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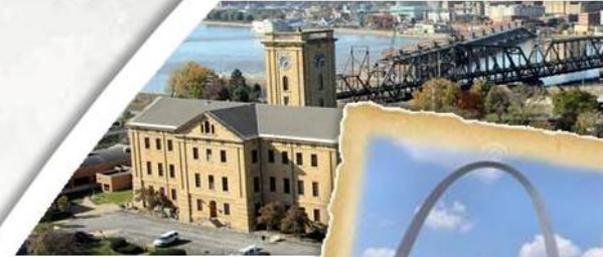
# Mississippi River & Tributaries Project History & Overview

Watershed Division  
Mississippi Valley Division

17 June 2015

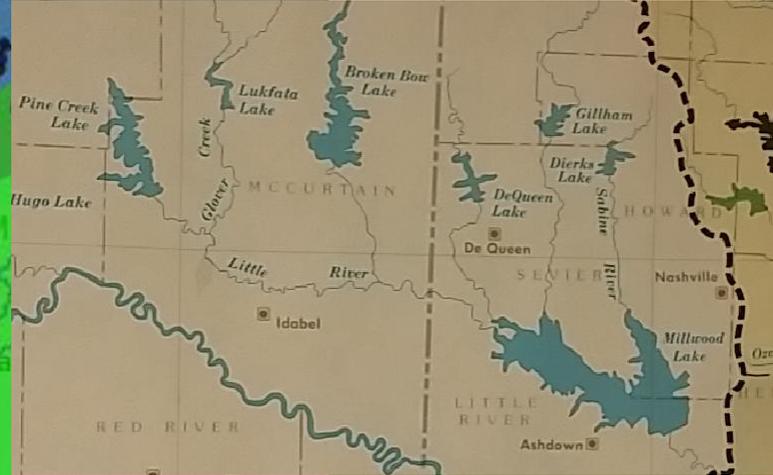
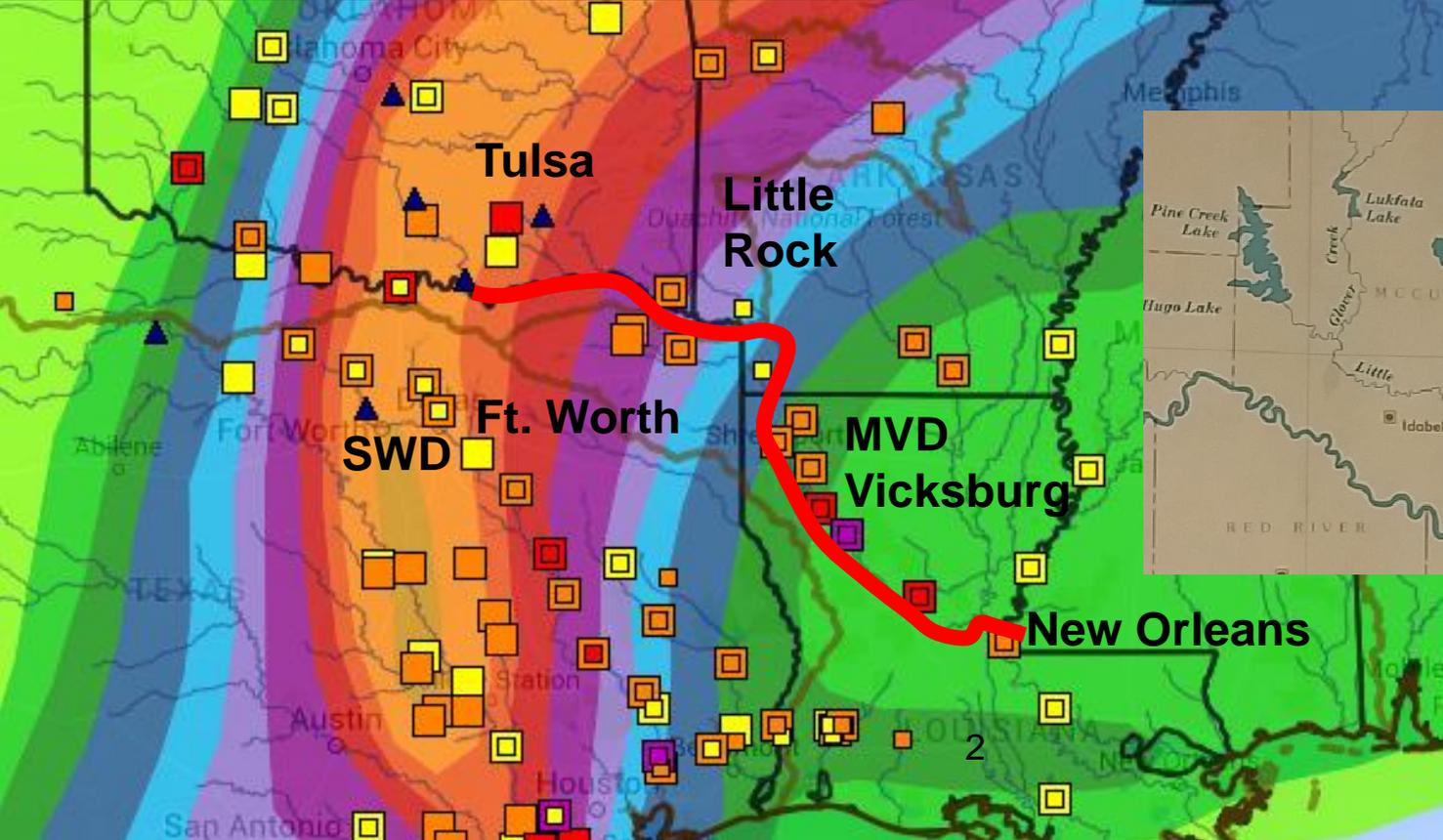
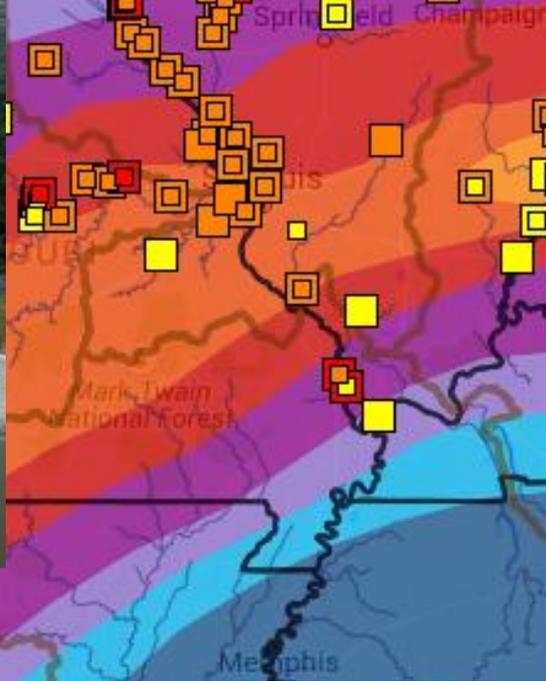


US Army Corps of Engineers  
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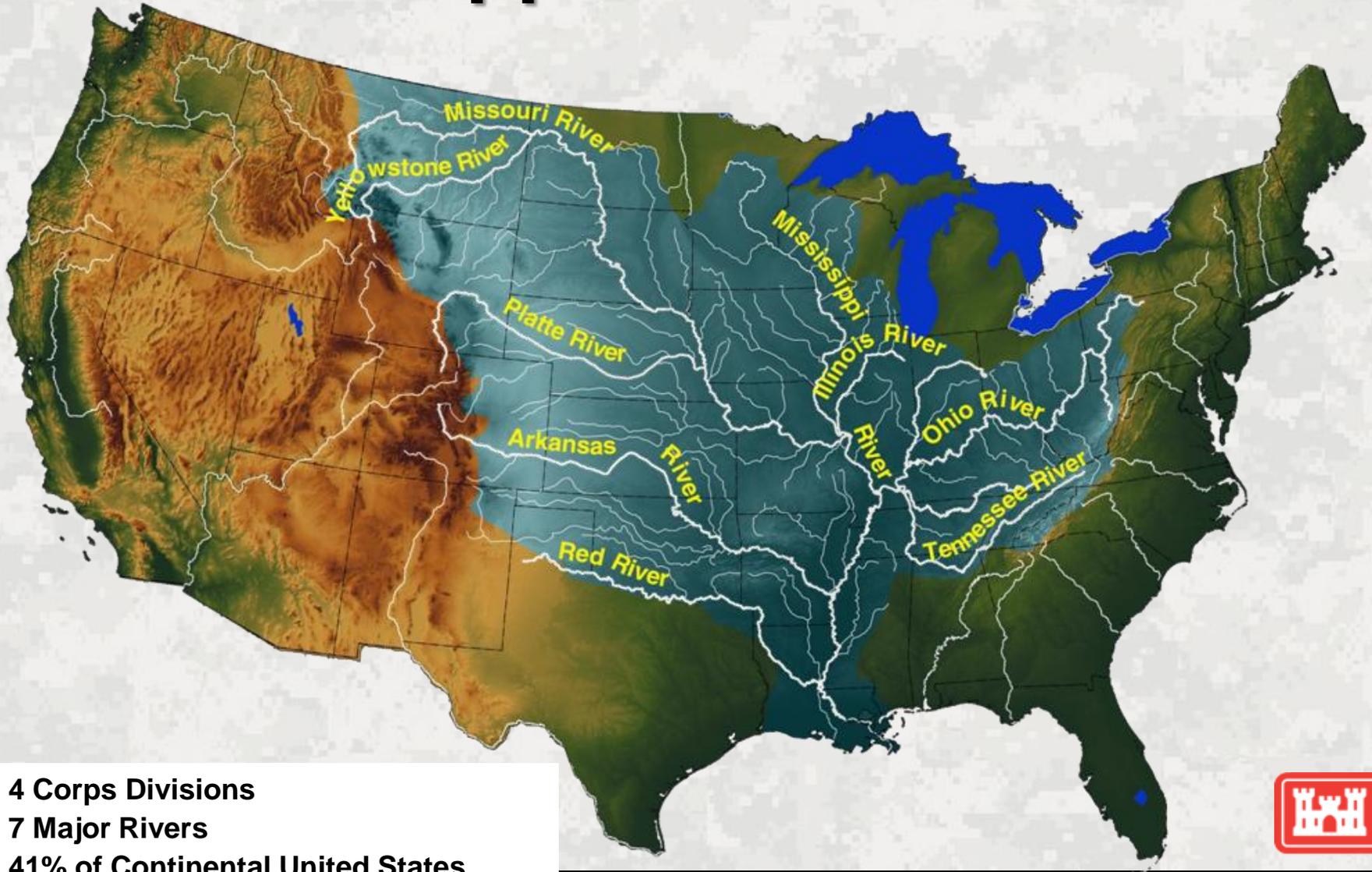


**Lake Texoma  
Spillway**



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# Mississippi River Watershed



- 4 Corps Divisions
- 7 Major Rivers
- 41% of Continental United States
- 31 States
- 2 Canadian Provinces



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# Mississippi River & Tributaries Project

1. There is a past rendition we must recollect.
2. There is a present situation we must not neglect.
3. There is a future condition we must protect.



# 1. There is a past rendition we must recollect.

To understand where we're going, we have to understand where we've been.

## 1927 Flood



### Legend

 1927 Flooded Area

- Flooded 26,000 mi<sup>2</sup>
- 700,000 homeless
- 162,000 homes inundated
- Over 250 people killed
- Economic Damages ~\$1B



▪ \$102.6M in Crop Losses

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1927 Flood Impacts, Greenville to Vicksburg



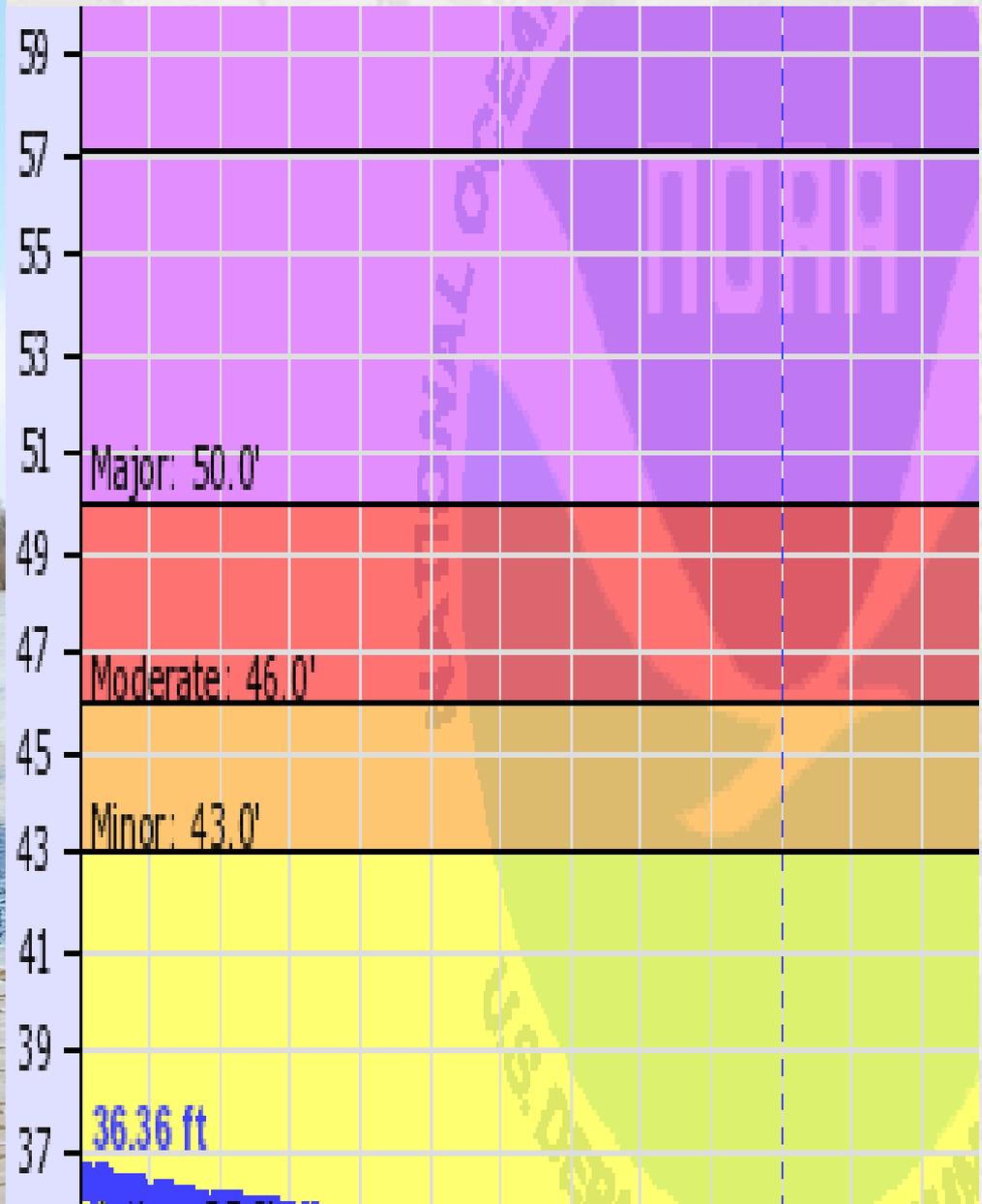
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Levee Repairs being made in Plaquemine Parish



Levee worker on McCrea Levee near Point Coupee, LA



Boy Scouts distributing tobacco to refugee camp near Baton Rouge



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# Levees Only Policy

“It’s hardly worthwhile to consider the projects for relieving the Mississippi River floods by creating new outlets, since these sensational propositions have commended themselves only to unthinking minds, and have no support among engineers...there could not well be a more unphilosophical method of treatment than the multiplication of avenues of escape.”

- Edward Atkinson, Boston  
April 14, 1882  
From Mark Twain’s  
Life On The Mississippi



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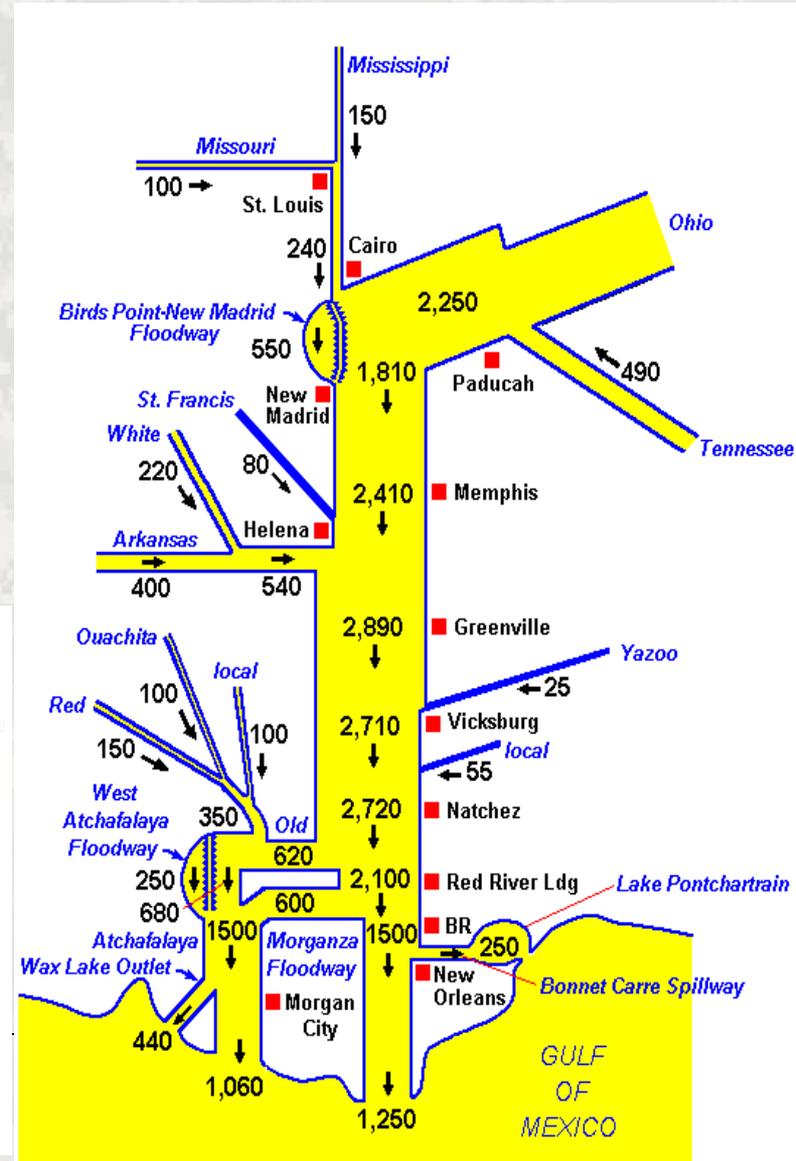


In 1927, Gen. Jadwin tasked the Mississippi River Commission with creating an alternative to the "levees only plan." However, the commission produced a levee continuation plan with an exuberant cost of \$882 million. Gen. Jadwin turned down the commission's plan and pushed forward with his engineering alternatives. The **Flood Control Act of 1928** established an engineering board to select the best features of the Corps of Engineers and the commission's plans.

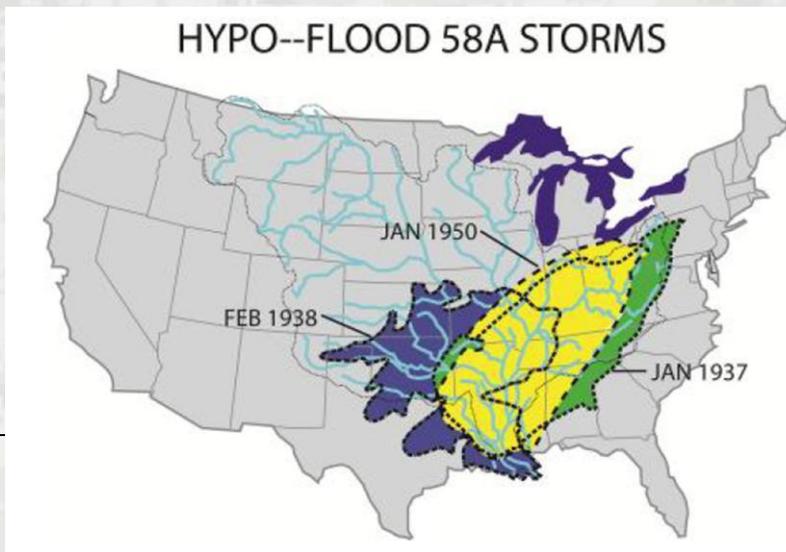
# The Mississippi River and Tributaries project was authorized by the 1928 Flood Control Act.

- The MR&T project has four major features:
  1. Levees / Floodwalls
  2. Floodways / Backwater Areas
  3. Channel improvement and stabilization
  4. Tributary basin improvements
- These features work together to provide risk reduction from floods, efficient navigation, and environmental protection and enhancement.

## Project Design Flood



HYPO--FLOOD 58A STORMS



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# Mississippi River Levees

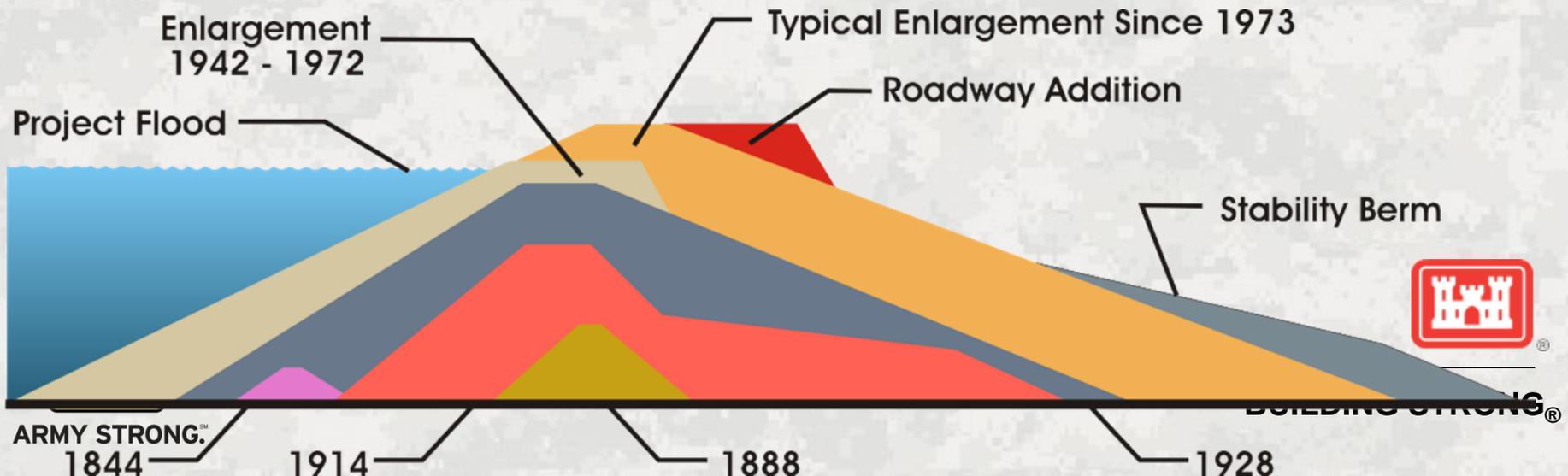
The backbone of flood protection,  
confining flow to the leveed area

## FY 14 Status\*

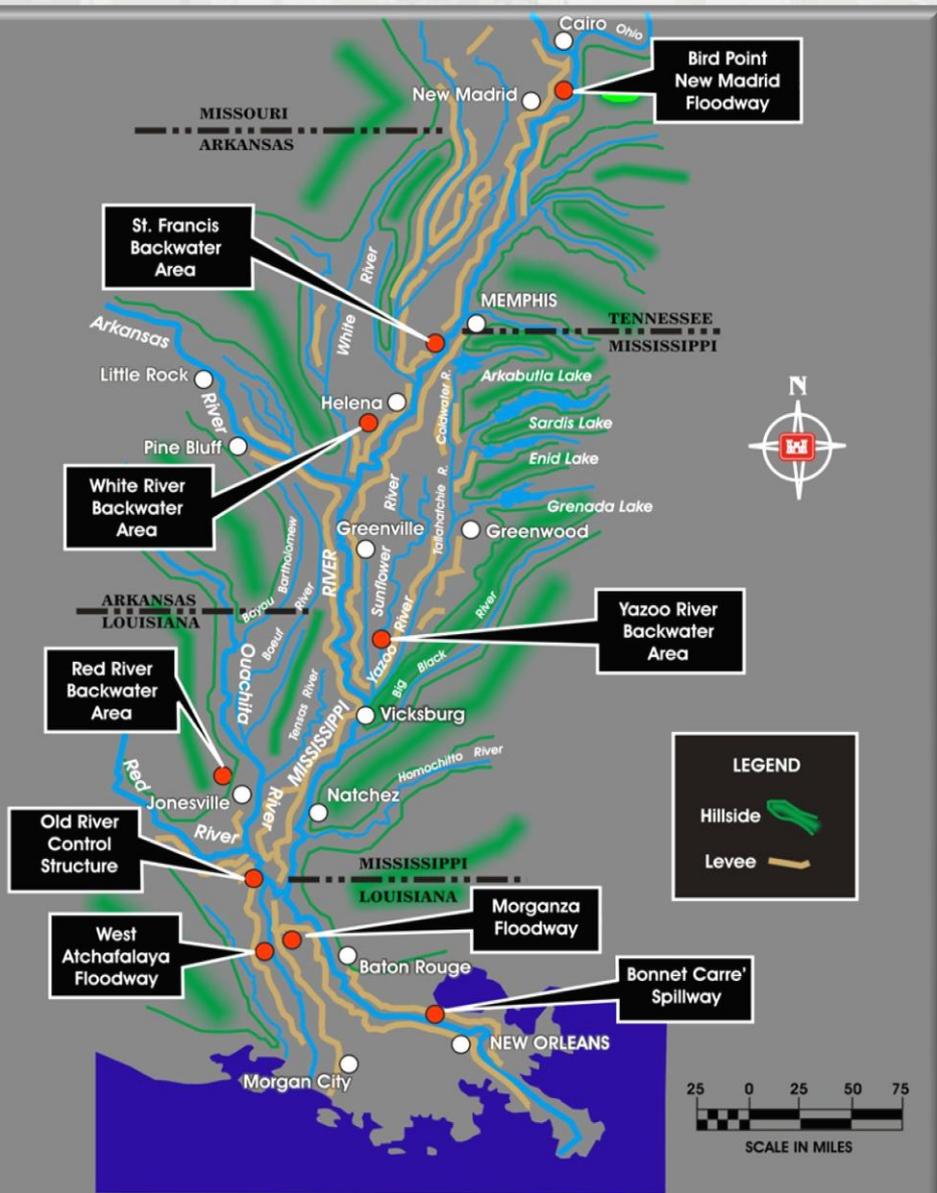
Authorized	2215.7 miles
Full Grade	1845.7 miles
Remaining Work	370 miles



\*Status to be reevaluated at the  
completion of the MR&T Flowline Study.



# Floodways and Backwater Areas



## Floodways

- Birds Point - New Madrid = 133,000 acres
- Morganza = 71,500 acres
- Bonnet Carré Spillway = 7,600 acres
- West Atchafalaya = 154,000 acres

**Total Area = 366,100 acres**

**Used in 2011 = 212,000 acres**

## Backwater Areas

- St. Francis = 500,000 acres
- White River = 145,000 acres
- Yazoo = 634,000 acres
- Red River = 373,000 acres

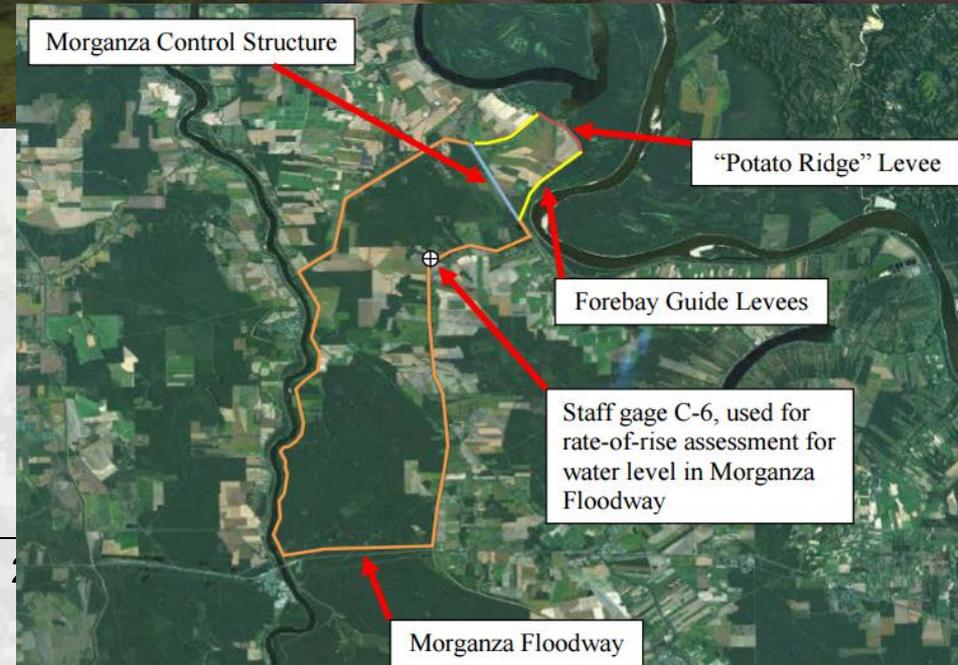
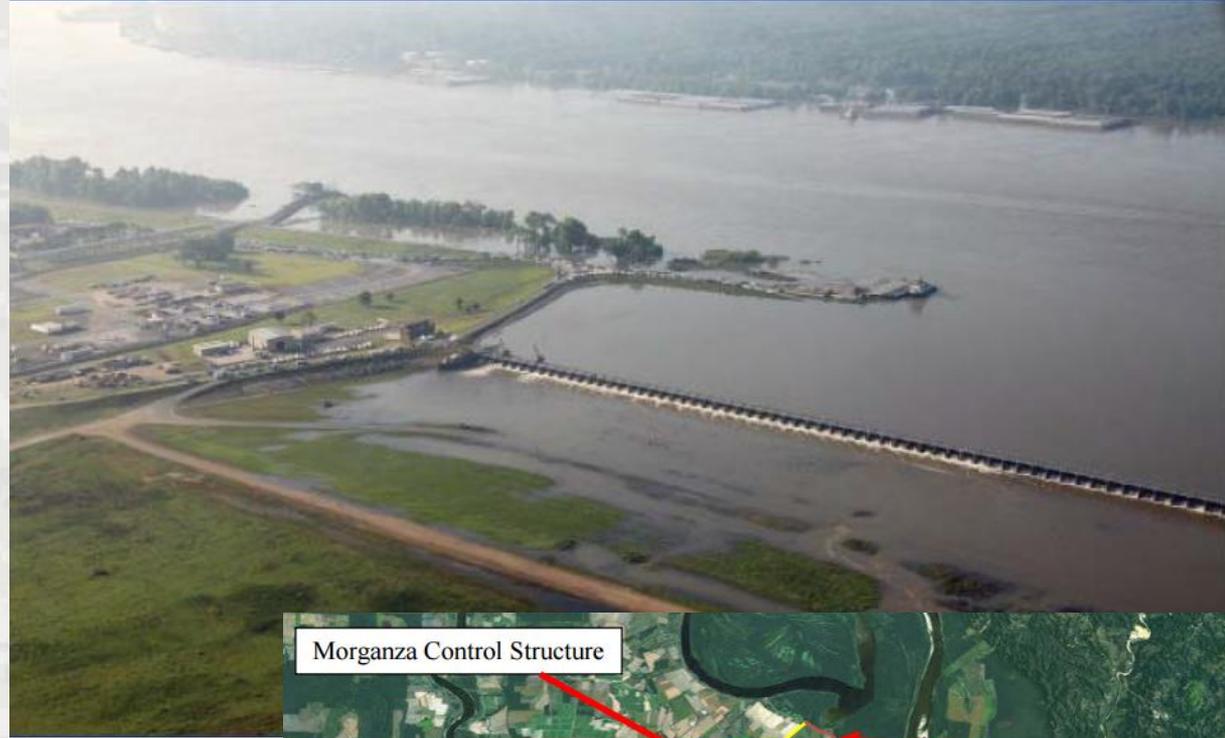
**Total Area = 1,652,000 acres**

**Used in 2011 = 335,000 acres**

**(interior flooding)**

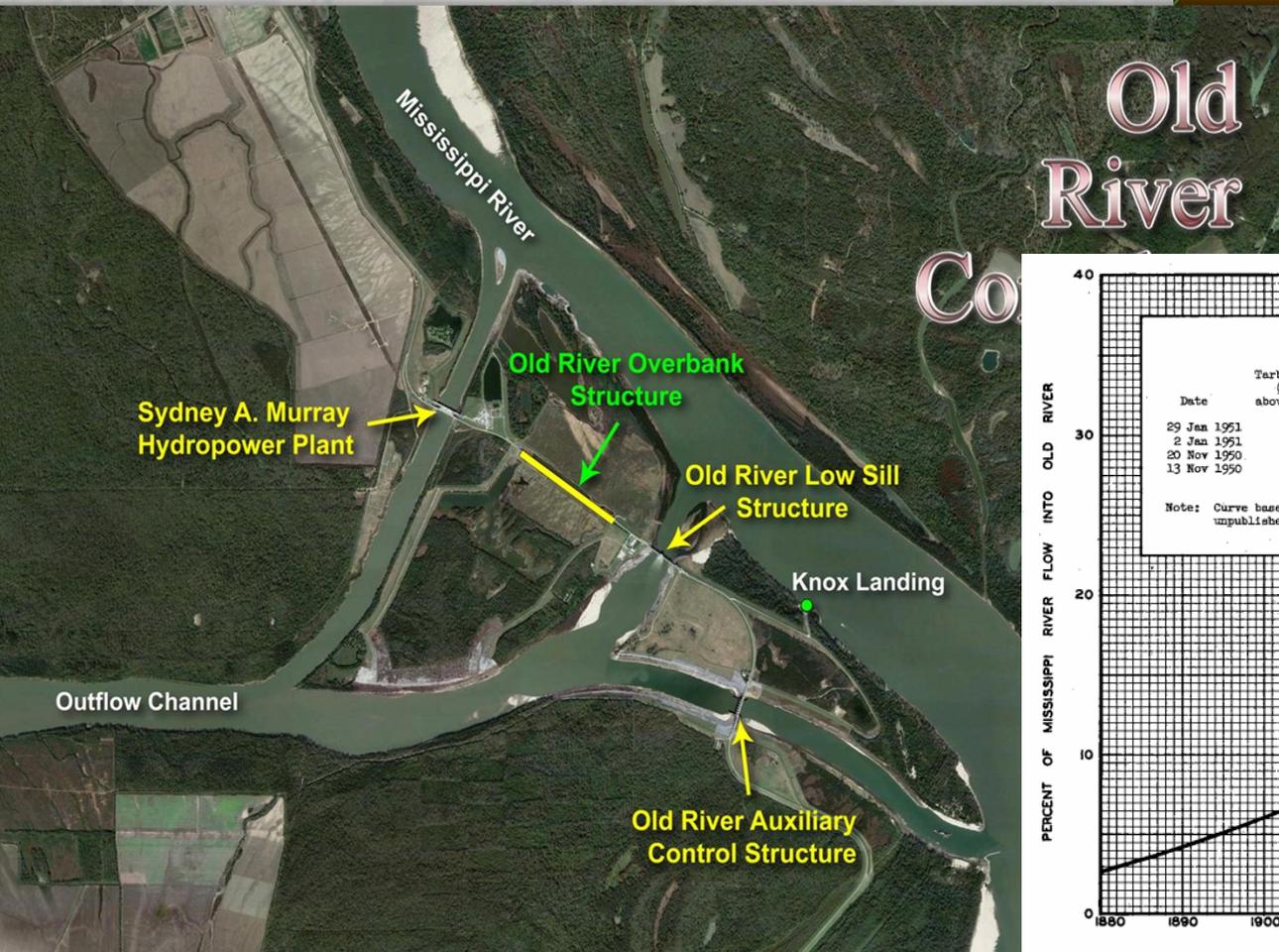
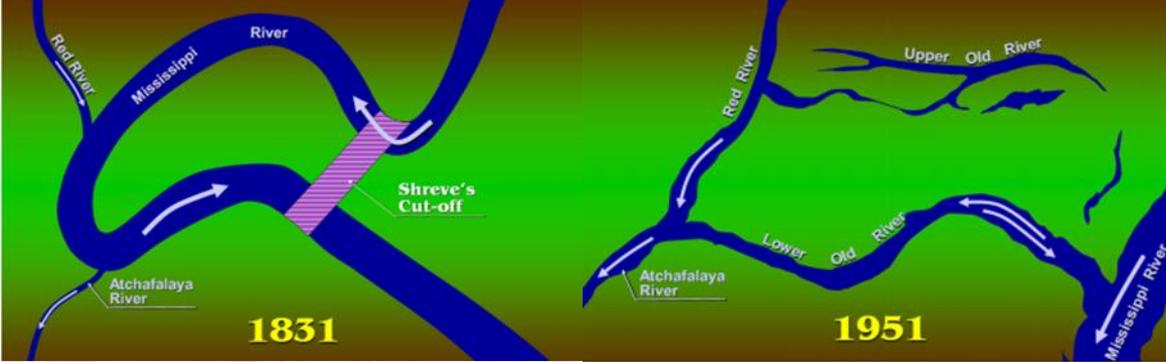


# Floodways and Backwater Areas

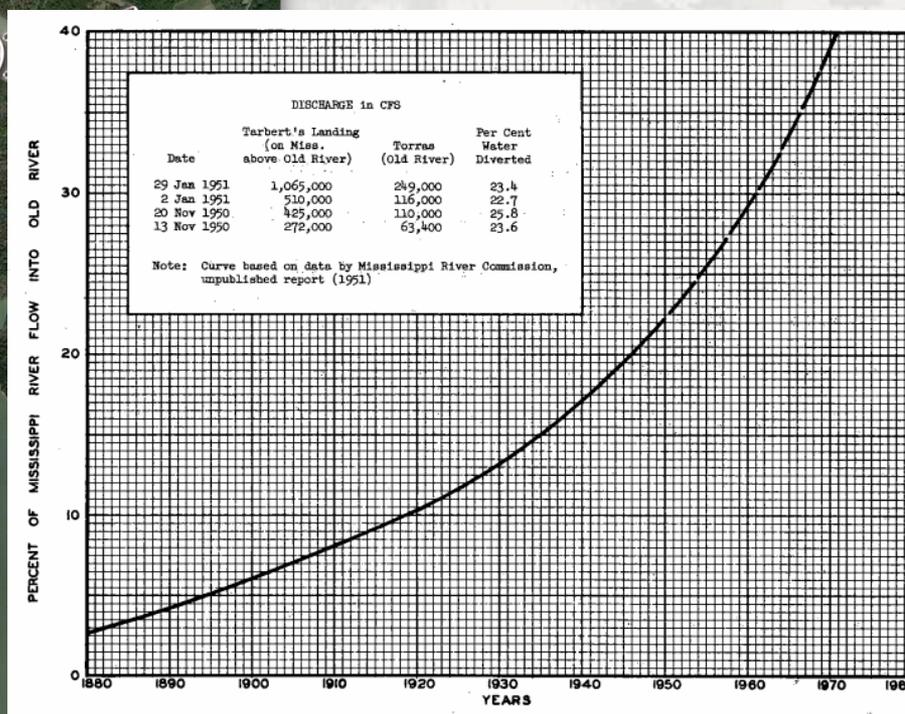


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# Old River



# Tributary Improvements

- Reservoirs
- Levees
- Control Structures
- Pumping Plants



Wappapello Lake



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# Channel Improvements



**Natural & Reveted Bank**



**Stone Structures – Dikes,  
Chevrons, & Bendway Weirs**



**Dredging**



**Environmental  
Enhancements**



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# Arkansas City, 2011 Flood



# Between Baton Rouge & New Orleans, 2011 Flood



# Historical Flows

Station	2011	1927 <sup>6/</sup>	1937 <sup>6/</sup>	1973	PDF <sup>5/</sup>
Cairo, IL <sup>1/</sup>	2,100,000 <sup>C/2/3/</sup>	1,626,000	2,010,000 <sup>4/</sup>	1,536,000	2,360,000 <sup>4</sup>
Memphis, TN	2,213,000 <sup>C</sup>	N/A	2,020,000	1,633,000	2,410,000
Helena, AR	2,130,000 <sup>C</sup>	1,756,000	1,968,000	1,627,000	2,490,000
Arkansas City, AR	2,293,000 <sup>C</sup>	1,712,000	2,159,000	1,879,000	2,890,000
Vicksburg, MS	2,320,000 <sup>C</sup>	1,806,000	2,060,000	1,962,000	2,710,000
Natchez, MS	2,260,000 <sup>C</sup>	N/A	2,046,000	2,024,000	2,720,000
Red River Landing, LA	1,641,000 <sup>C</sup>	1,461,000	1,467,000	1,498,000	2,100,000
Baton Rouge, LA	1,436,000 <sup>C</sup>	N/A	1,400,000	1,381,000	1,500,000
N. Orleans, LA	1,230,000 <sup>C/8/</sup>	1,360,000	1,342,000	1,248,000	1,250,000
Morgan City, LA <sup>7/</sup>	512,000 <sup>C</sup>	741,000	493,000	692,000	920,000
Wax Lake Outlet, LA <sup>7/</sup>	323,000 <sup>C</sup>	N/A	N/A	292,000	580,000

C - Peak Discharge, Provisional

1/ Discharge Range at Hickman, KY

2/ Total Confluence Flow of 1,936,000 cfs measured at approximate mile 950.8 at 1400 CDT 5/02/2011 near Wickliffe, KY, prior to operation of Birds Point-New Madrid

3/ Peak Flow Measured 4 May 2011 = 1,730,000 cfs at Hickman plus 370,000 cfs flow through Birds Point-New Madrid Floodway

4/ Includes flow through Birds Point-New Madrid Floodway

5/ Project Design Flood (PDF) provides design flows for MR&T project. Prior to 2011 Flood, MR&T Project was 89% complete. 2011 Flood Flows ~ 80-85% of MR&T PDF Flows.

6/ Reference - "Annual Maximum, Minimum, and Mean Discharges of the Mississippi River and Its Outlets and Tributaries to 1963"

7/ Wax Lake Outlet was constructed from 1937-1942. Prior to that, Lower Atchafalaya River was the major outlet.

8/ New Orleans Mean Daily Flow Measured at Belle Chasse in 2011, Readings at this site are tidally influenced. An instantaneous measurement of 1,320,000 cfs was made on 17 May 2012

Revised 27 Jan 2012

# Flooded Areas

## 1927 Flood vs 2011 Flood

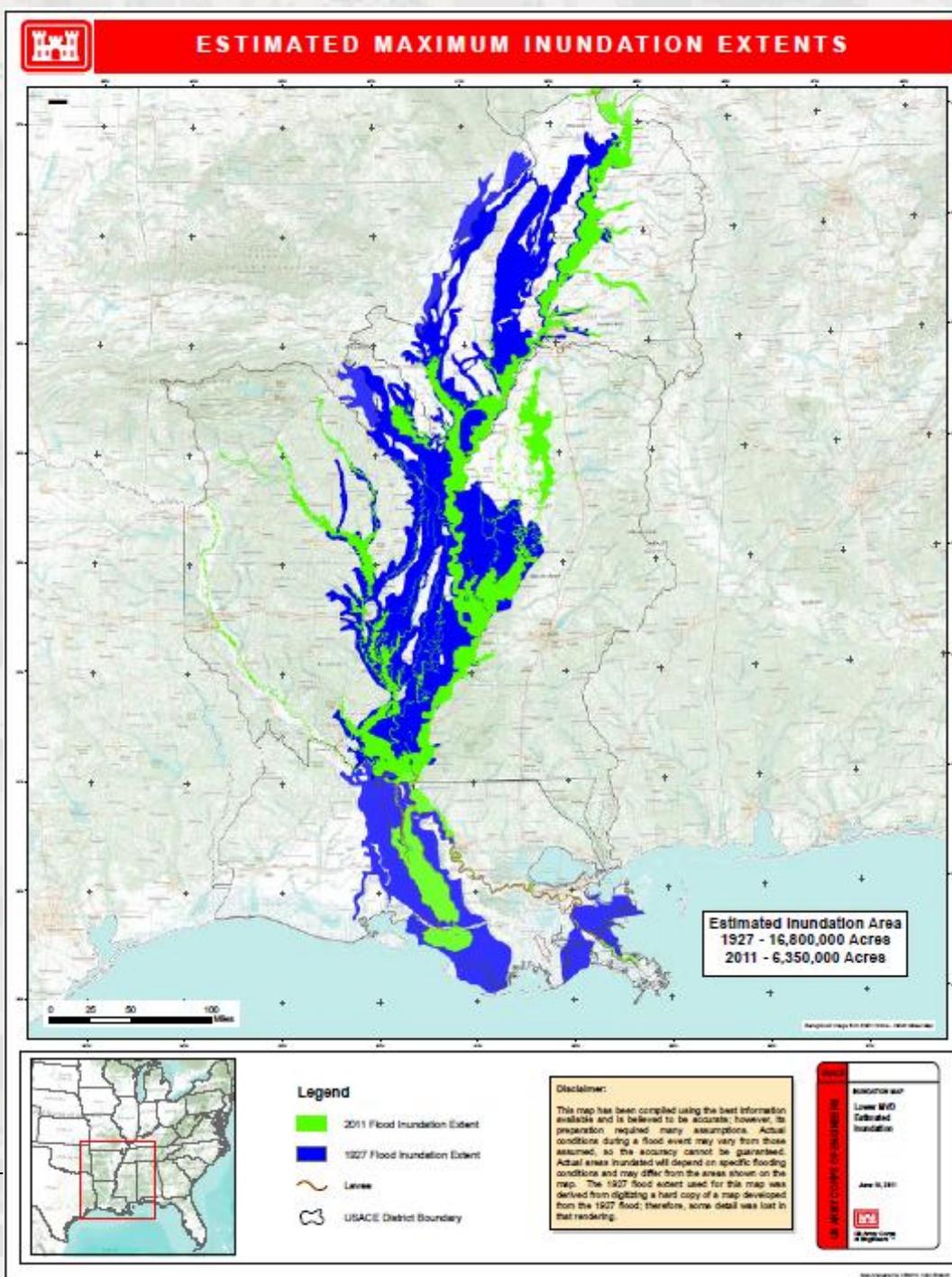
1927 Flood = 26,000 sq. miles (16.8 million acres)

>250 Deaths

2011 Flood = 9,900 sq. miles (6.35 million acres)

More than 16,000 sq. miles (10 million acres) not flooded in 2011

No Deaths



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# 2011 Mississippi & Atchafalaya STAGES

Station	Flood Stage	2011 Crest Stage	2011 Crest	Record Stage	Record Year
Cairo, IL	40.0	<b>61.72***</b>	<b>2 May</b>	59.51	1937
New Madrid, MO	34.0	<b>48.35</b>	<b>6 May</b>	47.97	1937
Caruthersville, MO	32.0	<b>47.61</b>	<b>7 May</b>	46.00	1937
Memphis, TN	34.0	<b>47.87</b>	<b>10 May</b>	48.70	1937
Helena, AR	44.0	<b>56.59</b>	<b>12 May</b>	60.21	1937
Arkansas City, AR	37.0	<b>53.14</b>	<b>16 May</b>	59.20	1927
Greenville, MS	48.0	<b>64.22</b>	<b>17 May</b>	65.4****	1927
Vicksburg, MS	43.0	<b>57.1</b>	<b>19 May</b>	56.20*	1927
Natchez, MS	48.0	<b>61.95</b>	<b>19 May</b>	58.04	1937
Red River Lndg, LA	48.0	<b>63.09</b>	<b>21 May</b>	61.61	1997
Baton Rouge, LA	35.0	<b>45.01</b>	<b>18 May</b>	47.28	1927
New Orleans, LA	17.0**	<b>17.38</b>	<b>19 May</b>	21.27	1922
Simmesport, LA	47.0	<b>44.94</b>	<b>23 May</b>	59.13	1927
Butte LaRose, LA	25.0	<b>23.14</b>	<b>26 May</b>	27.28	1973
Morgan City, LA	4.0	<b>10.35</b>	<b>29 May</b>	10.53	1973

## New Record Stage

\*6 Levees Held \*\*Levees Protect New Orleans to 20.0' Stage

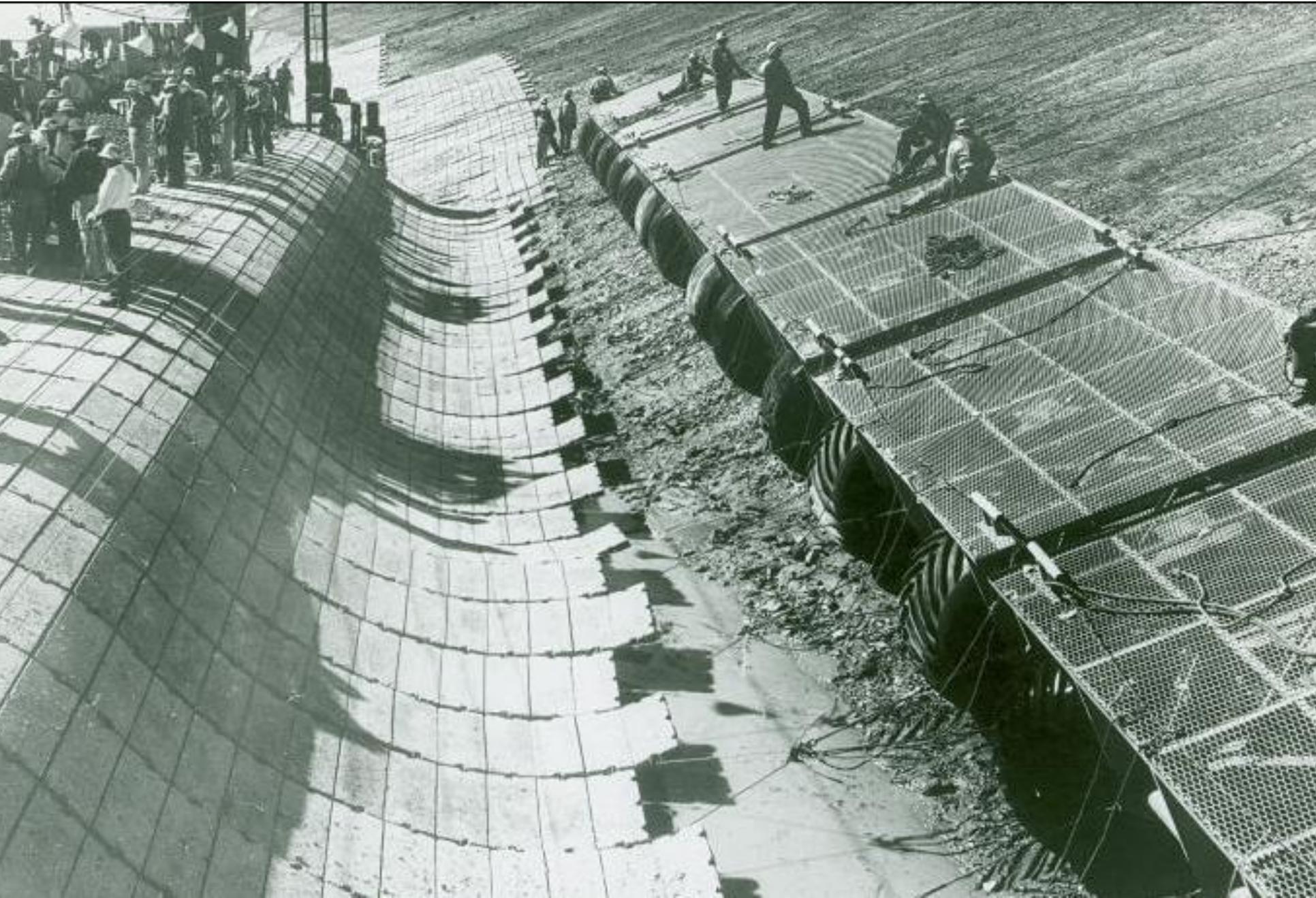
\*\*\*Highest Crest of 63.0' on 5 May w/o BPNM Operation – Actual Stage of 59.7' on 5 May 2011 w/BPNM Operation

\*\*\*\*Adjusted to Current Gage Location - Prior to 1940 stages were taken at City Front or Warfield Point

**NO MORGANZA OPERATION, BATON ROUGE TO N. ORLEANS CRESTS OCCUR PRIOR TO UPSTREAM LOGS BUILDING STRONG®**  
 ARMY STAYS STRONG main steady during these floodway operations. 22 March 2012



**2. There is a present situation we must not neglect.**



# MR&T Strategic Investment Plan (SIP)

- ✓ Identify all remaining work required for project completion inclusive of cost;
- ✓ Assess and characterize the risk associated with the incomplete MR&T system;
- The SIP serves as an MR&T 101 of where we are today.
- **Main Stem Levees and Floodwalls:**
  - 187 levee and/or floodwall segments below design elevation



## Main Stem Structures:

- 8 navigation locks are below design elevation



## Main Stem Channel Improvements & Stabilization:

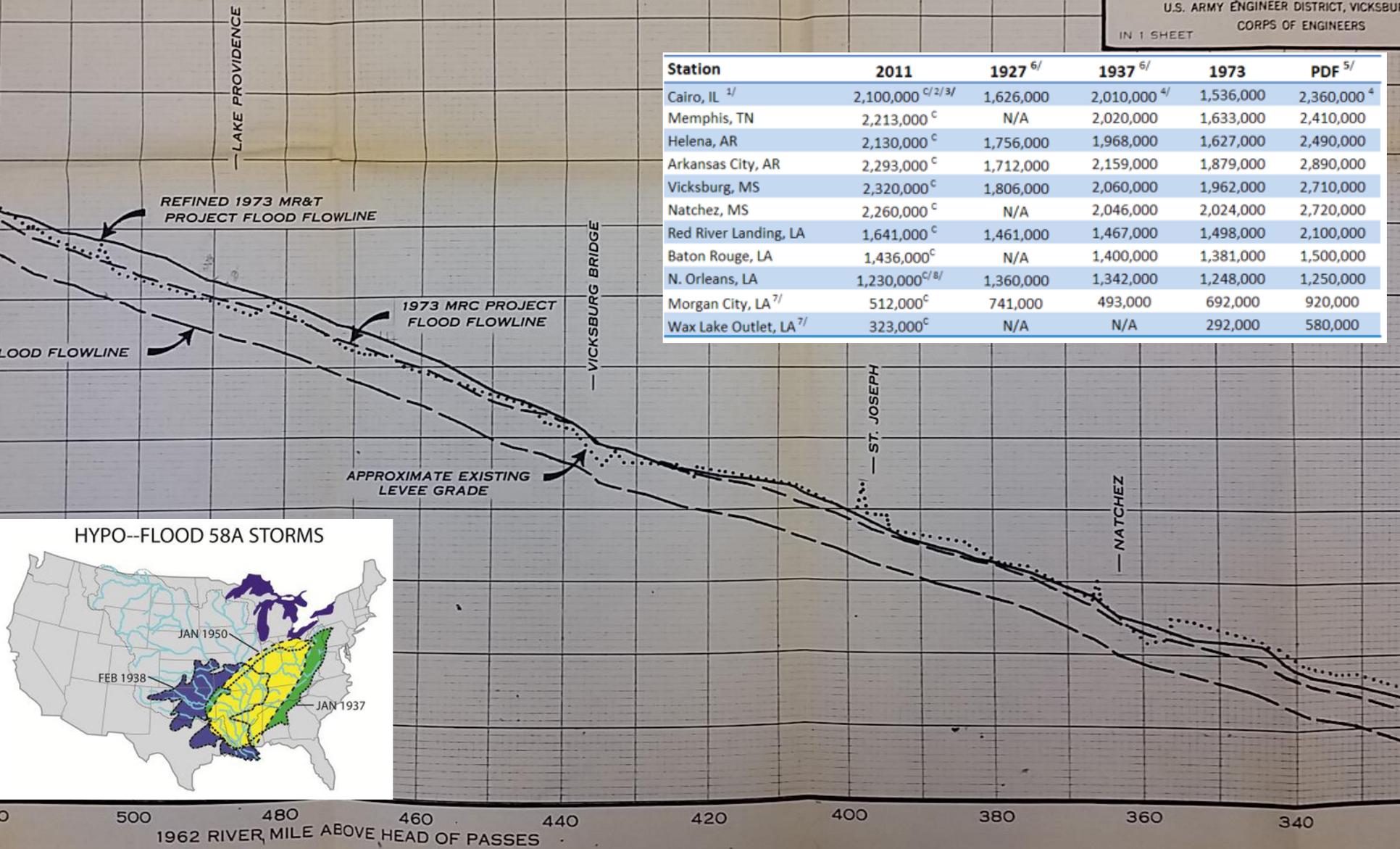
- 14 new revetments to be constructed
- 54 existing revetments to be extended



# MR&T Flowline Study

MISSISSIPPI RIVER  
 PROJECT FLOOD FLOWLINE  
 AND  
 EXISTING LEVEE GRADE  
 WEST BANK  
 SCALES AS SHOWN  
 U.S. ARMY ENGINEER DISTRICT, VICKSBURG  
 CORPS OF ENGINEERS  
 IN 1 SHEET

Station	2011	1927 <sup>6/</sup>	1937 <sup>6/</sup>	1973	PDF <sup>5/</sup>
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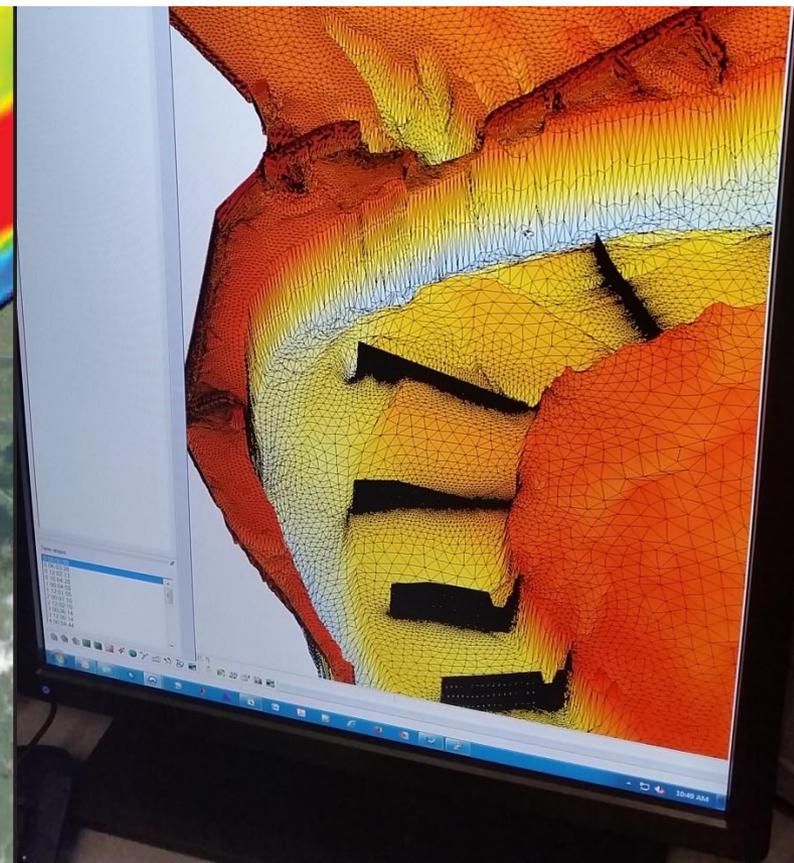
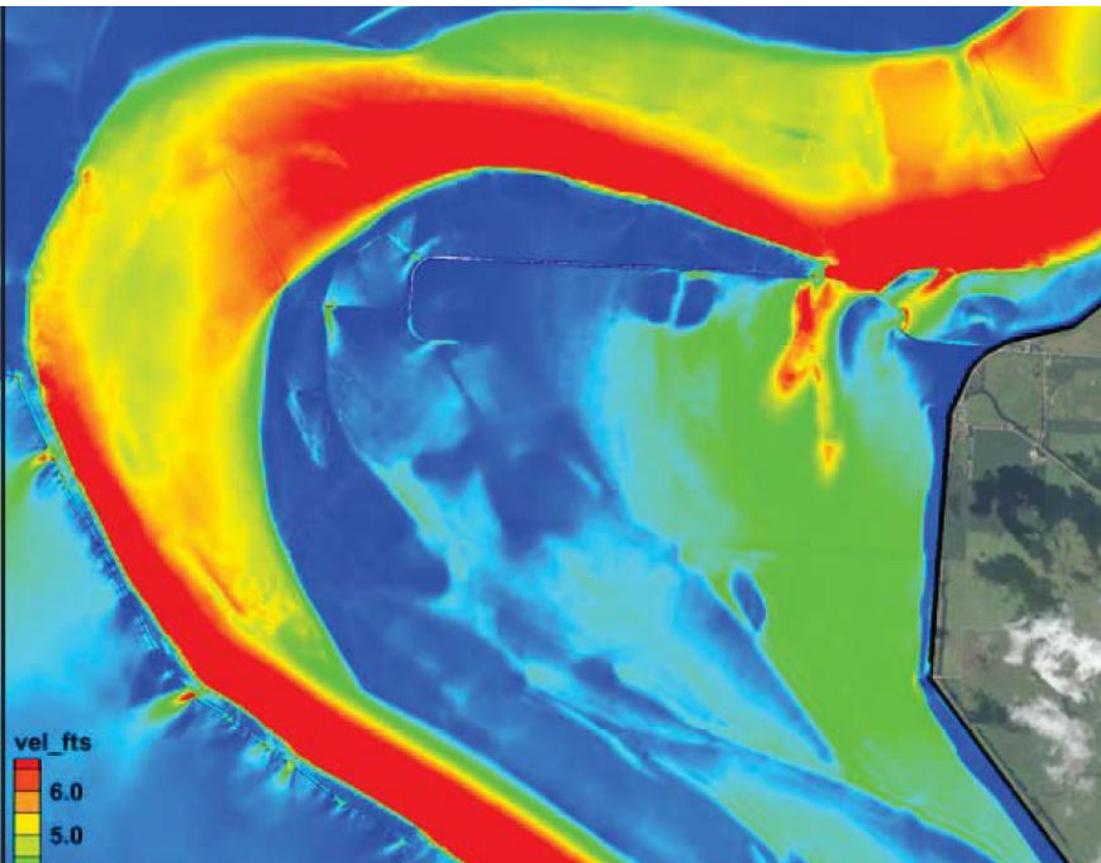


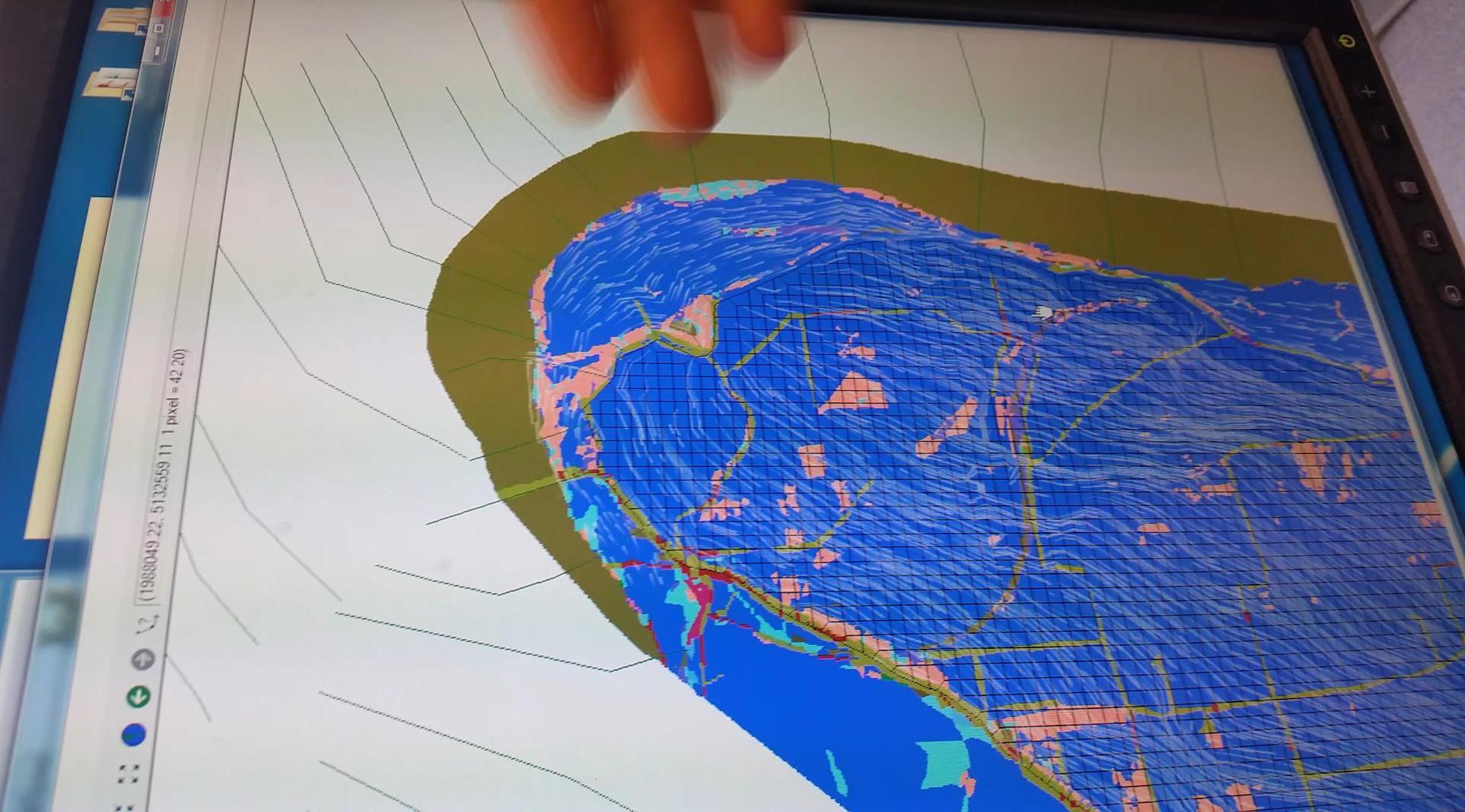
### **3. There is a future condition we must protect.**

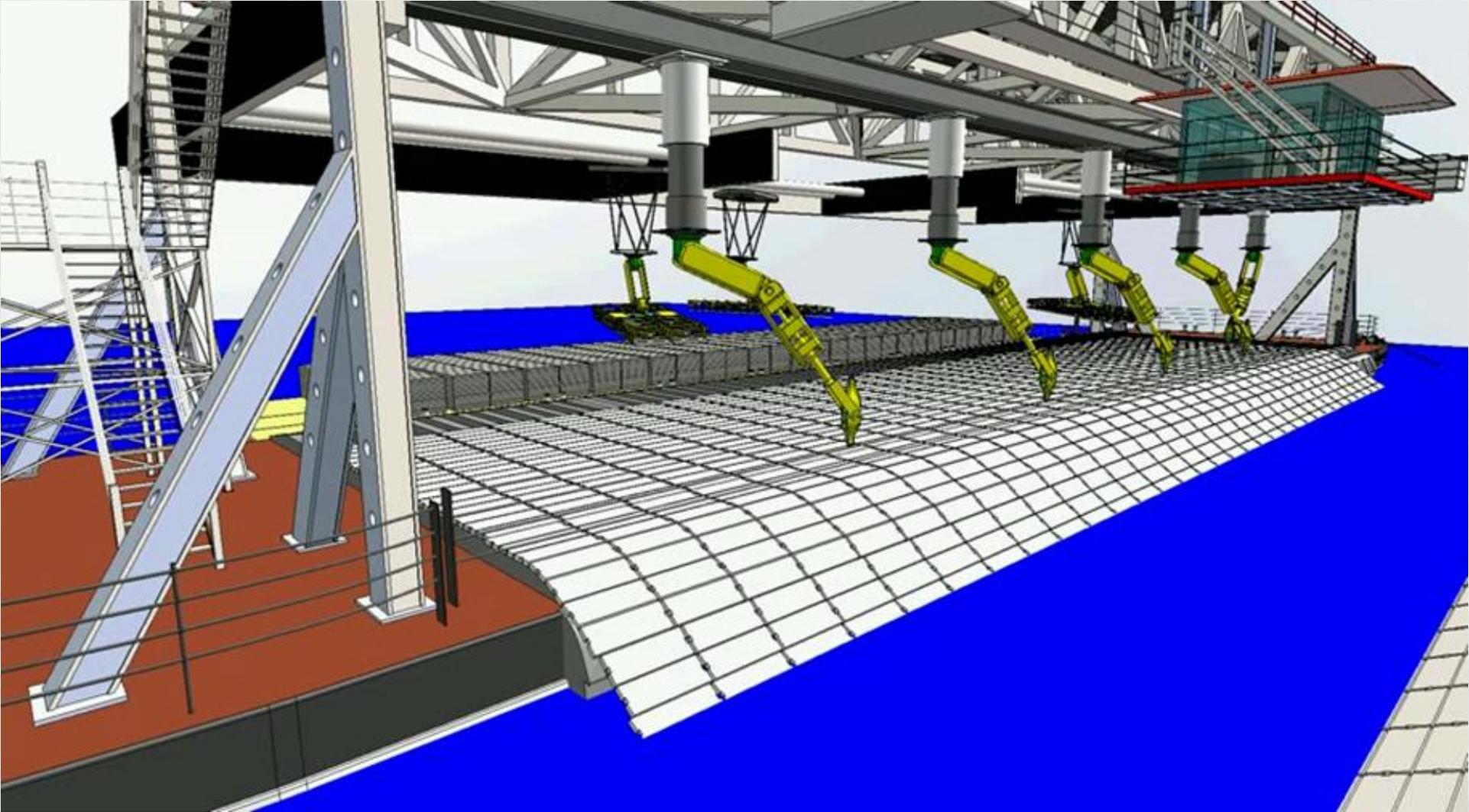
2028 will mark the 100-yr anniversary of the MR&T. A greater flood will occur in the future.

The MR&T “did not happen because of some overnight miracle, but due to the foresight of the people.” - George Gruett

What we sought to solve in 1928 has continued to be modified, expanded, and invested for more than 80 years. This will be our our legacy.









Search MVD



M

MISSISSIPPI RIVER COMMISSION

# Protecting the Alluvial Empire: The Mississippi River and Tributaries Project



mission  
d Engineering since 1879

### HOT INFO

- MRC Statements
- MRC Executive Summaries
- Protecting the Alluvial Empire

### Useful Links

- MRC Home
- About the MRC



Please direct questions or concerns to Samuel.L.Clemens@usace.army.mil



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