009
- Issue Phase 1 Request for Proposals Sep 2009
- Award Design-Build Contract Aug 2010

***"as long as the permanent facilities proceed according to schedule and a thorough inspection and maintenance program is followed for the temporary facilities, there are no immediate vulnerabilities to catastrophic failures with the hydraulic pumping systems or their supporting systems."***

**Parsons Final Report to DoD IG - Temp Outfall Canal Pumps, 27 Feb 2009**



**Temporary Outfall Canal Closure Structure**



**Rendering of Permanent Solution**

# Mississippi River Gulf Outlet

## Closure Status

- Rock closure structure in the vicinity of Bayou La Loutre Ridge in St. Bernard Parish.
- Closure completed July 2009

## Ecosystem Restoration Plan

- Feasibility Study underway – will provide plan to restore and maintain estuarine habitat areas affected by MRGO navigation channel
- Study area encompasses Lake Borgne ecosystem
- Study will evaluate:
  - ▶ Saltwater intrusion
  - ▶ Wetland loss
  - ▶ Retreating and eroding barrier islands
  - ▶ Bank and shoreline erosion



Mississippi River Gulf Outlet Closure

Image #90702.6034  
Date 07.02.2009  
Photo 888.542.0231



**MRGO Construction**

# Harvey Canal Floodwall



# Harvey Canal Floodwall



# Pre-Katrina Pump Station



# Bayou Segnette Pump Station

## *Completed Safe House*

Dec 2006



# Challenges Ahead

- Real Estate
- Borrow Material
- Transportation Impact
- Mitigation





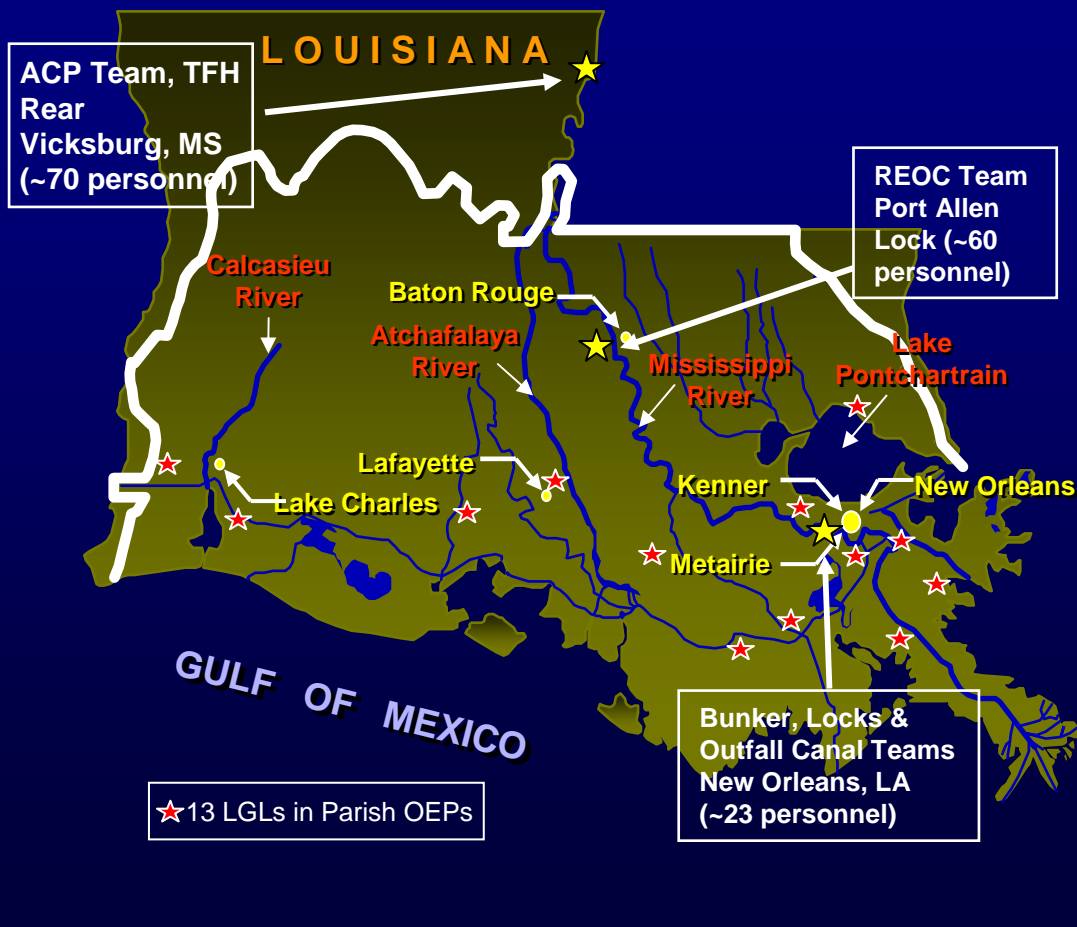
# Magnitude of Construction Traffic

- **140 million total miles**
- **Borrow Trucks (29 MCY)**
  - ▶ 95% of construction traffic
  - ▶ 50 million miles
  - ▶ 2 million trips
- **Steel Trucks (822,000 Tons)**
  - ▶ 2% of construction traffic
  - ▶ 90 million miles
  - ▶ 40,000 trips
- **Concrete Trucks (972,000 CY)**
  - ▶ 3% of construction traffic
  - ▶ 1 million miles
  - ▶ 100,000 trips



# Response Preparedness for Hurricane Season 2009

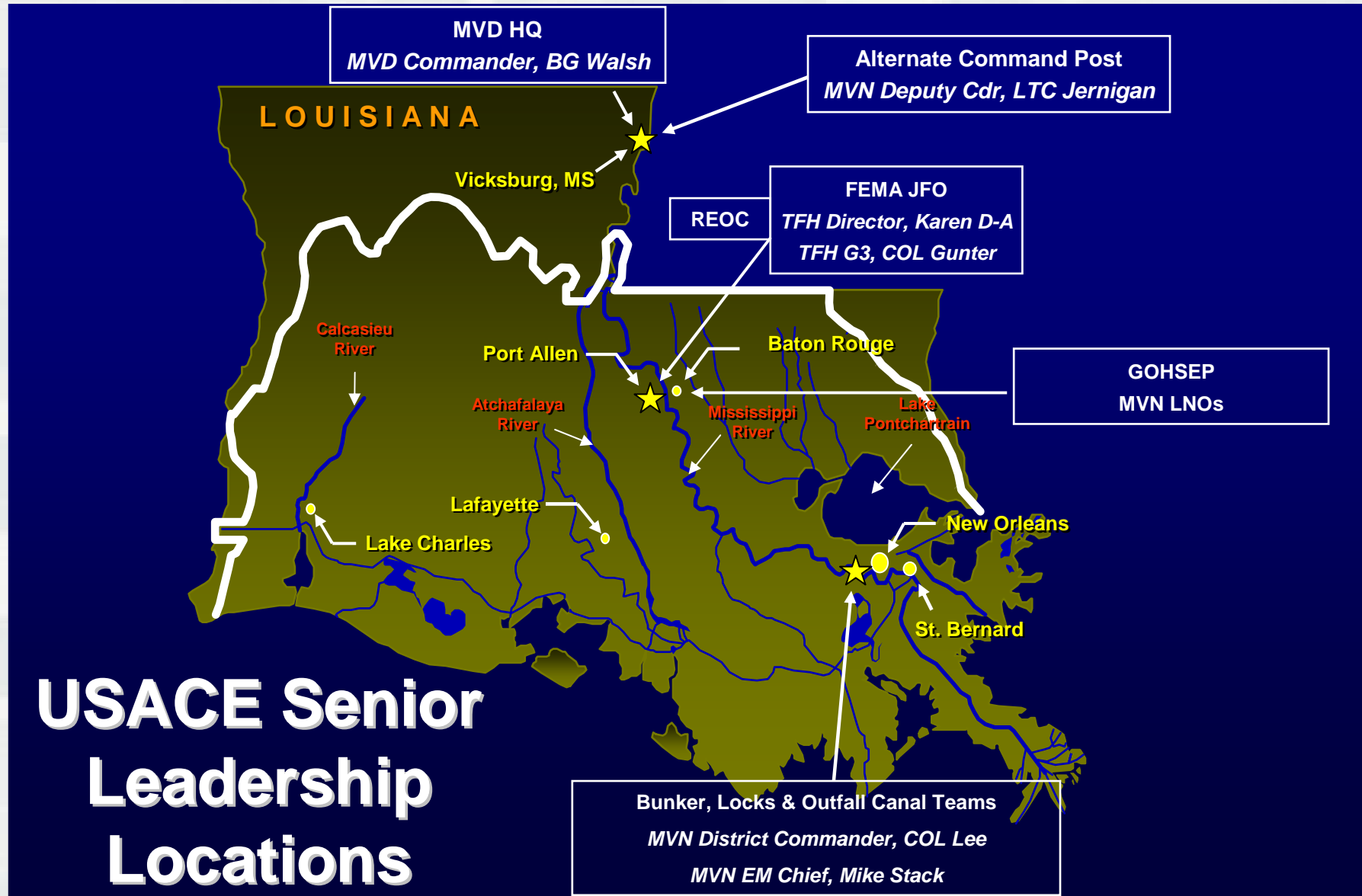
## New Orleans District 30,000 sq. miles



- *Pre-positioning of supplies and equipment*
  - ▶ *Flood fighting*
  - ▶ *Unwatering*
  - ▶ *Channel clearing*
- *Pre-award helicopter contracts*
- *USACE liaison assigned to state and local governments*
- *Protocols and Agreements for Outfall Canal Gates in place with Sewer and Water Boards and operations will be rehearsed prior to 1 June 2009*



# Response Preparedness for Hurricane Season 2009



# Currently, you have a 1% chance every year of flooding this deep from Hurricanes

## Notes:

- The depth map tool is a relative indicator of progress, over time, demonstrating risk reduction as a function of construction progress
- The water surface elevations are mean values
- The scale sensitivity of the legend is +/- 2 feet
- The info does not depict interior drainage modeling results
- The storm surge is characterized as the result of a probabilistic analysis of 5 to 6 storm parameters of a suite of 152 storms and not a particular event



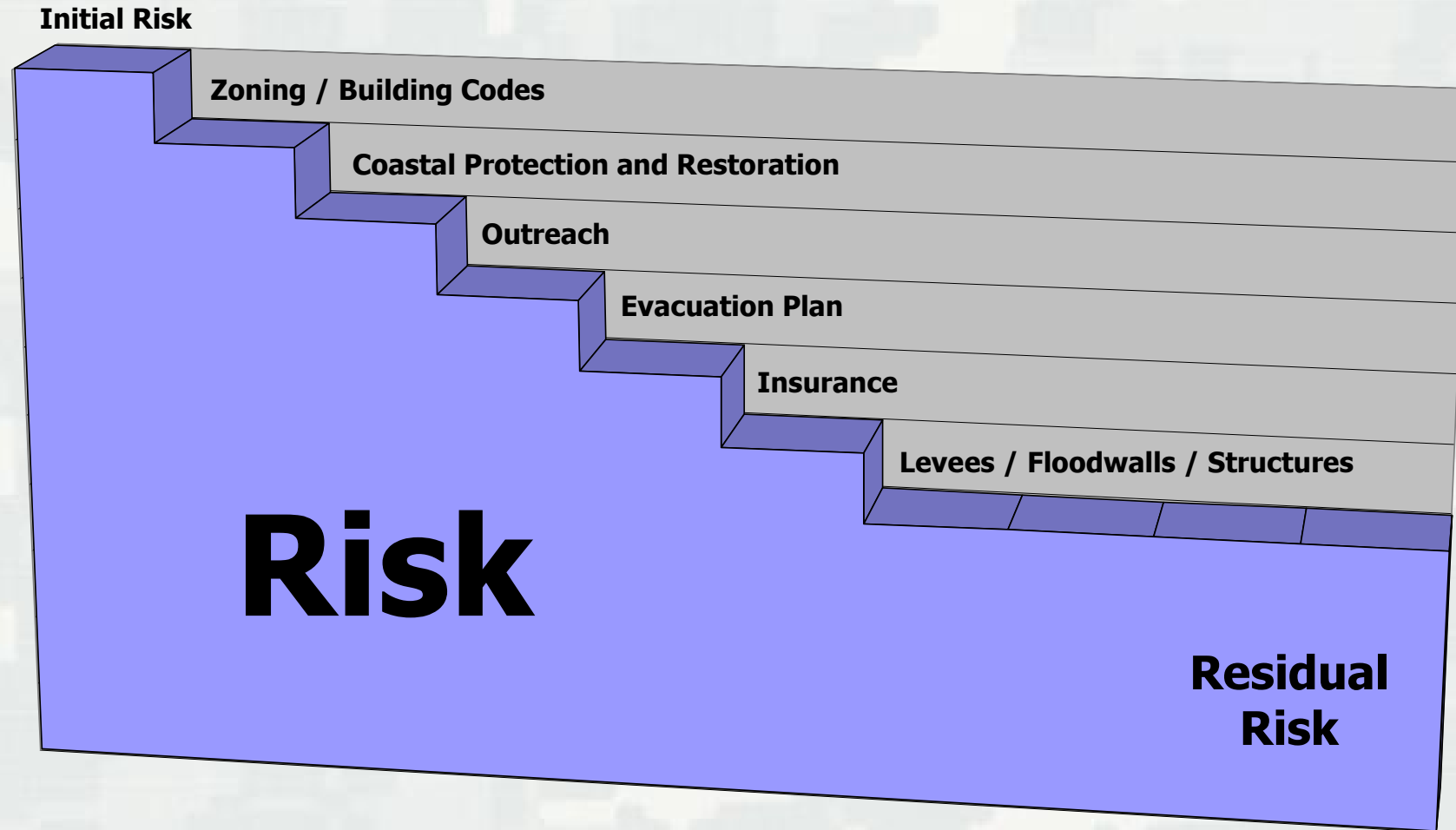
# With the 100-year level of protection, you have a 1% chance every year of flooding this deep from Hurricanes

## Notes:

- The depth map tool is a relative indicator of progress, over time, demonstrating risk reduction as a function of construction progress
- The water surface elevations are mean values
- The scale sensitivity of the legend is +/- 2 feet
- The info does not depict interior drainage modeling results
- The storm surge is characterized as the result of a probabilistic analysis of 5 to 6 storm parameters of a suite of 152 storms and not a particular event



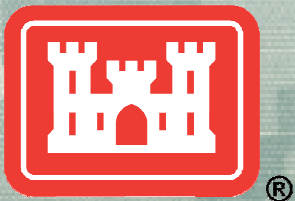
# Buying Down Risk



# New Orleans Hurricane and Storm Damage Risk Reduction System

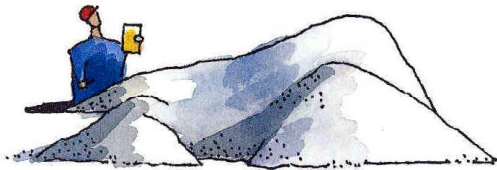
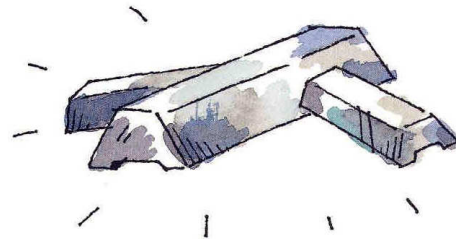
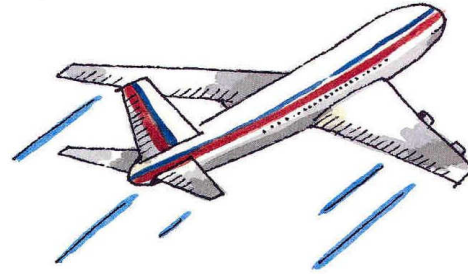
Luis A. Ruiz, P.E.  
Hurricane Protection Office

August 27, 2009



US Army Corps of Engineers  
**BUILDING STRONG**<sup>®</sup>





**It all starts with dirt.**



**Gracias  
por su  
atención**