



The Mississippi River Commission

Shepard M. Smith

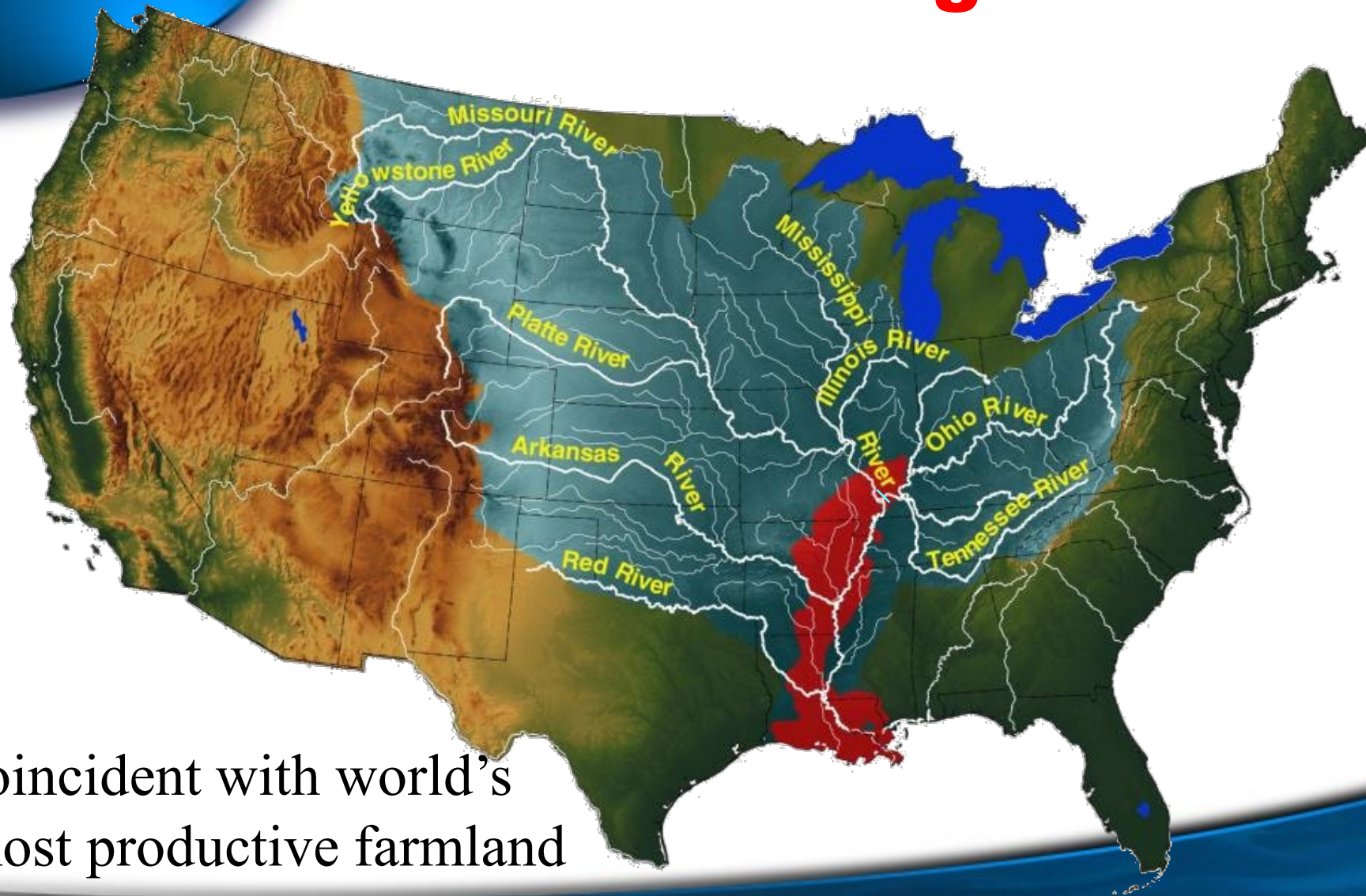
**Rear Admiral (ret), National Oceanic & Atmospheric Administration
Former Director, Office of Coast Survey
Emeritus Member, Mississippi River Commission**

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**Professor (ret), Civil Engineering, University of New Orleans
2017 ASCE President
Emeritus Member, Mississippi River Commission**



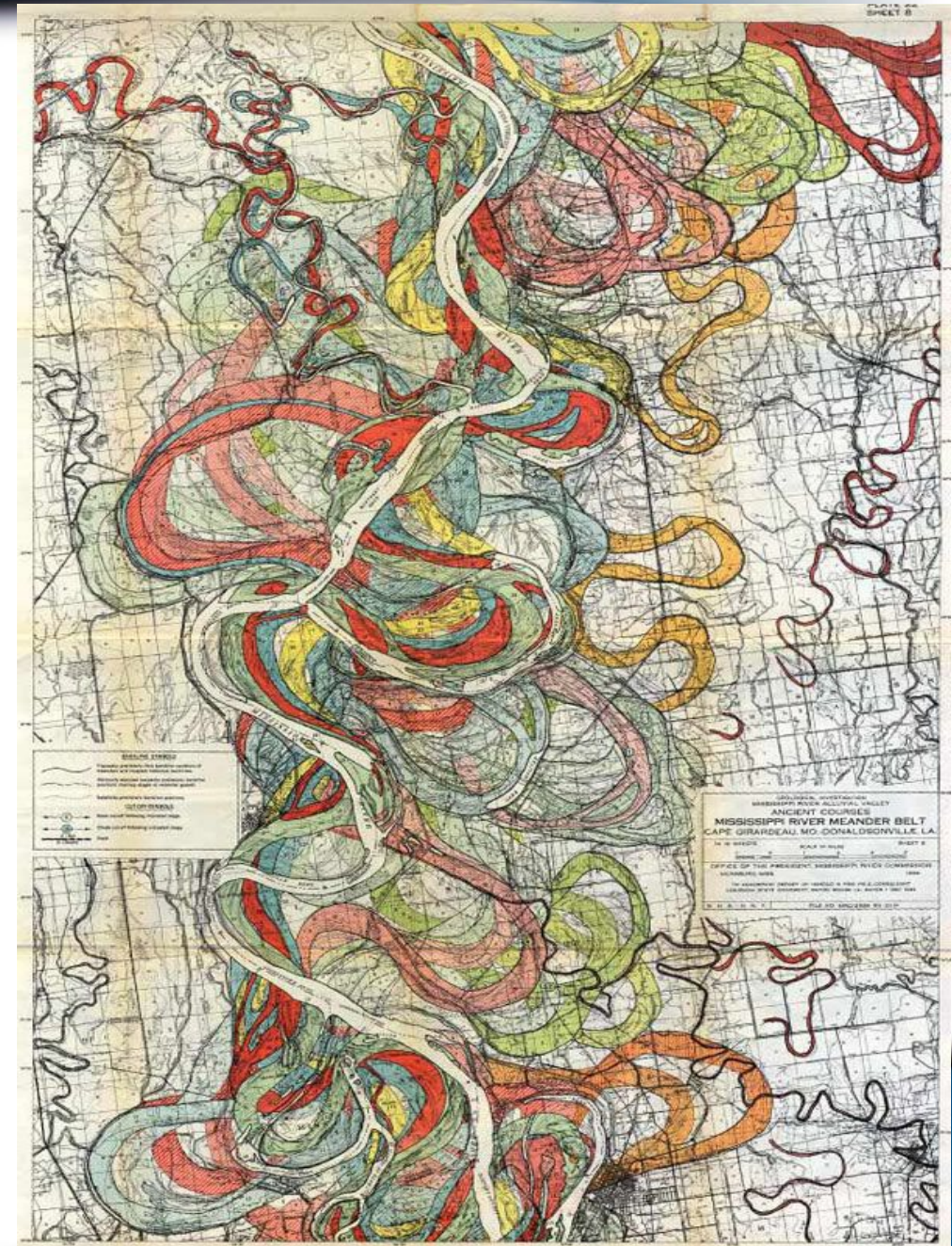
World's Largest Naturally Navigable Watershed



Coincident with world's
most productive farmland



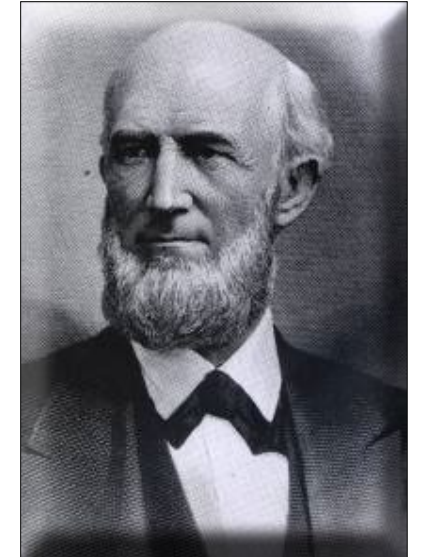
Flood Control? Reliable Navigation?





The MRC - 1879

- Differing opinion: military and civilian engineers about navigation
- Federalized flood control
- 3 army officers, 1 USC&GS, 3 civilians (2 civil engineers)





MRC Authorities

1879 Originating Act

- Direct surveys of the entire river
- Topo and hydro exams of MS river & tributaries for general improvement
- Secretary of War to detail officers, men, vessels, etc. from USACE
- Request same from US Coast and Geodetic Survey
- Initially “levees only”

46th Cong., Sess. I. Ch 43.1879: An act to provide for the appointment of a Mississippi River Commission for the improvement of said river from the Head of Passes near its mouth to its headwaters.



The Great Mississippi Flood of 1927

- Herbert Hoover, Secretary of Commerce, "the greatest peace-time calamity in the history of the country"
- Inundated 16 million acres
- ~500 people dead, another 700,000 seeking shelter
- 41,000 buildings destroyed
- Total losses \$1B, federal budget ~\$3B





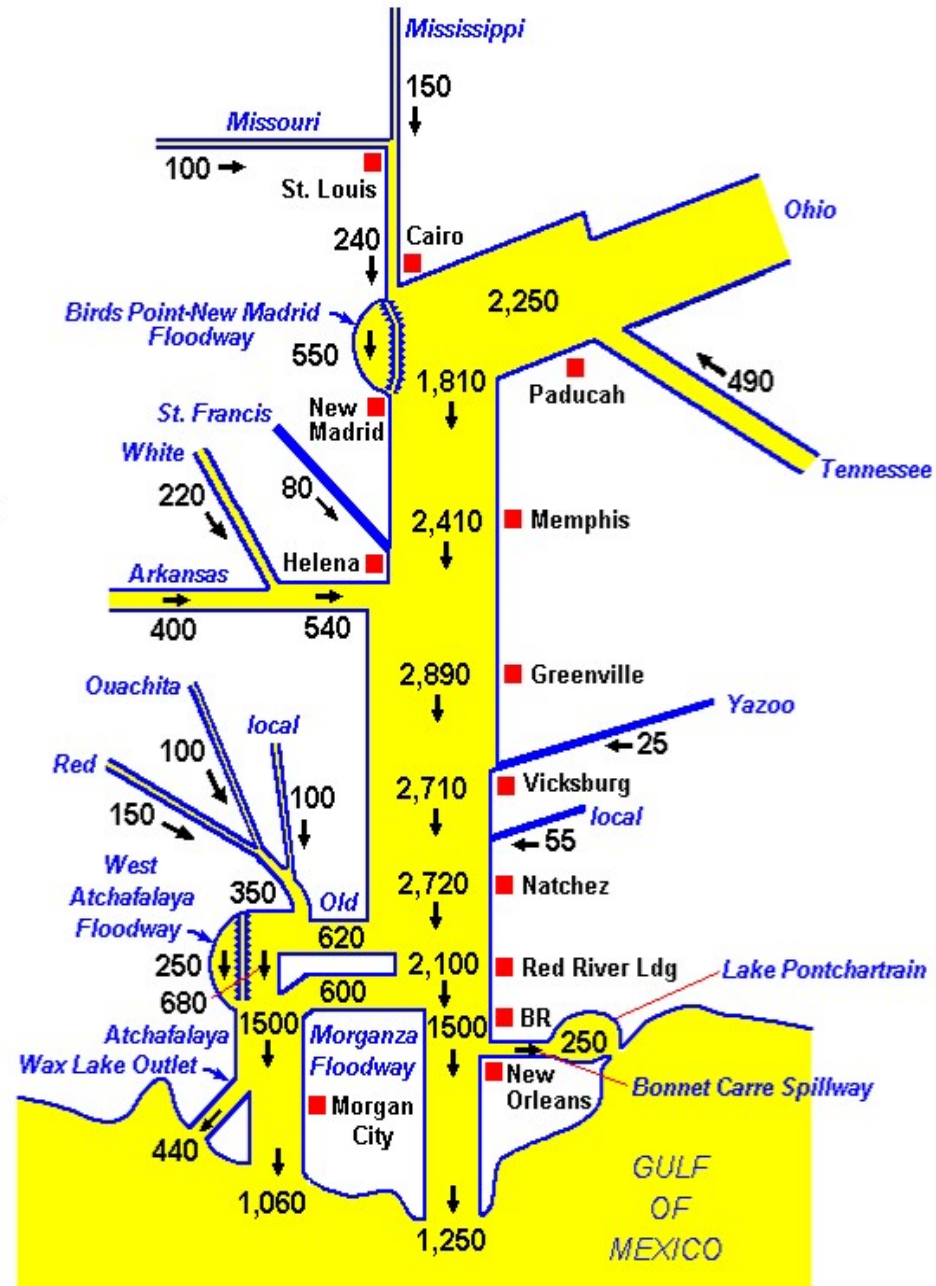
The “Jadwin Plan” 1928 Flood Control Act

- “Jadwin Plan” (evolves into MR&T Project)
 - Floodways to reduce flood stages and relieve pressure on levees
 - Birds Point-New Madrid
 - Boeuf Floodway in Arkansas
 - Bonnet Carre Spillway
 - Morganza Floodway
 - Levees protect against project design flood (PDF)
 - PDF of 3M cfs between Atchafalaya & Mississippi rivers
 - Prevent levee failure by using floodways/backwater areas



MR&T Project Design Flood

Discharge in 1,000 cfs





Mississippi River & Tributaries Project

Flood Control & Navigation

- Revetment
- Dikes/Channel stabilization
- Dredging and Cutoffs
- Levees
- Floodways
 - pumping plants
 - reservoirs, & drainage structures

Environmental features





MISSISSIPPI RIVER COMMISSION

- Presidentially appointed
- Seven members:
 - ✓ 3 Corps Officers
 - ✓ 1 NOAA Admiral
 - ✓ 3 Senior Civilians
- ✓ Authority: entire river - Headwaters to Head of Passes
- Oversees MR&T Project – Corps Districts carry out the work



**Brig. Gen. Kimberly
Peebles** President



**Hon. Robert
Miller, Ph. D.**
Civilian Member
2022



**Hon. James
Reeder**
Civilian
Member
2018



Hon. Riley James
Civilian Member
2020



**Rear Adm.
Ben Evans**
NOAA
(Designee)



**Maj. Gen. Mark
Quander**
Great Lakes &
Ohio River
Division
(Designee)



**Brig. Gen. Geoff
Van Epps**
Northwestern
Division

The Inland Navigation System



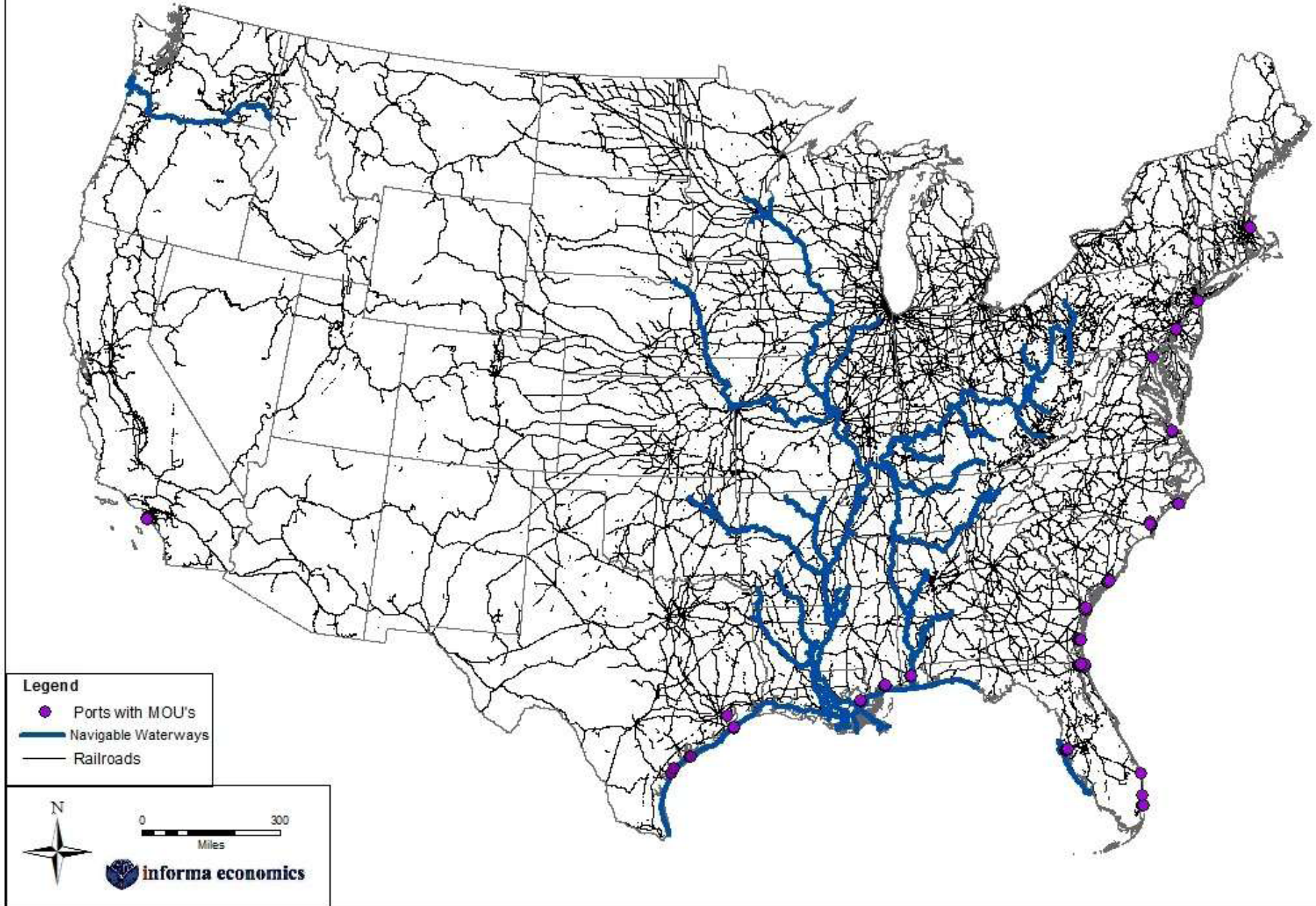


Some US Locks & Dams





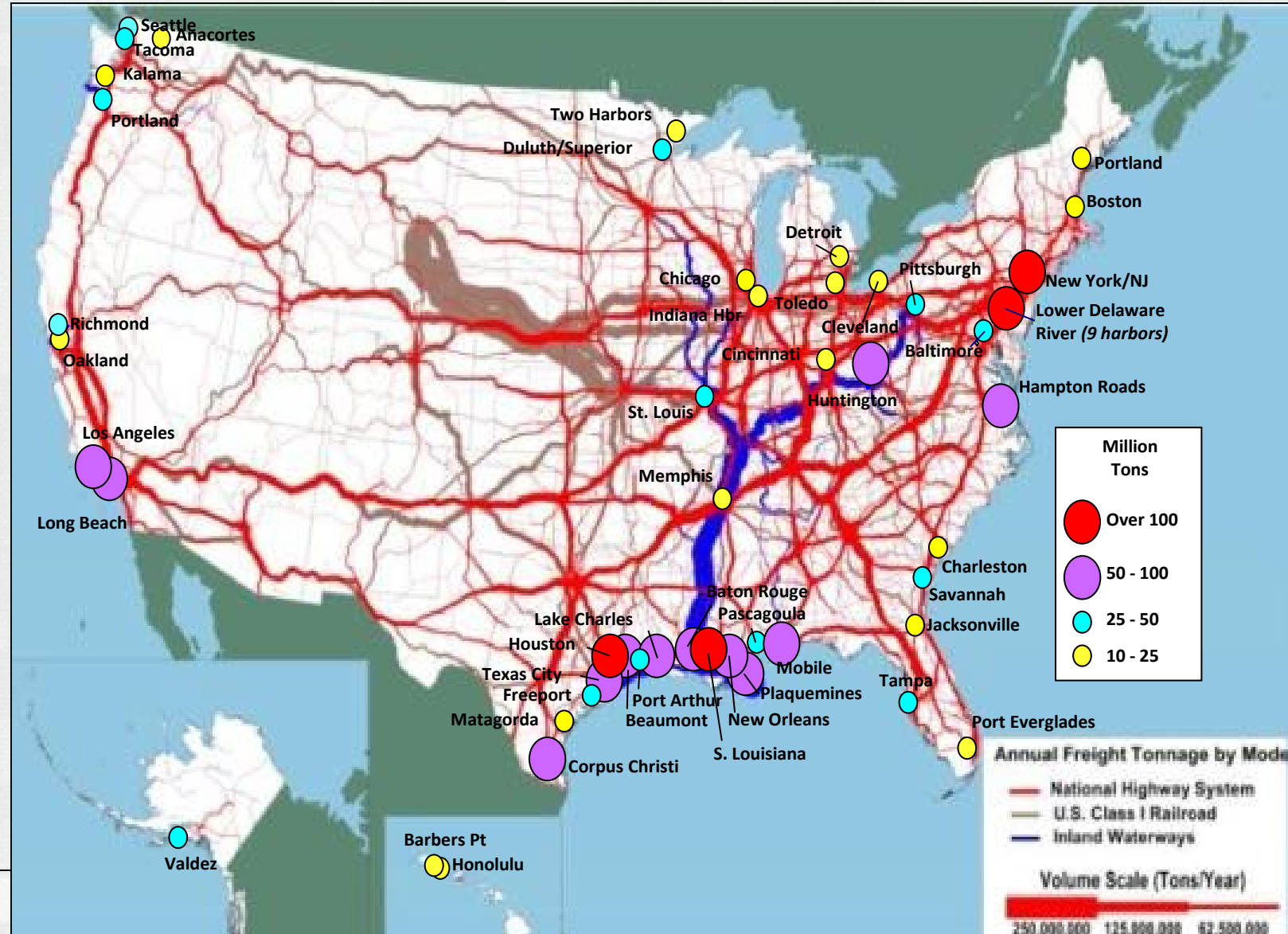
Inland Waterways & Rail



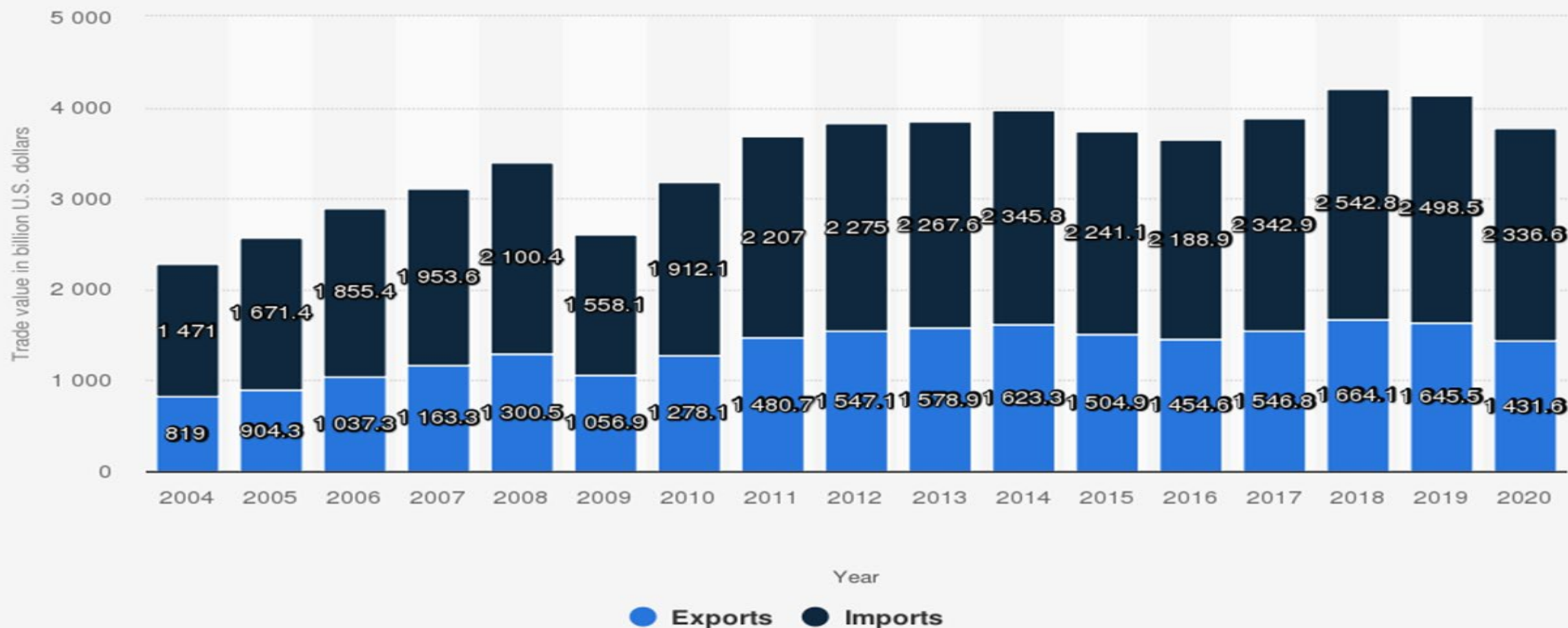
U.S. PORTS AND INLAND WATERWAYS: VITAL TO OUR NATIONAL ECONOMY



- 95% of all U.S. imports & exports (\$1.4TR) move on waterways and/or ports
- Inland waterways connect major industry/cities w/ coastal ports
- Inland waterways overlay prime agricultural areas.



Total value of U.S. trade in goods (export and import) worldwide from 2004 to 2020 (in billion U.S. dollars)



Source
US Census Bureau
© Statista 2021

Additional Information:
United States; US Census Bureau; 2004 to 2020



Challenges for Inland Waterways

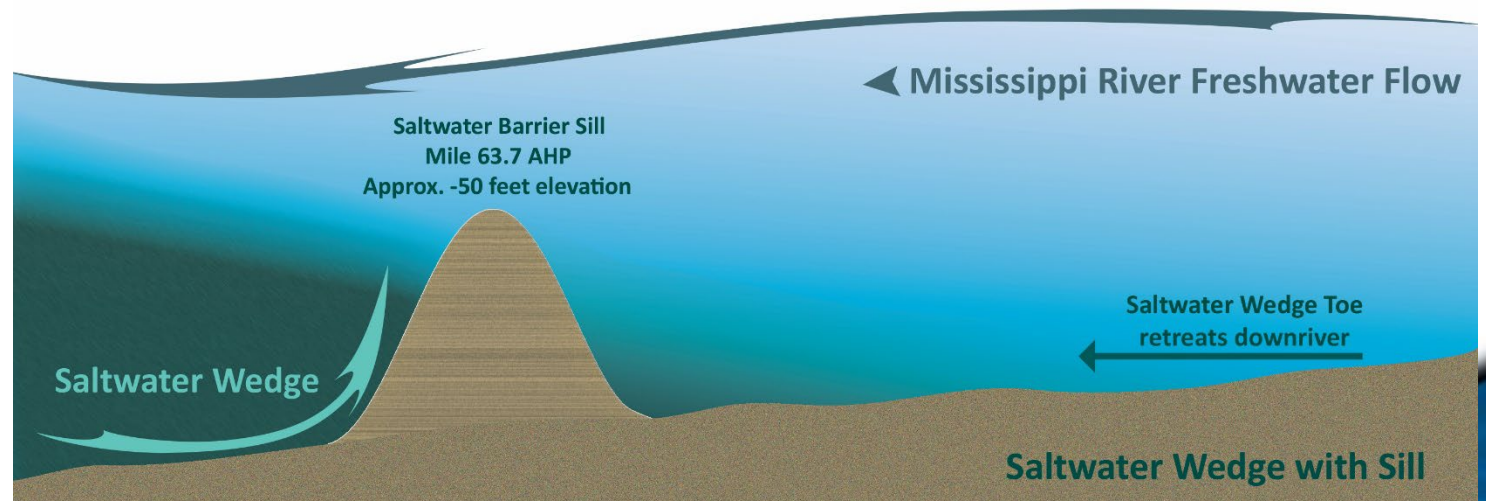
- Most locks on system 600'x110'
 - Limits barge tows to 8 barge w/ towboat – most tows >12 (need “cut” to pass thru locks)
 - Most beyond design life – increased risk of outage
- Inland ports do not make the “cut” for dredging via Harbor Maintenance Trust Fund
- Deepening river to New Orleans
 - Cost of dredging, bank/levee stability, saltwater wedge



Erratic Weather the New Norm

- 2011 record high water
- 2012 record low water (the Pinnacles)
- 2018-19 record duration high water
- 2022 low water
- 2023 low water

A “Sill” used to halt the salt water wedge (1988, 1999, 2012, 2022, 2023)





MR&T Tested in 2011

- Record or near record stages throughout lower Mississippi River
- Greatest flood since 1927
- Opportunity to test/evaluate MR&T system and gather flow data
- Operated three floodways





2019 Wettest Year in US on Record

- Records for past ~126 years
 - 36.2” on average (NOAA)
 - Except Pacific Northwest and parts of New Mexico and Colorado
- Expected long term trend, with increasing climate temperatures intensifying rain



Floodways Operation

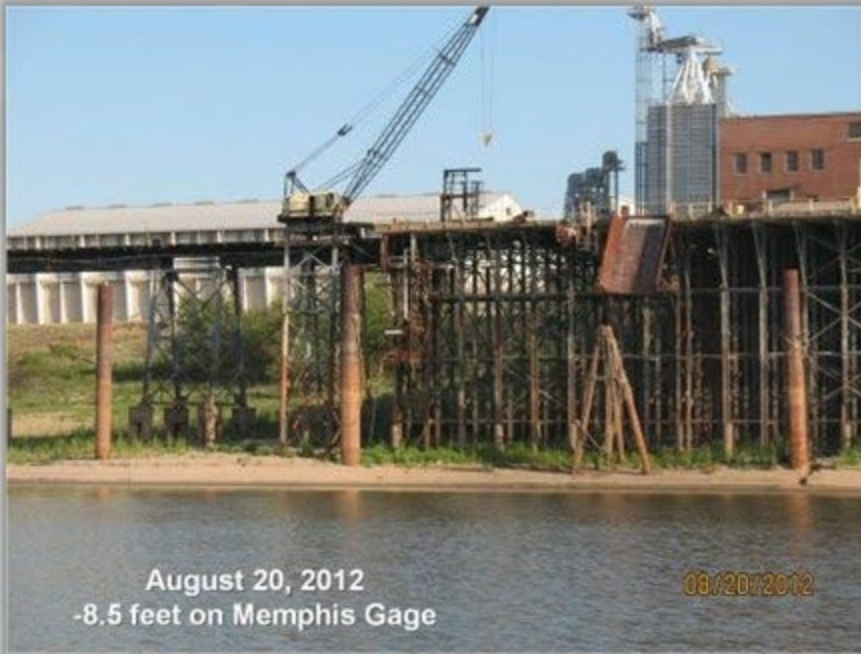


Year	Floodway
1937	Bonne Carré
1945	Bonne Carré
1950	Bonne Carré
1973	Bonne Carré, Morganza
1975	Bonne Carré
1979	Bonne Carré
1983	Bonne Carré
1997	Bonne Carré
2008	Bonne Carré
2011	Bonne Carré, Morganza, New Madrid
2016	Bonne Carré
2018	Bonne Carré
2019	Bonne Carré, Bonnet Carré
2020	Bonne Carré



2012 Drought

- Low water levels negatively impacted navigation
- Threatened closure of the Mississippi River at the “Pinnacles” in Illinois
- The Administration placed a high priority in removing the rock and allowing navigation to be sustained by streamlining contracting



Mississippi River Low Water

Mississippi River	Difference in River Elevation between 2011 & 2012 (as of Aug 24, 2012)
Cape Girardeau, MO	39 feet
Cairo, IL	53 feet
New Madrid, MO	48 feet
Memphis, TN	59 feet
Vicksburg, MS	57 feet
Red River Landing, LA	50 feet
New Orleans, LA	16 feet

BUILDING STRONG®



2018-19 Mississippi River High Water Season

Extended High Water
Season: flood fighting
200+ days



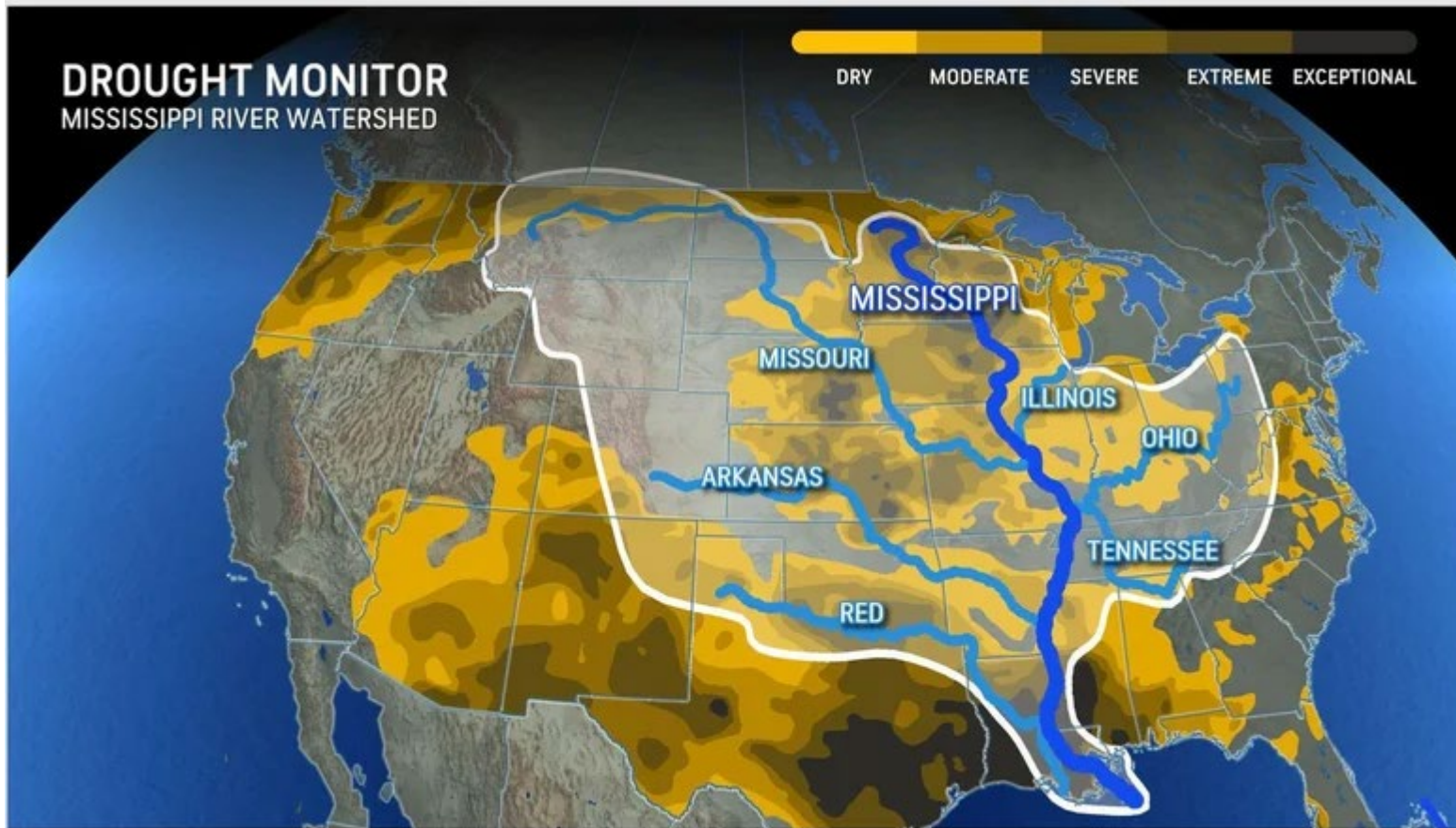
Pin Oak Levee Breach, IL



Dardenelle Levee Breach, AR



2022-23 Droughts



- Months of excessive heat and drought
- Low water levels negatively impacted navigation
- Dredging kept River open, but barges had to be loaded to lesser draft

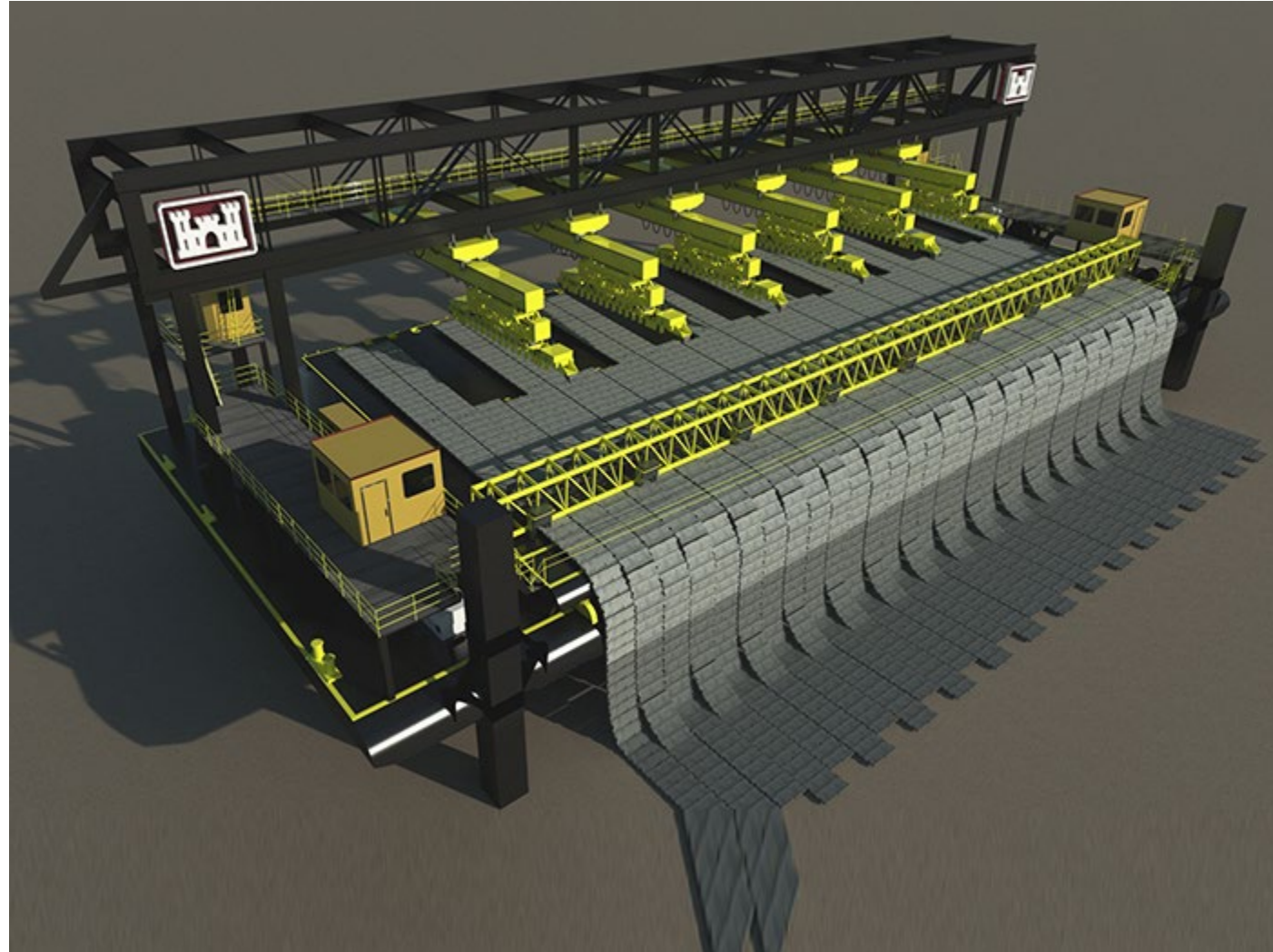


Mat Sinking Unit





ARMOR 1





MRC in Action





MRC Inspection Trips





MR&T: Issues at Coast

- MR High Water Season extended into Gulf of Mexico Hurricane Season
- River stage at high level with possible hurricane surge
 - Hurricane Barry in July 2019





Impact on the Mississippi Sound





Unfinished MR&T Features



All the rainfall in the MS Delta shown on this map must exit through the Steele Bayou Structure to enter into the Yazoo River to the MS River.

4,093 square miles
(2.62 Million Acres)



Steele Bayou Drainage Structure





Mekong-Mississippi Sister Rivers Partnership





Mekong-Mississippi Sister Rivers Partnership





Mekong-Mississippi Sister Rivers Partnership

July 2022

