

Civil Works Planning Program

Vision for USACE Planning

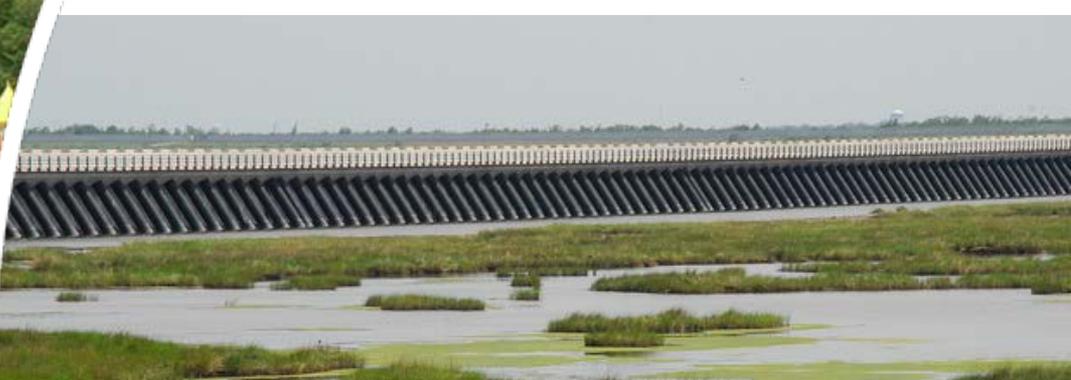
Closing Plenary

TAB BROWN

Chief of Planning

2015 National Planning Community of Practice Training

June 1, 2015



US Army Corps of Engineers
**PLANNING SMART
BUILDING STRONG**



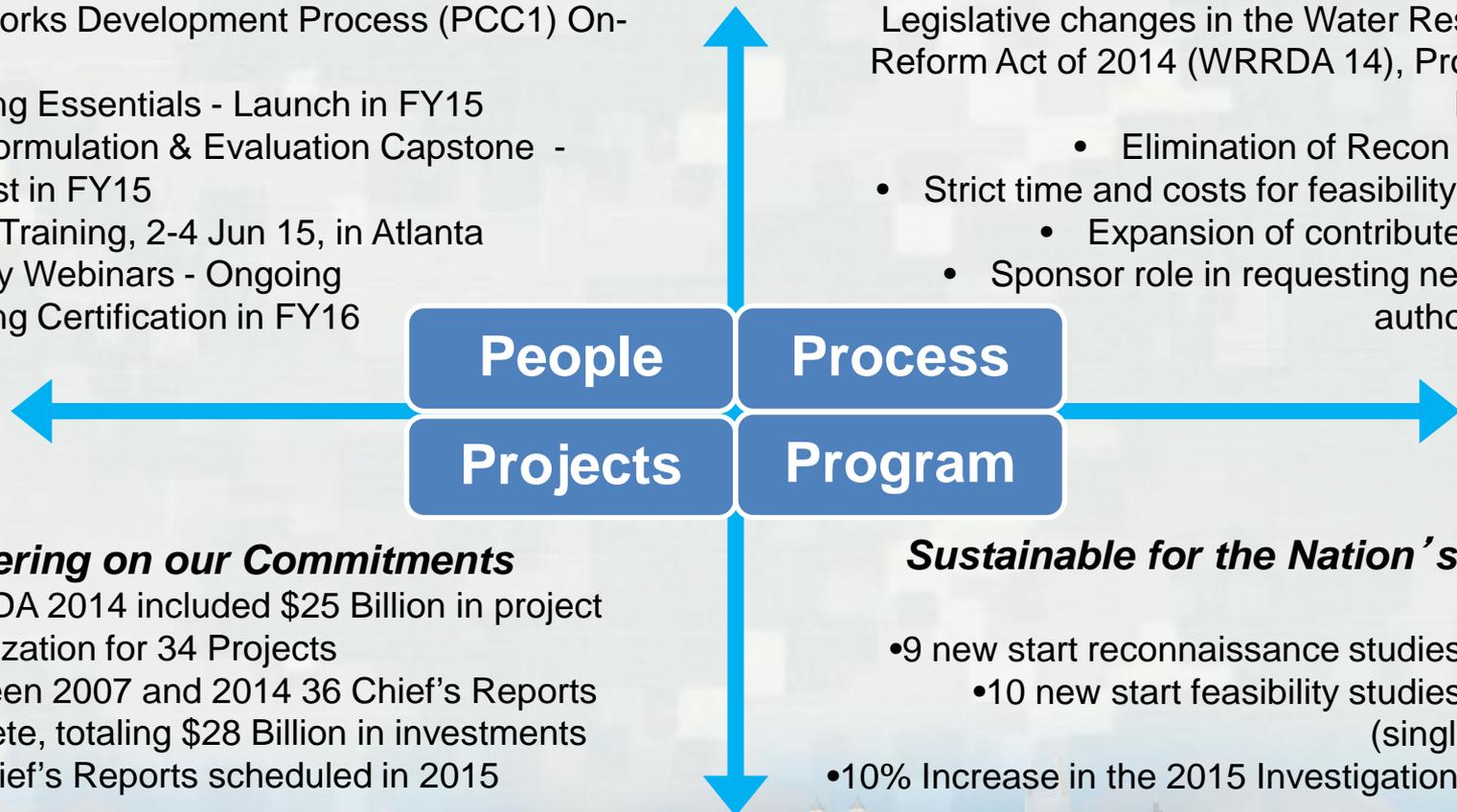
Key Planning Modernization Accomplishments

Investing in Planner's Knowledge

- Civil Works Development Process (PCC1) On-line
- Planning Essentials - Launch in FY15
- Plan Formulation & Evaluation Capstone - Beta-test in FY15
- PCOP Training, 2-4 Jun 15, in Atlanta
- Monthly Webinars - Ongoing
- Planning Certification in FY16

SMART Planning and 3x3x3

- Legislative changes in the Water Resources Reform Act of 2014 (WRRDA 14), Provisions Include:
- Elimination of Recon Studies
 - Strict time and costs for feasibility studies
 - Expansion of contributed funds
 - Sponsor role in requesting new study authorization



Delivering on our Commitments

- WRRDA 2014 included \$25 Billion in project authorization for 34 Projects
- Between 2007 and 2014 36 Chief's Reports complete, totaling \$28 Billion in investments
- 29 Chief's Reports scheduled in 2015

Sustainable for the Nation's Future Needs

- 9 new start reconnaissance studies in FY14
- 10 new start feasibility studies in FY15 (single phase)
- 10% Increase in the 2015 Investigations budget



WRRDA 2014



**Deauthorizations
& Backlog
Prevention**



**Water Supply and
Reservoirs**



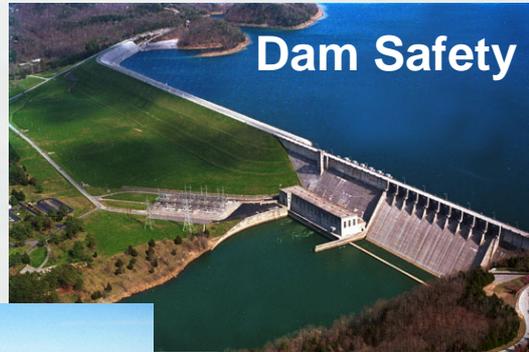
**Regulatory
(Including 408)**



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



**Alternative
Financing**



Dam Safety



Levee Safety



Navigation



**Non-Federal
Implementation**



Credits

A Perfect Storm: U.S. Water Resources Challenges

Increased Competition for Water – Population Growth & Demographic Changes

Aging Civil Works Infrastructure and Implications to Resilience

Increasing Demand - Mega Nexus Drivers – i.e. Water Supply, Domestic Hydrocarbon Production, Agricultural Needs

Nonstationarity and Adaptation to Climate Change

Paradigm Shift to IWRM /Systems Perspective Focused on Sustainability

Technological Advancement and Knowledge Management

Global Economy & Increased Importance of U.S. Maritime Transportation System

As “World Shrinks” – Increasing Concerns Over International Water Security

US Debt Pandemic & Constrained Federal Budgets

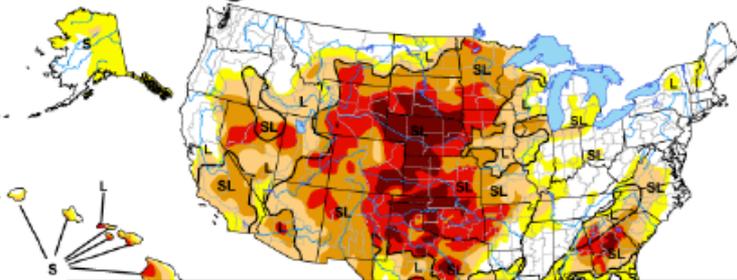


BUILDING STRONG®

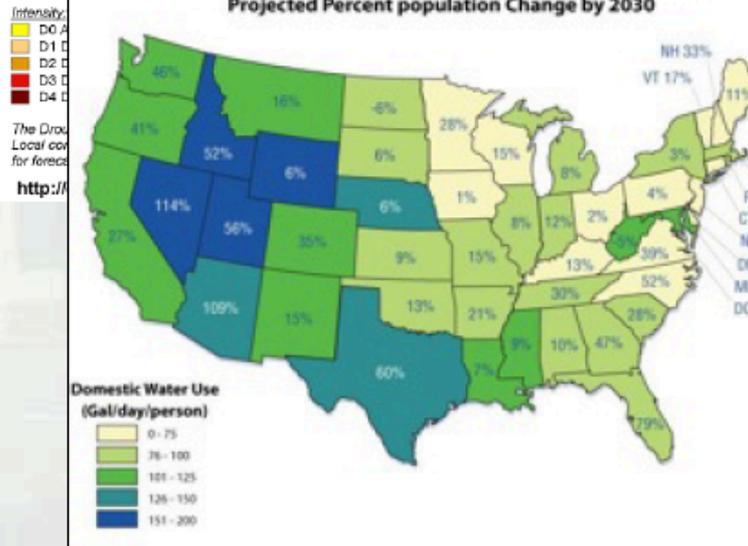
Mega-Nexus of Future Water Demand

IWRM Context: It is essential that we approach societal water problems from the context of the “Mega Nexus” of **Water - Food - Energy - Transportation – Ecosystems & QOL - Health**

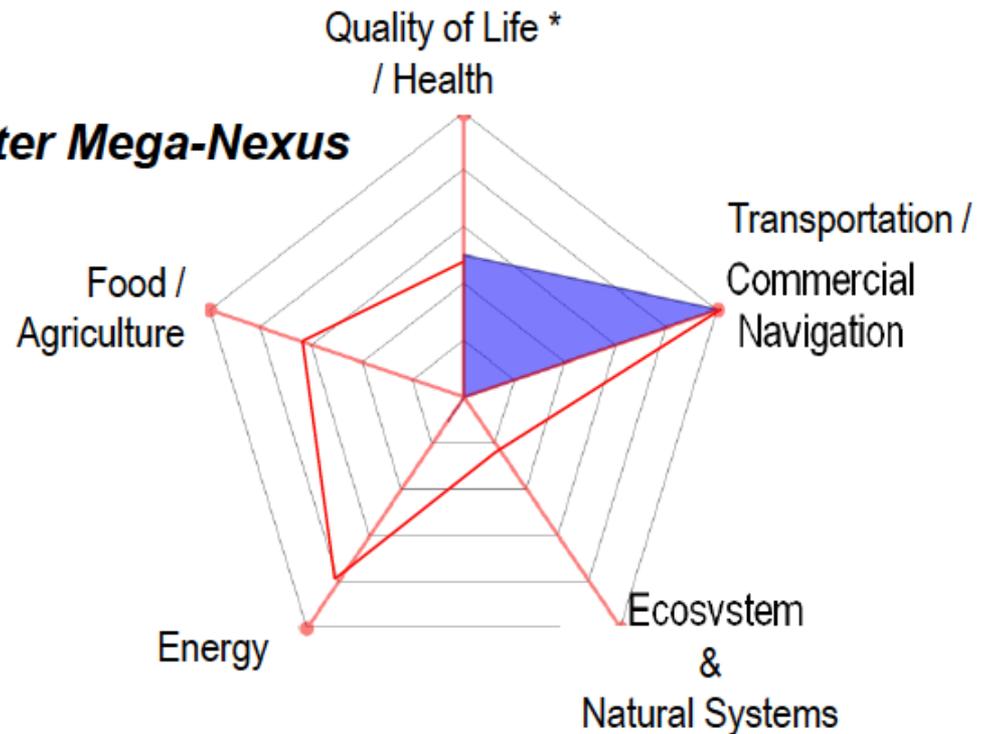
U.S. Drought Monitor January 1, 2013
Valid 7 a.m. EST



Domestic Water Use in Gallons per Day per Person and Projected Percent population Change by 2030



Water Mega-Nexus

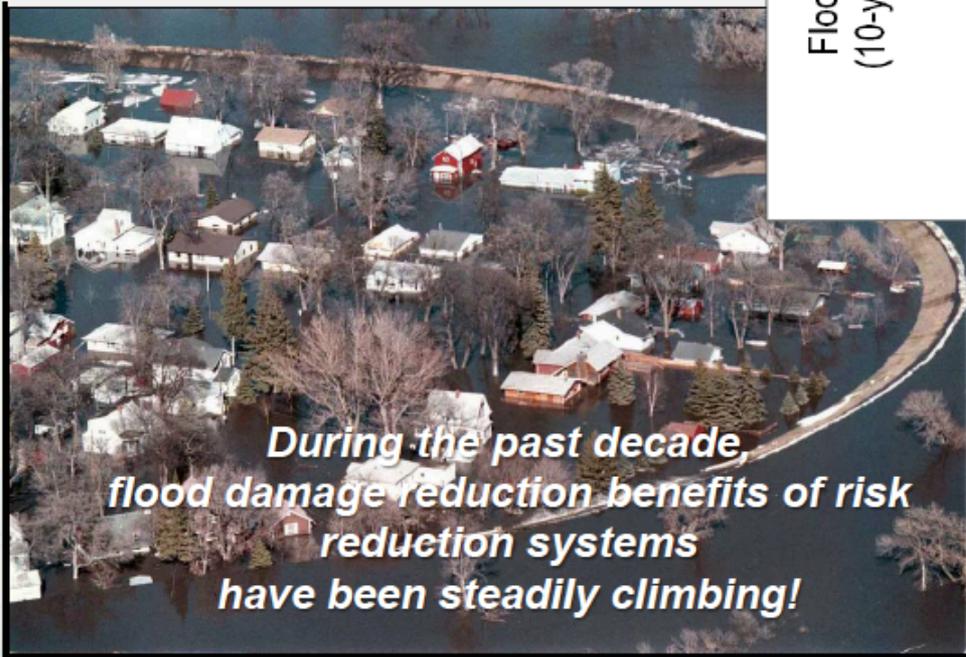


* Includes risk mitigation of extreme events – floods, droughts

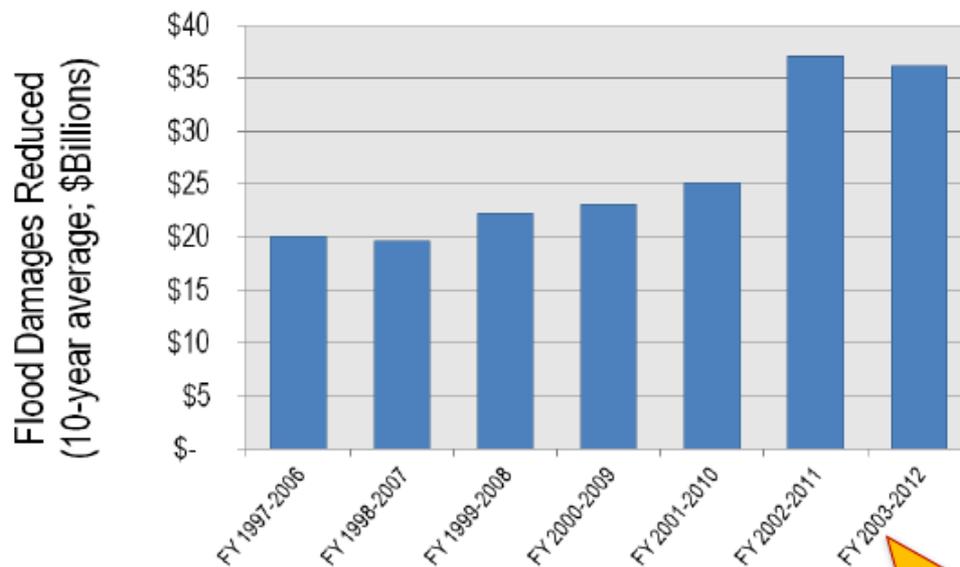
A Perfect Storm: U.S. Water Resources Challenges

Aging Civil Works Infrastructure

- Much of U.S. 20th Century infrastructure is approaching or exceeding original design lives
- Failure poses risk to populations, economy & environment



US Army Corps of Engineers Flood Risk Management Portfolio

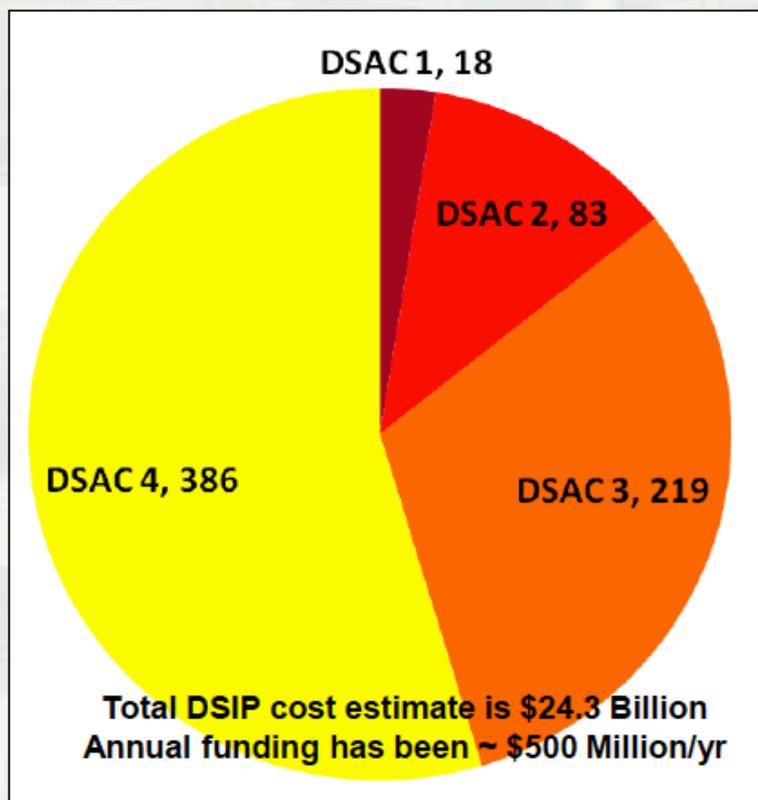


Existing risk reduction portfolio is being stressed as it continues to age...



BUILDING STRONG[®]

A Perfect Storm – USACE Dams are Also Aging and the Urgency of Dam Safety Actions is Increasing



USACE Dam Safety Action Classifications (DSAC's)

Dam Safety Action Class	Characteristics of this class
I URGENT AND COMPELLING (Unsafe)	CRITICALLY NEAR FAILURE Progression toward failure is confirmed to be taking place under normal operations. Almost certain to fail under normal operations from immediately to within a few years without intervention. OR EXTREMELY HIGH RISK Combination of life or economic consequences with probability of failure is extremely high.
II URGENT (Unsafe or Potentially Unsafe)	FAILURE INITIATION FORESEEN For confirmed (unsafe) and unconfirmed (potentially unsafe) dam safety issues, failure could begin during normal operations or be initiated as the consequence of an event. The likelihood of failure from one of these occurrences, prior to remediation, is too high to assure public safety. OR VERY HIGH RISK The combination of life or economic consequences with probability of failure is very high.
III HIGH PRIORITY (Conditionally Unsafe)	SIGNIFICANTLY INADEQUATE OR MODERATE TO HIGH RISK For confirmed and unconfirmed dam safety issues, the combination of life, economic, or environmental consequences with probability of failure is moderate to high.
IV PRIORITY (Marginally Safe)	INADEQUATE WITH LOW RISK For confirmed and unconfirmed dam safety issues, the combination of life, economic, or environmental consequences with probability of failure is low and may not meet all essential USACE guidelines.

- 707 dams at 557 projects
- DSAC chart includes all USACE dams except one newly constructed dam not yet been assigned a DSAC value*.
- Data source: DSPMT, 31 Oct 2014

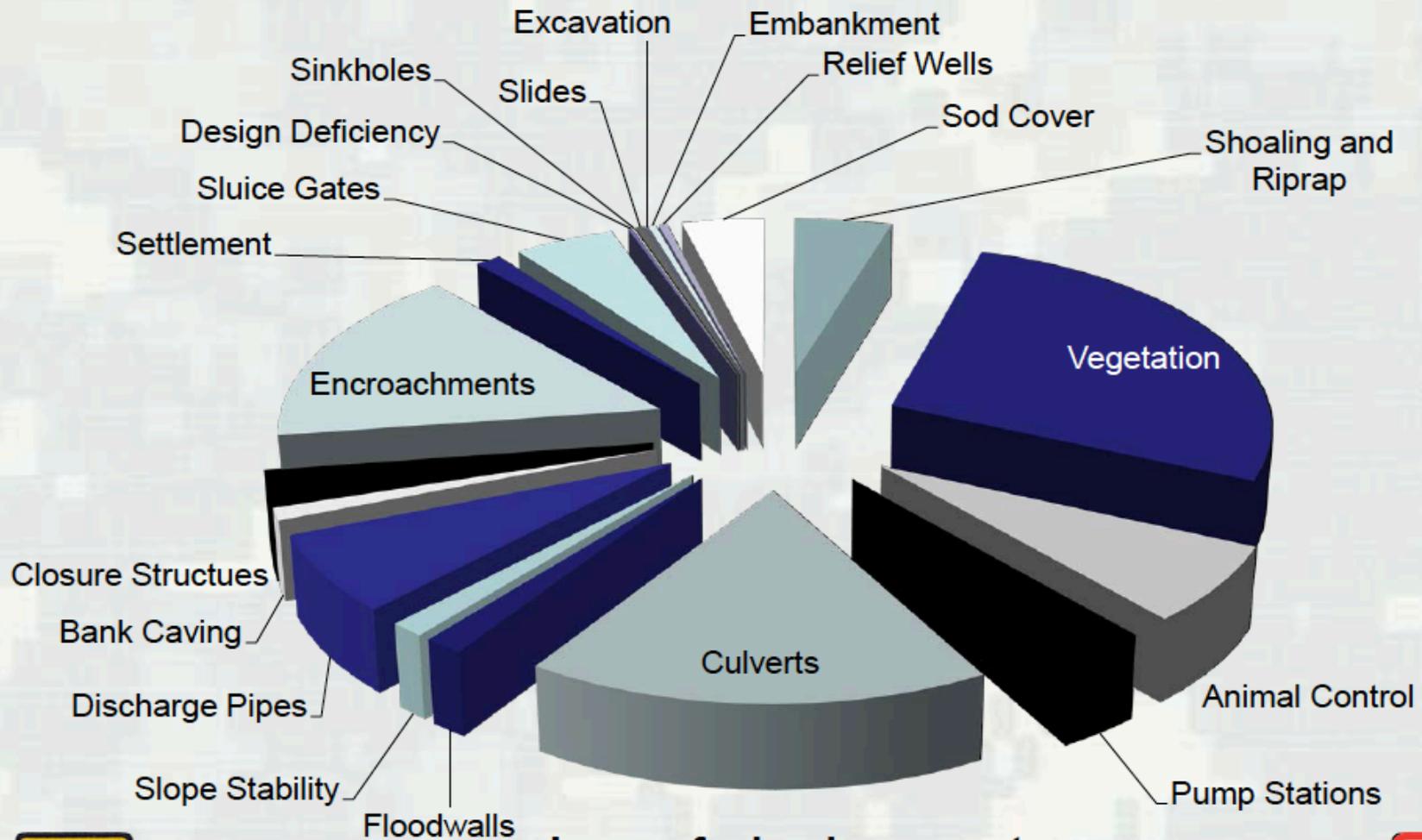


*1 other dam not classified: Indiana Harbor Dam



BUILDING STRONG®

A Perfect Storm – Increasing Engineering Condition Deficiencies with the Nation’s Aging Levees



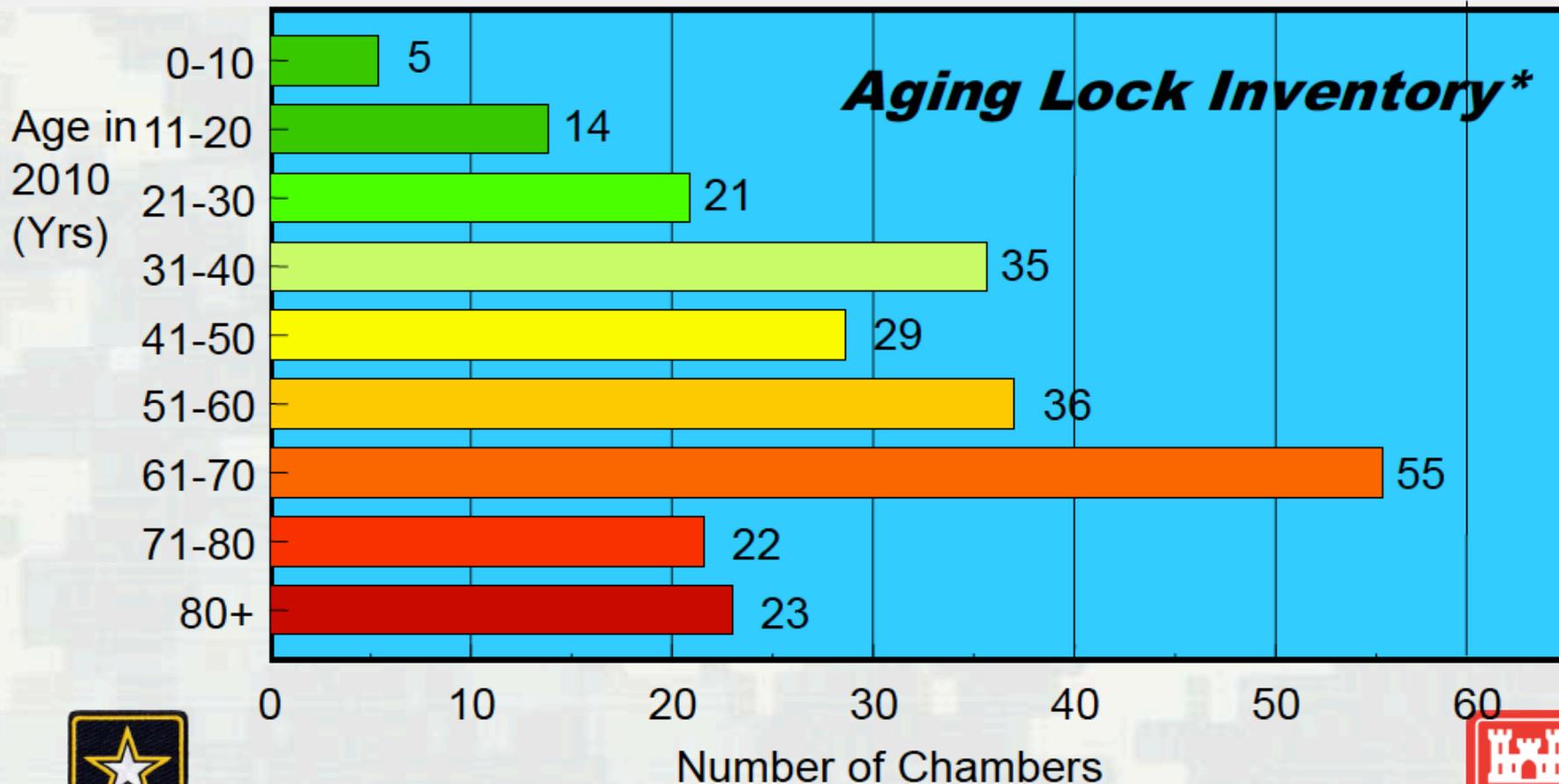
**Issues facing levee systems
across the nation.**



A Perfect Storm: U.S. Water Resources Challenges

Aging Civil Works Infrastructure

- Much of U.S. 20th Century infrastructure is approaching or exceeding original service lives – and thus at increased risk to populations, economy & environment

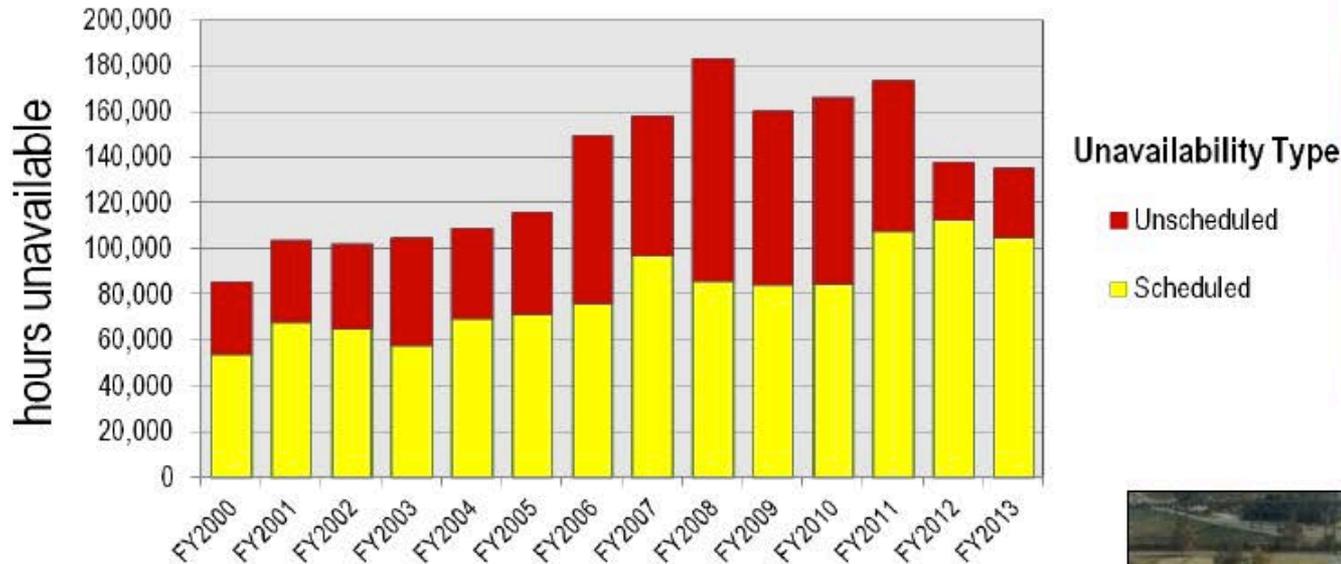


*Includes all operational deep and shallow draft Corps and TVA navigation locks.

BUILDING STRONG®

A Perfect Storm – System Reliability is Suffering as Outages are Increasing at Navigation Locks

US Army Corps of Engineers: Navigation Lock Unavailability



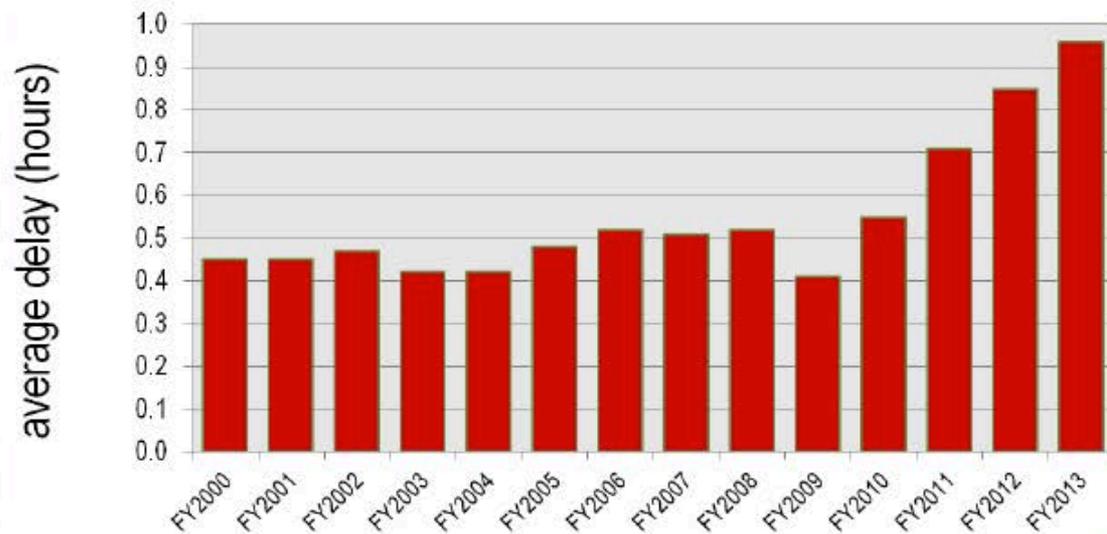
Since 2000:

- ~50% increase in unavailability
- Twofold increase in scheduled outages!



A Perfect Storm – Vessel Delays at Our Locks are Increasing

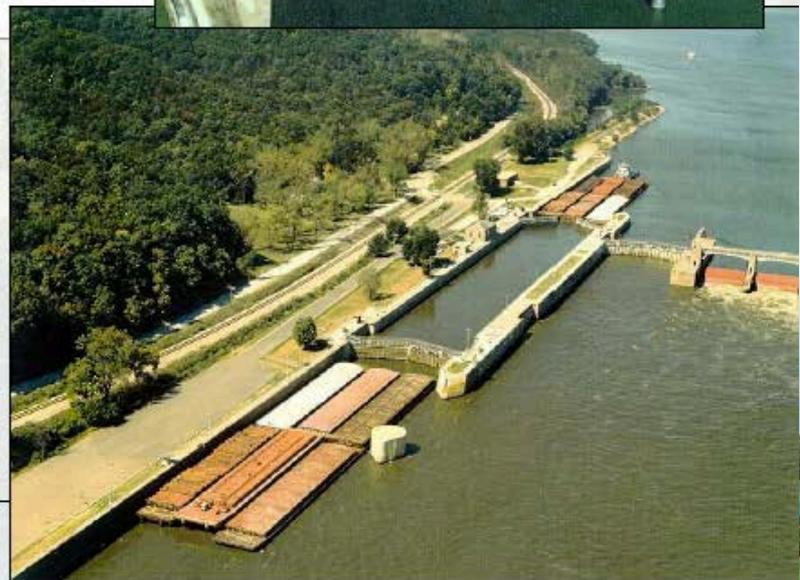
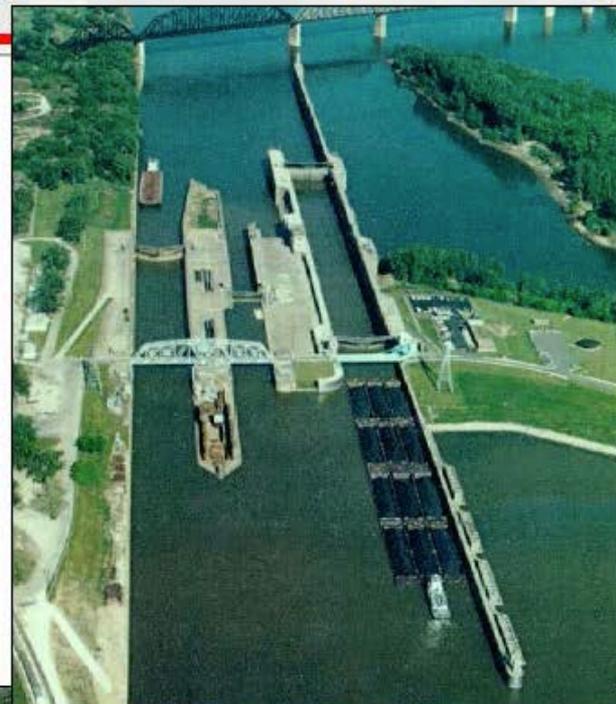
US Army Corps of Engineers: Vessel Delays at Locks



Since 2009:

- more than a doubling in delays!
- Roughly 770,000 hours of delays in 2013

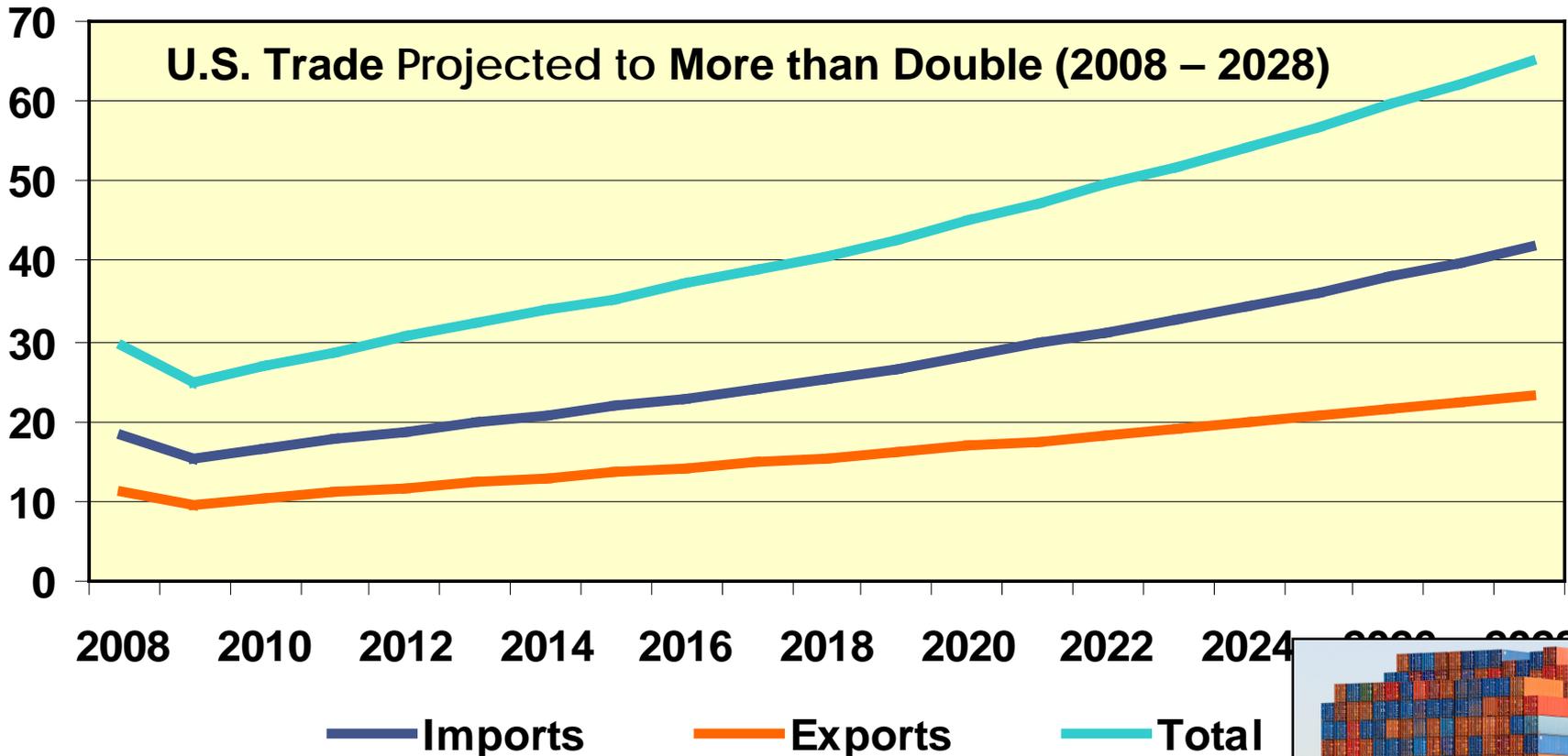
These are actual delays experienced by vessels!



A Perfect Storm: U.S. Water Resources Challenges

Global Economy & Increased Importance of U.S. Maritime Transportation System

Millions of TEUs



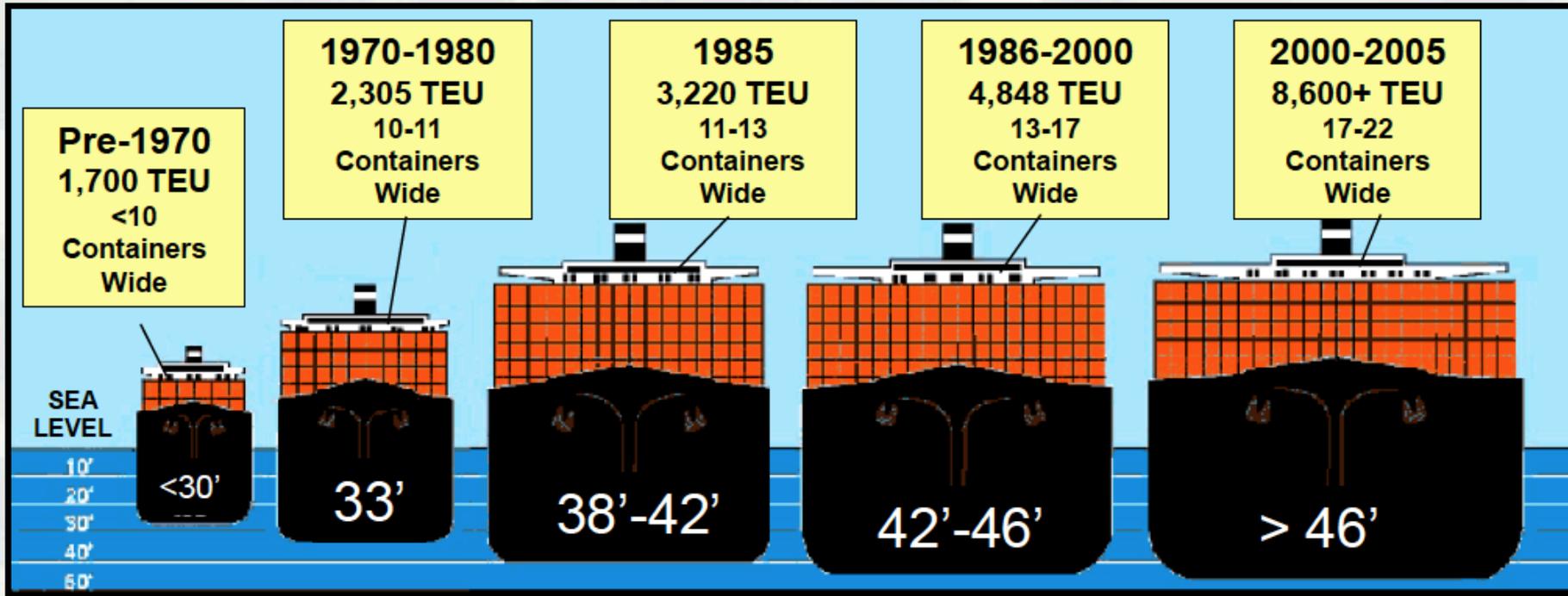
Source: I H S G I World Trade Service

Port & Waterways Modernization Study, June 2012



Ever Larger Containerships

Driving Need for Ever Larger Channels



Key Driver – Expansion of the Panama Canal



The Ports along the U.S. Southeast and Gulf coast (where the population growth is expected) are likely candidates for investment to deepen to be "post-Panamax" or "cascade" ready.



Source: USACE Institute for Water Resources

Figure 21: Main Channel Depths at Selected Ports

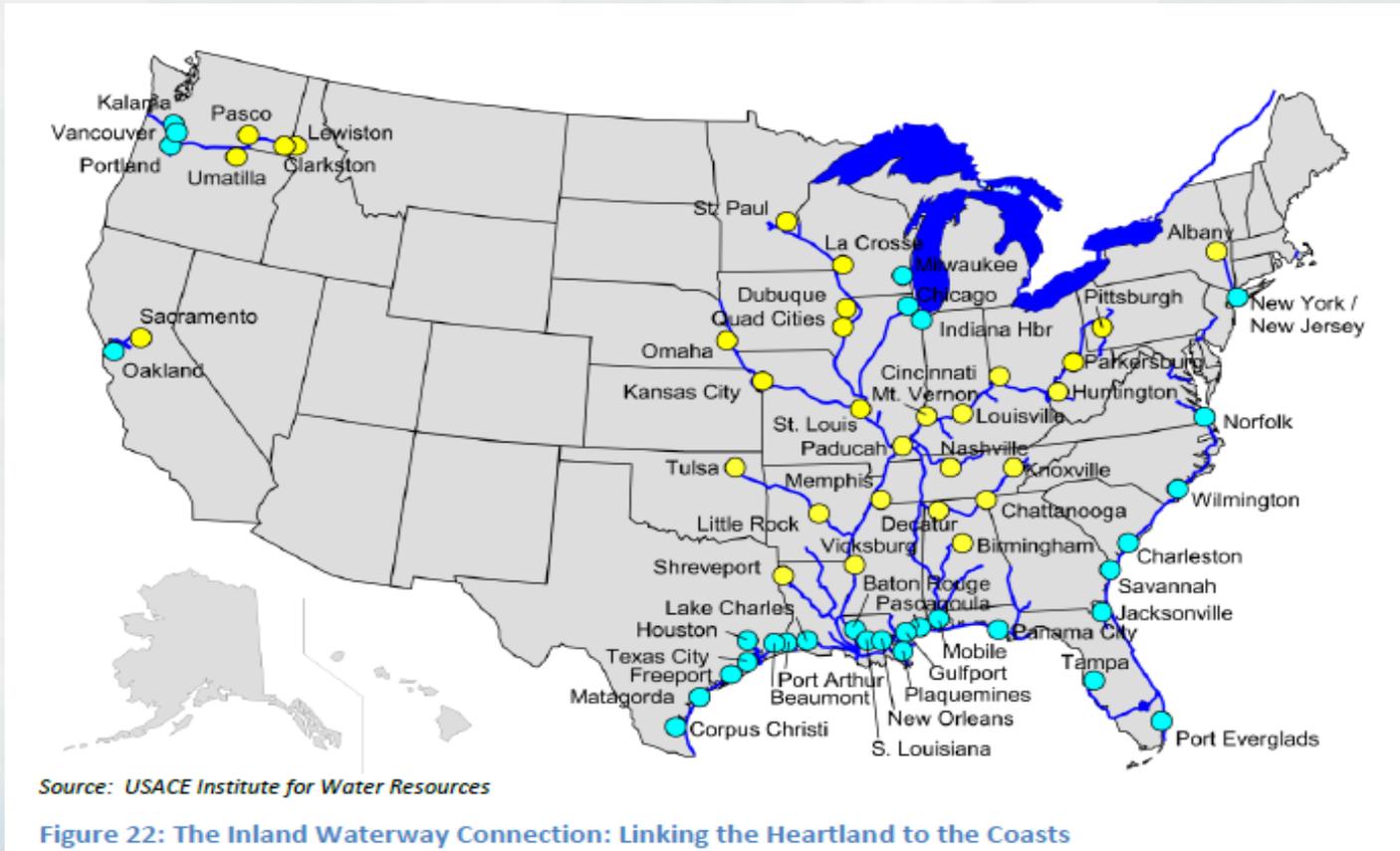


U.S. ARMY



PLANNING SMART
BUILDING STRONG®

The inland waterways need to be maintained (both channel depth and reliability) to service the opportunities for growth in agricultural exports

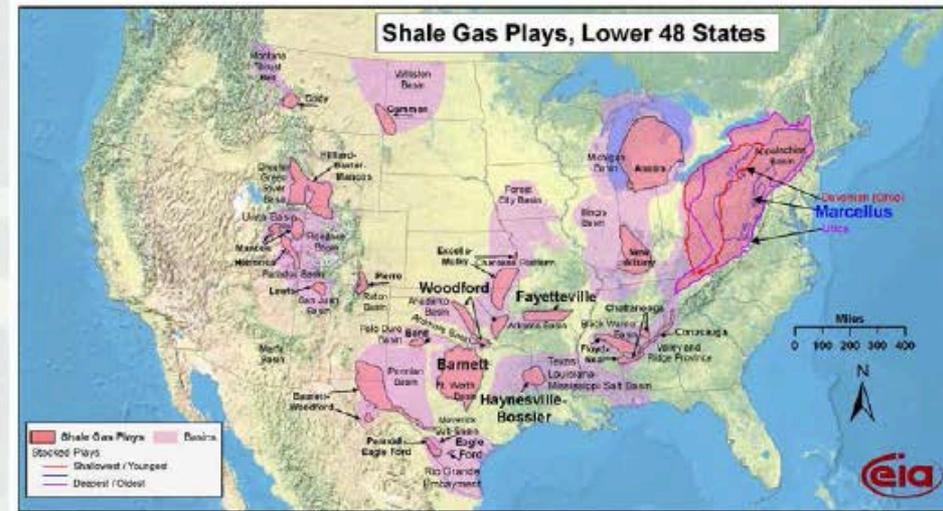
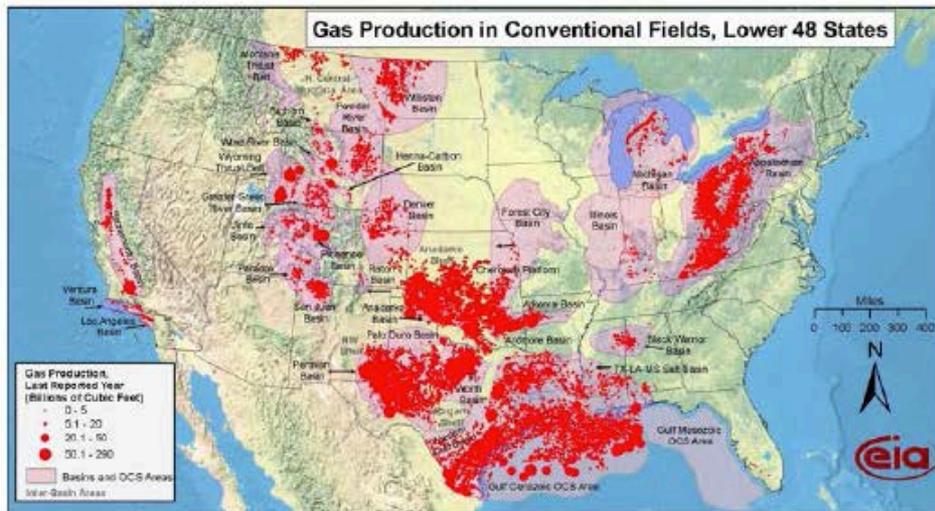


**PLANNING SMART
BUILDING STRONG®**

A Perfect Storm: U.S. Water Resources Challenges

Energy Driver – Domestic Hydrocarbon Production

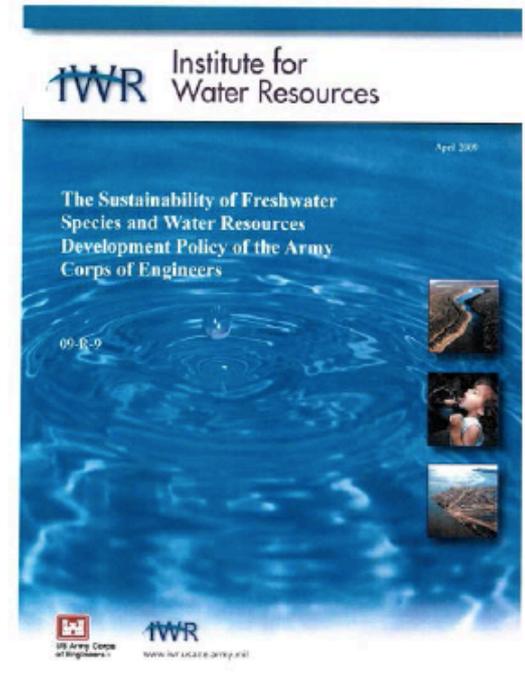
- US Oil Production:
 - Grew 18% in last year alone
 - ~~US will be World #1 producer in 2015~~ **US is #1 Producer July 2014**
- US Natural Gas Production:
 - US is World #1 producer as of 2013 (more than Russia)
- Cascading Effect on Other Industries --- Chemical, Plastics, all Manufacturing



A Perfect Storm - Biodiversity and Water Resources Development in the U.S.

Environmental Sustainability

- Development in the U.S. has contributed to the loss of wetlands, natural habitats, and freshwater species
- Species extinction rates for freshwater species have increased significantly in the continental U.S.
- Extinction of freshwater species is 3 to 20 times the terrestrial rate, depending on the groups in the analysis.
- In U.S., most freshwater species extinction and imperilment is owed to urban-agricultural development & invasive species.
- However, Federal water resources development was involved in a few fish extinctions & nearly half of the invertebrate extinctions.
- Federal agencies have more recently sought balance between development and long term sustainability.
- The Corps of Engineers now has programs contributing to reversing species decline through impact mitigation, restoration projects, and its regulatory program.



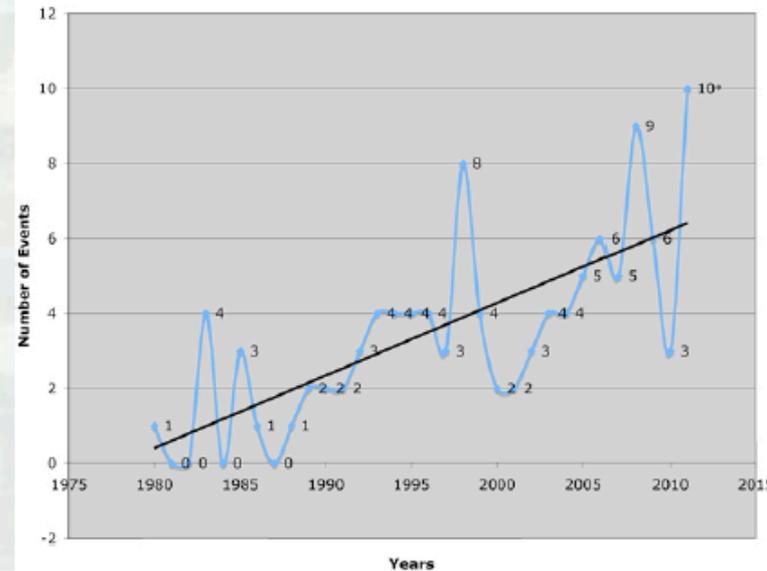
BUILDING STRONG®

A Perfect Storm: Changing Climate

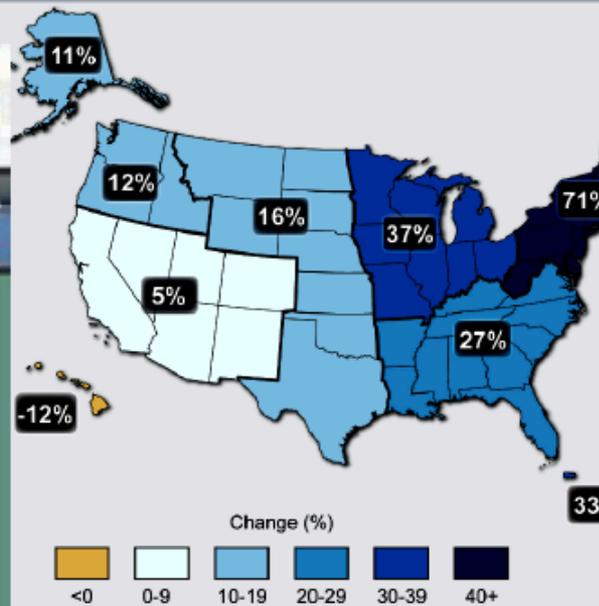
Nonstationarity & Adaptation to Climate Change

- Observed changes in snowmelt, floods & droughts are likely to progress over time, likely affecting virtually all aspects of water resources mgt
- Already need means to anticipate & adapt to climate change impacts to the frequency, intensity & spatial occurrence of extreme events

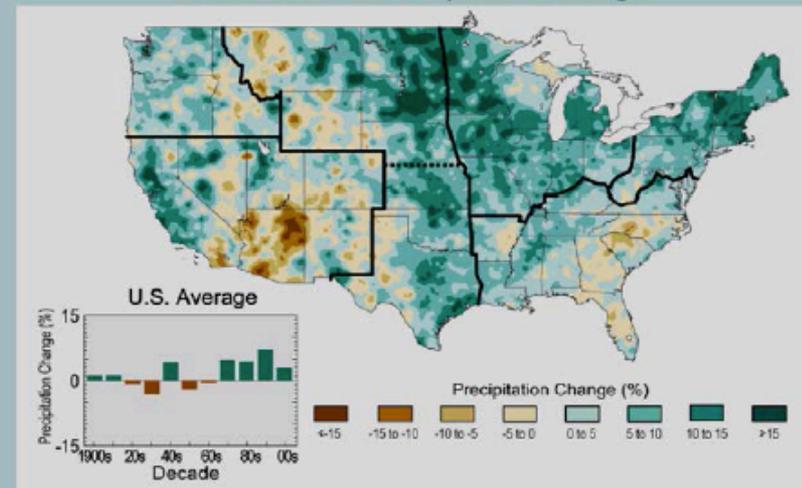
US Billion Dollar Weather Events 1980-2010



Observed Change in Very Heavy Precipitation



Observed U.S. Precipitation Change



The colors on the map show annual total precipitation changes for 1981-2012 compared to the 1901-1960 average, and show wetter conditions in most areas. The bars on the graph show average precipitation differences by decade for 1901-2012 (relative to the 1901-1960 average). The far right bar is for 2001-2012. (Figure source: NOAA NCDC / CICS-NC).

Changes in the amount of precipitation falling in very heavy events (the heaviest rain events) from 1981 to 2012 for each region. There is a clear national trend toward a greater amount of precipitation being concentrated in very heavy events, particularly in the Northeast and

IWRM Context for Consideration of Risk Reduction Measures along the Coast

Coastal Risk Reduction and Resilience: Using the Full Array of Measures



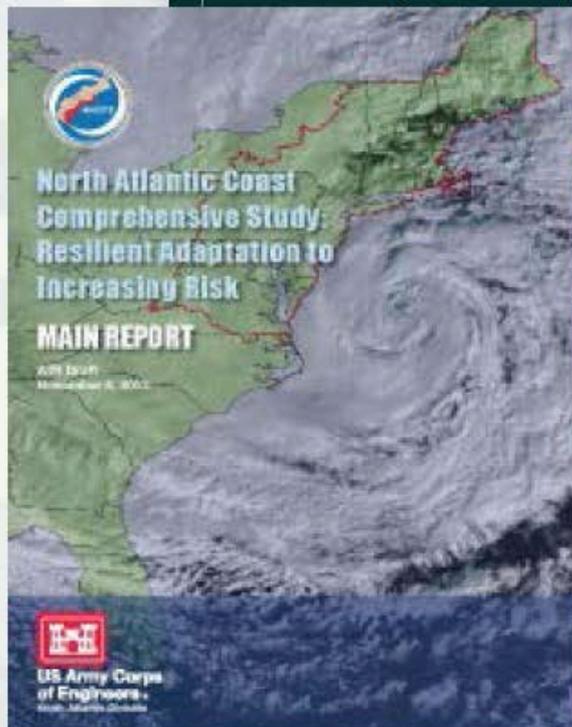
US Army Corps of Engineers

Coastlines are especially vulnerable to threats posed by tides and coastal storms, due to geologic processes, changing climate, and ongoing development within the coastal zone.

IWRM provides framework for considering the full range of risk reduction measures: ***natural, nature-based, nonstructural, structural.***

Natural and nature-based measures are capable of improving the quality and resilience of economic, ecologic, and social systems.

Within the U.S., integrated approaches to risk reduction incorporating natural and nature-based features in addition to nonstructural and structural measures have long been recognized (Jadwin, MsCIP)



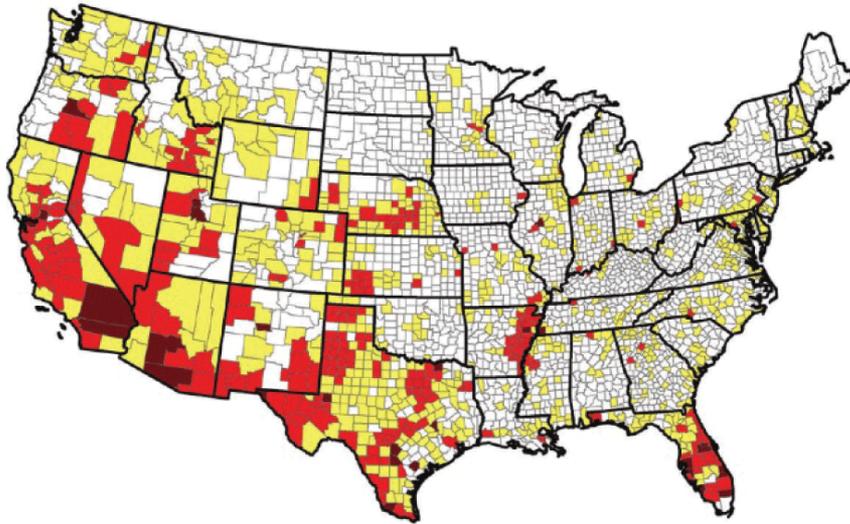
September 2013
SWTS 2013-3



BUILDING STRONG®

Climate Change: Water Supplies Projected to Decline

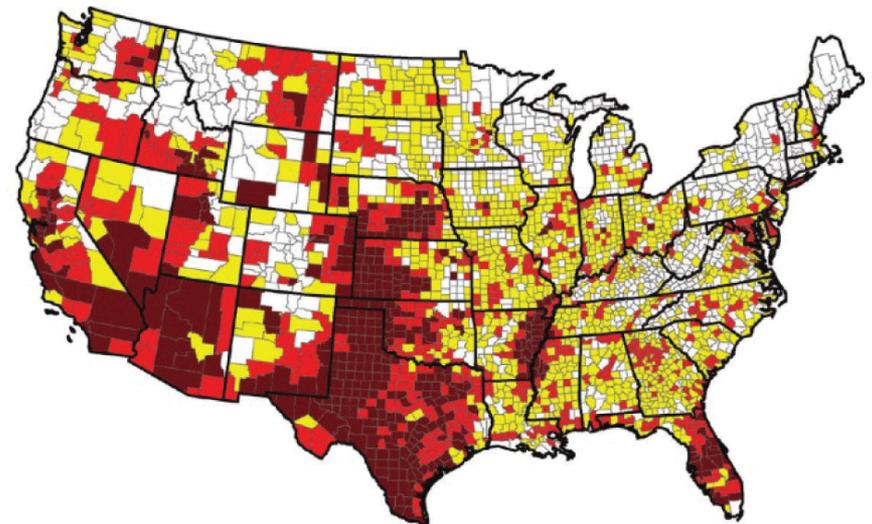
(a) No Climate Change Effects



Water Supply Sustainability Risk Index (2050)



(b) Climate Change Effects



Water Supply Sustainability Risk Index (2050)



Preview of Coming Attractions



HD
movie

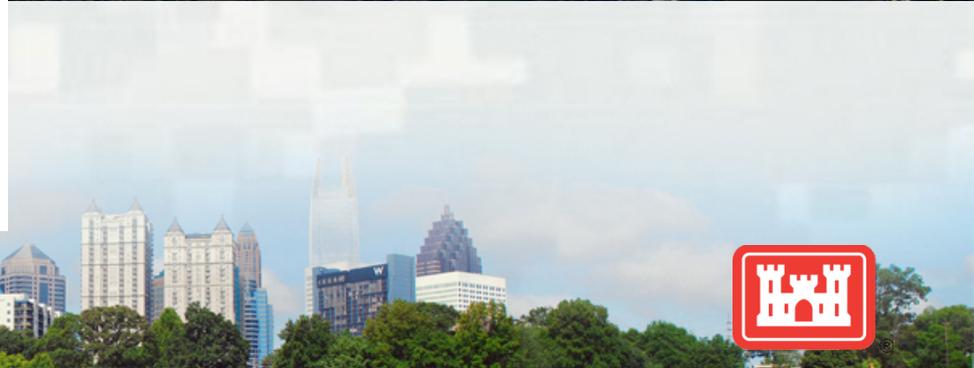
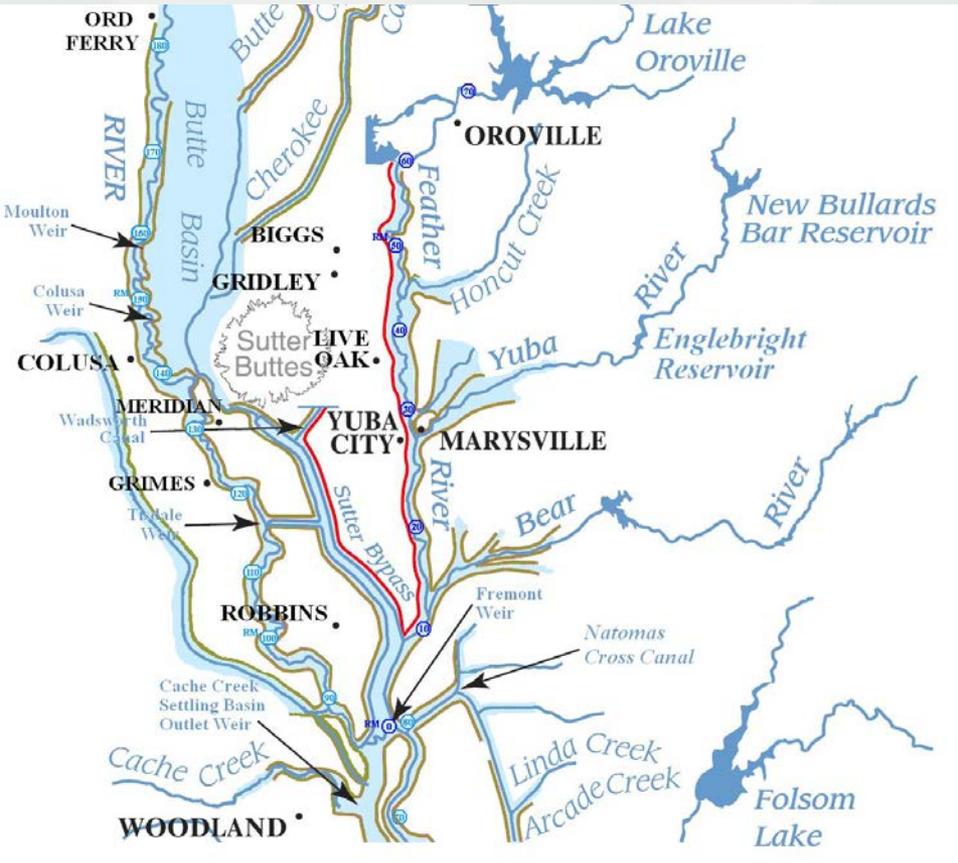


U.S. ARMY



PLANNING SMART
BUILDING STRONG®

Sutter Basin



U.S. ARMY



PLANNING SMART
BUILDING STRONG®

Central Everglades

CENTRAL
EVERGLADES
PLANNING
PROJECT



*Restoring the Heart
of the Everglades*

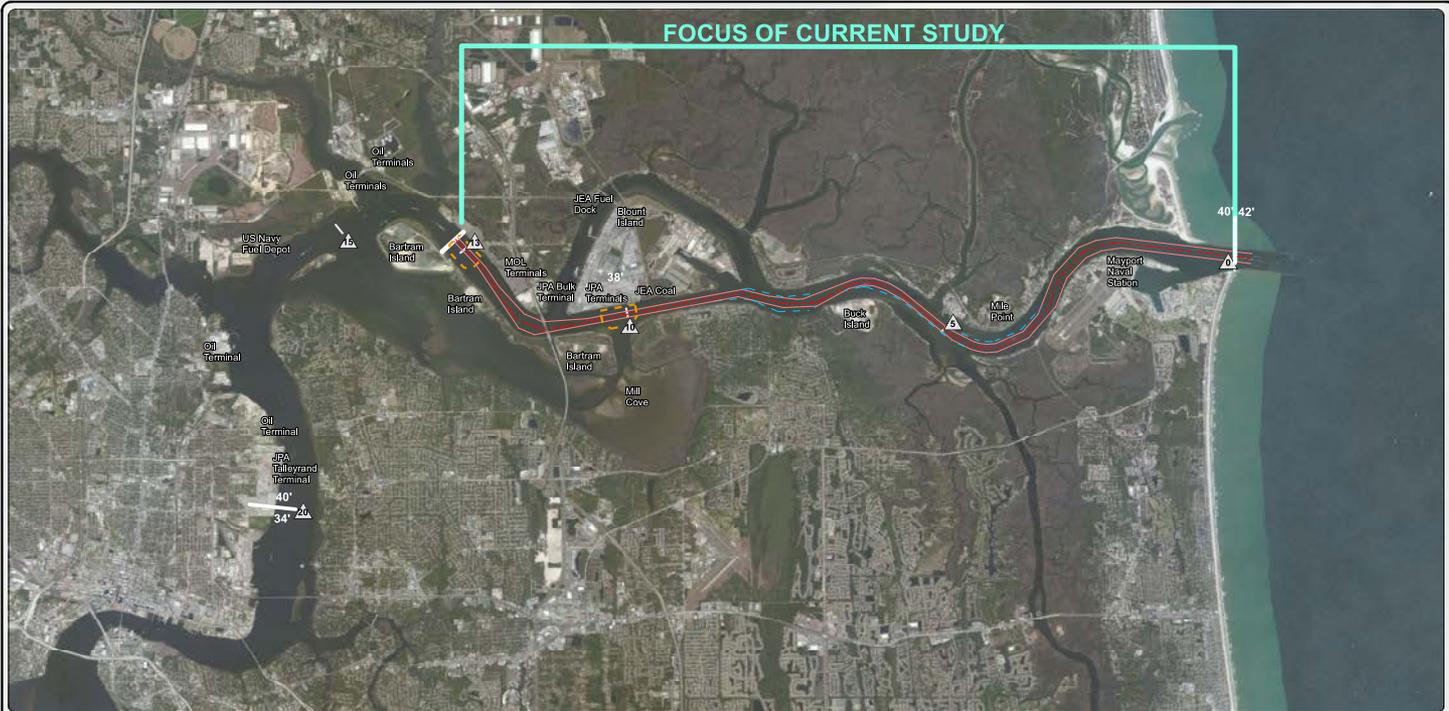


U.S. ARMY



PLANNING SMART
BUILDING STRONG®

Jacksonville Port Deepening



U.S. ARMY



PLANNING SMART
BUILDING STRONG®

Houston Ship Channel 204



U.S. ARMY



PLANNING SMART
BUILDING STRONG®

GLMRIS

GLMRIS STUDY AREA MAP



Created by US Army Corps of Engineers
2011



U.S. ARMY



PLANNING SMART
BUILDING STRONG®

Call to Action for the Future

- *We must apply our talents across the project lifecycle*
- We must work across USACE programs
- We must be virtual, nimble and agile
- We MUST deliver
- We need to continue to grow and enhance our knowledge, skills and abilities
- We MUST communicate and tell the story



John F. Kennedy

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.





Son, one day you will appreciate the truly important things in life.



Thanks, Dad!



PLANNING SMART
BUILDING STRONG®

WIN WITH PEOPLE!
DO SOMETHING GREAT!

**PLANNING SMART
BUILDING STRONG**