

The State of U.S. Infrastructure- Past, Present and Future

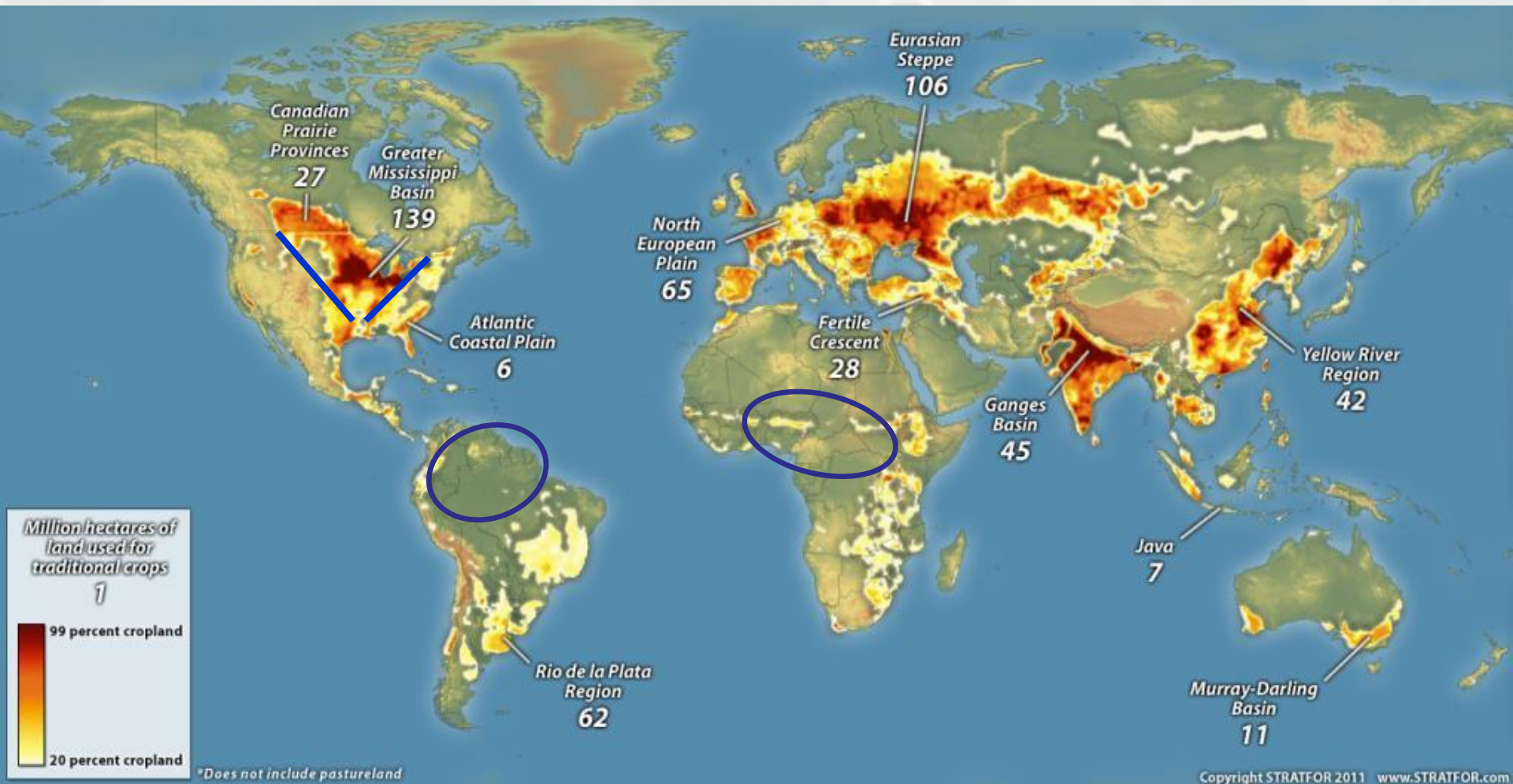
Society of American Military Engineers Regional Joint Engineer Training Symposium

Steven L. Stockton, P.E., F.ASCE
Director Civil Works
U.S. Army Corps of Engineers

6 November 2014, Portland, OR



The United States: The Inevitable Empire?



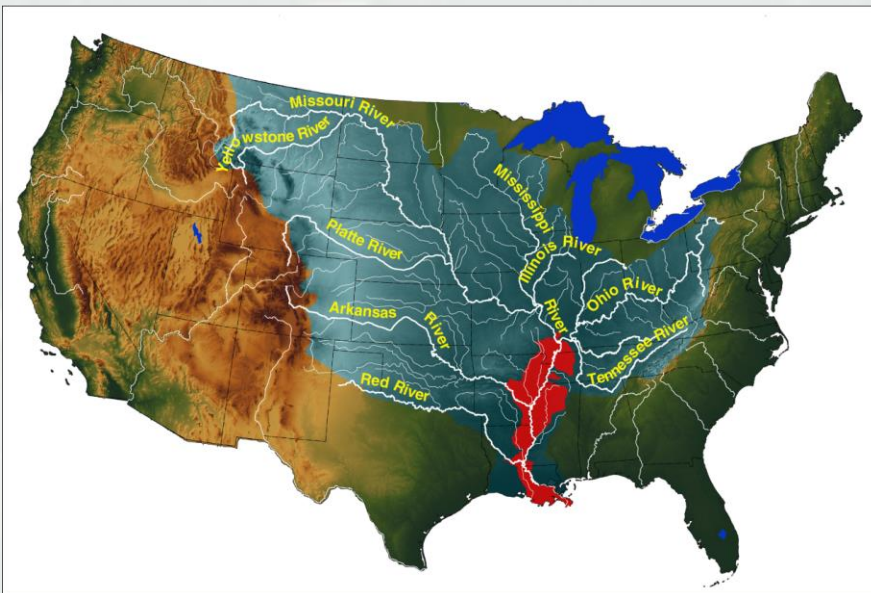
On America's Inland Waterways



“Prompted by these actual observations, I could not help taking a more **contemplative and extensive view of the vast inland navigation of these United States** ... and could not but be struck with the immense diffusion and importance of it; and with the **goodness of that Providence which has dealt his favors to us with so profuse a hand.**

Would to God we may have wisdom enough to improve them."

**George Washington
1783**



A Dream is Just a Dream ...

***A Goal is a Dream with a
Plan and a Schedule***

Douglas Peabody, 1959-2012



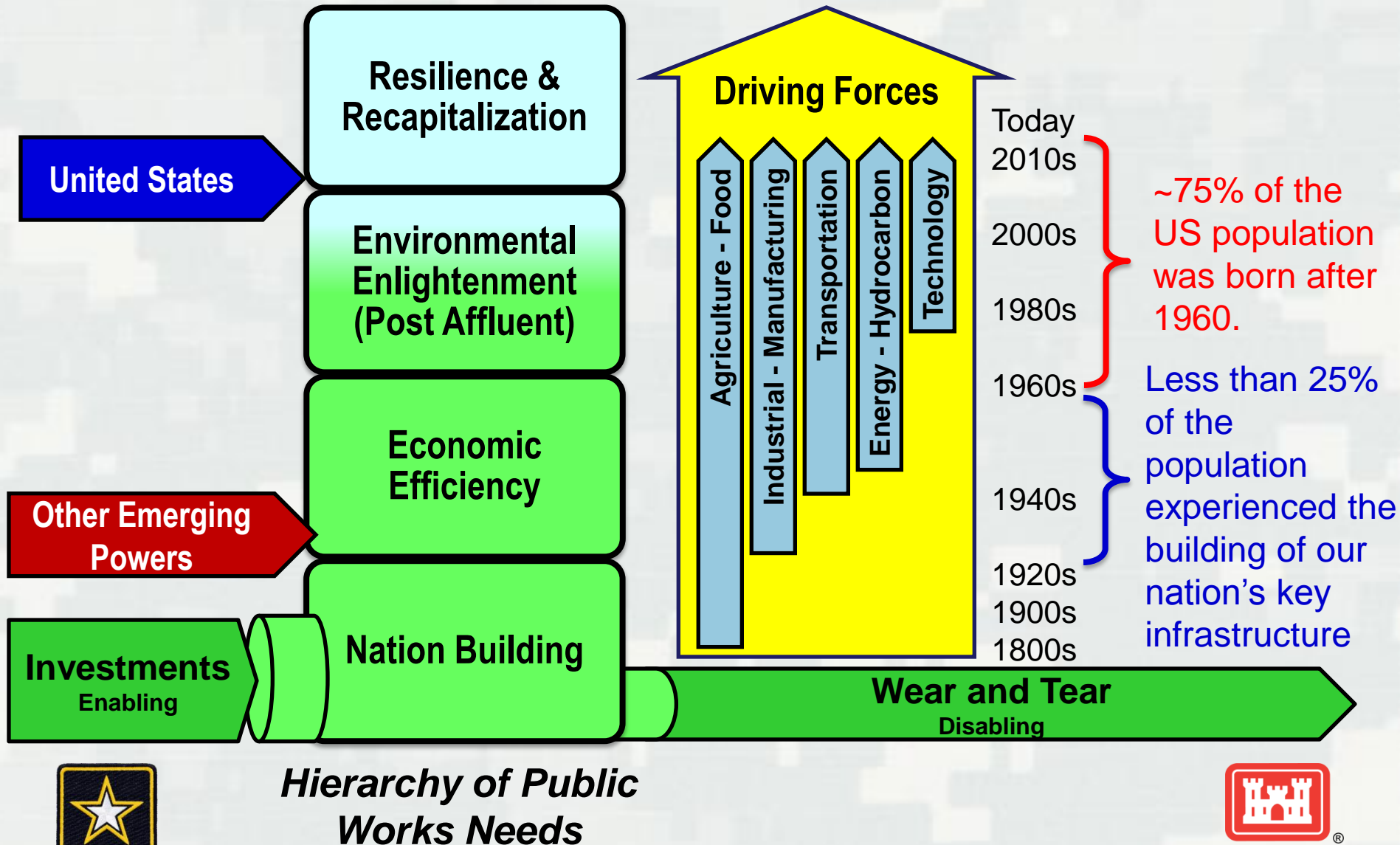
***“One of the great mistakes
is to judge policies and
programs by their intentions
rather than their results.”***

Milton Friedman

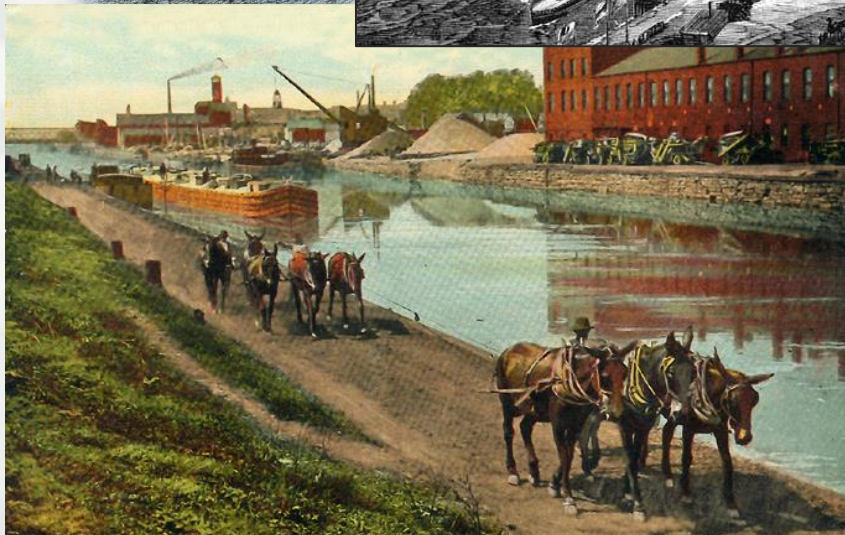
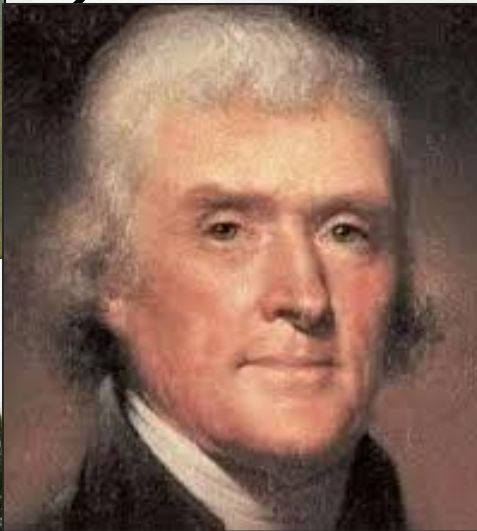


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Changing Perspectives on Infrastructure



1a) Nation Building: Starting the Task



Analysis

- **1808 Gallatin Report**

Key Legislation

- **1826 Omnibus Rivers and Harbors Act**
- **1862 Homestead Act**

Institutions Formed

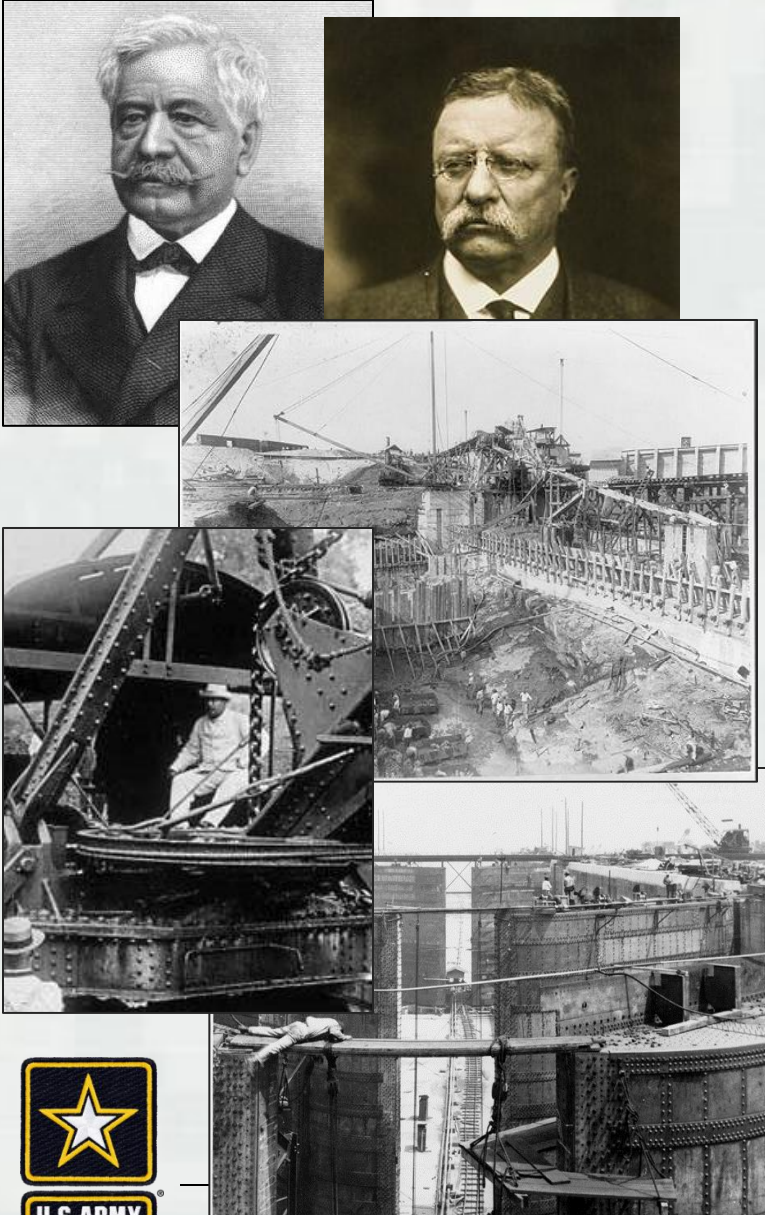
- **1802 US Army Corps of Engineers**
- **1871 US Commission on Fish and Fisheries**
- **1879 Mississippi River Commission**

Key Events

- **Westward expansion - Value of navigation: interior river systems**
- **1817 Start construction of the Erie Canal**
- **1828 Start Construction of the Chesapeake and Ohio Canal**



1b) Nation Building: Completing the Phase



Key Legislation

- 1902 Reclamation Act
- **1917 Flood Control Act (first)**
- 1920 Federal Water Power Act
- 1927 Rivers and Harbors Act
- **1928 Boulder Canyon Project Act**

Institutions Formed

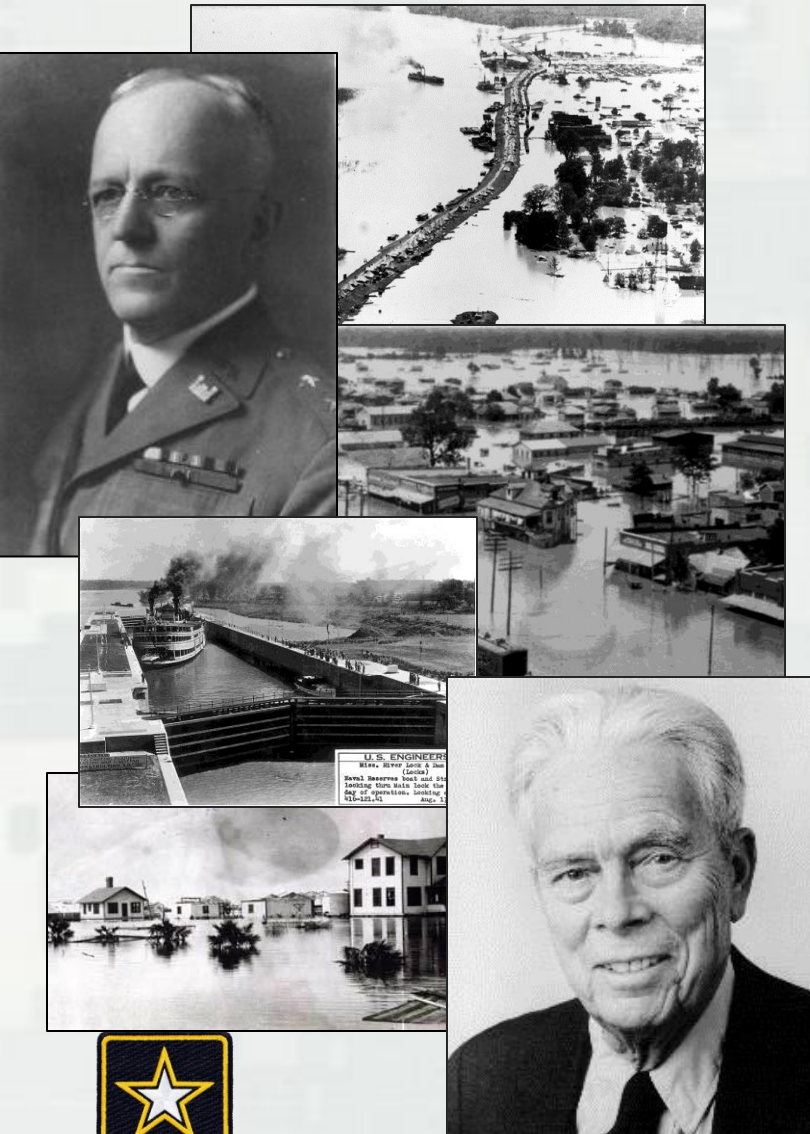
- 1902 Reclamation Service
- **1905 National Forest Service**
- 1909 National Conservation Cmsn
- 1912 National Waterways Commission
- **1916 National Park Service**
- 1920 Federal Power Commission

Key Events

- **1914 Panama Canal completed**
- 1927 Great Mississippi River Flood



2a) Economic Efficiency: Harnessing Nature



Analysis

- 1933 National Planning Board multi-purpose plans for ten rivers
- **1936 Flood Control act with benefit-cost language**
- 1942 Gilbert White's analysis of human adjustments to floods

Key Legislation

- 1928, 1936 & 1938 Flood Control Acts

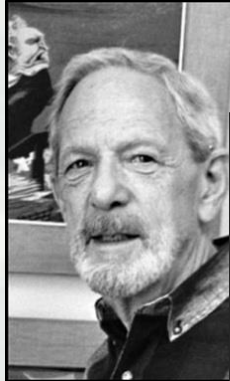
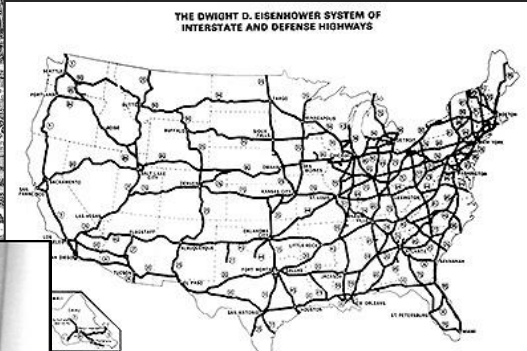
Institutions Formed

- **1933 Tennessee Valley Authority**
- 1933 National Planning Board
- 1935 National Resources Committee
- 1939 Bureau of the Budget
- 1939 Public Works Administration
- 1916 National Park Service
- **1940 National Fish and Wildlife Service**

"Floods are an act of God, but flood losses are largely an act of man"
Gilbert White



2b) Economic Efficiency: System Build-out



Analysis

- **1952 Circular A-47 Economic Analysis**
- 1958 Multiple-Purpose River Development
- 1962 Design of Water Resources Systems

Key Legislation

- 1944, 1956, 1965 Flood Control Act
- **1948 and 1956 Water Pollution Control Acts**
- 1955 and 1965 Rivers and Harbors Act
- **1956 Federal Aid Highway (Interstate) Act**
- 1965 Water Resources Planning Act
- **1966 Clean Rivers Restoration Act**
- 1968 Wild and Scenic Rivers Act
- **1968 Flood Insurance Act**

Institutions Formed

- 1950 Presidential Water Resources Policy Cmsn
- 1952 House Subcommittee to Study Civil Works
- **1955 Pres. Cmsn on Water Resources Policy**
- 1958 NASA
- 1965 Water Resources Council

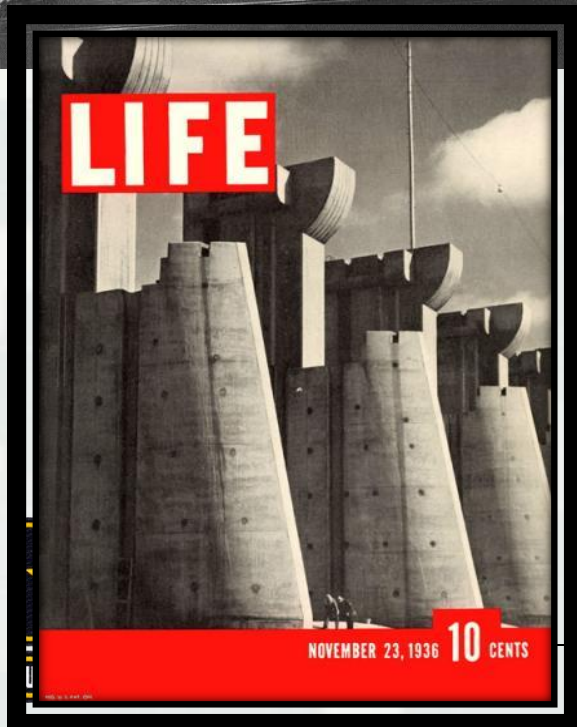


The Power of Leadership and Vision



*"It is because **we have undertaken this gigantic task** that will take us **more than a generation to complete**, because we have undertaken it now, and **the people of the United States understand the objective of the idea, that I feel very certain we are going to carry it through to a successful completion.**"*

- President Franklin Delano Roosevelt,
at Fort Peck Dam, 1934



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3) Environmental Enlightenment: Late 1900s



Analysis

- 1962 “Silent Spring” published
- 1973 National Water Commission report

Key Legislation

- **1969 National Environmental Policy Act**
- **1973 Endangered Species Act**
- 1974, 1986, & 1996 Safe Drinking Water Acts
- **1977 Clean Water Act**
- **1980 CERCLA**
- 1986 Federal Power Act
- **1986 Water Resources Development Act**

Institutions Formed

- 1970 Council on Environmental Quality
- **1970 Environmental Protection Agency**

Key Events

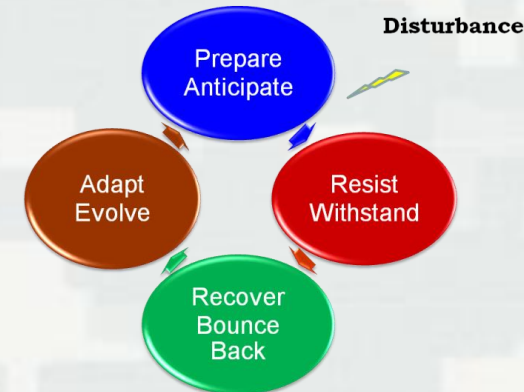
- **1969 Cuyahoga River Catches Fire**
- 1986 FEMA takes over Interagency Flood Management Task Force
- **1989 Escalating Federal involvement in Everglades restoration**



4) *Emerging Focus?* *Recapitalization and Resilience*

White House Initiatives:

- Building a 21st Century Infrastructure
- “We Can’t Wait” Port Modernization
- Infrastructure Task Force
- Build America Investment
- Building a Clean Energy Economy
- Climate Action Plan
- Federal Sustainability
- Strengthen Global Resilience to Climate Change
- Climate Change Adaptation Task Force
- Task Force on Climate Preparedness and Resilience
- Hurricane Sandy Rebuilding Task Force
- Gulf Coast Restoration Task Force



“And I'm very interested in pursuing ideas that can **put folks to work right now on roads and bridges and waterways and ports** and a better air traffic control system. If we had one, by the way, we could reduce delays by about 30 percent.

We could reduce fuel costs for airlines by about 30 percent, and hopefully that would translate into cheaper airline tickets, which I know everybody would be interested in.

So there's all kinds of work we can do on our infrastructure.

This may be one mechanism that Republicans are comfortable in -- in financing those kinds of efforts.

So, that will be part of the discussion that I think we're prepared for on Friday, and then in the weeks to come leading into the new Congress.”

Barack Obama,

5 November 2014



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John F. Kennedy: The Last Great Positivist?



We are a great and strong country ... but **greatness and strength are not ... gifts which are automatically ours forever.** It took toil and courage and determination to build this country - and it will take those same qualities if we are to maintain it. For, although a country may stand still, history never stands still. Thus, if we do not soon begin to move forward again, we will inevitably be left behind. ... **But effort and courage are not enough without purpose and direction.**



Some “Inevitable” Empires



Egypt



Roman Empire



Charlemagne



Philip of
Macedon



Napoleon's
French Empire



British
Empire

Ming
Dynasty



Ottoman
Empire



Aztec Empire



Soviet Union

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2013 Report Card for America's Infrastructure

by the American Society of Civil Engineers

D+

America's
Cumulative G.P.A.

Aviation	D	Ports	C
Bridges	C+	Public Parks & Recreation	C-
Dams	D	Rail	C+
Drinking Water	D	Roads	D
Energy	D+	Schools	D
Hazardous Waste	D	Solid Waste	B-
Inland Waterways	D-	Transit	D
Levees	D-	Wastewater	D

A = Exceptional

B = Good

C = Mediocre

D = Poor

F = Failing

Estimated investment needed by 2020 =

\$3.6 Trillion



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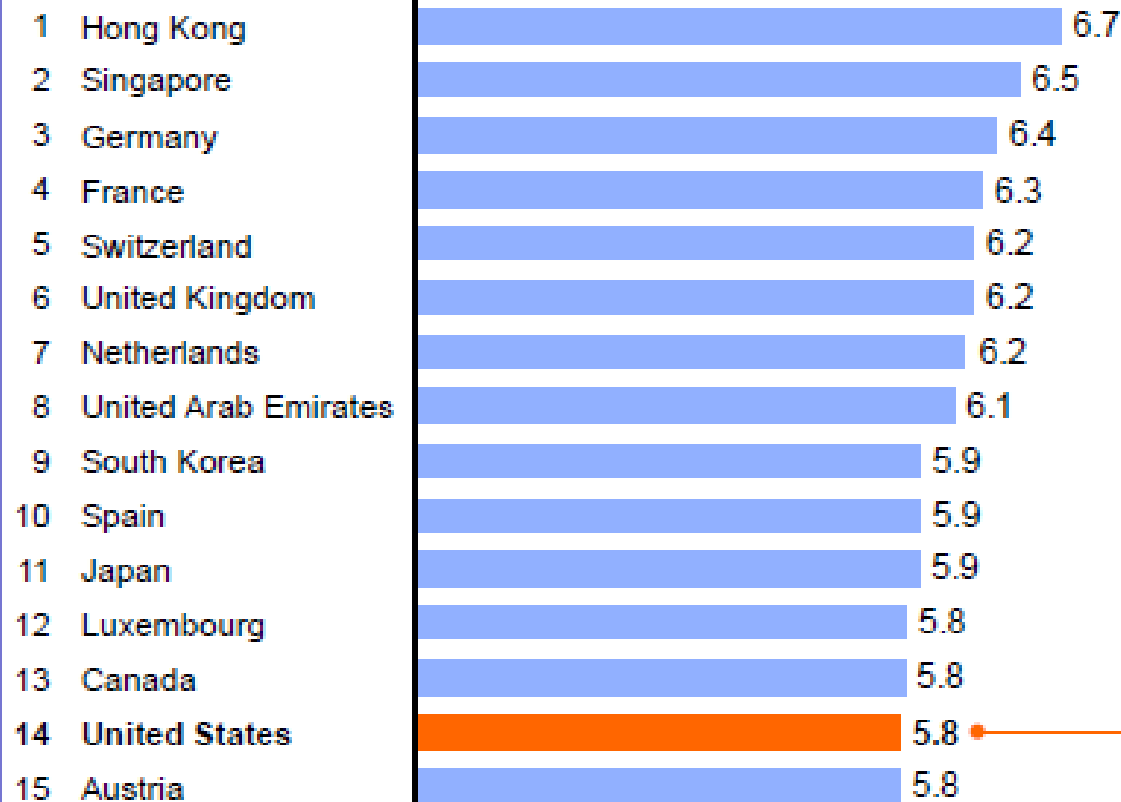
Relative Quality of US Infrastructure

The World Economic Forum ranks US infrastructure behind that of most other comparable advanced nations

Overall infrastructure quality index, 2012–13

Top 15 of 144 countries

Scale: 1 = Extremely underdeveloped; 7 = Extensive and efficient by international standards



Sector-specific indexes, 2012–13
Out of all 144 countries

Ports
United States
#19

Roads
United States
#20

Power and telephony
United States
#21

SOURCE: World Economic Forum; McKinsey Global Institute analysis

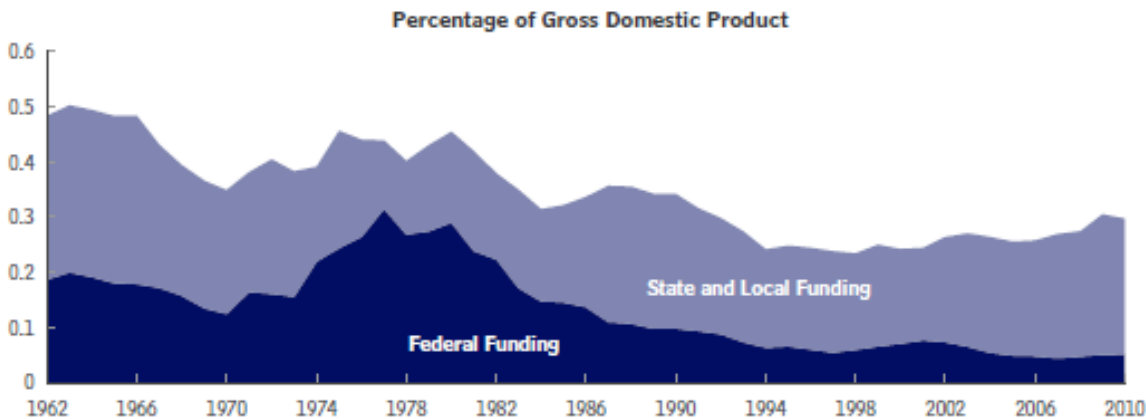
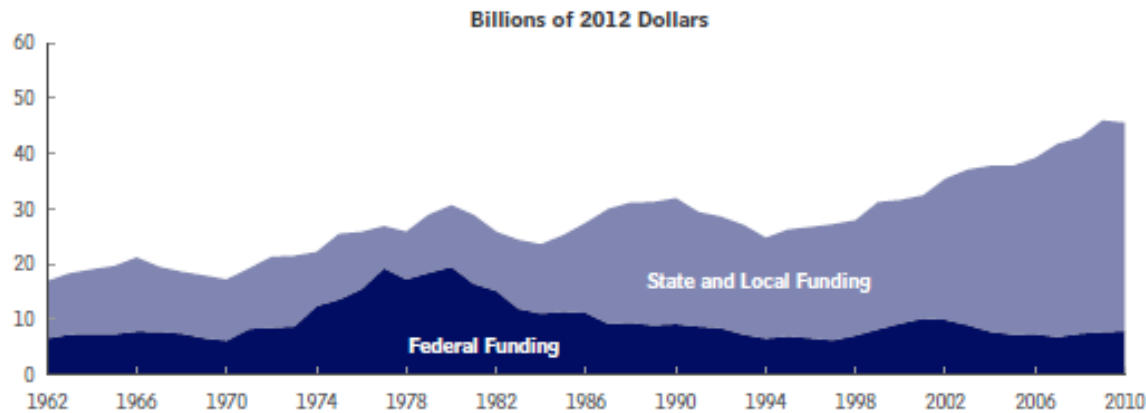
U.S. ARMY

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Water Infrastructure Spending

Water Infrastructure: Sources of Nondefense Investment, 1962 to 2010



Source: Congressional Budget Office based on data from the Office of Management and Budget, the Census Bureau, and the Bureau of Economic Analysis. For details, see the appendix.

Between 1962 & 2010...

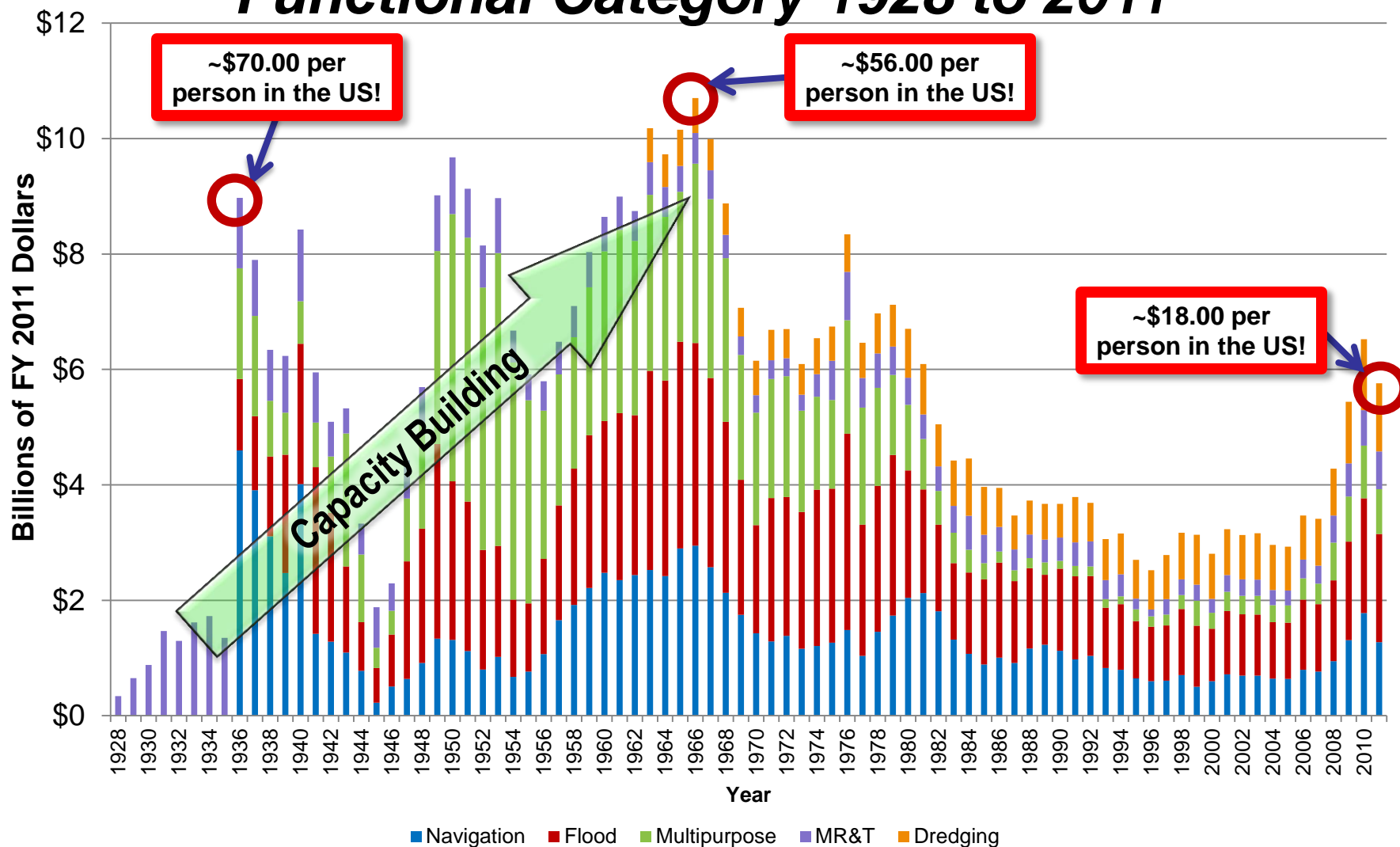
Total funding **increased**
% GDP **decreased**

**Greater burden on state
and local funding sources
as infrastructure ages.**

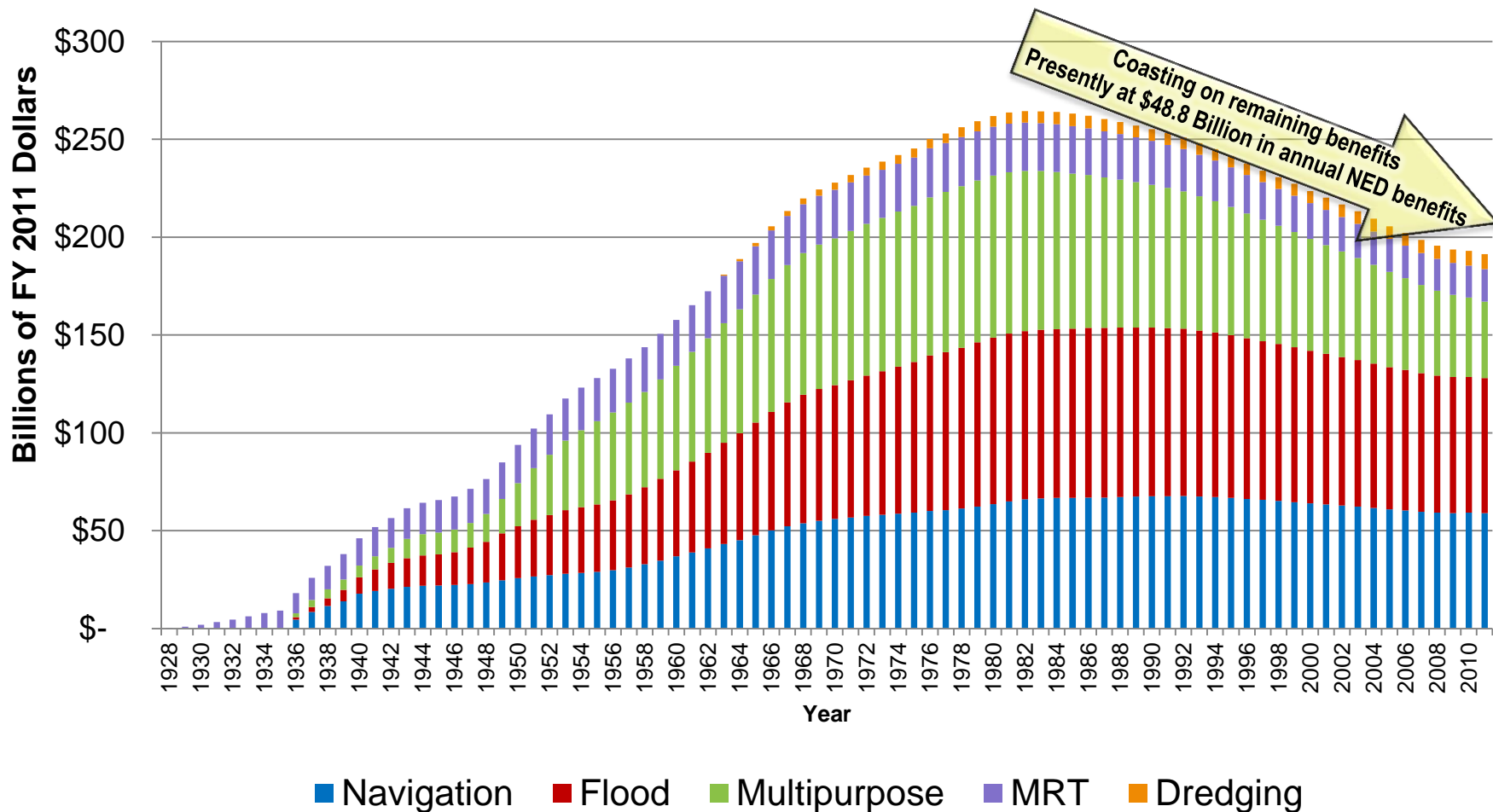


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Historical Investments by USACE Functional Category 1928 to 2011

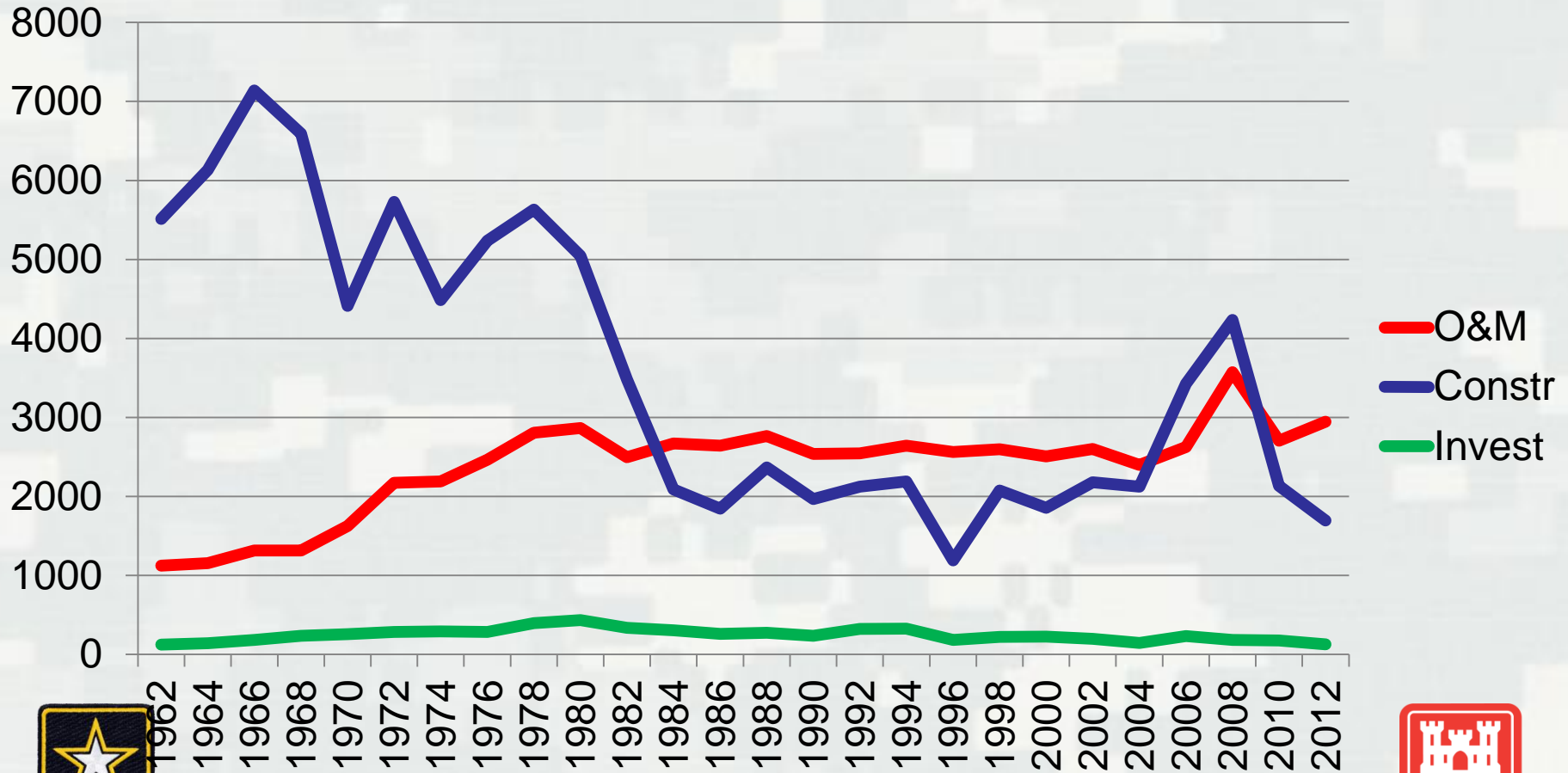


USACE Capital Stock Value by Functional Category, 1928 to 2011

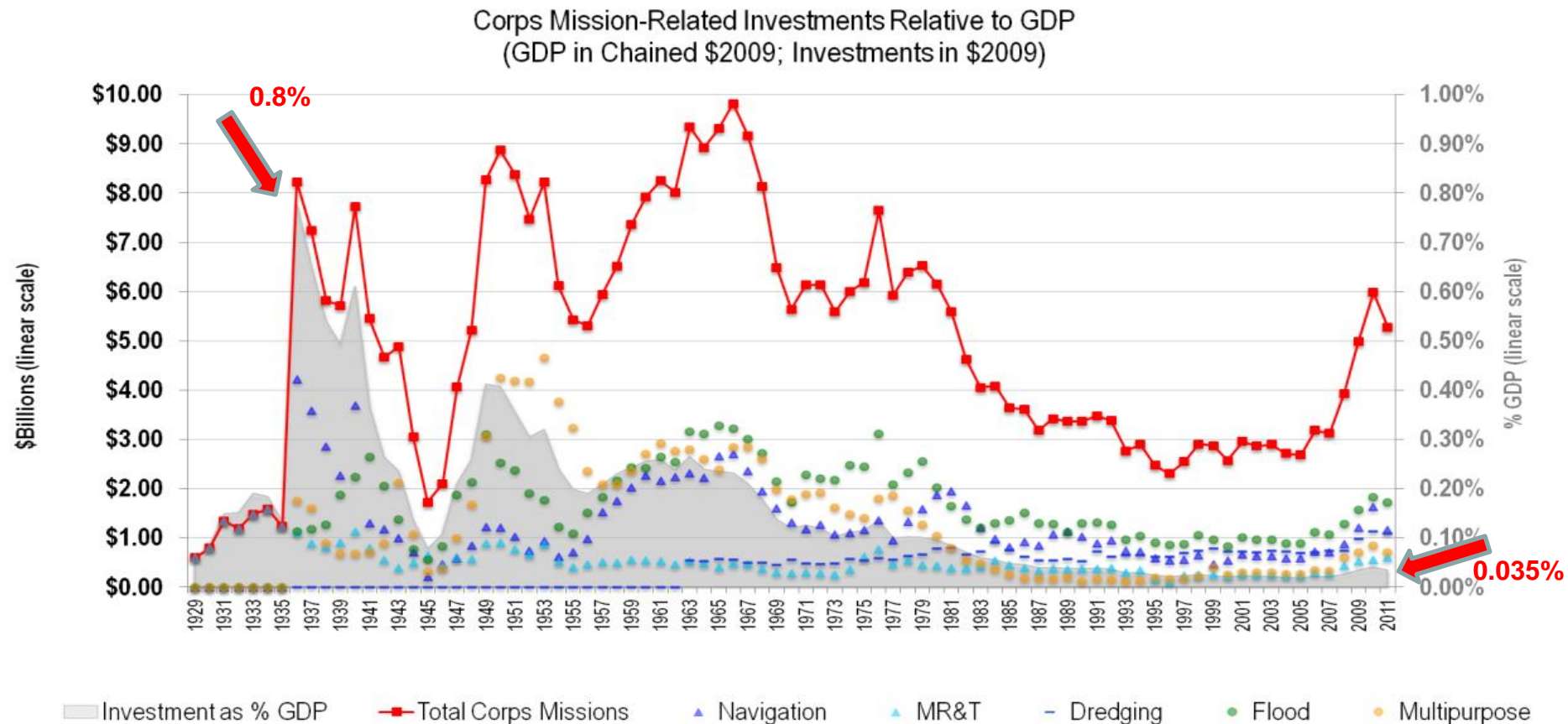


Long Term Civil Works Funding Trends

Appropriation (\$Million in 2012 \$)



CW Spending as Percent of GDP



As % of GDP, USACE CW spending has declined from 0.8% (1935) to ~ 0.035% today
 Today's spending represents a decline by a factor >20 as % of GDP
Current spending levels will not sustain services levels



USACE CW's Economic Benefits & Revenues to the Treasury

(2010-2012 Average)

Each dollar spent on the USACE Civil Works program generated
~ \$16 in economic benefits and \$5 in revenues 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	\$59.47	\$58.84	\$18.90
Coastal Navigation	\$9.47	\$8.70	\$3.70
Inland Navigation	\$8.10	\$7.51	\$2.07
Water Supply	\$7.00	\$6.98	\$0.09
Hydropower	\$2.30	\$2.11	\$1.37
Recreation	\$3.20	\$2.91	\$1.13
Leases and Sales			\$0.03
Total Annual NED	\$89.54	\$87.05	\$27.29

Notes:



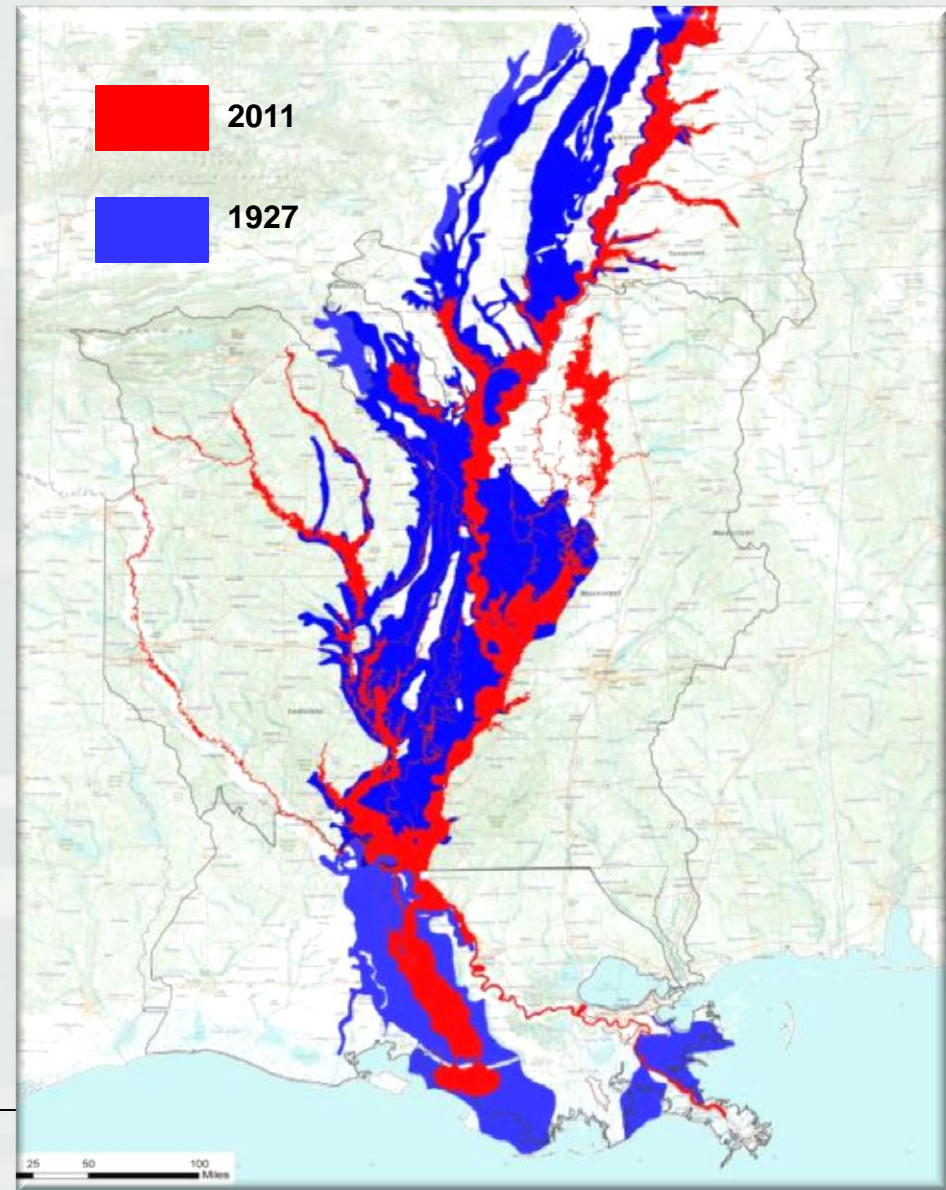
Net NED benefits are defined as NED benefits less the costs of operations, maintenance, and investigations. Since the costs associated with expenses and oversight by the Assistant Secretary of the Army (ASA) serve all Corps programs, including those we did not calculate benefits for in this report, this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

The Benefits and Revenues numbers are not additive.



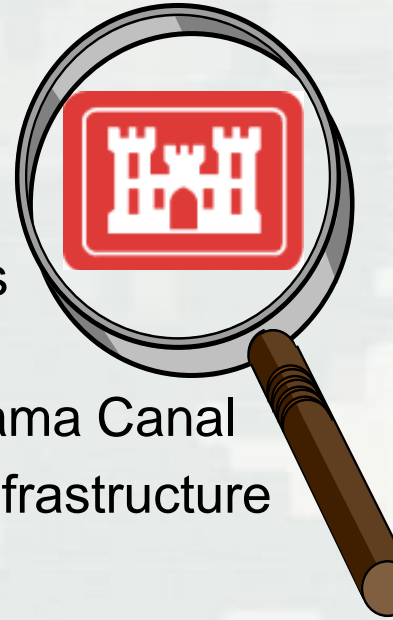
1927 vs. 2011 Mississippi River Record Flood: From “Levees Only” to “Room for the River”

- 1927 Flood = 16.8 M acres (Challenge)
- 2011 Flood = 6.35 M acres (Response)
- **\$230 B damages prevented**
 - \$612 B since 1928
 - 44 to 1 ROI
- \$7 B in crop damages prevented
- 4.5 million people protected
- **\$3B Annual Transportation Rate Savings**



Trends Influencing CW's Future

- Aging infrastructure: Critical need for robust asset management & a long-term recapitalization program
- Domestic discretionary funding: Need for innovative financing, capital stock divestment, market-based solutions
- Globalization: Waterborne trade implications, homeland security & international water resources, expansion of Panama Canal
- Political and Governance turmoil. No focus on America's infrastructure needs and investment
- Water resources challenges:
 - Lack of a national water resources Vision to elevate water infrastructure to a national level of attention
 - Need IWRM perspective to holistic solutions, collaborative planning
 - Competition for water, including increasing environmental & water supply needs
- Climate change adaptation & water-food-energy nexus
- ACE organization: Performance, technical capability , delivery



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The Current Situation



- We are in a non-earmark environment
 - We fund too many studies/projects at less than capability
 - It takes too long to get studies and projects completed and costs too much!!
-
- We make sponsors and stakeholders unhappy due to lack of timeliness and cost effectiveness
 - We lack emphasis on the importance of quality assurance and quality products
 - In a budget constrained era, we must do what it takes to
Be RELEVANT!!

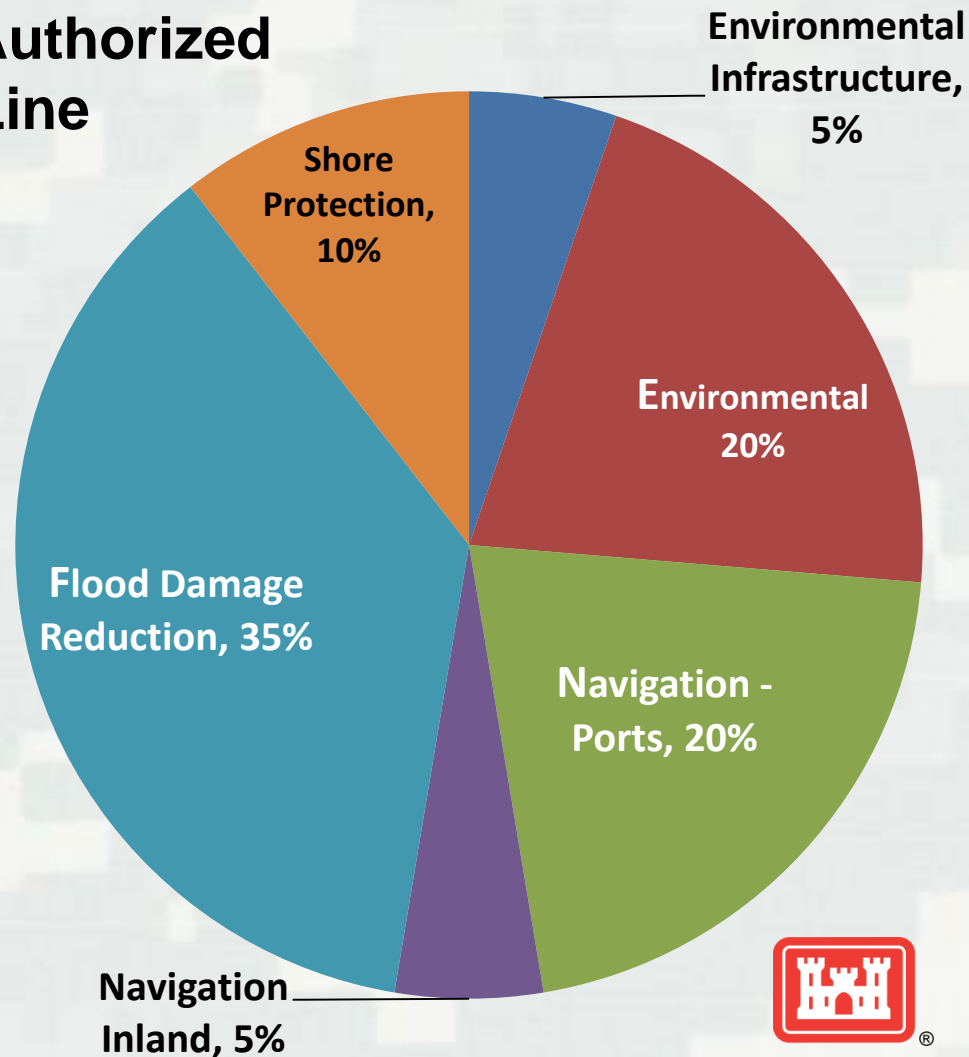
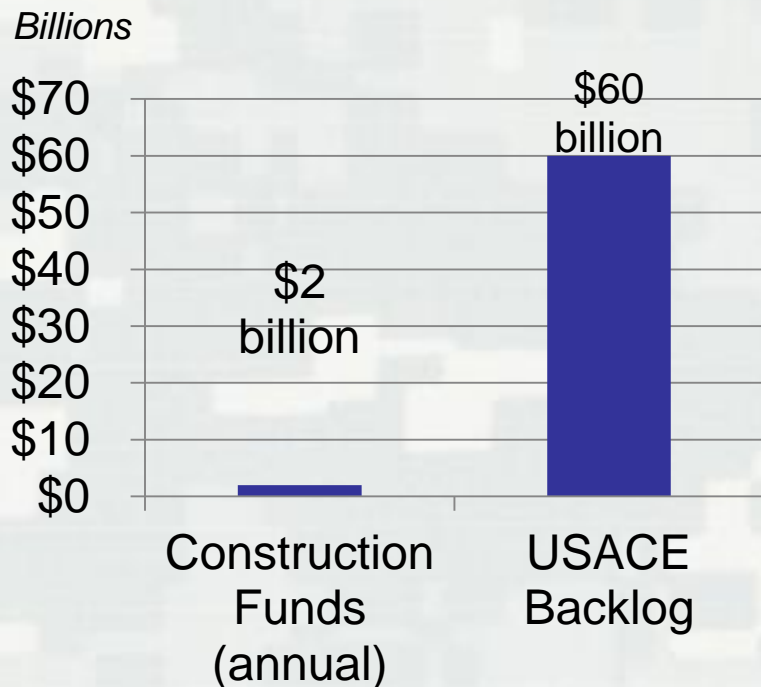


- All of which adds up to ...



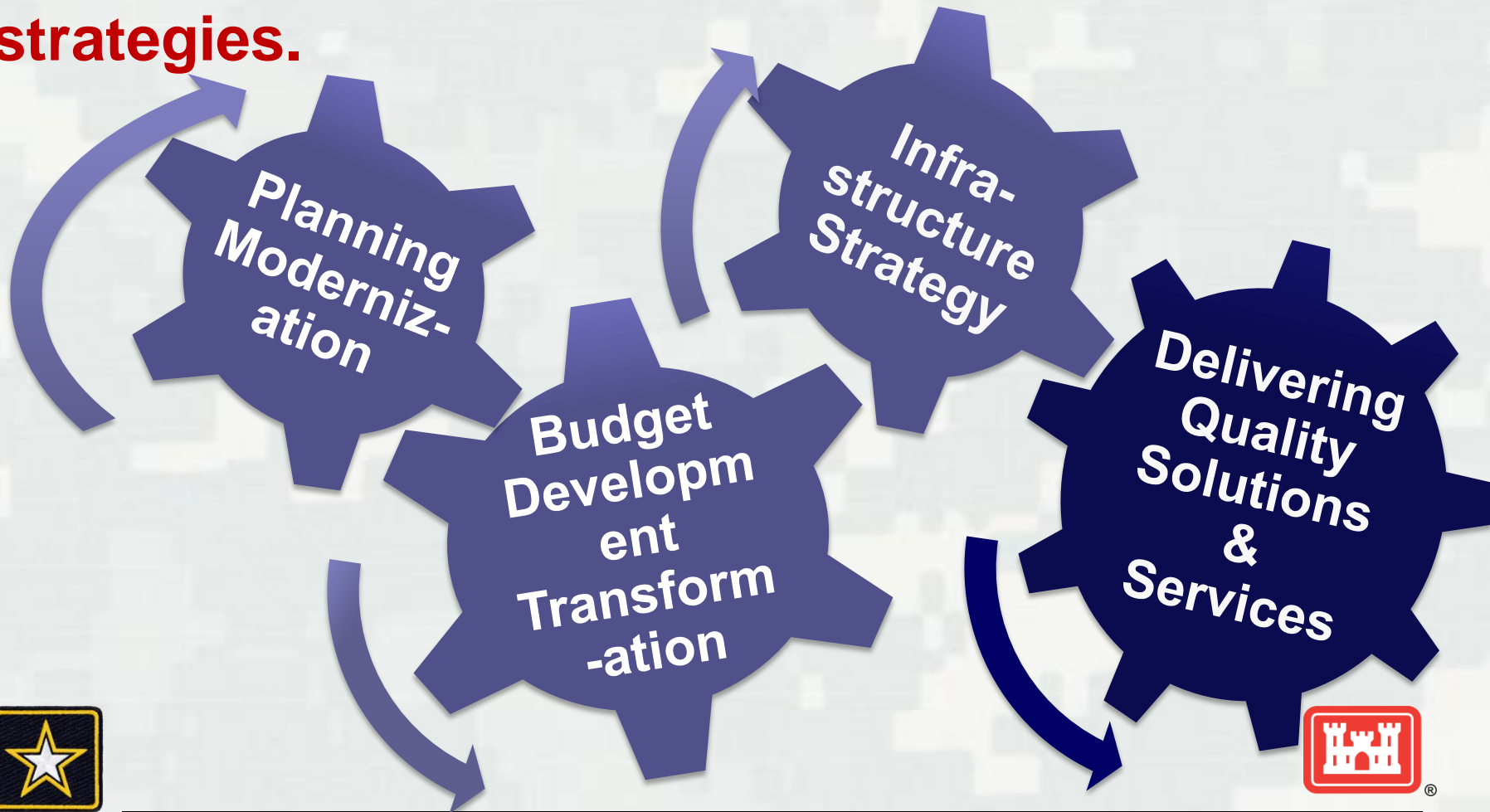
USACE Civil Works Construction Backlog

Backlog of Congressionally Authorized Projects by Business Line



Transforming Civil Works

Deliver enduring & essential water resource solutions by applying effective transformation strategies.



Planning Modernization



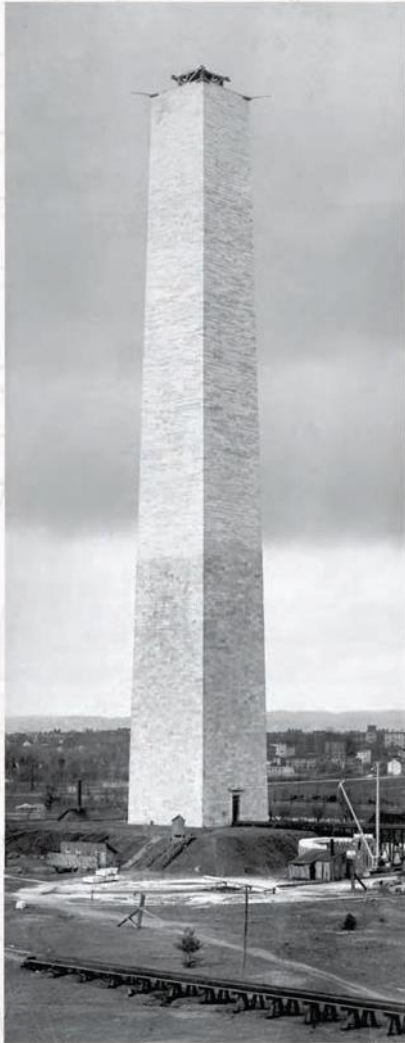
The Pentagon was planned in only 5 days and completed in 18 months. We would do remarkably well to replicate such conception-to-completion time today.

A streamlined project planning process that delivers timely, cost effective and high quality water resources investment recommendations for authorization.

- Studies must continue to inform investment decisions
- Improved time, schedule, and alignment of studies (SMART guidelines of “3x3x3” is now the law)
- Prioritize studies to account for funding constraints, and identify gaps to meet the nation’s need
- A reduced planning study portfolio
 - 38 Chief’s reports completed
 - 9 Chief’s reports to be completed Dec 2014
 - Reduced portfolio from 650 to 158



Budget Development Transformation



Construction of the Washington Monument began in 1848 but stopped when funds ran out 6 years later. It resumed 25 years later, but had to use a different stone source, thus the change in color partway up the shaft. Budget Development Transformation seeks to prevent similar stop-and-start construction.

A systems budgeting approach that enables development of comprehensive integrated water resources investments

- Operationalize integrated water resource management by Water Informed Budget Execution
- Expand watershed-informed pilots to include a majority of our projects
- Engage stakeholders to identify opportunities investment priorities
- Standardize business process that utilize watershed approaches



Delivering Quality Solutions & Services



USACE built the Pension Building after the Civil War to provide space for the 1,500 people involved in providing pension coverage for veterans and for their survivors. Today that building is the National Building Museum, a testament to the quality of its design and construction – and a reminder of “quality solutions and services” that can be seen from the COE’s office window.

Solutions and services are delivered effectively, efficiently, sustainably.

- Keep our commitments – Deliver projects on time and budget (public trust & confidence is a “resource driver”)
- Enhance technical competency and methods of delivery (knowledge management, information sharing, policies, guidance, etc)
- Consistently deliver quality technical solutions (leverage CX’s and Review Processes)
- Restore, protect, and manage our aquatic resources
- Develop and implement a climate preparedness and resilience roadmap
- Complete regulatory decisions faster



Infrastructure Strategy



McMillan Reservoir, completed in 1902, is part of the water supply system begun by USACE before the Civil War. It continues to provide most of the city's water today.

A resilient, reliable, sustainable water resources infrastructure system

- Asset Mgmt, Apply Life Cycle Portfolio Mgmt, and Alternative Financing (P3 Pilots, and other mechanisms) and O&M Efficiencies
- Optimize O&M efficiencies by Completing regional level of service analyses and optimization plans
- Alternative financing, reduce time with model contributed funds agreements and identify public-private partnership (P3) projects
- Coordinated systems (within watershed) based investment decisions – apply WRRDA and make divestiture decisions



Alternate Financing/P3 Snapshot

2014

2015

Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar

Existing Authorities

P3

Meet w/
MSCs
Pilot Dev

Draft
concept
pilots

Selection &
approval of
pilots

Coordinating the deals

1 RFI

Contributed Funds

MSCs Expanding Ideas/Pilots

New Authorities

P3

Submit
Draft P3
Framework

Approval
P3
Framework

Set up 3-5 Pilots

Pick projects
New Authorities
Politics →
Legislation
(project specific)

Recommend Org
requirements for P3
PgM Capability

**Integrated P3 Pilot
Efforts in FY 15**

NEW CONTRACT/DO

1. 2 RFIs/deals already initiated
2. Deals that need more time
3. Implement new authority pilots

WRRDA Implementing Instructions

4 case studies applying SEP Authorities

Fargo, Olmsted, N Atlantic Coast, Great Lakes

Dam Safety

Divestiture

Existing Assets
Divest Criteria

Database
output & review

FRAGO/District
feedback/Pilot
selection

Final Draft
Divestiture
Guidebook

Quarterly
IPRs

Streamlining Life Cycle Analysis Processes & Identifying/Developing New Legislation

Investment Strategy: Public-Private Partnership Possibilities

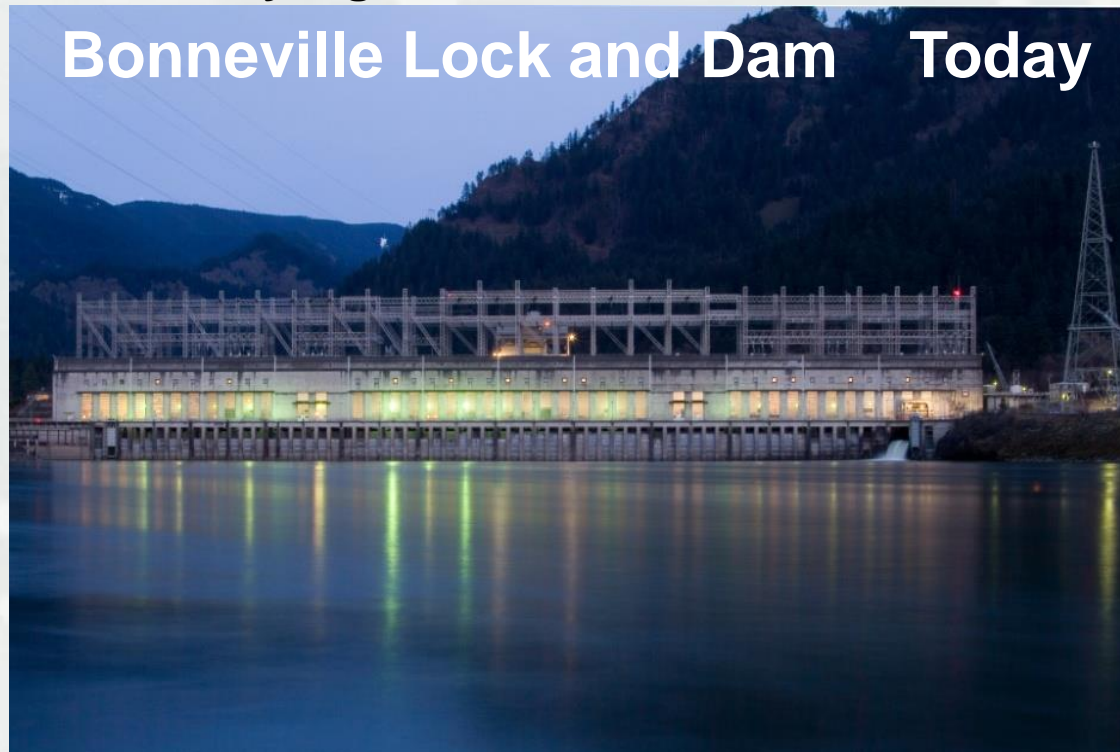
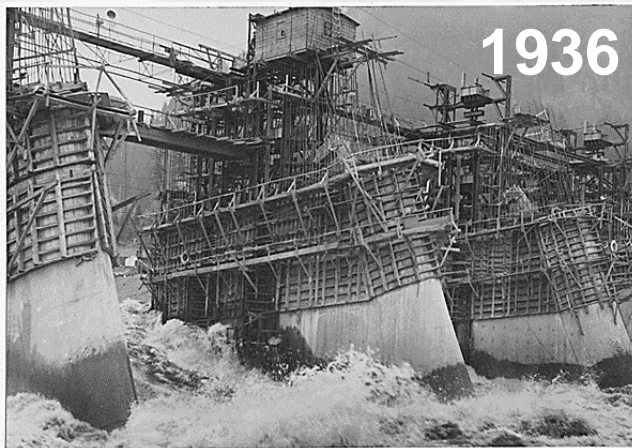


- Recreation
 - Hydropower
 - Harbors
 - Flood Risk Management
 - Disaster Recovery
- Leveraging *Private and Other Agency Capital*



Hydropower Partnerships

- 1937 - Congress creates Bonneville Power Administration (BPA) in 1937 to market and transmit power produced at Bonneville Dam.
- 1992 - Legislation authorizes BPA to direct-fund O&M and capital improvements.
- 1994, 1998 - BPA and Department of Army sign MOUs.



Recreation Partnerships

Habitat Construction at Table Rock Lake



Corps Partnership with Bass Pro Shops



**USACE returns \$50M
generated in user fees
to US Treasury each
year**

**USACE Recreation Areas welcome
370 million visitors annually**



Conclusion

- ***USACE's Civil Works mission provides a key foundational component of the Nation's public infrastructure that facilitates economic growth, quality of life, environmental health and national security for the American people!***

BUT...

- CW infrastructure is deteriorating (declining engineering condition).
- CW infrastructure is underperforming (declining service performance).
- U.S. is under-investing in its public works infrastructure overall.
- U.S. lags other developed nations in maintenance of prior public infrastructure investments.
- We stand to squander the international competitive advantage provided by the Nation's public works due to inattention to the needs of aging infrastructure, shifting demand, climate change, and underinvestment.
- At risk is U.S.'s economic prosperity, quality of life & environmental health.
- ***USACE CW infrastructure is on unsustainable glide-path of benign neglect.***
- ***We are devolving from a paradigm of “preventing failure”, to one of “fixing after failure”, and even towards “failing to fix!”***



What Can You Do?

- **Tell the Story** - Preach Infrastructure's Value to Nation
- **Leverage** Efforts
- **Collaborate** with ALL stakeholders and beneficiaries
- Find **consensus** for major initiatives
- Identify **funding** to reach outcomes
- Be mutually **supportive**
- Involve & engage **end-users**
- Seek to **influence decision-makers**
- Facilitate a **Watershed-Informed** approach
- Help the Nation **prioritize** efforts, programs, and projects
- Support innovative approaches for **alternative resourcing**

Thank You!



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WRRDA 2014



**Deauthorizations
& Backlog
Prevention**

**Water Supply and
Reservoirs**



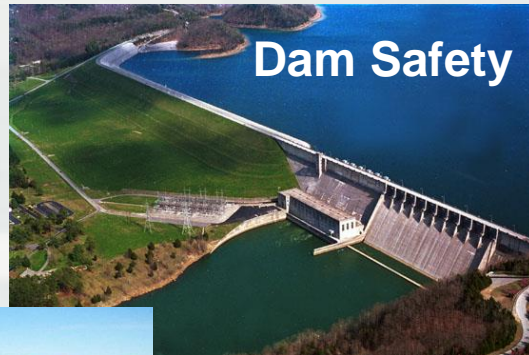
**Regulatory)
(including 408)**



**Project
Development and
Delivery (Including
Planning):**



**Alternative
Financing**



Dam Safety



Levee Safety



Navigation



**Non-Federal
Implementation**



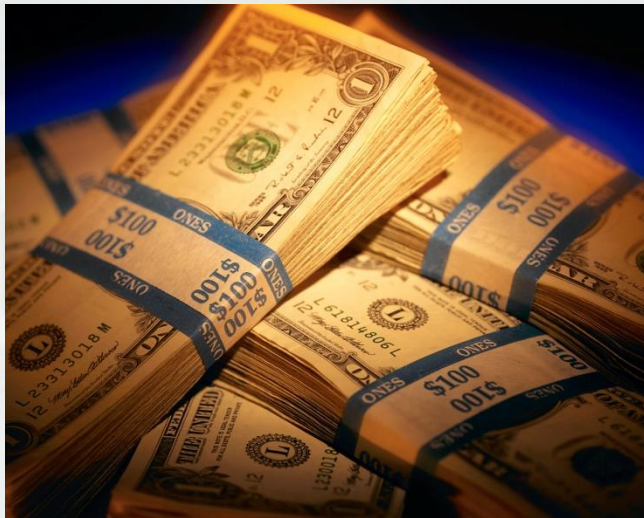
Credits

Water Resources Reform & Development Act

Non-Federal Partnerships

Non-federal entities can:

- Conduct projects authorized by Congress on their own
- Contribute funds for any study or project Corps deems in public interest
- Fund locks where Corps has proposed to reduce operations
- Receive assistance for drinking water, wastewater and other water infrastructure.



- Corps authorized to enter into agreements with non-federal interests, including private entities, to finance at least 15 water projects.



WRRDA 2014 Listening Sessions

Aug 13: Deauthorizations & Backlog Prevention; Project Development and Delivery (Incl. Planning)

Aug 27: Alternative Financing; Credits

Sep 10: Levee Safety; Dam Safety; Regulatory Program

Sep 24: Non-Federal Implementation; Water Supply and Reservoirs; Navigation

Written suggestions or recommendations can be submitted by email to wrrda@usace.army.mil.

USACE's WRRDA website will be updated as more information and implementation guidance becomes available. The website can be found at:

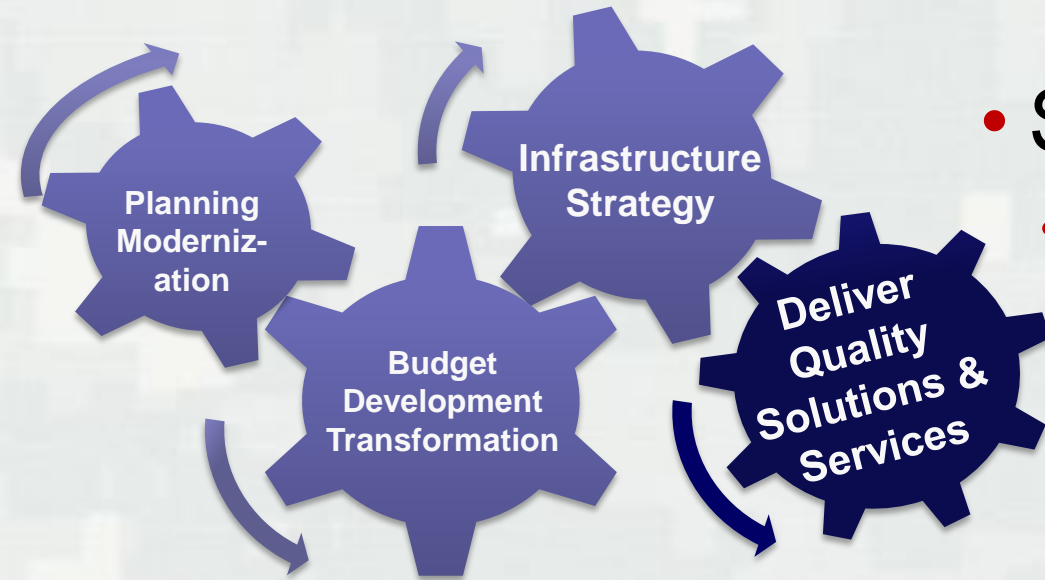
<http://www.usace.army.mil/Missions/CivilWorks/ProjectPlanning/legislativelinks.aspx>.



Collaboration

- We cannot be successful as an organization unless we are successful at collaboration and relationship management.
- We must make learning collaborative techniques a priority.
- We must maintain focus on transparency and stakeholder engagement during plan formulation.
 - ▶ Replace culture of completing a study, then distributing for stakeholder/public comment only after USACE (with sponsor) has developed the recommended plan.

Collaboration in CW Transformation



- SMART Planning
 - Facilitation skills are key to charettes
 - How to involve others in compressed schedule?

- Watershed-informed-Budgeting
 - Stakeholder Engagement helps identify full value of USACE investments
- Collaboration will be key in developing public-private partnerships

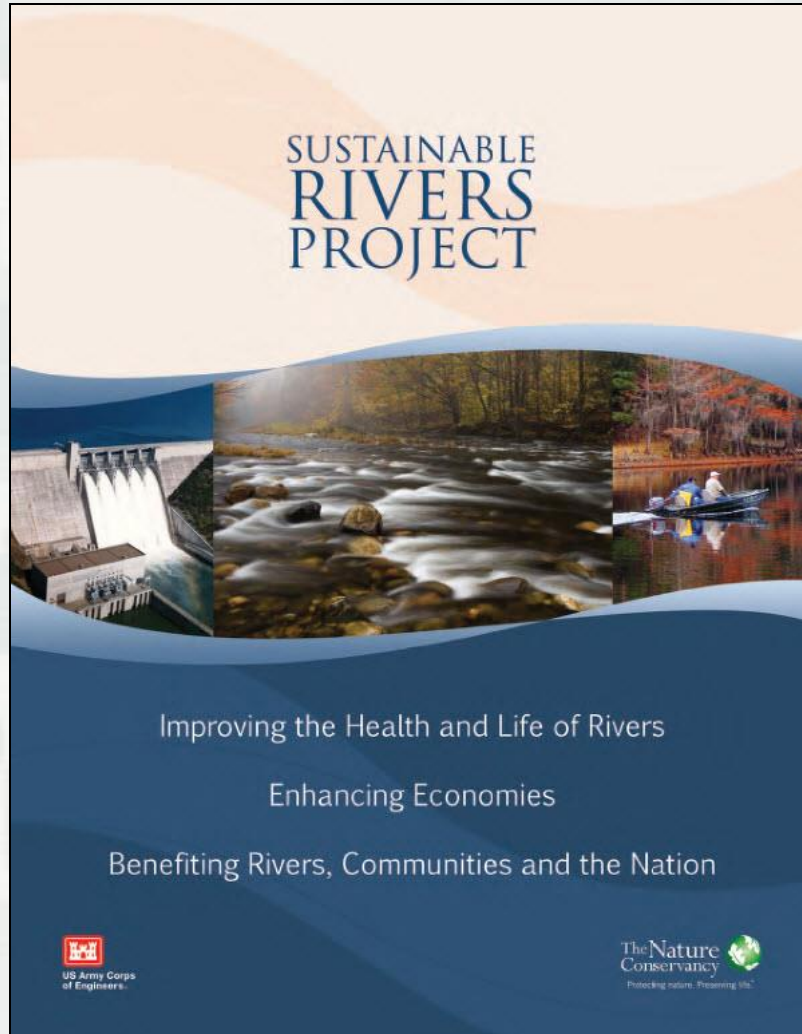


What Do We Expect in Collaboration?

- **Tell the Story** - Preach Infrastructure's Value to Nation
- Improve **delivery of projects** and programs on schedule and under budget
- **Leverage** Efforts
- **Collaborate** with ALL stakeholders and beneficiaries of the Civil Works Program
- Find **consensus** for major initiatives
- Identify **funding** to reach outcomes
- Involve & engage **end-users**
- Seek to **influence decision-makers**
- Facilitate a **Watershed-Informed** approach
- Help the Nation **prioritize** efforts, programs, and projects
- Take the **long view** - Look at infrastructure needs more than one budget cycle at a time

Better and more sustainable decisions and solutions!

Sustainable Rivers Project



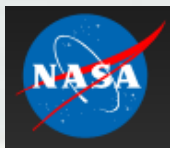
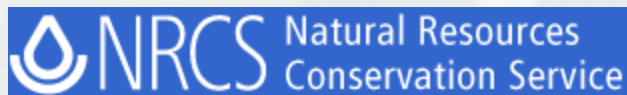
- Partnership between Corps of Engineers and The Nature Conservancy on ecosystem restoration
- More than a decade of collaboration
- Project types include:
 - adaptive reservoir management
 - stream restoration
 - wetland restoration
 - river-floodplain reconnection
 - coastal wetland restoration
 - oyster bed restoration
 - dam removal





WestFAST

- 2008 Western Governors' 'Next Steps' report suggested formation of a federal team to assist the coordination and implementation of the recommendations of the report
- WestFAST is a collaboration of 11 Federal agencies with water management interests in the West



- Key areas of interest for the WSWC and WestFAST:
Water Planning, Water Resources, and Infrastructure
Climate Variability
Drought
Water Quality
Indian Water Rights Issues
Endangered Species
Energy and Water

WestFAST's work plan is available at:

<http://www.westgov.org/wswc/westfast/workplan/index.htm>



BUILDING STRONG COLLABORATIVE RELATIONSHIPS FOR A SUSTAINABLE WATER RESOURCES FUTURE

watertoolbox.us
Federal Support Toolbox for Integrated Water Resources Management

FAQs | Glossary | Site Map | Help | Contact Us | Login

Align Programs and Resources for Efficiency Gains

Search Resources... **SEARCH!**

Home | Toolbox Resources | News & Events | Communication & Education | A Sustainable Water Future | Water Resources Management | Linking the World

About the Federal Support Toolbox

The Federal Support Toolbox Is a comprehensive "one-stop-shop" online water resources data portal with direct links to valuable data, state of the art models and tools for utilization in information sharing and collaboration for the water resources community in the U.S. and Internationally.

The water challenges facing the nation are compelling and the needs are great and managing water resources as a collaborative endeavor is crucial to effectively address these challenges and water needs. This website serves as a leading-edge resource for information sharing, best management practices, collaboration and more for the water resources community. Your participation is welcome and encouraged. Learn more about what the federal support toolbox website offers, below.

DATABASES, TOOLS & MODELS

Access water resources management programs, databases and models created by the U.S. federal government, states, Tribal Nations and non-governmental organizations by keyword or map search

- Search **active databases** for water management
- Access **models** that facilitate analysis & predictions
- Acquire new **tools and technologies**
- Search by **location** for data, models and programs

COLLABORATION & COMMUNITY

Contribute and take advantage of water resource solutions

- View **existing collaborations & partnerships**
- Be **aware of needs** within the water resources community
- Visit the **water resources forum** to learn about water activities and issues
- Find out how to become a **Federal Support Toolbox partner**

GET INVOLVED

Become a part of the Water Toolbox community

- Become a **Federal Support Toolbox partner**
- Stay informed about the latest **headline news** and **upcoming events**
- Join in the **discussion forums**

WATER RESOURCES MANAGEMENT

Effective water resources management depends on acquiring deep knowledge and astute skills

- Search the list of **legislative resources**
- Locate specific **policies and guidance**
- Review **best management practices**
- View the **list of agencies**

SHAPE THE FUTURE

Participate in creating a water secure world

- Think globally** - find out what the international water resources community is doing
- Reinforce local action** for improved water resources outcomes
- Help develop a **shared vision** of effective water resources management

OUTREACH & EDUCATION

Get engaged in education and outreach programs to deepen knowledge about water resources, promote cooperation and collaboration, and increase public awareness

- Browse or search our database of current **education and outreach programs**
- Enhance public awareness and stakeholders' engagement
- Stay up to date on state-of-the-art developments in science and technology

What's New at watertoolbox.us

Posted: August 22, 2013
Indiana Department of Natural Resources, Division of Water - U.S. Department of Homeland Security, Federal Emergency Management Agency (FEMA)
In State Water Plans

Posted: August 22, 2013
Draft SRBC Comprehensive Plan
In State Water Plans

[RSS](#) | [Subscribe](#) **MORE**

VIDEOS

Sept 2013 | CorpsConnection: Securing the Nation's Future Through Water

Securing the Nation's Future Through Water

USACE is the largest producer of renewable energy in the U.S.

0% emissions

Sept 2013 | Whiteboard: How to Reform Water Infrastructure with Chairman Bill Shuster

Whiteboard: How to Reform Water Infrastructure

Download the Federal Support Toolbox Fact Sheet

Download the Federal Support Toolbox Trifold Brochure

Upcoming Events

September 23, 2013 - September 27, 2013
PIANC-SMART Rivers 2013 Conference
Lübe (Belgium) and Maastricht (The Netherlands)

September 23, 2013 - September 26, 2013
Oceans 2013: An Ocean in Common
San Diego, California, USA

Watertoolbox.us

One Stop
Shop Data
Portal

Leading
Edge Models
and Tools

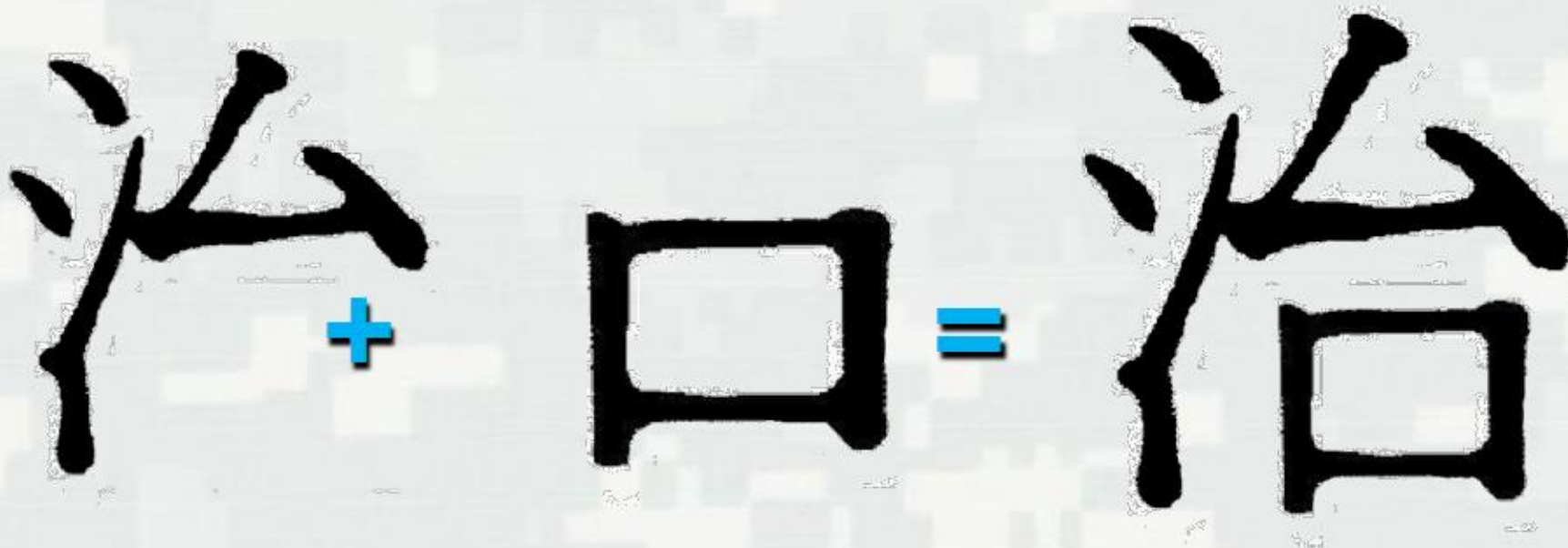
Collaboration
Connection



BUILDING STRONG®

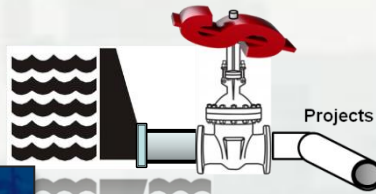
Water management (and water reform) is ALWAYS political.....

Ancient Chinese Characters:



River + Dike = Political Order

But Today...



Projects

**FAILURE TO ACT
THE IMPACT OF
CURRENT INFRASTRUCTURE
INVESTMENT ON AMERICA'S
ECONOMIC FUTURE ★★★★★**

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

**USACE Capital Stock presently yields
\$87.05 BILLION PER YEAR in realized
NED benefits!**



U.S. ARMY

SHARE THIS PAGE

AMERICA'S INFRASTRUCTURE G.P.A.

D+

Each category was evaluated on the basis of capacity, condition, funding, future need, operation and maintenance, public safety and resilience.

METHODOLOGY >

AVIATION	D	PORTS	C
BRIDGES	C+	PUBLIC PARKS AND RECREATION	C-
DAMS	D	RAIL	C+
DRINKING WATER	D	ROADS	D
ENERGY	D+	SCHOOLS	D
HAZARDOUS WASTE	D	SOLID WASTE	B-
INLAND WATERWAYS	D-	TRANSIT	D
LEVEES	D-	WASTEWATER	D

A = Exceptional
B = Good
C = Mediocre
D = Poor
F = Failing

ESTIMATED INVESTMENT
NEEDED BY 2020:

**\$3.6
TRILLION**

LEARN MORE >

Potential Impact on "Public Benefits"

- Missed opportunities for:
 - Additional job creation
 - National and regional economic growth
 - Improved intermodal freight transportation logistics & reduced consumer prices
 - Increased exports and imports
 - Reduced flood vulnerability to life & property
 - Improved hydro-electric energy generation
 - Flexible provision of water supply
 - Enhanced fish and wildlife habitat & restored wetlands
 - Sustaining the availability of outdoor recreation
- Reduced contributions to legacy U.S.:
 - Standard of living
 - Economic prosperity
 - Quality of life
 - Environmental health
 - National security and defense