



Maj. Gen. Michael C. Wehr
President



Hon. Sam E. Angel
Senior Member



Hon. R. D. James
Member, Civil Engineer



Hon. Norma Jean Mattei, Ph.D.
Member, Civil Engineer



Rear Adm. Gerd F. Glang
Member



Brig. Gen. Richard G. Kaiser
Member



Brig. Gen. John S. Kem
Member



Mississippi River Commission

2015 Executive Summary 393rd & 394th Sessions

Listening, Inspecting, Partnering & Engineering since 1879

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Mississippi River Commission

www.mvd.usace.army.mil/mrc/

The Mississippi River Commission has a proud heritage that dates back to June 28, 1879, when Congress established the seven-member presidential commission with the mission to transform the Mississippi River into a reliable commercial artery, while protecting adjacent towns and fertile agricultural lands from destructive floods.

In its current capacity, the Mississippi River Commission prosecutes the Mississippi River & Tributaries (MR&T) project authorized by the 1928 Flood Control Act. The MR&T project employs a variety of engineering techniques, including an extensive levee system to prevent disastrous overflows on developed alluvial lands; floodways and backwater areas that provide expansion room for the river so that the levee system will not be unduly stressed; channel improvements and stabilization features to



to protect the integrity of flood control measures and to ensure proper alignment and depth of the navigation channel; and tributary basin improvements, to include levees, headwater reservoirs and pumping stations, that maximize the benefits realized on the main stem by expanding flood protection coverage and improving drainage into adjacent areas within the alluvial valley.

Since its initiation, the MR&T program has brought an unprecedented degree of flood protection to the four million people living in the 35,000-square-mile project area within the lower Mississippi Valley. The nation has contributed \$14 billion toward the planning, construction, operation and maintenance of the project. To date the nation has received a 45 to 1 return on that investment, including \$639 billion in flood damages prevented.

The performance of the MR&T system during the Great Flood of 2011 validated this wise investment. Despite record high flows and stages, not a single life was lost as a result of the flood. Water lapped at the top of floodwalls and levees the length of the river, exerting unprecedented pressure on the backbone of the protection system, but the levees withstood the record stages and pressure due in large part to the operation of three floodways and the storage capacity provided by non-MR&T reservoirs in the Ohio and Arkansas-White basins. All told, the MR&T project prevented in

excess of \$234 billion in damages, not including potential losses from interrupted business activities and related impact. One year later, with much of the drainage basin under exceptional drought conditions and river stages plunging to near historic lows more than fifty feet lower than the 2012 highs

on the major gages between Cairo and Red River Landing, the performance of the MR&T system is again validating the nation's wise investment, as the navigation channel remains viable.

The Mississippi River Commission continued its 136-year process of listening to the concerns of partners and stakeholders in the Mississippi valley, inspecting the challenges posed by the river, and partnering to find sustainable engineering solutions to those challenges through the 2015 high-water inspection (393rd session of the commission). The official record of the Proceedings of the Mississippi River Commission, complete with recorded hearings of public meetings, copies of signed formal statements provided by the public, executive summaries of the Proceedings, and other documents of significance, are kept on file in the Office of the President in Vicksburg, Miss.

Inspection Trip Objectives

THEMES ... *Revolutions: Agriculture, energy, manufacturing and climate change, 1) re-invest in system: flood control, high-value water infrastructure, 2) high- and low-water extremes, system performance: dredging vs dikes, mapping of crossings, inland ports and their value, contingency planning and supplemental funding (funding pots) as a best practice.*

LISTEN to partners, stakeholders and public – provide opportunities to meet with the commission for mutual understanding, education and discussion on value and use of water resources in the local and regional area. The vertical team hears the themes, issues and concerns at the same time -- HQ, MVD/NWD/LRD/SWD, district, stakeholders and partners. Listen to issues of major concerns and on projects and studies and increase the understanding of how the entire system is related and impacted while formulating mature recommendations.

PARTNER with key associations and interest groups. Meetings with groups to help enhance relationships and broaden collaboration. Discover and include diverse forums for collaboration, dialogue and education.

LEARN from Mississippi, Ohio, Missouri, Arkansas, Tennessee, Cumberland, Illinois, Atchafalaya and Red river basins' partners and others the methods, procedures, systems and other resources to improve the development and delivery of policy, planning, construction and operation and maintenance for the high-value water resource system and basin.

SHARE information with partners, in particular the lessons that the MRC and partners have discovered since 1879 by listening, inspecting, partnering and engineering in the watershed.

INSPECT/REVIEW status of the major regional projects/studies and provide status of other national and comprehensive projects:

- 1) Upper Mississippi River-Illinois Waterway System Navigation & Ecosystem.
- 2) HSDRRS, Louisiana Coastal Authority, LaCPR ... benefits/impacts to navigation/riverine flooding.
- 3) Missouri River Master Manual; Missouri Basin Authorized Purposes and 2011 flood recovery+2012 drought.
- 4) Mississippi River and Tributaries (MR&T) project and the 2011 restoration effort/2012 drought.
- 5) Upper Mississippi Comprehensive Plan.
- 6) Ohio, Tennessee and Cumberland rivers studies, projects and programs and 2011 flood/2012 drought.

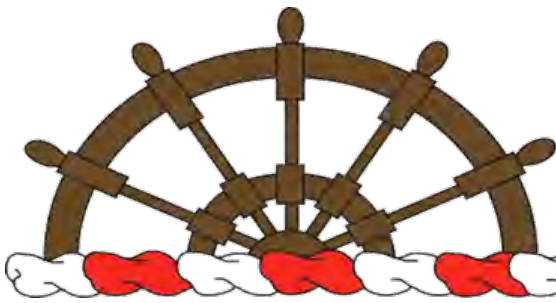
INSPECT maintenance status of structures in the watershed; perform on-site reviews with partners of the nation's infrastructure.

REVIEW/DISCUSS the Mississippi and Atchafalaya rivers and the MR&T project and impacts from and on the Mississippi, Ohio, Missouri, Red, Arkansas and Illinois river basins and projects; review status of current and future work. Review and identify comprehensive water resource engineering needs of the watershed.

EDUCATE with our partners, stakeholders and public on water investments and water resource engineering capabilities for the Mississippi Valley watershed (41 percent of U.S.) and the nation through media opportunities and local contacts during the inspection trip. Communicate the value, history, enablers **and** benefits of water resource engineering.

VISION -- continue to champion the broad participation, national/international recognition and working vision process for America's Watershed – the largest “navigable” system in the world! Gather feedback from international dialogue, across diverse sectors, through inspections and engagements with partners, stakeholders, and the public.

Communicate clearly the necessity, economic value, environmental sustainability and overall benefit, need, and importance of the water resources to the nation -- in venues that include the local public, public at large, partners, stakeholders, media (local and national), Tribes, Congressional and staff (local and DC), Governors and others.



Strategic Messages

Four Revolutions

Four ongoing revolutions will drive changes in the greater Mississippi River basin. How the nation responds to the revolutions and invests in potential solutions will dictate the level of future economic prosperity of the valley and the greater watershed.

Revolution 1: Explosive Growth of Agricultural Productivity Demands Inland Waterway System Reliability

- Yields per acre doubling and tripling over the past few decades.
- Record harvest in 2014.
- World population expected to grow by 2 billion in the next few decades
- Ability to feed the world will impact American security and global stability.



Revolution 2: Increase in U.S. Natural Gas and Oil Production Increases Demand on Transportation Systems

- 2013 - U.S. became top producer of natural gas.
- 2014 - U.S. passed Saudi Arabia as largest producer of oil.
- U.S. energy prices cheaper than European energy (by as much as 75%).
- Production increase impacts all manufacturing costs.



Strategic Messages

Four Revolutions (continued)

Revolution 3: Return of Manufacturing to the U.S. and the Mississippi Valley Demand Recapitalized Infrastructure

- Growth in manufacturing investment driven by energy production revolution.
- U.S. remains world leader in manufacturing output due to past infrastructure investment.
- Using the U.S. model, other nations are investing more in infrastructure and closing the manufacturing and export gap.



Revolution 4: Accelerating Impacts of Climate Change Demand System Resiliency

- Intense precipitation falling in more condensed periods.
- Increased runoff from development.
- More prolonged drought
- Rising sea levels along the coast.



Strategic Messages



Call to Action

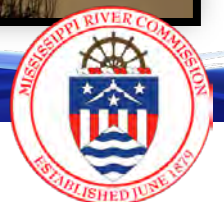
- Protecting productive farmland, manufacturing, refineries, pipelines and overland commerce through reliable flood control based on resiliency.
- Inland water transportation is the only economic game changing transportation system with the capacity capable of handling the increase in moving agricultural, energy and manufacturing products to the coasts for export.
- Water infrastructure makes delivery of domestic stability and security possible.

“My eyes are bleeding looking at the growth that we are forgoing right now because we are not yet investing at a level that will pay us back.”

**-- Brig. Gen. Duke DeLuca,
President of the Mississippi
River Commission, August 2014**

**“Inland
Waterways: D.”**

**-- Report Card for
America's
Infrastructure,
American Society of
Civil Engineers.**



Strategic Messages



Call to Action

- We are losing hard-fought ground earned by prior generations through their financial and personal sacrifices.
- We have benefitted from the investments of our forefathers but have done little to assure this heritage will be passed on to our children's children.
- Our economic prosperity, standard of living, and environmental quality are increasingly vulnerable to threats posed by aging infrastructure and increase potential for failure.



Fluid
Prejudice

by John
Briscoe

“The time for action is now, and the moment to start is immediately.”

**-- A Call to Action,
Mississippi River
Commission**

“The American Geography is an impressive one. The Greater Mississippi Basin together with the Intracoastal Waterway has more kilometers of navigable waterways than the rest of the world combined. The American Midwest is both overlaid by this waterway and is the world’s largest contiguous piece of farmland...”

**-- The Geopolitics of the United States: The Inevitable Empire,
STRATFOR Global Intelligence**





Strategic Messages

Call to Action

- We are a maritime nation.
- Reliable ports, harbors and channels matter.
- Reliable living in highly productive areas makes our nation great.
- The people in the alluvial valley drive productivity.
- National security is assured through success in the Mississippi Valley.

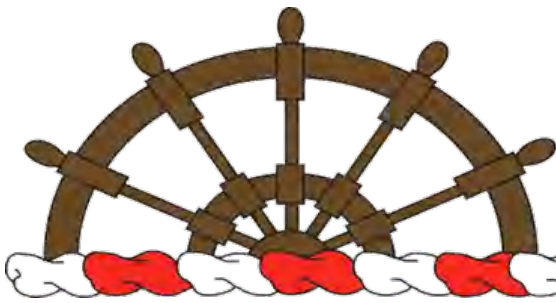
“The United States is a maritime nation....the Mississippi River Commission strives to help maintain the nation’s global economic competitiveness by ensuring a reliable navigation channel and the commercial reliability of ports and harbors....”

--Statement on extreme low water, Mississippi River Commission

“We are a maritime nation. Our dependence on the seas and inland waterways has driven our national security and economic success throughout our nation’s history.”

--Statement on inland waterway navigation system, Mississippi River Commission





Strategic Messages

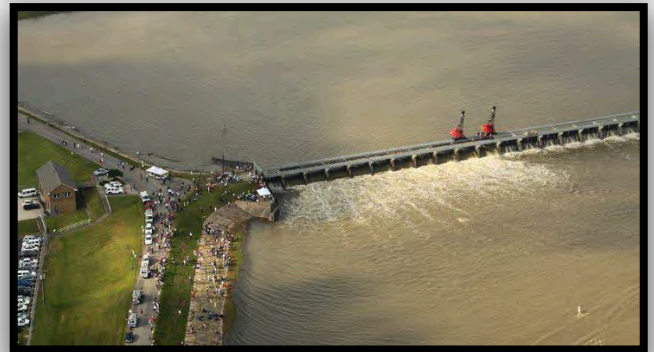
MR&T Economic Values

Congress authorized the Mississippi River & Tributaries project in 1928; one year after the devastating Great Flood of 1927 cut an 80-mile wide swath across the alluvial valley. The massive flood ravaged the valley by inundating 26,000 square miles of land, destroying 41,000 buildings, killing 500 people and creating up to 700,000 refugees. The flood was not merely one that impacted the valley; its consequences were felt nationwide as the raging waters put more than the 3,000 miles of rail and thousands of miles of highways out of service, severing east-west communications and commerce for months.

To prevent a similar tragedy, the nation invested heavily in a unified system of public works to provide unprecedented flood protection and a reliable commercial artery. The resultant MR&T project has four main features:

- Levees and floodwalls to confine ordinary floods.
- Floodways and backwater areas to provide room for the river to expand and relieve pressure on the levee system during larger floods.
- Channel stabilization and channel improvements to provide an efficient channel that carries more water at lower stages during floods.
- Tributary basin improvements that maximize the benefits of mainstem protection by providing reservoirs for headwater protection and interior drainage improvements.

These features work in tandem to provide a safe and dependable commercial navigation channel on the Mississippi River, while protecting adjacent towns, farms, industry, manufacturers, energy providers, public and private investment, ports and transportation systems from "uncontrolled" flooding.





Strategic Messages

MR&T Economic Values

This increases reliability and productivity, and protects the nation's high-value investments.

The MR&T provides flood protection for:

- More than 4 million people and 900,000 households.
- 10.6 million acres of prime agricultural lands needed to feed the world.
- 3,600 miles of rail used by four major Class I freight carriers with combined (nationally) operating revenues of \$50 billion in 2011.
- 5,100 miles of highways, including major sections of I-10, I-20, I-40, I-55 and I-57, needed to transport commerce.
- 12 major oil refineries with a combined capacity of nearly 3 million barrels per day.
- Hundreds of thousands of oil and gas wells and related pipelines.
- 102 power plants, including three nuclear power plants.
- Hundreds of manufacturers, which generate more than \$100 billion and provide approximately 400,000 jobs.

“At the current rate of [MR&T] funding, it will take decades to complete our MRL levee. Louisiana will continue to be vulnerable.”

**-- Reynold Minsky,
5th Louisiana Levee District, La.**

In addition, the MR&T project provides:

- For more than 500 million tons of cargo to move annually (~\$3 billion in annual transportation rate savings).
- Authorized depths for continued water commerce during severe droughts (1988, 1999, 2012).
- A commercial link from the bread basket and sugar and rice bowls of the nation to more than 30 ports, including four of the nation's busiest ports.

The MR&T “made us the most wealthy country in history and we are neglecting it every single day.”

**-- Rob Rash, St. Francis
Levee District of Arkansas, Ark.**



A large red barge is positioned on the Mississippi River. In the background, a dam structure is visible, with water cascading over its spillways. The sky is clear and blue, and some buildings are visible on the riverbank.

**393rd Session of the
Mississippi
River
Commission
High-water
Inspection Trip**

New Madrid, Mo.

Memphis, Tenn.

Vicksburg, Miss.

Baton Rouge, La.



High-Water Inspection Trip

March 22-27, 2015

The 393rd session of the Mississippi River Commission took place from March 22-27, 2015. The annual high-water inspection of approximately 660 miles of the lower Mississippi River between New Madrid, Missouri, and Baton Rouge, Louisiana, coincided with a significant spring flood crest emanating from heavy rains along the upper Mississippi River and Ohio River.

A total of approximately 2,200 people, representing boards, agencies, and associations with memberships and constituencies numbering in the tens of thousands, partnered directly with the Commission through various engagements during the high-water inspection. Approximately 1,000 of these participated in open house sessions on the Motor Vessel MISSISSIPPI in Memphis, Tenn., and New Madrid, Mo.

The members of the Mississippi River Commission present during the 393rd session were:

- Maj. Gen. Michael Wehr, designated as President on August 29, 2014
- Hon. R. D. James, civil engineer, reappointed as member on April 6, 2003
- Hon. Norma Jean Mattei, PhD, civil engineer, appointed as member on December 3, 2012
- Rear Adm. Gerd F. Glang, appointed as member on September 19, 2013
- Brig. Gen. John S. Kem, appointed as a member on June 13, 2014
- Brig. Gen. Margaret W. Burcham, appointed as member on May 28, 2013
- Hon. William Clifford Smith, Member Emeritus (October 1998- December 2012)
- Col. Torey DiCiro served as secretary of the commission, a non-voting position.
- Hon. Sam E. Angel, reappointed as member on December 30, 2010, and Brig. Gen. Richard Kaiser, designated as a member on September 26, 2014 (vice Brig. Gen. Burcham) were unable to attend the 393rd session.

Like
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*From left to right:
Dr. Norma Jean
Mattei, Mr. R. D.
James, Maj. Gen.
Mike Wehr, Rear
Adm. Gerd Glang
and Brig. Gen.
John Kem.*



Connecting people, land and water for a productive tomorrow.



High-Water Inspection Trip

Listening

The Mississippi River Commission held formal public hearings at New Madrid, Mo., Memphis, Tenn., Vicksburg, Miss., and Baton Rouge, La. Mississippi River Commission hearings are held in accordance with Section 8 of the 1928 Flood Control Act:

“Sec. 8. ...The commission shall make inspection trips of such frequency and duration as will enable it to acquire first-hand information as to conditions and problems germane to the matter of flood control within the area of its jurisdiction; and on such trips of inspection ample opportunity for hearings and suggestions shall be afforded persons affected by or interested in such problems.”

The hearings, engagements and dialogue help maintain a consistent connection — an exchange of viewpoints and ideas among the public, partners, stakeholders, elected officials, the Mississippi River Commission, the Corps of Engineers and agencies from the private, state and federal sectors. This process provides a greater voice for those who live and work in the region in shaping federal management and policy on the river.

Approximately 240 members of the public attended the public meetings and listened to the testimony presented by 52 individual speakers.



“You (MRC) get on the ground and listen to the concerns that people have....it reminds me that we need to do the same.”

--Netherlands, Mr. Cees Henk Oostinga, Rijkswaterstaat





High-Water Inspection Trip

What We Heard Top MR&T System-wide Issues

Levee districts from all seven states bordering the MR&T project footprint expressed strong concern over several federal initiatives or policies under various stages of development and implementation:

- Federal Flood Risk Management Standards (FFRMS) - Executive Order 13690.
- Proposed federal rules to define and regulate "Waters of the United States."
- Corps of Engineers guidance for engineer districts to issue Section 408 permits for work on levee rights of way owned by the local levee districts.
- National Flood Insurance Program.
- Rulemaking regarding the PL 84-99 program.

These policies "are working in unison to create conditions not only in this great valley but throughout the nation THAT WILL SET BACK FLOOD CONTROL and navigation for generations to come."

-- Mike Reed, Sny Island Levee and Drainage District, Ill.

"The National Levee Safety Committee can impose unachievable standards on our levees."

-- Harry Stephens, Cotton Belt Levee District, Ark.

"This will affect millions of Americans by forcing them to purchase flood insurance and it will discourage industry and businesses from locating to the Mississippi Delta."

-- Peter Nimrod, Mississippi Levee Board, Miss.

"These actions need to be put on hold until we get more information on what is going on."

-- Reynold Minsky, 5th Louisiana Levee District, La.



High-Water Inspection Trip

What We Heard Top Regional Issues

ISSUE: The need for the Corps of Engineers to maintain federal drainage ditches under its jurisdiction in the St. Francis Basin.

“Many farmers...are concerned that they will have to quit farming areas [in the St. Francis Basin] due to the increasing risk of losing a crop.”

-- Dustin Boatwright, Little River Drainage District, Mo.



ISSUE: Support for the St. Johns Bayou-New Madrid Floodway Project..



“We have compromised much since the [St. Johns Bayou-New Madrid Floodway] project was first conceived. And it is only fair that the agencies [EPA, U.S. Fish and Wildlife, MO-DNR] compromise as well.”

-- Riley James, St. Johns Levee and drainage District, Mo.



High-Water Inspection Trip

What We Heard Top Regional Issues

ISSUE: Support for raising the Yazoo Backwater Levee to its authorized height.

“We are becoming more and more concerned with the tone from Washington with CEQ, FEMA and Corps Headquarters that our YBW Levee may not get raised.”

-- Peter Nimrod, Mississippi Levee Board, Miss.



ISSUE: Concern over the lack of a comprehensive flood control program for the upper Mississippi River.

“At my home in the upper valley, our most fundamental challenge is the lack of a comprehensive plan (similar to the MR&T) for flood control that protects us from the devastation of flooding such as we saw in 1993.”

-- Mike Reed, Sny Island Levee and Drainage District, Ill.



ISSUE: The importance of small ports and harbors on local and regional economies.

“...we are concerned that dredging funds for these ports are not included in the FY16 President’s budget.”

-- Gene Higginbotham, Arkansas Waterways Commission, Ark.





High-Water Inspection Trip

Partnering, Dialogue and Feedback Developing Sustainable Engineering Solutions

PORTS AND HARBORS

- Hickman-Fulton County Riverport, Ky.
- Pemiscot County Port Authority, Mo.
- New Madrid County Port Authority, Mo.
- Southeast Missouri Regional Port Authority, Mo.
- Port of Memphis, Tenn.
- Port of Rosedale, Miss.
- Madison Parish Port Commission, La.
- Port of Greater Baton Rouge, La.
- Port of Morgan City, La.

INDUSTRY

- AEP River Operations
- Consolidated Grain & Barge
- American Waterways Operators
- Southern Towing Company
- American General Contractors, Mississippi Valley Branch
- Bunge North American
- Dynamic Measurement, LLC, Texas
- MWH Global, Ore.
- REI Development, Miss.
- T. Baker Smith, La.
- Lucy Woodstock Marine

RIVER BASIN ASSOCIATIONS

- West Tennessee River Basin Authority
- Red River Valley Association, La.
- Ouachita River Valley Association, La.
- White River Coalition, Ark.
- St. Johns Bayou Basin
- Lower Mississippi River Sub-basin Committee

AGRICULTURE AND ECONOMIC DEVELOPMENT

- Economic Development Growth Engine (EDGE) Memphis, Tenn.
- Delta Council, Miss.
- East Arkansas Enterprise
- Mississippi Farm Bureau

CONSERVATION AND RECREATION

- Lower Mississippi River Conservation Committee
- Mississippi River Corridor

EDUCATIONAL AND RESEARCH

- University of Illinois
- Iowa State University
- Presbyterian Day School, Memphis, Tenn.
- University of Arkansas, Pine Bluff
- Louisiana State University
- Gulf Water Institute, Baton Rouge, La.





High-Water Inspection Trip

FLOOD CONTROL

- Mississippi Valley Flood Control Association
- Sny Island Levee District, Ill.
- Alexander County, Ill.
- Little River Drainage District, Mo.
- St. Francis Levee District of Missouri
- St. Johns Levee and Drainage District, Mo.
- Elk Chute Levee District, Mo.
- Consolidated Drainage District No. 1, Mo.
- Fulton County Levee Board, Ky.
- Lake County Levee and Drainage District, Tenn.
- Dyer County Little Levee District No. 1, Tenn.
- Reelfoot Levee District, Tenn.
- Lake County Levee Board, Tenn.
- St. Francis Levee District of Arkansas, Ark.
- Piney Drainage District, Ark.
- Drainage District No. 7, Ark.
- White River Drainage District, Ark.
- Laconia Levee District, Ark.
- Cotton Belt Levee District, Ark.
- Southeast Levee District of Arkansas
- Yazoo-Mississippi Delta Levee Board, Miss.
- Mississippi Levee Board, Miss.
- Fifth Louisiana Levee District
- Tensas Basin Levee District, La.
- Atchafalaya Basin District, La.
- Southeast Louisiana Flood Protection Authority

WATER SUPPLY / WATER MANAGEMENT ENTITIES

- Bayou Meto Water Management District, Ark.
- White River Irrigation District, Ark.
- Union County Water Conservation Board, Ark.
- Yazoo-Mississippi Delta Joint Water Management District, Miss.
- Boeuf-Tensas Water District, La. and Ark.
- Amite River Basin Drainage & Water Conservation, La.



Connecting people, land and water for a productive tomorrow.



High-Water Inspection Trip

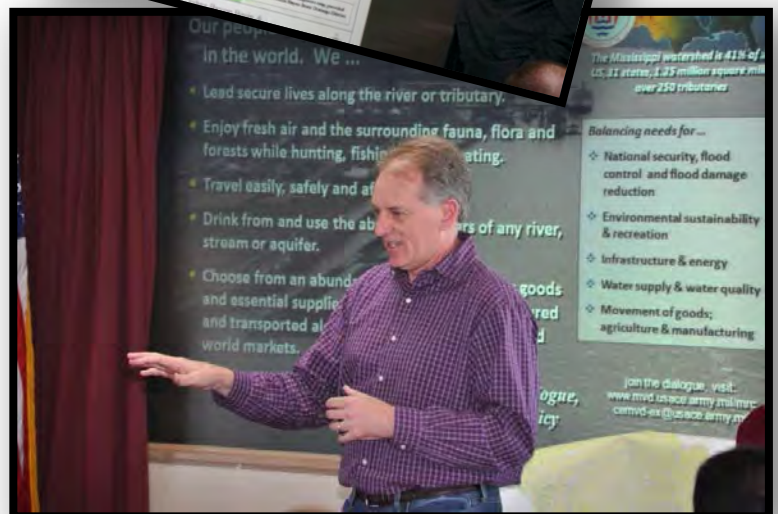
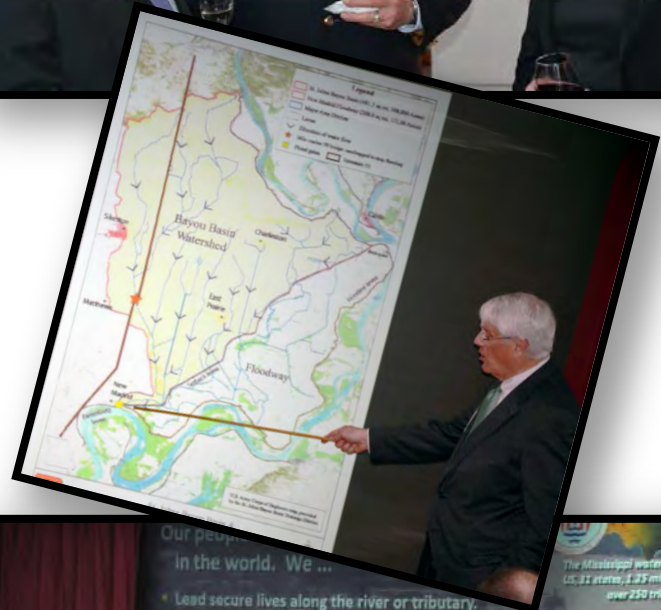
Partnering, Dialogue and Feedback Developing Sustainable Engineering Solutions (Governmental Agencies)

FEDERAL AGENCIES

- U.S. Fish & Wildlife Service
- U.S. Coast Guard
- Assistant Secretary of the Army for Civil Works (Let Mon Lee)
- National Weather Service

STATE AGENCIES

- Missouri Department of Natural Resources
- Missouri Department of Transportation
- Missouri Department of Agriculture
- Missouri State Emergency Management Agency
- Arkansas Waterways Commission
- Arkansas Game and Fish Commission
- Tennessee Emergency Management Agency
- Tennessee Department of Environment and Conservation
- Mississippi Emergency Management Agency
- State of Louisiana, Atchafalaya Basin Program
- Louisiana Department of Natural Resources



Connecting people, land and water for a secure tomorrow.





High-Water Inspection Trip

Partnering, Dialogue and Feedback Developing Sustainable Engineering Solutions (Congressional and Elected Officials)

U.S. SENATE

- Sen. Roy Blunt, Mo. (Sam Wilson)
- Sen. Claire McCaskill, Mo. (Christy Mercer)
- Sen. Lamar Alexander, Tenn. (Lora Jobe)
- Sen. John Boozman, Ark. (Chris Caldwell and William Rockefeller)
- Sen. Tom Cotton, Ark. (Vanessa Moody)
- Sen. Thad Cochran, Miss. (JoAnn Clark)
- Sen. Bill Cassidy, La. (Michael Eby)

U.S. HOUSE OF REPRESENTATIVES

- Rep. Garret Graves, LA-6
- Rep. Jason Smith, MO-8 (Darren Lingle)
- Rep. Steve Cohen, TN-9 (Jonathan Donald)
- Rep. Rick Crawford, AR-1 (Jay Sherrod)
- Rep. Gregg Harper, MS-3 (Chip Reynolds)
- Vice Rep. Alan Nunnelee, MS-1 (Walt Starr)

GOVERNORS

- Missouri Lt. Gov. Peter Kinder

MAYORS AND PARISH PRESENTS

- Mayor Tyrone Coleman, Cairo, Ill.
- Mayor Donnie Brown, New Madrid, Mo.
- Mayor David Lattus, Hickman, Ky.
- Mayor William Foresythe, Hornersville, Mo.
- Mayor Kevin Mainord, East Prairie, Mo.
- Mayor Denny Johnson, Lake County, Tenn.
- Mayor Benny McGuire, Obion County, Tenn.
- Mayor George Flaggs, Vicksburg, Miss.

CITIES, TOWNS, COUNTIES AND PARISHES

- Dyer County, Tenn.
- Fulton County, Ky.
- Horn Lake, Miss.
- Vicksburg, Miss.
- St. John Parish, La.
- Ascension Parish, La.
- Terrebonne Parish, La.
- Baton Rouge, La.



Connecting people, land and water for a bright tomorrow.



High-Water Inspection Trip

Inspections Sites

- St. John's Bayou and St. John's Floodway
- Cherokee Point (levee and bank repair) below Tiptonville, Tenn.
- Floodwall, Pyramid and Construction of Bass Pro Shop, Memphis, Tenn.
- St. Francisville, La., concrete mat construction yard (176K squares on the yard currently)
- Old River Control Overbank Structure
- Sidney A Murray Jr. Hydroelectric Plant





High-Water Inspection Trip

Briefings Received

- District commanders from the Memphis, Vicksburg and New Orleans districts provided overview discussions on strategic topics within their respective areas of operation and provided detailed status updates on key MR&T features to include the channel improvement program, the Mississippi River levee system, MR&T ports, dredging, St. Johns Bayou-New Madrid Floodway project, the Bayou Meto Basin and Grand Prairie projects.
- James Bodron, acting chief of Program Directorate, provided a Civil Works Integration Division overview that summarized the appropriations and program status for the MR&T project and the 2012 emergency supplemental. Bodron also detailed various project authorizations set forth in WRRDA 2014.
- Michael Turner, chief of Engineering Division, provided an update on the Levee Safety program.
- Charles Shadie, chief of Watershed Management, delivered a detailed analysis of current river conditions, the spring flood outlook, long range precipitation outlooks and reservoir storage capacity in the larger drainage basin.
- Brig. Gen. Kem discussed expected challenges and opportunities for the next decade in the Missouri basin. Charles Shadie provided an update on river management and reservoir operations on the Ohio River on behalf of Brig. Gen. Kaiser.





High-Water Inspection Trip

Briefings Received

- Col. Jeffery Anderson, commander of the Memphis District, provided an informational briefing on the status of the St. Johns Bayou-New Madrid Floodway project and an overview of the independent external peer review and interagency team feedback. Anderson also briefed the commission on new designs for an improved and more efficient plant for mat-sinking unit operations.
- James Bodron updated the commission on the ongoing MR&T Strategic Investment Plan. The plan identifies all remaining MR&T work and assesses the risks associated with an incomplete system. The plan also identifies future MR&T recapitalization requirements at an estimated cost of \$15 billion.
- Dr. Barb Kleiss, director of Science and Technology, provided an update on the recent scientific findings related to Mississippi River geomorphology and potomology. Kleiss also discussed the USACE Climate Adaptation Policy and potential implications in the lowermost Mississippi River.
- Charles Shadie provided an update on the ongoing MR&T Project Flood Flowline Study. The briefing centered on the overall status of the study, an update on associated hydrologic work, and a path forward toward completion.





High-Water Inspection Trip

Leader Dialogue – Water is our Nation’s Infrastructure

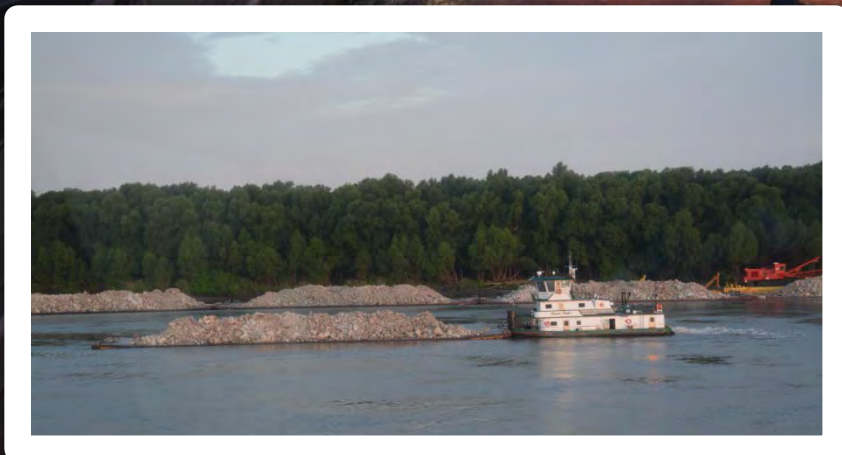
We are listening closely, and people along America's waterways are asking for the following:

- To improve the quality of their life, and they want economic security and protection from damaging floods.
- To enjoy the beauty of nature, with clean air and water, and a healthy environment in which their children and grandchildren can live and produce.
- To be more connected to their community, to include locally grown, more natural foods.
- To reconnect with our nation's rivers to realize the economic and natural bounty provided by clean, abundant water.



Senior Leaders: Mr. Chuck L. Greco (president, Associated General Contractors of America, Texas); Mr. Walton Gresham (president, Delta Council, Indianola, Miss.); Ms. Phyllis Harden (president, Miss Valley Associated General Contractors of America, Arkansas); Mr. Martin T. Hettel (Inland Waterway Users Board River Industry Executive Task Force, Missouri); Command Sergeant Major Antonio S. Jones, Georgia; Mr. Gaylon M. Lawrence, Jr. (Little River Drainage District and The Lawrence Group, Missouri, Arkansas and Tennessee); SMA Kenneth O. Preston, USA Retired (director, Noncommissioned Officer & Soldier Program Association of the United States Army, Virginia); Mr. Jose E. Sanchez (director, Coastal & Hydraulics Laboratory, ERDC, USACE, Mississippi); and General Gordon Sullivan, USA Retired (president and chief executive officer, Association of the United States Army, Virginia). **MRC members and team:** Maj. Gen. Michael C. Wehr (president, Miss.); Brig. Gen. Margaret Burcham (member, Washington, DC); RDML Gerd F. Glang (member, NOAA, Maryland); Mr. Thomas A. Holden, Jr., SES, director, Regional Business; Mr. Stephen Gambrell, MRC director, civil engineer; Mr. Charles A. Camillo, MRC historian; Dr. Barb Kleiss, director, Mississippi River Science & Technology Office; John Files; Mrs. Kimberly Gauntt, HR strategic advisor; and Mrs. Bitsy Sloan, chief legal officer.

Connecting people, land and water for a productive tomorrow.





**394th Session of the
Mississippi
River
Commission
Low-water
Inspection Trip**

**Chattanooga, Tenn.; Decatur, Ala.;
Clarksville, Tenn.; Nashville, Tenn.;
Kentucky Lock, Ky.; Olmsted Lock;
Cape Girardeau, Mo.; Memphis, Tenn.;
Greenville, Miss.; Baton Rouge, La.**



Low-Water Inspection Trip

August 8-21, 2015

The Mississippi River Commission conducted the 394th session from August 8-21, 2015. During the session, the commission visited five different river systems that form a portion of the greater Mississippi River drainage basin.

The session commenced with an inspection trip covering 463 miles of the Tennessee River from Chattanooga, Tenn., to the Cumberland River through Barkley and Kentucky lakes. Next the commission inspected 192 miles of the Cumberland River to Nashville, Tenn., where the motor vessel *MISSISSIPPI* travelled back downstream to the Ohio River. The commission inspected the lower 50 miles of the Ohio River before travelling another 55 miles on the upper Mississippi River from Cairo, Ill., to Cape Girardeau, Mo.

Upon leaving the Ohio River watershed, the commission held its traditional low-water inspection of the Mississippi River and Tributaries (MR&T) project and inspected 723 miles of the river from Cape Girardeau to Baton Rouge, La. The commission intended to also inspect nearly 100 miles of the Atchafalaya River, but rare summer high-water conditions on the river forced the commission to remain on the Mississippi River.



Left to right: Brig. Gen. Richard Kaiser, Rear Adm. Gerd Glang, Dr. Norma Jean Mattei, Mr. Sam Angel, Maj. Gen. Michael C. Wehr, Mr. R.D. James and Brig. Gen. David Hill.



Low-Water Inspection Trip

August 8-21, 2015 (continued)

Altogether the Mississippi River Commission partnered directly with 1,800 people during the 394th session and the vessel, crew and Corps of Engineers districts engaged another 2,500 people as the vessel plied 2,900 miles as it surveyed and assured navigability by the large platform on key rivers in the watershed. The majority of the water resource advocates engaged by the Mississippi River Commission represent boards, associations or commissions with combined memberships that number into the tens of thousands. The commission also interacted with members of Congress and their staffs, governors and state agencies, federal partners and river town mayors through engagements during the low-water inspection.

The members of the Mississippi River Commission present during the 394th session were:

- Maj. Gen. Michael Wehr, appointed as president on August 5, 2015.
- Hon. Sam E. Angel, reappointed as member on December 30, 2010.
- Hon. R. D. James, civil engineer, reappointed as member on April 6, 2003.
- Hon. Norma Jean Mattei, Ph.D., civil engineer, appointed as member on December 3, 2012.
- Rear Adm. Gerd F. Glang, appointed as member on September 19, 2013.
- Brig. Gen. Richard G. Kaiser, appointed as member on August 5, 2014.
- Brig. Gen. David C. Hill, designated as member on July 17, 2015.

- Col. Michael Derosier served as secretary of the commission, a non-voting position.



Connecting people, land and water for a bright tomorrow.



Low-Water Inspection Trip

Member Voices



**“We feed the world.
This is our biggest
bullet for the future.
Only this bullet does
not kill people, it
feeds people.”**

Hon. R.D. James

**“We need to let Congress
know that these
[dredging] funding pots
work.”**

Dr. Norma Jean Mattei



**“The next time you see a rocket
launch, know that that rocket was
moved on the inland waterway
system (from the Tennessee River
to the West and Southeastern
coasts).”**

Rear Adm. Gerd Glang





Low-Water Inspection Trip

Listening – Low-Water Inspection – MR&T

The Mississippi River Commission held formal public hearings at Cape Girardeau, Mo., Memphis, Tenn., Greenville, Miss., and Baton Rouge, La. Mississippi River Commission hearings are held in accordance with Section 8 of the 1928 Flood Control Act:

“Sec. 8. ...The commission shall make inspection trips of such frequency and duration as will enable it to acquire first-hand information as to conditions and problems germane to the matter of flood control within the area of its jurisdiction; and on such trips of inspection ample opportunity for hearings and suggestions shall be afforded persons affected by or interested in such problems.”

Because of the inter-connected nature of the many uses of the river, the Mississippi River Commission recognizes all water resource challenges and issues as being “germane to the matter of flood control.”

The hearings, engagements and dialogue help maintain a consistent exchange of viewpoints and ideas among the public, partners, stakeholders, elected officials, the Mississippi River Commission, the Corps of Engineers and agencies from the private, state and federal sectors. This process allows the people who live and work in the region a greater voice in shaping federal management and policy on the river and for the watershed.

Approximately 300 members of the public attended the public meetings. Fifty-five individual speakers presented testimony to the Mississippi River Commission, and two others submitted written testimony for the record only. The major themes from the testimony included:



-.“We continue to appreciate this commission ... and its ability to draw folks together...It is here we come without fear. It is here we come with hope.”

-Christina Kost, Big Island Levee Conservancy, Illinois



Low-Water Inspection Trip

What We Heard Top Regional Issues

ISSUE: The importance of small ports and harbors to the local, regional and national economies.

"We need open harbors...you can't have navigation if you can't get in and out of the harbors."

--[Greg Curlin, Hickman-Fulton County Riverport Authority](#)

"We feed the nation from our part of the country."

--[Pete Burns, SEMO Port](#)



ISSUE: Concerns with the National Levee Safety Program and levee inspections.

"We passed a record flood and I've never received a worse rating on our inspection...ever! ... Are we going to set the bar to something that no one can pass? Please don't write a test that no one can pass."

--[Rob Rash, St. Francis Levee District of Arkansas](#)

"The YBW [Yazoo Backwater] levee [rated] "unacceptable" because the gates are in need of rehabilitation. The gates ... are the direct responsibility of the Corps of Engineers. I think this "unacceptable" rating is unjust and unfair to the Mississippi Levee Board."

--[Peter Nimrod, Mississippi Levee Board](#)



Low-Water Inspection Trip

What We Heard Top Regional Issues

ISSUE: The importance of flood control to the nation's economy and reliable, productive businesses.

"We are thankful for the relief wells installed since the 2011 flood. I can honestly tell you that I did not get one single call about sand boils during this past high water."

--[Reynold Minsky](#),
[Fifth Louisiana Levee District](#)



"Please remember, Noah didn't wait till the flood to start building the ark...we need your help to protect our ability to feed the world and protect our homes."

--[Jim Carroll](#),
[Piney Drainage District](#)

"Since 2008, the Sny's flood control system has prevented more than \$800 million in damages in the Sny alone... What a great example of a private-public working relationship."

--[Mike Reed](#),
[Sny Island Levee District](#)

ISSUE: The need for Corps of Engineers involvement in ground water conservation and water supply.

"Water supply is the most critical resource problem our nation will face this century."

--[Gene Sullivan](#), [Bayou Meto Water Management District](#)

"Who better than us to feed [the world] ... but we've got to have water to grow these crops."

--[Ann Cash](#),
[Boeuf-Tensas Irrigation District](#)



Low-Water Inspection Trip

What We Heard Top Regional Issues

ISSUE: The MR&T project and its need for re-investment.

"The yearly budget in this country is nearly \$3.8 trillion. Yet we can't seem to fund the yearly \$500 million to maintain and complete a project that has provided this country with a 44 to 1 return on investment."

--[Dustin Boatwright, Little River Drainage District, Mo.](#)



"The part of the country I live in wouldn't be livable if had not been for Corps projects."

--[Harvey Joe Sanner, White River Coalition](#)



"The MR&T is a great benefit to the entire nation and not just the people of the valley."

--[Randy Richardson, Port of Memphis](#)



Low-Water Inspection Trip

What We Heard Top Regional Issues

ISSUE: Concerns and challenges of the 408 permit process.

"Our members have found the current interpretation of section 408 permitting unworkable."

--Mike Klingner, [Upper Mississippi, Illinois and Missouri Rivers Association](#)



"We want to take a look at section 408 to make sure it will not impact how we take care of the levee."

--Peter Nimrod,
[Mississippi Levee Board](#)

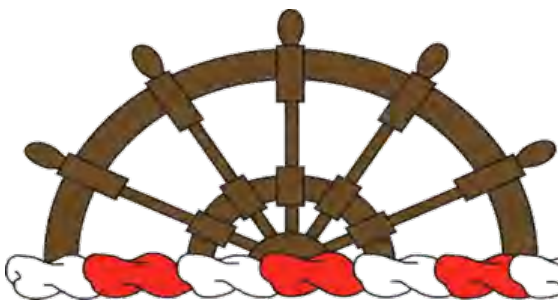
ISSUE: Concerns and potential cost to the nation related to the Waters of the United States Rule.

"The new rule does not clarify EPA's regulatory jurisdiction, but greatly confuses the sensitive issue even further."

--Larry Banks,
[Louisiana farmer](#)

"The proposed rule would make the ditches considered in *Rapanos vs U.S.* jurisdictional, when the Supreme Court ruled they are not."

--Peter Nimrod,
[Mississippi Levee Board](#)



Watershed Approach

Tennessee and Cumberland Rivers

The Mississippi River and its tributaries drain an area of 1.25 million square miles, or approximately 41 percent of the United States exclusive of Alaska. The drainage basin spans from western New York to western Montana and from 70 miles north of the United States Canadian border to southern Louisiana and the Gulf of Mexico. The basin includes more than 250 tributaries and covers all or portions of 31 states and about 20,000 square miles of Canada. The MR&T project implemented by the Mississippi River Commission provides comprehensive navigation, flood control and ecosystem improvements for the alluvial valley that strategically anchors the lower end of the natural funnel formed by the Mississippi watershed.

Water resource management in the major sub-basins comprising the greater Mississippi watershed directly impacts the operations, practices and decisions of the Mississippi River Commission and its prosecution of the MR&T project. Since 1997, the commission has traversed the basins that serve as the greatest contributors of water to the lower Mississippi River and has met face-to-face with tens of thousands of local, state and federal partners and stakeholders to gain a better understanding of the concerns, issues and impacts on the watershed As a whole.

The commission reviewed and inspected the upper Mississippi basin Ten times from 1997 to 2008 and again in 2013, the Ohio River basin in 2005 and 2011, the Missouri River Basin in 2007 and 2012, the Illinois River basin in 2009 and the Arkansas-White basin in 2010 and 2014. As part of the 394th session, the commission returned to the Great Lakes and Ohio River Division to review navigation structures and ports along the Tennessee, Cumberland and lower Ohio rivers. These systems carry approximately 57 million tons annually valued at more than \$10 billion. The Tennessee and Cumberland rivers provide 1,492 navigable river miles that are reliable and resilient to the impacts of ice, drought or floods. These river systems will be an essential mode of transportation should a New Madrid seismic event occur, facilitating the movement of emergency supplies, personnel and equipment into the affected region and the evacuation of injured and affected populations.



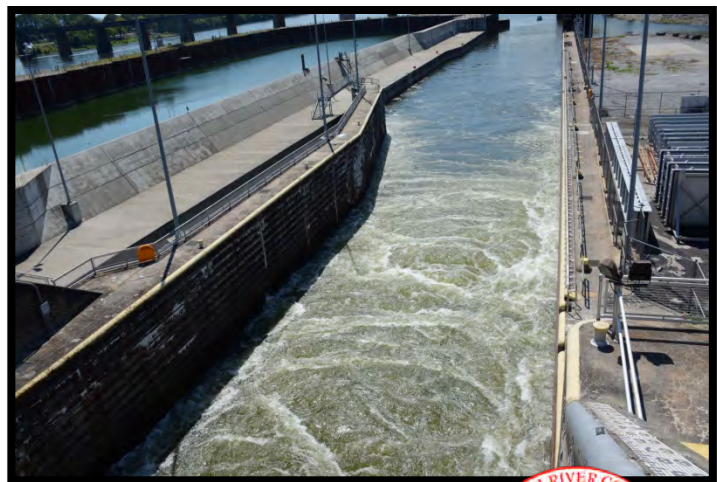
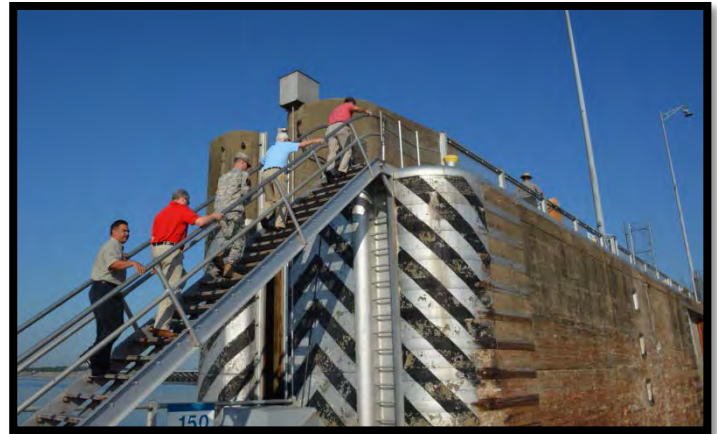


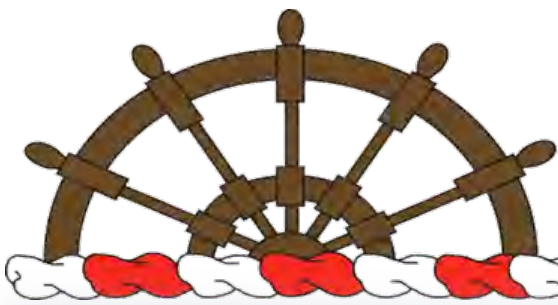
Watershed Approach

Tennessee and Cumberland Rivers *(continued)*

The commission also travelled to these watersheds to learn more about the management of the flood control reservoirs in the greater drainage basin. The vast amount of storage capacity in the system, coupled with the Corps of Engineers water management efforts, played an instrumental role in reducing the water levels and flooding experienced in the July 2015 high-water event on the lower Mississippi River. The storage capacity and water management efforts also augment the Mississippi River during low-water periods. While the Tennessee and Cumberland systems only comprise about six percent of the drainage basin upstream of Memphis, during the September 2012 drought, approximately 40 percent of the flow at Memphis came from the Tennessee and Cumberland systems.

The Tennessee and Cumberland watersheds account for roughly a third of the greater Ohio basin. More than 50 percent of the Great Lakes and Ohio River Division program centers on facilitating commerce through its navigation mission. The commission was impressed by the efficient operation of the Tennessee and Cumberland rivers, but does so with some trepidation as the aging system is approaching its 50-year design life and is consuming its capital (with operation and maintenance demands). Underfunded maintenance for essential repairs is leading to more costly rehabilitations that negatively impact system reliability. The system must be recapitalized to maintain its tremendous benefits. The Great Lakes and Ohio River Division's infrastructure represents 25 percent of the U.S. Army Corps of Engineers civil works budget. To complicate matters, the division's investigation program is trending downward, which is alarming given the need for major rehabilitation in the system.





Watershed Approach

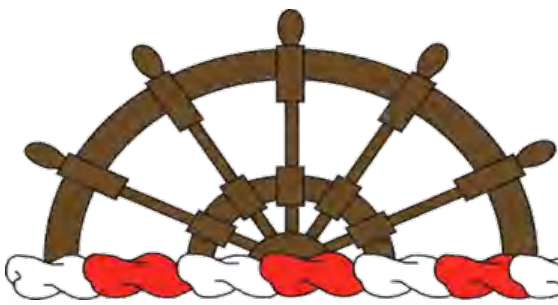
Listening – Tennessee, Cumberland and Lower Ohio Watersheds

During its inspection of the Tennessee, Cumberland and Ohio rivers, the Mississippi River Commission engaged with more than 500 people. The stakeholders involved ranged from federal and state congressional representatives, city and county mayors, the Department of Energy, Huntsville Engineering Center and the Tennessee Valley Authority.

Commerce

- Tennessee River system is a critical component for the transportation of the national space program (NASA) rocket production and transportation program at Decatur, Ala., via their one-of-a-kind rocket Transport vessel, the Delta Mariner. It is estimated that the annual value of the Delta Mariner's cargo is in excess of \$1 billion and this is the only way for these larger and newer Delta IV rockets to be transported to the launching facilities on the West and Southeastern coasts.
- Chickamauga Lock and Kentucky Lock are critical components of river commerce to the Mississippi River. Their aging infrastructure and insufficient sizes result in some of the worst lockage delays in the system (over nine hours last year for Kentucky Lock). Their closure due to needed repairs would disrupt commerce on the entire Cumberland and Tennessee rivers systems. If Chickamauga Lock is closed, it would shut down 318 miles of navigable river upstream. The new Chickamauga Lock will increase the capacity of the current lock by a factor of nine.
- The Olmsted Lock and Dam project is ahead of schedule and below budget. The Louisville District estimates completion of the project in 2022 at a cost below the fully funded amount of \$3.09 billion. The district has also accelerated the dam operational date from 2020 in the Post Authorization Change Report to 2018. Capability funding for the Olmsted Lock and Dam is crucial for the remainder of the project.
- Locks and Dams No. 52 and No. 53, which were built in 1928 and 1929, represent significant concerns. The Louisville District spends millions of dollars annually and countless man hours keeping the 90-year-old dams operational. The system at this juncture is in active failure where lock walls are visibly leaning. When Olmsted Lock and Dam becomes operational and replaces the old dams, the district will be able to utilize the freed up operation and maintenance dollars on other Ohio River infrastructure projects needing repairs.





Watershed Approach

Listening – Tennessee, Cumberland and Lower Ohio Watersheds *(continued)*

Hydropower

- Nine Corps of Engineers' hydropower projects in the region are revenue earners; they return funds to the federal treasury and are a critical component of Tennessee Valley Authority's ability to provide affordable, green and responsive power to millions of homes.
- Many components of hydropower units are more than 60 years old and have exceeded their design life.

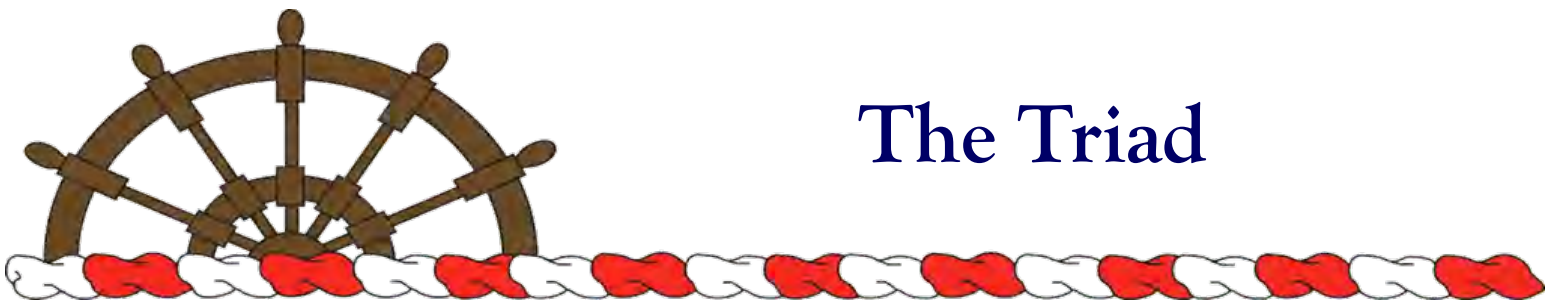
Flood Control

- The Great Lakes and Ohio River Division works closely with the Nashville District in flood reduction operations by utilizing the impressive flood control capacity in the Cumberland Basin projects. This capacity and the Corps of Engineers controls played an instrumental role in reducing the water levels and flooding experienced in the July 2015 high-water event on the lower Mississippi River.
- Districts with major river infrastructure lack adequate revenue to maintain the major maintenance items of their systems without federal/state assistance.

Recreation

- Three of the top five most popular national recreational areas are located in the Tennessee and Cumberland systems, with more than 31 million visitors recorded annually. These systems provide recreational opportunities critical to the local and regional economies. The Nashville District is home to the Corps of Engineers' largest marina concessionaire program and increasing consumer spending on recreation and recreation support activities.





The Triad

The voices of the people are clear: They need and appreciate direct and regular involvement in the process of maturing and delivering water resource solutions that advance the future of the United States. They believe their role serves as an example of long-term local, public and private partnership that has served the role of nation building for over 150 years in the Mississippi's alluvial valley. Local people and partners have demonstrated that they can produce and deliver essential products that improve the quality of life from the nation's inner coast to global destinations in need of food, water and energy.



Connecting people, land and water for a productive-secure-bright tomorrow.

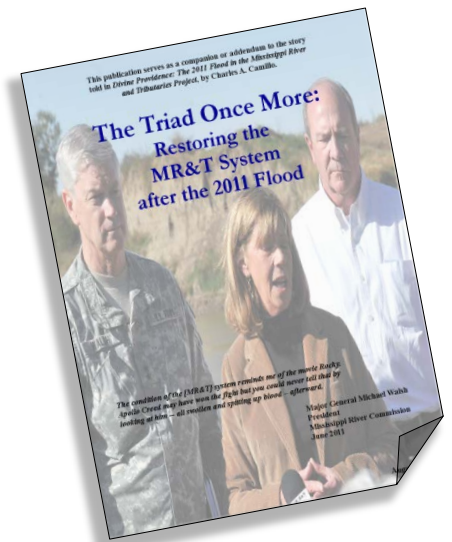
Civil Works' Value to the Nation (2010-2013 Average)

USACE has been working to characterize and document the Value to the Nation provided by the Civil Works program, based on economic return on investment as measured by NED benefits produced, and the financial measure of revenues that flow back to the U.S. Treasury.

Program	NED Benefits (billions of dollars)	Net NED Benefits (billions of dollars)	U.S. Treasury Revenues (billions of dollars)
Flood Risk Management	\$79.83	\$79.19	\$25.30
Coastal Navigation	\$9.87	\$9.07	\$3.88
Inland Navigation	\$8.84	\$8.24	\$2.27
Water Supply	\$7.61	\$7.59	\$0.08
Hydropower	\$2.92	\$2.73	\$1.43
Recreation	\$3.31	\$3.01	\$1.17
Leases and Sales			\$0.03
Total Annual NED	\$112.38	\$109.83	\$34.16

Notes:

- (1) Net NED benefits are defined as NED benefits less the costs of operations, maintenance, and investigations. Since the costs associated with expenses and oversight by the Assistant Secretary of the Army (ASA) serve all Corps programs, including those we did not calculate benefits for in this report, this report does not account for those costs."
- (2) The Benefits and Revenues numbers are not additive.



"The Triad Once More" serves as a companion or addendum to the story told in *Divine Providence: The 2011 Flood in the Mississippi River and Tributaries Project*.

The economic data is compelling: the nation's wise investment in high-value high-return water infrastructure continues to produce record returns -- which can be used for reinvestment. These investments bolster national security and economic vitality.





Low-Water Inspection Trip

Partnering, Dialogue and Feedback Developing Sustainable Engineering Solutions

PORTS AND HARBORS

- Hickman-Fulton County Riverport, Ky.
- Pemiscot County Port Authority, Mo.
- New Madrid County Port Authority, Mo.
- Southeast Missouri Regional Port Authority, Mo.
- Memphis Port Commission, Tenn.
- Henderson River Port, Ky.
- Port of Rosedale, Miss.
- Rosedale-Bolivar County Port Commission, Miss.
- Claiborne County Port, Miss.
- Port of Greenville, Miss.
- Madison Parish Port Commission, La.
- Port of Point Coupee
- Port of Greater Baton Rouge, La.
- Port of Morgan City, La.

ENERGY SECTOR

- Ergon, Inc.
- Tennessee Valley Public Power Association
- Big River Electric
- Placid Refinery, Port Allen, La.
- Rio Fuel
- T. Baker Smith, La.
- Stone Energy

RIVER BASIN ASSOCIATIONS

- Tennessee River Valley Association
- Cumberland River Compact
- West Tennessee River Basin Authority
- Red River Valley Association, La.
- Ouachita River Valley Association, La.
- White River Coalition, Ark.
- St. Johns Bayou Basin

RIVER INDUSTRY

- Serondino, Inc.
- Parker Towing
- Sunset Marina
- C.F. Bean
- Allison Marine
- Crouse Corporation
- Cajun Contractors
- Conrad Shipyards
- Prizer Point Marina
- Elm Hill Marina
- Hunter Marine
- Trinity Marine
- Big River Coalition
- Central Boats, La.
- Ocean Marine, La.
- Nyrstar Corporation
- Mid River Terminal, Mo.
- Kirby Corporation, Tex.
- Bruce Oakley, Inc., Ark.
- Bunge North American
- AEP River Operations, Mo.
- Ingram Barge Line, Tenn.
- Southern Towing Company
- Tidewater Barge Lines, Wash.
- COWI Marine North America
- American Commercial Lines
- Consolidated Grain & Barge
- American Waterways Operators
- Kentucky Water Transportation Board
- Murray American Transportation, Inc. Pa.



Lynn Muench,
American Waterways
Operators

CONSERVATION AND RECREATION

- The Nature Conservancy, TN & MO Chapters
- Big River Strategic Initiative
- Ducks Unlimited
- Audubon Society, La.



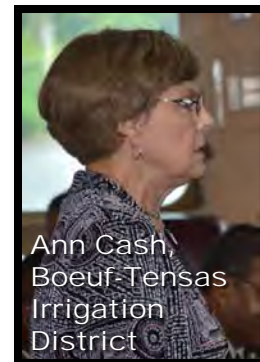
Low-Water Inspection Trip

FLOOD CONTROL

- Mississippi Valley Flood Control Association
- Upper Mississippi, Illinois, and Missouri River Association
- Sny Island Levee District, Ill.
- Big Island Levee District, Ill.
- Alexander County, Ill.
- Little River Drainage District, Mo.
- Len Small Levee and Drainage District
- St. Francis Levee District of Missouri
- St. Johns Levee and Drainage District, Mo.
- Fulton County Levee Board, Ky.
- Lake County Levee and Drainage District, Tenn.
- Dyer County Little Levee District No. 1, Tenn.
- Reelfoot Levee District, Tenn.
- Lake County Levee Board, Tenn.
- St. Francis Levee District of Arkansas, Ark.
- Piney Drainage District, Ark.
- Drainage District No. 7, Ark.
- White River Drainage District, Ark.
- White River Levee District of Woodruff, Monroe, and Prairie, Ark.
- Laconia Levee District, Ark.
- Cotton Belt Levee District, Ark.
- Southeast Levee District of Arkansas
- Mississippi Levee Board, Miss.
- Fifth Louisiana Levee District
- Tensas Basin Levee District, La.
- Atchafalaya Basin Levee District, La.
- Red River, Atchafalaya & Bayou Boeuf Levee District
- St. Mary Levee District, La.
- Southeast Louisiana Flood Protection Authority

BUSINESS AND MANUFACTURING

- Olin Corporation
- Trane HVAC
- Poydrus Minerals
- GHD, Baton Rouge
- Holcim, Inc. Mich.
- CBG Enterprises, La.
- Klingner and Associates, Ill.
- Cycle Construction Company
- PMI Environmental Services, La.
- Associated General Contractors of America



Ann Cash,
Boeuf-Tensas
Irrigation
District

AGRICULTURE AND ECONOMIC DEVELOPMENT

- Tennessee Economic Community Development
- Indiana Soybean and Corn Growers Alliance
- Delta Regional Authority
- Economic Development Growth Engine (EDGE) Memphis, Tenn.
- Delta Council, Miss.
- East Arkansas Enterprise
- Illinois Farm Bureau
- Mississippi Farm Bureau

WATER SUPPLY / WATER MANAGEMENT ENTITIES

- Waterways Development Authority Board, Tenn.
- Nashville Metro Water Services, Tenn.
- Bayou Meto Water Management District, Ark.
- White River Irrigation District, Ark.
- Union County Water Conservation Board, Ark.
- Yazoo-Mississippi Delta Joint Water Management District, Miss.
- Boeuf-Tensas Water District, La. and Ark.
- Amite River Basin Drainage & Water Conservation, La.



Low-Water Inspection Trip

Partnering, Dialogue and Feedback Developing Sustainable Engineering Solutions (Governmental Agencies)

FEDERAL AGENCIES

- Tennessee Valley Authority
- U.S. Department of Energy
- U.S. Geological Survey, Tennessee Science Center
- U.S. National Park Service
- U.S. Fish & Wildlife Service
- U.S. Coast Guard
- Assistant Secretary of the Army for Civil Works (Jo-Ellen Darcy, LetMon Lee)
- Institute for Water Resources
- Engineer Research and Development Center
- National Weather Service
- U.S. Department of Agriculture

STATE AGENCIES

- Tennessee Department of Transportation
- Tennessee Wildlife Resources Agency
- Tennessee Emergency Management Agency
- Tennessee Department of Agriculture
- Missouri State Emergency Management Agency
- Missouri Department of Natural Resources
- Missouri Department of Transportation
- Missouri Department of Agriculture
- Arkansas Waterways Commission
- Arkansas Natural Resources Commission
- Arkansas Game and Fish Commission
- State of Louisiana, Atchafalaya Basin Program
- Louisiana Department of Environmental Quality
- Mississippi Department of Environmental Quality
- Louisiana Department of Transportation and Development
- Louisiana Department of Natural Resources





Low-Water Inspection Trip

Partnering, Dialogue and Feedback Developing Sustainable Engineering Solutions (Congressional and Elected Officials)

U.S. SENATE

- Sen. Lamar Alexander, Tenn. (Jeff Lewis, Allison Martin, Evann Freeman, Charlotte Jackson, Lora Jobe)
- Sen. Bob Corker, Tenn. (Caroline Diaz-Barringa, Nick Kistenmacher)
- Sen. Roy Blunt (Downey Magallanes, Carolyn Yielding, Tom Schulte)
- Sen. Claire McCaskill, Mo. (Christy Mercer)
- Sen. John Boozman, Ark. (William Rockefeller)
- Sen. Tom Cotton, Ark. (Russell Haygood)

U.S. HOUSE OF REPRESENTATIVES

- Rep. Jim Cooper, TN-5
- Rep. Chuck Fleischmann, TN-3 (Trish Mullens)
- Rep. Diane Black, TN-6 (Charles Schneider, Emily Bruce)
- Rep. Mike Bost, IL-12 (Carol Klaine)
- Rep. Jason Smith, MO-8 (Darren Lingle, Josh Haynes)
- Rep. Stephen Fincher, TN-8 (Chris Connolly, Ivy Fultz)
- Rep. Steve Cohen, TN-9 (Jeremy Jordan)
- Rep. Rick Crawford, AR-1 (Andrea Allen, Jay Sherrod)
- Rep. Gregg Harper, MS-3 (Chip Reynolds)

GOVERNORS AND STATE CONGRESSIONALS

- Rep. Terri Lynn Weaver, TN-40
- Sen. Bret Allain II, LA-21 (Laura Meadows)

MAYORS AND PARISH PRESENTS

- Mayor Leigh Dollar, Guntersville, Al
- Mayor Mickey Haddock, Florence, Al
- Mayor Don Kyle, Decatur, Al
- Mayor Tyrone Coleman, Cairo, Ill.
- Mayor David Lattus, Hickman, Ky.
- Mayor William Foresythe, Hornersville, Mo.
- Mayor Allen Latimer, City of horn Lake, Miss.
- Mayor John Cox, Greenville, Miss.
- Mayor Vernon Jackson, Coldwater, Miss
- Mayor Barbara Lewallen, Truman, Ark.
- Mayor Denny Johnson, Lake County, Tenn.
- Parish President Paul Naquin, St. Mary Parish, La.

CITIES, TOWNS, COUNTIES AND PARISHES

- Hamilton County, Tenn.
- Chattanooga, Tenn.
- Nashville, Tenn.
- Cheatam County, Tenn.
- Montgomery City, Tenn.
- Clarksville, Tenn.
- Shelby County, Tenn.
- Paducah, Ky.
- Fulton County, Ky.
- Scott County, Mo.
- Cape Girardeau, Mo
- Blytheville, Ark.
- Poinsett County, Ark.
- Pine Bluff, Ark.
- Memphis, Tenn.
- Warren County, Miss.
- DeSoto County, Miss.
- Sharkey County, Miss.
- Pointe Coupee Parish, La.
- Morgan City, La.



Rep. Rick Crawford
- Arkansas



Low-Water Inspection Trip

Briefings Received

Tennessee, Cumberland, Ohio Rivers

- Kentucky Lock Addition
- Chickamauga Lock Replacement Project Update
- Regional Overview of Great Lakes and Ohio River Division
- Nashville District Command Brief
- Tennessee Valley Authority Operations Brief
- Tennessee Valley Authority River Operations Brief
- New Madrid Seismic Zone Operation Plan: Mission Brief
- Olmsted Lock: Historic Perspective
- Great Lakes Water Management update
- Great Lakes and Ohio River Division Watershed Planning
- Great Lakes and Mississippi River Interbasin Study
- Ohio River Navigation System Maintenance Issues and Initiatives
- Great Lakes and Ohio River Division Civil Works Funding Overview
- Nashville District Flood Risk Management
- Nashville SAFE Forecasting Flooding in Extreme Weather Events
- Nashville District Recreation
- Nashville District Hydropower Program



Lt. Col. Stephen Murphy
Nashville District Engineer

Mississippi River and Tributaries Project

- 2015 Weather and Flooding Overview, Charles Shadie, Chief of Water Management
- Budget Overview and WRDA Summaries, Jim Bodron, Chief of Programs
- Mississippi River and Tributaries Flowline Study Update, Charles Shadie
- Mississippi River and Tributaries Action Plan, Dennis Norris, Chief of Operations
- Mississippi River and Tributaries Strategic Investment Plan, Dennis Norris
- Mississippi River Science and Technology, Barb Kleiss, Science & Technology Director
- Louisiana Coastal Area, Mississippi River Delta Management Study, Barb Kleiss
- Mississippi River Geomorphology and Potamology Program, Barb Kleiss
- Levee Safety Activities, Michael Turner, Chief of Engineering & Construction
- National Levee Safety Program, Michael Turner
- Federal Flood Risk Management Standard, Michael Turner
- St. Louis District Low Water Inspection Brief, Col. Anthony Mitchell
- Memphis District Low Water Inspection Brief, Col. Jeffery Anderson
- Vicksburg District Low Water Inspection Brief, Col. John Cross
- New Orleans District Inspection Brief, Col. Rick Hansen



Low-Water Inspection Trip

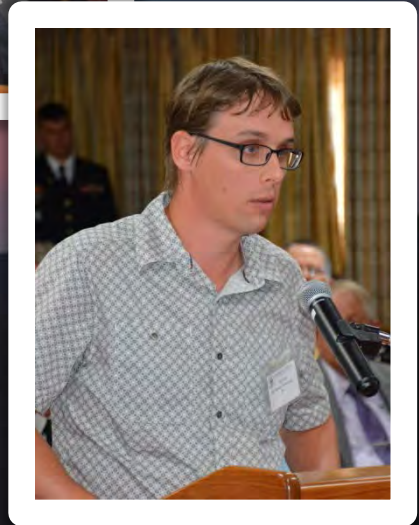
Site Visits

- Chickamauga Lock, Chattanooga, Tenn.
- United Launch Alliance, Decatur, Ala.
- City of Nashville (2010) flooded area.
- Kentucky Lock, mile 22.4 of the Tennessee River in western Kentucky.
- Olmsted Lock and Dam, ~17 miles upstream from the confluence of the Ohio and Mississippi rivers.
- Presidents Island Revetment Repair & Memphis Harbor, Tenn.
- Lake Port Plantation, Lake Village, Ark.

St. Francis Levee District, Osceola, Ark.



Connecting people, land and water for a secure tomorrow.



America's Watershed: A 200-year working vision

An Intergenerational Commitment

Our people enjoy a quality of life unmatched in the world:

- We lead secure lives along the river or tributary.
- We enjoy fresh air and the surrounding fauna, flora and forests while hunting, fishing and recreating.
- We travel easily, safely and affordably.
- We drink from and use the abundant waters of any river, stream or aquifer.
- We choose from an abundance of affordable basic goods and essential supplies that are grown, manufactured and transported efficiently and reliably along and by the river to local and world markets.



The Mississippi watershed is 41% of the U.S., 31 states, 1.25 million square miles, more than 250 tributaries.

Balancing needs for:

- ✓ **National security, flood control and flood damage reduction**
- ✓ **Environmental sustainability and recreation**
- ✓ **Infrastructure and energy**
- ✓ **Water supply and water quality**
- ✓ **Movement of goods; agriculture and manufacturing**

Leveraging local citizens' input, international dialogue, science, engineering, technology and public policy.

Join the dialogue, visit:

- www.mvd.usace.army.mil/mrc
- cemvd-ex@usace.army.mil



Mississippi River & Tributaries Project

Facts

The Mississippi River and Tributaries project was authorized by the 1928 Flood Control Act. In the wake of the 1927 flood, it was deemed necessary to put into place a comprehensive, unified system of public works within the lower Mississippi Valley that would provide unprecedented protection from floods and an equally efficient navigation channel.

The MR&T project has four major features:

- Levees/floodwalls
- Floodways
- Channel improvement and stabilization
- Tributary basin improvements

These features work together to provide flood protection and navigation, and foster environmental protection and enhancement.

PROJECT BENEFITS

Flood Control

- \$14.4 billion invested for planning, construction, operation and maintenance since 1928
- \$639 billion in flood damages prevented, since 1928
- Approximately 4 million people protected
- \$234 billion damages prevented in 2011
- 44.5 to 1 return on each dollar invested
- 1927 Flood = 16.8 million acres flooded
- 2011 Flood = 6.4 million acres flooded
- 87% physically complete
- \$3 billion annual transportation rate savings
- Untold economic productivity enables farms, towns & factories

Navigation

- More than 500 million tons of cargo move on the Mississippi River system each year.
- \$2.9 billion saved annually in transportation benefits.
- The Mississippi River remained open during the 1988, 1999 and 2012 droughts, as well as the 2011 record flood. The ability to keep the river open offered unequivocal evidence of the benefit of the MR&T project to the nation. Keeping it open and reliable is a pillar of economic stability and national security.





Mississippi River & Tributaries Project

Economic Values

Congress authorized the Mississippi River & Tributaries project in 1928; one year after the devastating Great Flood of 1927 flood cut an 80-mile wide swath across the alluvial valley. The massive flood ravaged the valley by inundating 26,000 square miles of land, destroying 41,000 buildings, killing 500 people and creating up to 700,000 refugees. The flood was not merely one that impacted the valley; its consequences were felt nationwide as the raging waters put more than the 3,000 miles of rail and thousands of miles of highways out of service, severing east-west communications and commerce for months.

To prevent a similar tragedy, the nation invested heavily in a unified system of public works to provide unprecedented flood protection and a reliable commercial artery. The resultant MR&T project has four main features:

1. Levees and floodwalls to confine ordinary floods.
2. Floodways and backwater areas to provide room for the river to expand and relieve pressure on the levee system during larger floods.
3. Channel stabilization and channel improvements to provide an efficient channel that carries more water at lower stages during floods.
4. Tributary basin improvements that maximize the benefits of mainstem protection by providing reservoirs for headwater protection and interior drainage improvements.

These features work in tandem to provide a safe and dependable commercial navigation channel on the Mississippi River, while protecting adjacent towns, farms, industry, manufacturers, energy providers, public and private investment, ports and transportation systems from "uncontrolled" flooding.

This increases reliability and productivity, and protects the nation's high-value investments.

The MR&T provides flood protection for:

- More than 4 million people and 900,000 households.
- 10.6 million acres of prime agricultural lands needed to feed the world.
- 3,600 miles of rail used by four major Class I freight carriers with combined (nationally) operating revenues of \$50 billion in 2011.
- 5,100 miles of highways, including major sections of I-10, I-20, I-40, I-55 and I-57, needed to transport commerce.
- 12 major oil refineries with a combined capacity of nearly 3 million barrels per day.
- Hundreds of thousands of oil and gas wells and related pipelines.
- 102 power plants, including three nuclear power plants.
- Hundreds of manufacturers, which generate more than \$100 billion and provide approximately 400,000 jobs.

In addition, the MR&T project provides:

- For more than 500 million tons of cargo to move annually (~\$3 billion in annual transportation rate savings).
- Authorized depths for continued water commerce during severe droughts (1988, 1999, 2012).
- A commercial link from the bread basket and sugar and rice bowls of the nation to more than 30 ports, including four of the nation's busiest ports.

¹ Association of American Railroads, *Class I Railroad Statistics*, April 17, 2013. The major Class I freight operators include Burlington Northern-Sante Fe Railroad (\$19.6 billion), Kansas City Southern Railroad (\$1.2 billion), Canadian National Railroad (\$9.1 billion), and the Union Pacific Railroad (\$19.5 billion).

² Oil and Gas Journal, *List of Oil Refineries in the United States*

³ Industrial Economics, Inc., *Economic Profile of the Lower Mississippi Region*. This report states that in 1998 manufacturing generated \$87 billion in revenues and provided 383,000 jobs. The \$87 billion figure, when adjusted for inflation, amounts to approximately \$126 billion in revenues in 2014.





Mississippi River Commission

We Value

Listening - Access

... providing an equal opportunity for all citizens to share their insight and wisdom in a free and open forum – a forum that offers greater access for citizens to actively engage in and shape federal water resource management policy.



Inspecting - Professionalism

... setting the highest professional, engineering and process standards that are emulated nationally and internationally, and offer an intergenerational vision for the world's 3rd largest watershed.



Partnering - Relationships

... establishing and nurturing long-term collaborative relationships with diverse interests, elected representatives, state and federal agencies, and the Corps of Engineers to develop sustainable solutions for current and future watershed challenges.



Engineering - Action

... protecting lives, property, economic prosperity and the nation's natural resources by advancing balanced and sound water resource engineering solutions reached through collaboration and long-term relationships.





Mississippi River Commission

Priorities

Navigation – *assuring availability, preparing for the future by improving delivery of goods*

- Consider, discuss and address container on barge with opening of the new Panama Canal set of locks (2015).
- Dredging of small ports and harbors.
- Navigation, Ecosystem Sustainability Program (NESP).

Infrastructure

- Use MRC process of listening, inspecting, partnering and engineering to increase awareness of the deteriorating infrastructure in the watershed.
- Through established relationships develop plans to address infrastructure in the watershed; lead federal efforts.
- Use MRC process to increase and help improve infrastructure investment.

Comprehensive Flood Control and Management – *a systems approach*

- MR&T (2011 flood system restoration; Mississippi River levees, Morganza to the Gulf).
- Upper Mississippi / Illinois Rivers Comprehensive Plan.
- Communicate MRC/MR&T process as a comprehensive balanced watershed approach to follow in the six major sub-basins comprising the world's largest watershed inland navigation system – the Mississippi, Missouri, Ohio, Red, Arkansas, Illinois river basins and tributaries.

Environmental Sustainability – *uniting water, land and people*

- Integrate science based, sustainable and resilient work into all projects (life-cycle cost and delivery of solutions to long term viability of water resources).
- LCA: Explore and recommend innovative science based approaches and solutions to coastal challenges ... such as water and sediment diversions.

Water Supply and Ground Water

- Prolonged drought concerns / storage of runoff.
- Multi-state aquifer depletion.

200-year working Vision – America's Watershed

- MRC signed a working vision on Aug. 20, 2009 (revised 2015). It serves as:
 - A system-wide balanced approach, offers an intergenerational commitment and compliments a national vision.
 - A platform for broad participation, international recognition and a long term balanced working vision for the world's largest navigable watershed.



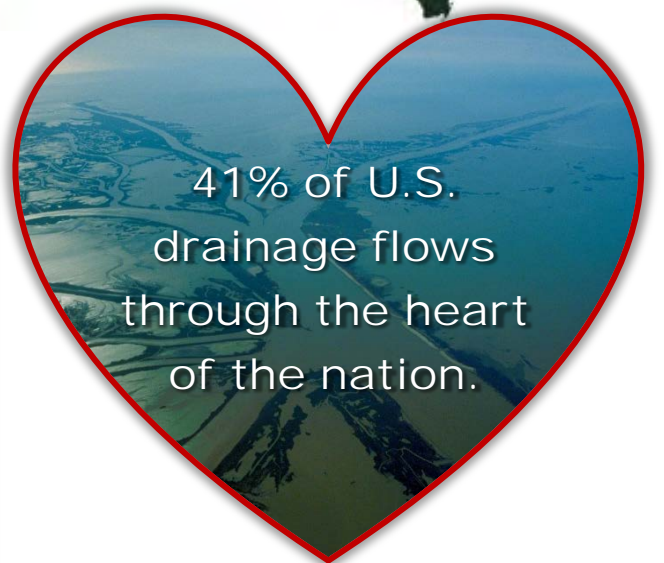


World's Largest Naturally Navigable Watershed

95% of all U.S. imports and exports (about \$1.4 trillion) move on waterways and/or ports.



2 billion tons of domestic and import/export cargo move on the U.S. waterways annually.



41% of U.S. drainage flows through the heart of the nation.