

# Great Lakes Navigation Update

April 14, 2016

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# Agenda

- Welcome – COL Christopher Drew and Shamel Abou-El-Seoud
- LRD Programs Overview – David Dale
- Great Lakes Nav Update – Mike O’Bryan
  - ▶ GL Inspection Tour
  - ▶ Budget Trends
  - ▶ Soo Locks Update
- Spotlight on District Projects – Ops Chiefs
  - ▶ Ogdensburg – Josh Feldmann
  - ▶ Saginaw River Deepening – Dave Wright
  - ▶ Calumet – Shamel Abou-El- Seoud
- Strategy for the Great Lakes – St. Lawrence River Maritime Transportation System – Pete Johnson
  - ▶ St. Marys River Deepening
  - ▶ State Involvement in Dredging Program
  - ▶ Soo Hydro Expansion
- NOAA Marine Sanctuaries – Tom Rayburn
- Key Legislative Activities – Steve Fisher
- Other Topics - Stakeholders



# Great Lakes Inspection Tour June 2015

Participants: LRD and MVD Commanding Generals and senior leaders from Division, Buffalo, Chicago, and Detroit Districts

Objectives:

- To gain a better understanding of the GL Navigation system value to the nation
- Observe an "origin to destination" operation from raw material receipt and loading to destination port destined for manufacturing
- Experience challenges of waterborne transit at the key node in the system, the Soo Locks
- Observe offloading and manufacturing into a finished product



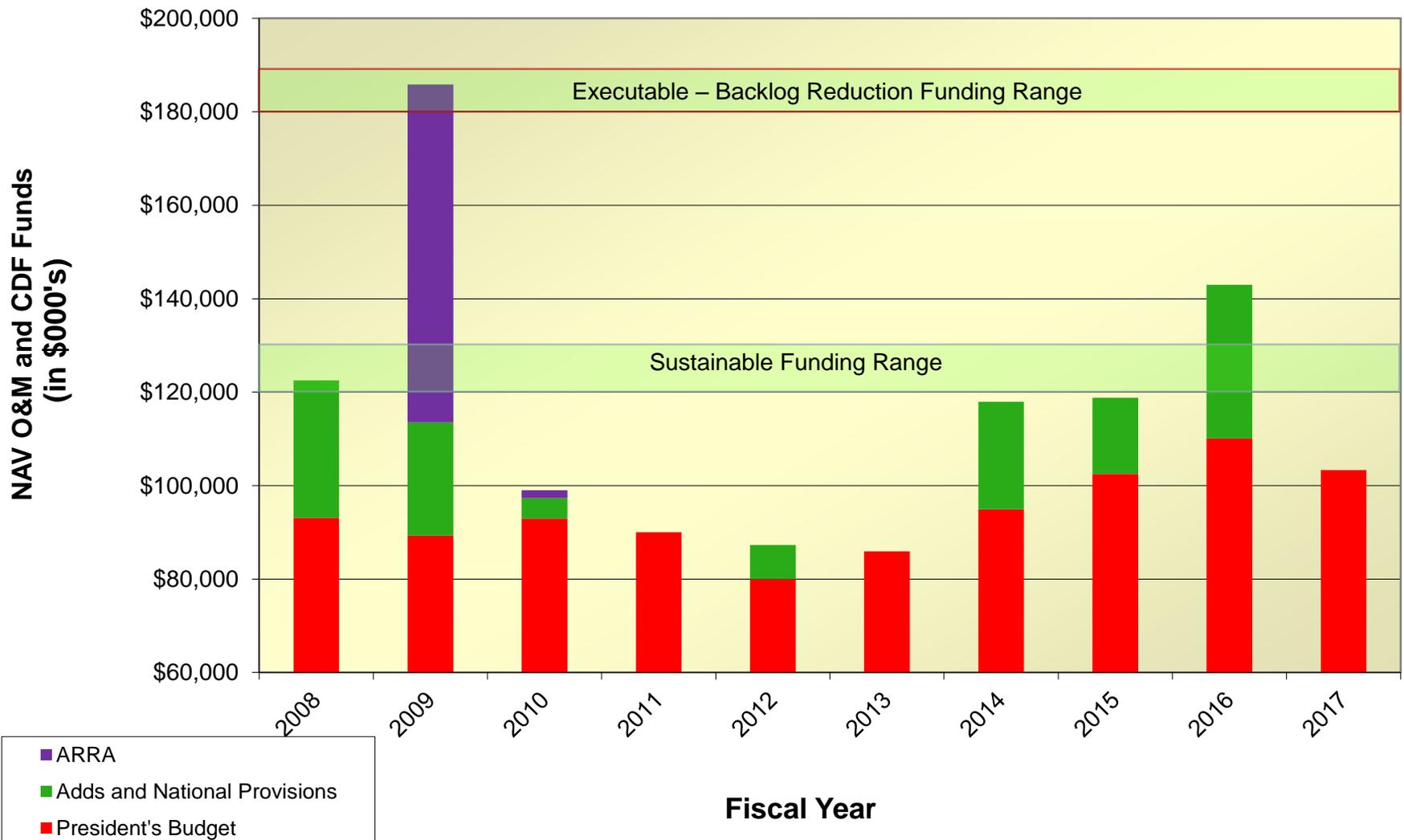
# Great Lakes Inspection Tour - 2016

- **Plans are underway for mid-June, 2016**
  - Focus on lower Great Lakes – Milwaukee, Chicago, Toledo, Ann Arbor
  - Focus areas:
    - Ecosystem restoration
    - Invasive species
    - Flood risk management
    - Harmful algal blooms

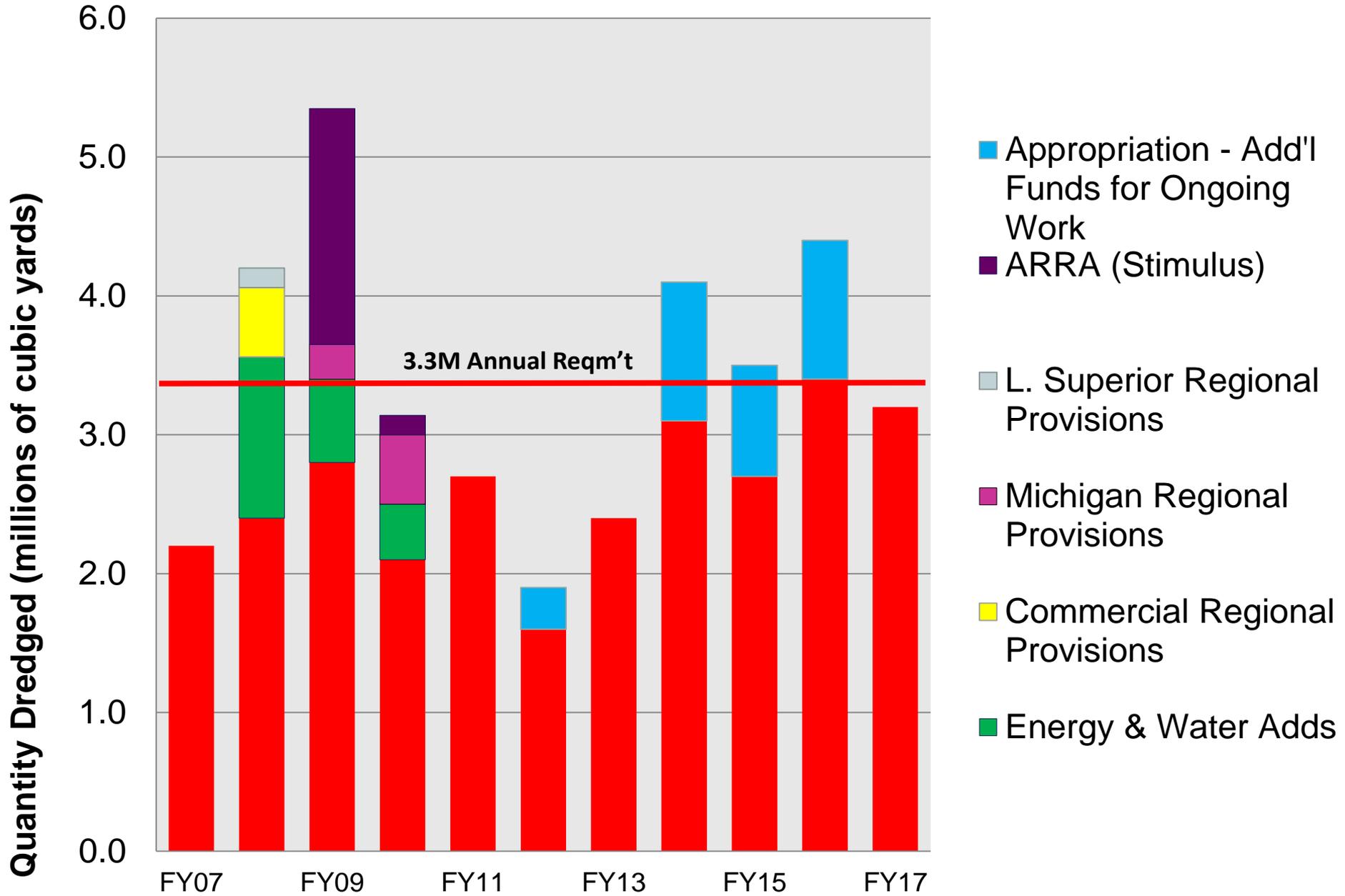
Key to success is strong stakeholder participation!



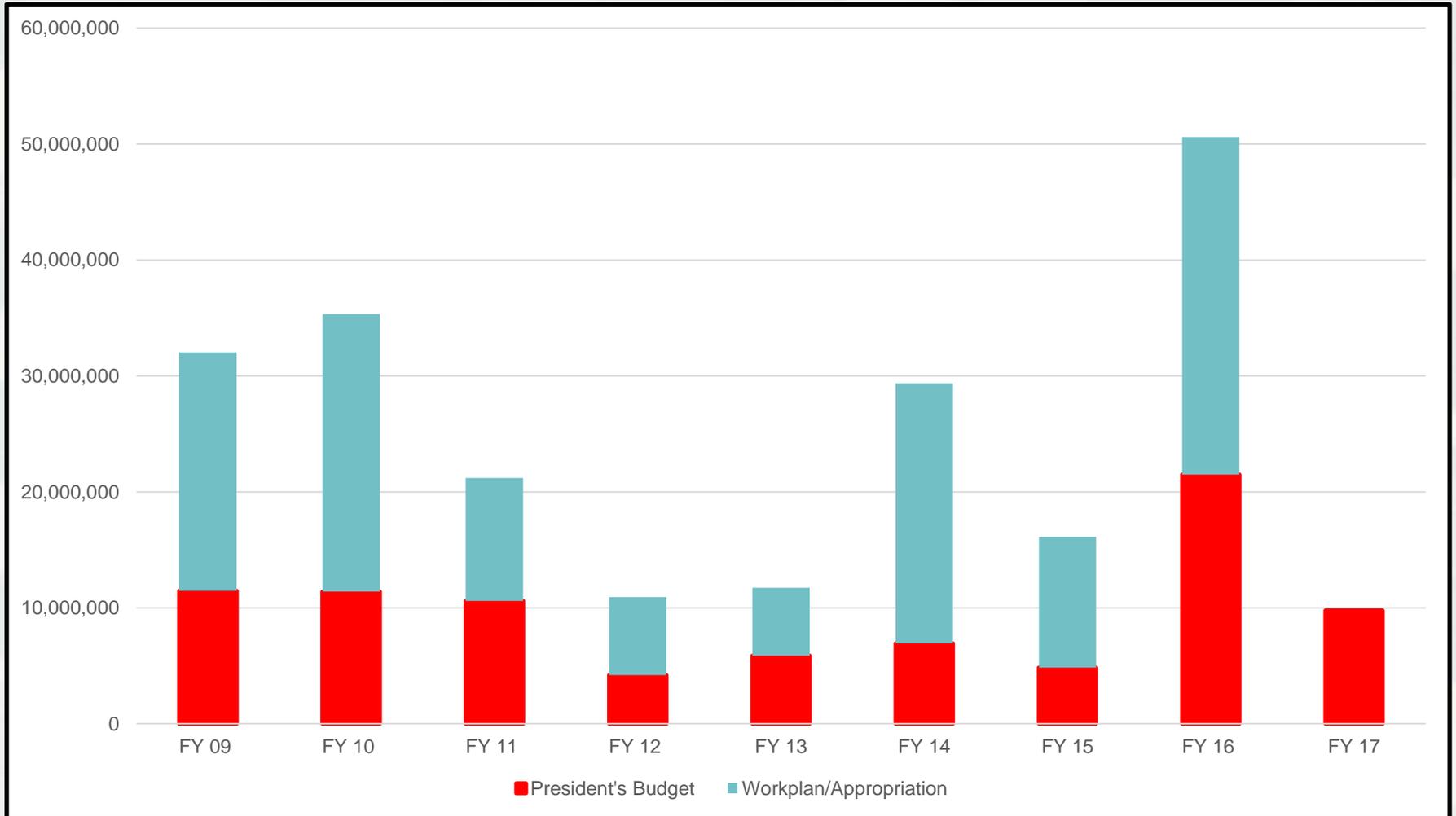
# GL Navigation Funding History



# Dredging Funding Trends 2007 – 2017



# Historical Funding Great Lakes Low Use Projects (<1M Tons)



# Soo Locks Asset Renewal Update

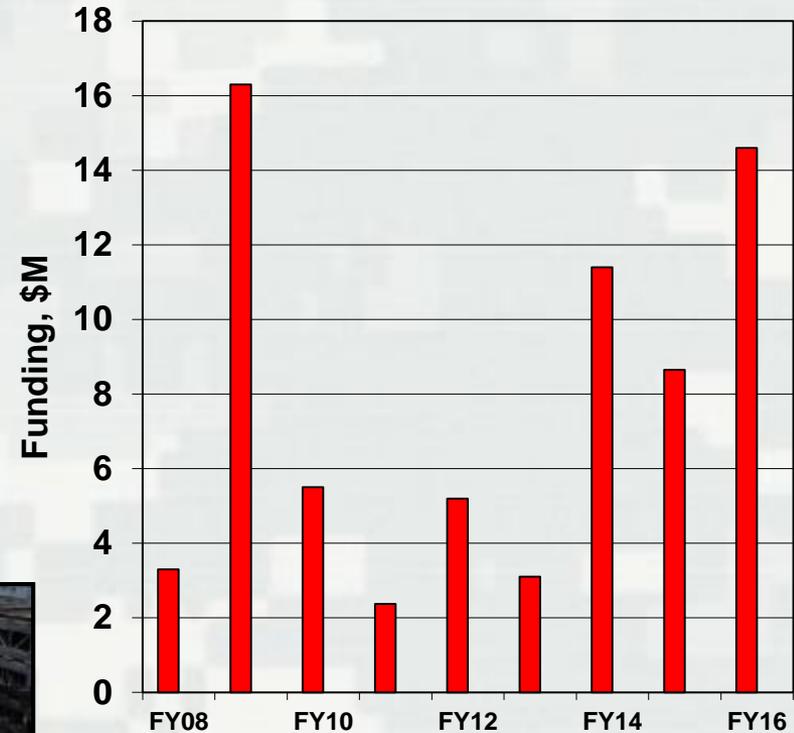
## New Lock – Economic Reevaluation Report



# Soo Locks Asset Renewal Long-Term Plan

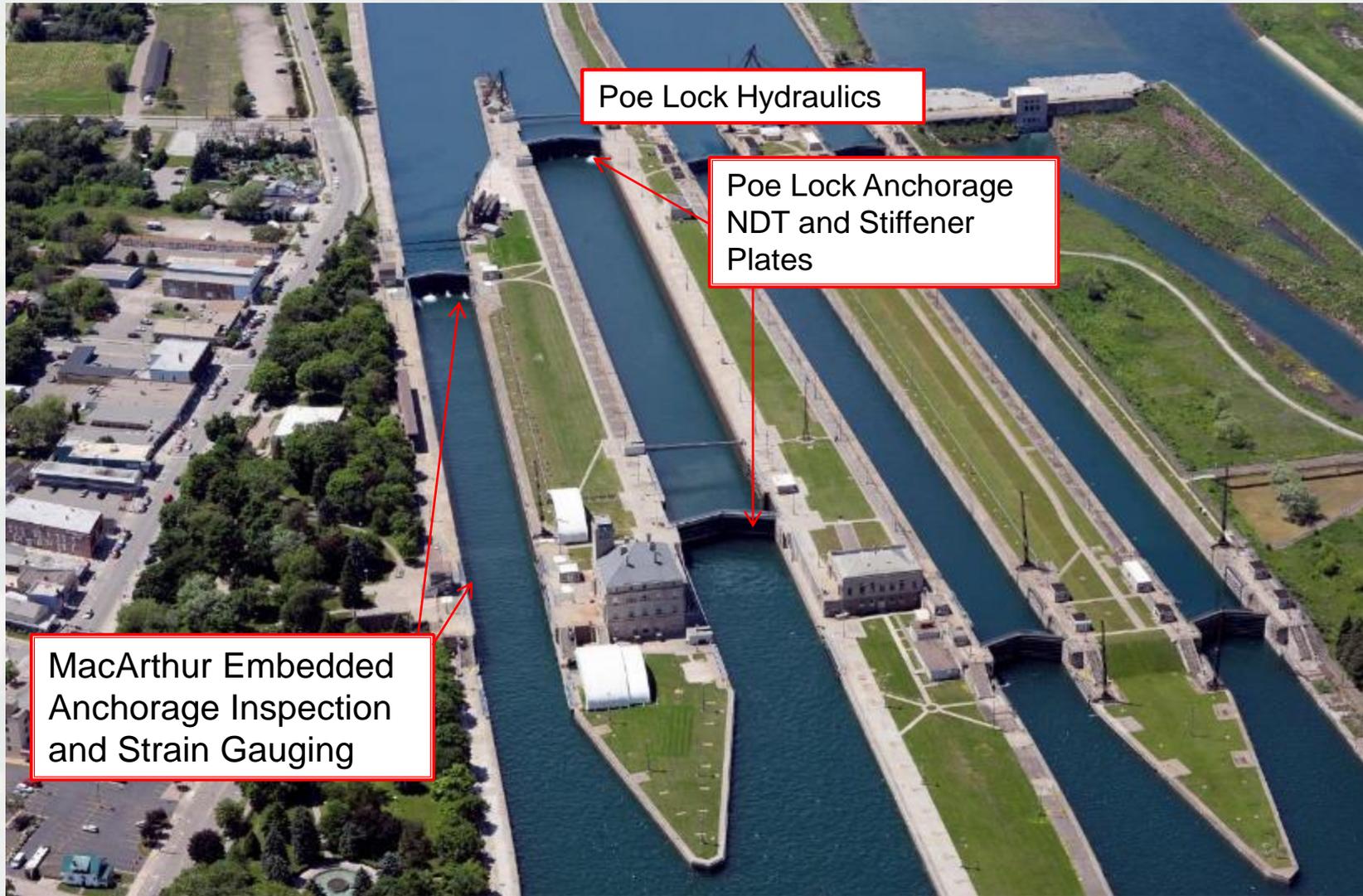
Asset Renewal Plan will maximize reliability and reduce risk through 2035

- \$70.5M funded to date through FY16
  - New hydraulics, stop logs, utilities
  - Compressed Air System
  - Gate Anchorage Replacement
  - Mac and Poe Electrical System Replacement
- Remaining key priorities
  - Poe Miter and Quoin Block Replacement
  - Poe Lock Gate 1 Replacement
  - Pier rehabilitation



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# Soo Locks 2016 Winter Work



# Poe Lock Embedded Anchorages



- **Interim Risk Reduction Measures underway until a permanent repair is complete**
- **Design Ongoing by Corps' Inland Navigation Design Center of Expertise**
- **Funded in FY16 Workplan**
- **Advertise for contract repairs in Summer 2016, schedule currently calls for installation of new anchorages complete by March 2017; minimal impact to navigation**



# Stiffener Plate Installation

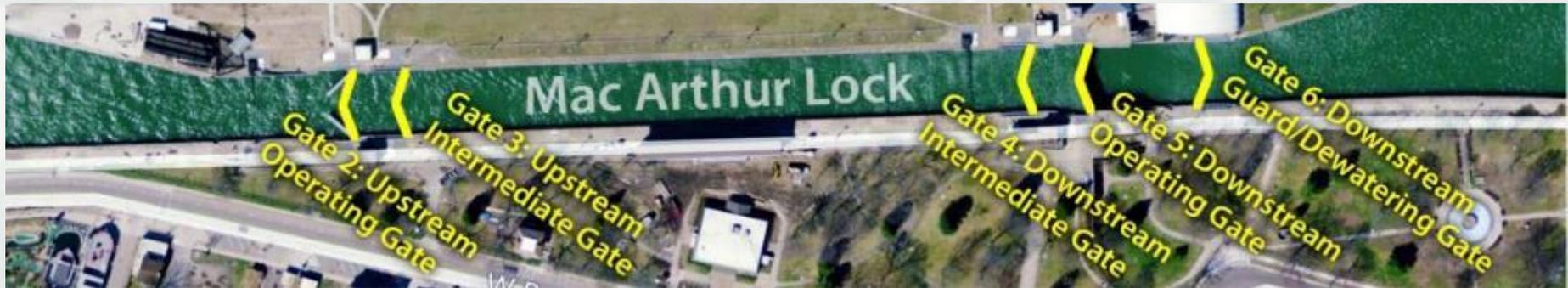


Template of stiffener plate

Soo welder installing stiffener plate



# Mac Lock Embedded Gate Anchorages Background / Issue



- Mac embedded anchorages evaluated as part of the ongoing MRR.
- Finite element analysis (FEA) of primary embedded anchorage performed by LRH
- Results show that fatigue life has been exceeded at three design details



# Soo Locks Construction Efforts - FY16



MacArthur Lock valve bulkheads

Poe miter gate lifting pendants

West Center Pier repairs

Poe Lock electric system rehab

Poe Lock Gates 1&3 embedded anchorage replacement

E&D for Poe Lock miter/quoin block replacement

Red – work added in FY16 Workplan



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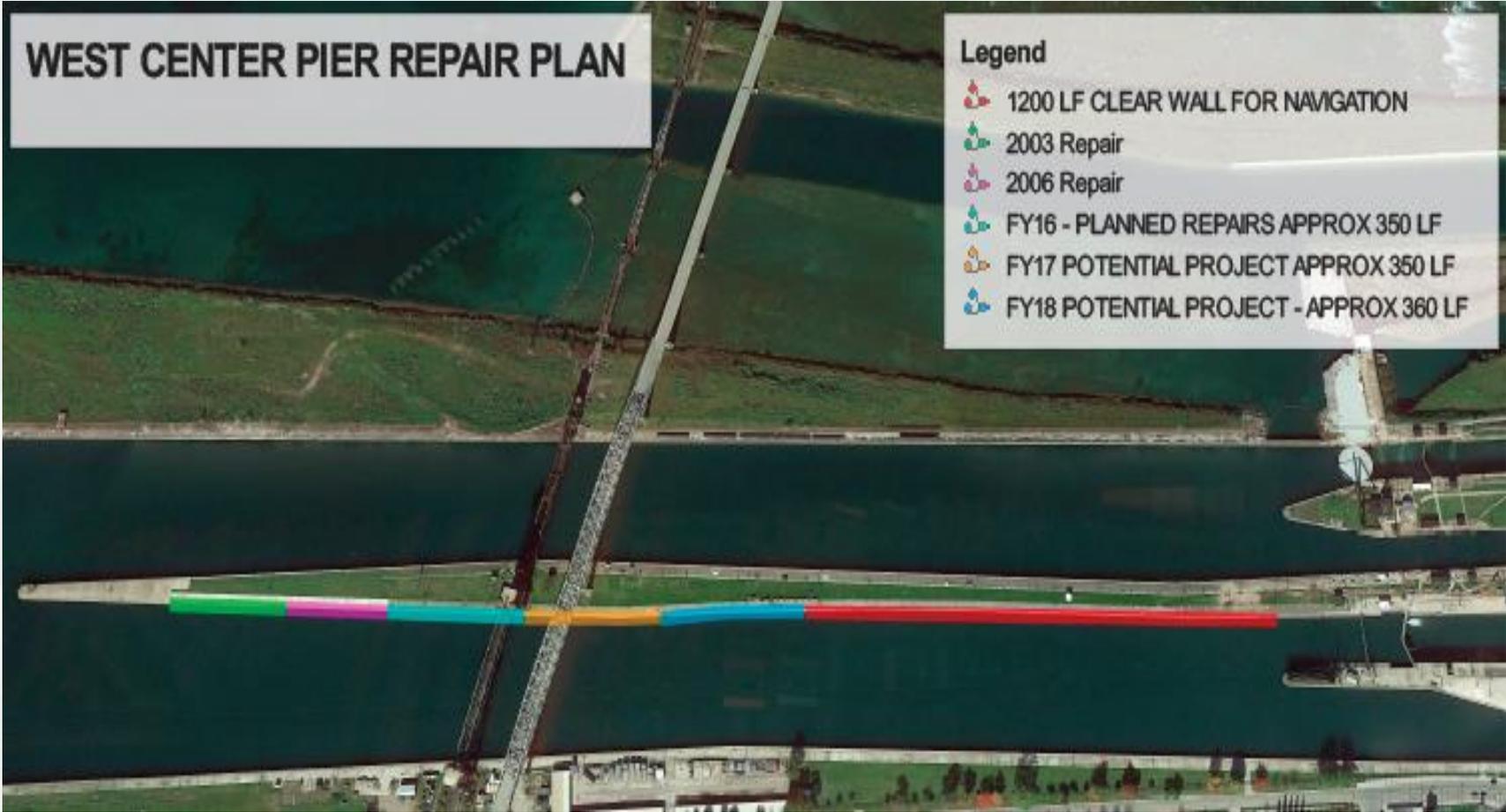
# FY16 PBUD Soo Locks Asset Renewal West Center Pier Repairs



Project  
Location



# Soo Locks – West Center Pier Repairs



# Economic Reevaluation Report Status

- Conducting Level 3 Economic Reevaluation Report
- Funding \$1.3M received Nov 2017
- Team includes all three GL Districts, Planning Center of Expertise for Inland Navigation (Huntington) and the Civil Works Cost Engineering MCX (Walla Walla)
- Expected completion Dec 2017



# Main ERR Work Efforts

- Updating commodity and transportation forecast
- Calculating costs of alternate transportation modes
- Updating consequences/benefits
- Updating component reliability and failure probabilities
- Updating and certifying with and without project costs





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# A Quick History of the Soo Locks

## 1798 First Lock on St. Marys River

To support the growing fur trade, the Northwest Fur Company built a canoe lock on the north shore of the river. This lock was approximately 40 feet-long and 9 feet-wide.



## 1855 "State Lock" opens

Built in only two years this tandem lock used two chambers each measuring 350' X 70' and each with a lift of 10 feet to bypass the rapids.

This lock was operated and maintained by the State of Michigan.



## 1896 Poe Lock opens

Built on the site of the former State Lock, the Poe lock was 800 feet long and 100 feet wide.



## 1919 Sabin Lock opens

An exact twin of the Davis Lock, it was begun even before the Davis was finished. It is also the only lock on the site named for a civilian, Louis Sabin, the only civilian to ever serve as the Detroit District Engineer.



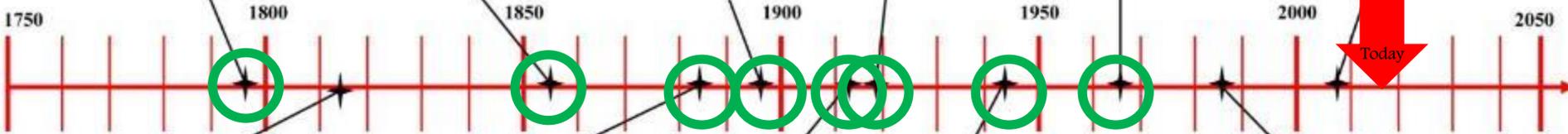
## 1968 Second Poe Lock opens

As the design for a new lock neared completion it became clear that an even larger lock would be needed as boats measuring 1,000 feet-long were being planned. Originally set to be 1,000 feet-long and 100 feet-wide it was redesigned to its current size of 1,200 feet-long and 110 feet-wide.



## 2009 Preparatory work for new lock completed

Funds were provided to build coffer dams at each end of the Sabin Lock and to dredge the approach channels to 28.5 feet.



## 1814 Lock Destroyed

During the War of 1812 American forces destroyed the British lock. Goods had to be unloaded and stored in warehouses at either end of the falls and transported on a railway running down Portage Avenue.



## 1883 Wietzel Lock opens

This lock was the first one to fill and empty the chamber through openings in the floor, reducing turbulence in the lock.

During its construction in 1881 the entire facility was transferred from the state to the U.S. Army Corps of Engineers.



## 1914 Davis Lock opens

At 1,350 feet-long the Davis lock held the honor of being the longest lock in the world when it opened.



## 1943 MacArthur Lock opens

Opening of a new, deeper lock became a matter of national security during World War II and the MacArthur Lock was built in 15 months. During the war thousands of soldiers were stationed at the Soo to protect the locks and the flow of iron ore.



## 1986 New Lock Authorized

As part of the Water Resources Development Act, Congress authorized the construction of a new lock to be built on the site of the Sabin and Davis Locks. This new lock will be the same size as the Poe Lock.



It has been nearly 50 years since a new lock was built at the Soo

# Key Great Lakes Contacts

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