

Great Lakes Navigation Update

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US Army Corps of Engineers
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Great Lakes Navigation Session

Introductions

Mike O'Bryan

Great Lakes Navigation Program

Marie Strum

- Great Lakes Inspection Tour
- Great Lakes Navigation Funding Status
- FY15, FY16, FY17 Navigation Programs
- Soo Locks Reliability

District Operations Chiefs

Key Project Updates

Josh Feldmann

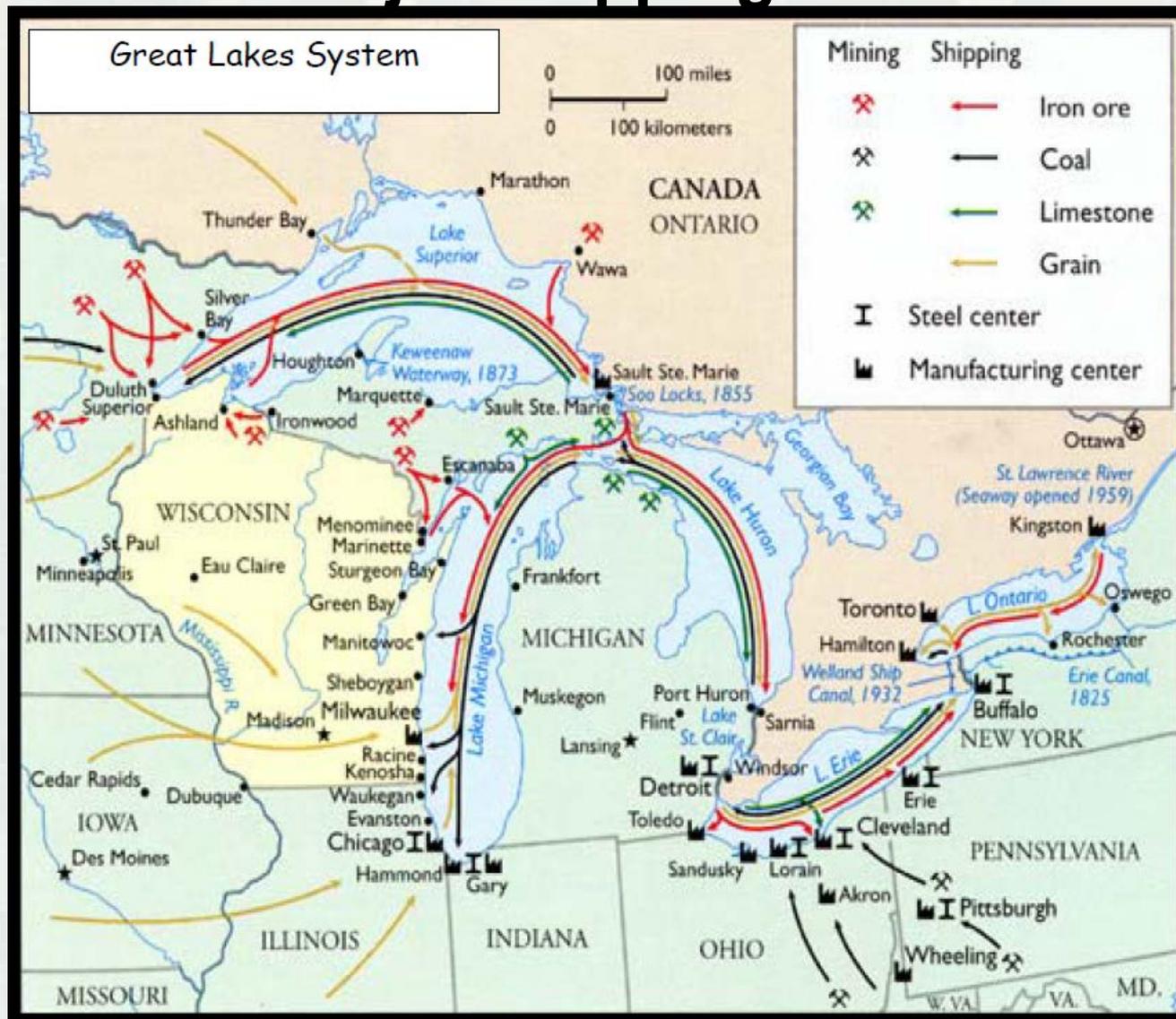
Shamel Abou-El-Seoud

Dave Wright



Great Lakes Navigation System

Major Shipping Routes

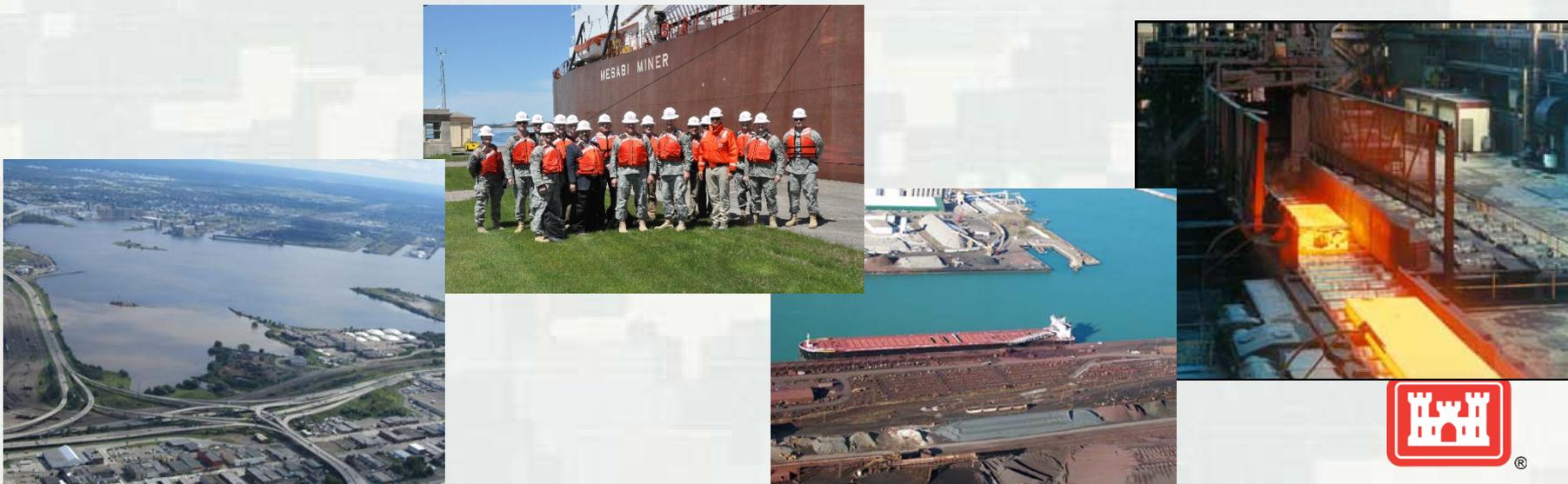


Great Lakes Inspection Tour June 2015

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

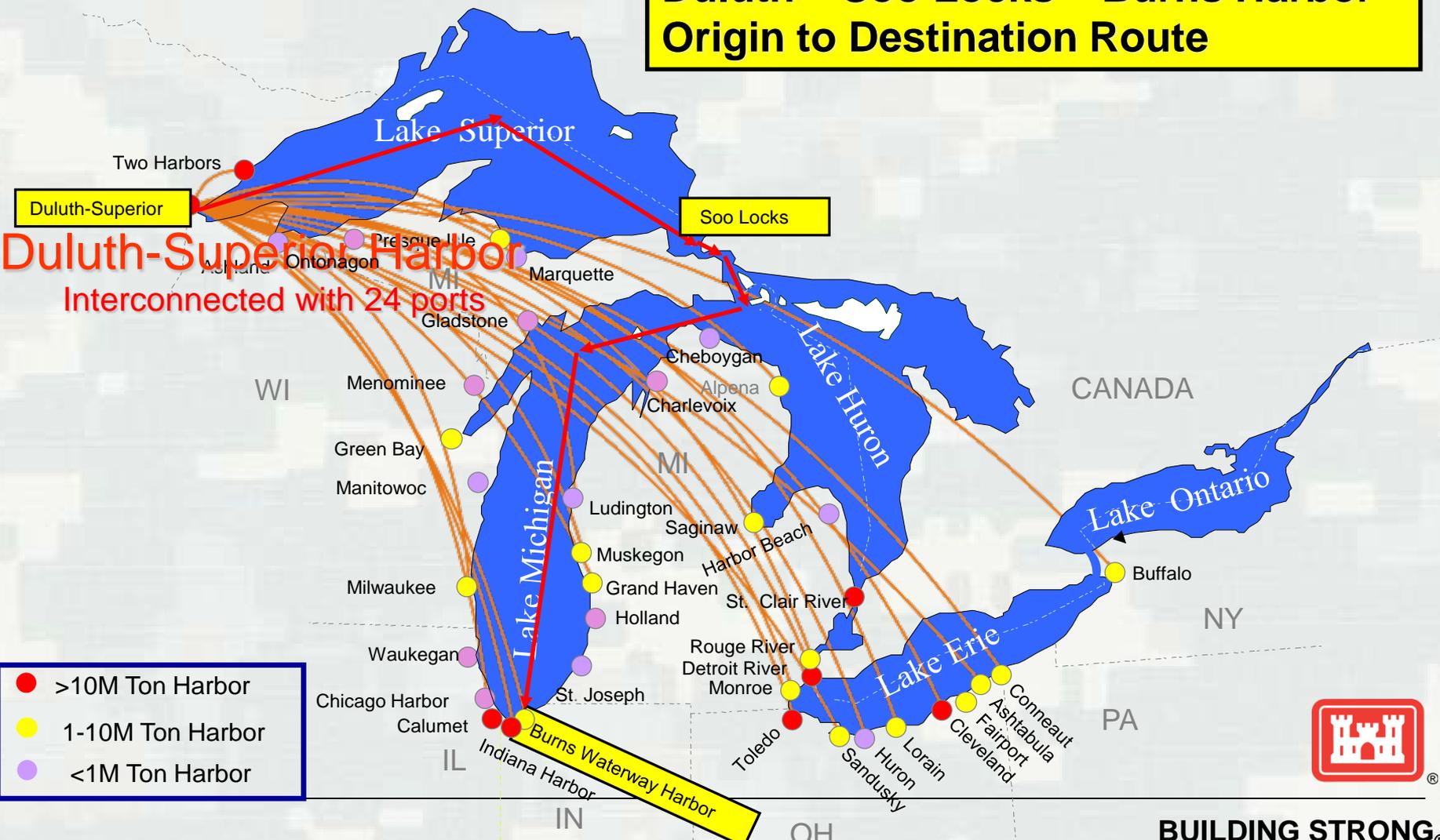
Objectives:

- 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



Focusing on System Interconnectivity

**Duluth – Soo Locks – Burns Harbor
Origin to Destination Route**



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Great Lakes Inspection Tour June 1-4, 2015

- **Duluth-Superior Harbor, June 1-2**
 - Canadian National Iron Ore Dock Tour
 - Roundtable discussion with 14 stakeholders from 7 organizations
 - Stakeholders emphasized success of the Duluth Harbor Technical Advisory Committee
 - Focused on the industrial supply chain, which begins in Duluth-Superior with coal and iron ore
- **Soo Locks, June 2-3**
 - Boarded Interlake Steamship's M/V Mesabi Miner and traveled through the Poe Lock to the Rock Cut
 - Discussed importance of maintaining the system – locks, structures, dredging
- **Burns Harbor, June 3-4**
 - Toured Ports of Indiana and ArcelorMittal Steel Plant
 - Met with 13 stakeholders from ports, steel industry, and shipping
 - Focused on lack of alternate modes to integrated steel mills and importance of this to U.S. economy



Great Lakes Inspection Tour - 2015



Great Lakes Inspection Tour - 2016

- Plans are underway for June/July 2016
 - Focus on lower Great Lakes
 - Potential focus areas:
 - Invasive species
 - Harmful algal blooms
 - Ecosystem restoration
 - Environmental infrastructure program
 - Regulatory program
 - Flood risk management



Corps Great Lakes Navigation Funding Status



FY 15 Great Lakes Navigation Program

\$115.7M Great Lakes Navigation Operations & Maintenance

Key Items

\$46.2M in Dredging (21 projects – 3.5M cubic yards)

\$10.3M in Dredged Material Management

\$8.65M in Soo Asset Renewal

\$1.0M Emergency Funding – Oct 31, 2014 Storm
Dredging – Muskegon, MI

Total FY15 Program \$116.7M



FY16 Corps Funding Status

- Congress passed the FY16 Consolidated Appropriations Act; enacted Dec 18, 2015.
- The FY16 Appropriations bill included FY16 President's Budget with some adjustments, plus additional O&M funds for ongoing work – to be allocated by USACE HQ

Additional Funding for Ongoing Work

- | | |
|-------------------------------------|---------|
| - Navigation Maintenance | \$23.5M |
| - Deep-draft harbor and channel | \$250M |
| - Small, remote, or subsistence nav | \$48M |



FY16 Projects Funded from Additional Funds for Ongoing Work (\$32.9M)

\$14M Dredging

Additional funds for:

- Duluth, MN
- Green Bay, WI
- Saginaw, MI
- Calumet, IL

New funding for:

- Alpena, MI
- Lorain, OH
- Fairport, OH
- Monroe, MI
- Manistique

\$10.9M Soo Asset Renewal

\$1.3M Chicago Lock Repairs

\$6.2M Structure Repairs (Ludington, Waukegan, Sandusky, Barcelona, Grand Haven)



FY 16 Great Lakes Navigation Program

\$142.8M Great Lakes Navigation Operations & Maintenance

Key Items

\$59.2M in Dredging (30 projects – 4.4M cubic yards)

\$8.6M in Dredged Material Management

\$14.6M in Soo Asset Renewal

\$2.3M Chicago Lock Repairs

\$7.9M Structure Repair by Contract



FY16 PBUD + Work Plan Dredging (\$59.2M)

Duluth-Superior +
Green Bay +

Erie

Indiana Harbor

Holland

Grand Haven

Saginaw River +

Ludington

Toledo

Presque Isle

Rouge River

Manistee

Conneaut

Sandusky

Cleveland

Alpena

Fairport

Huron

Waukegan

Burns Harbor

Monroe

Rochester

St. Joseph

Muskegon

Calumet +

Ontonagon

Lorain

Manistique

Manitowoc

Oswego



FY16 Dredging Funding and Dredging Requirements



FY 17 Great Lakes Navigation President's Budget

\$102.8M Great Lakes Navigation Operations & Maintenance

Key Items

\$38.4M in Dredging (20 projects – 3.2M cubic yards)

\$8.2M in Dredged Material Management

\$5.9M in Soo Asset Renewal

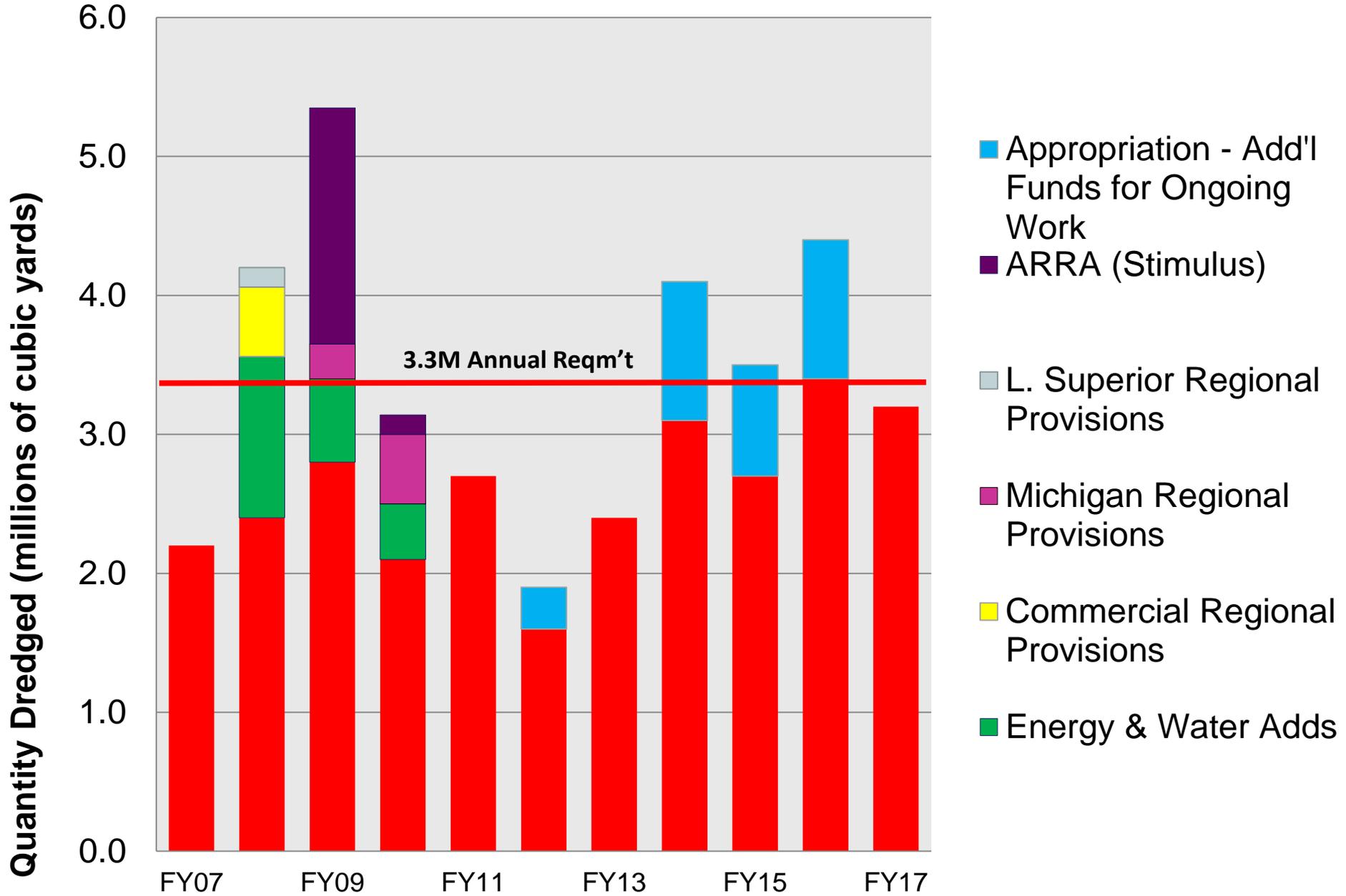


FY17 PBUD Dredging Projects

- Duluth-Superior
- Detroit River
- Green Bay
- Ashtabula
- St. Joseph
- Holland
- Grand Haven
- Burns Waterway
- Buffalo
- Keweenaw Waterway
- Indiana Harbor
- Sandusky
- Channels in Lake St. Clair
- Saginaw River
- Toledo
- Cleveland
- Calumet
- Waukegan
- Sturgeon Bay
- Fairport



Dredging Funding Trends 2007 – 2017



Soo Locks Reliability



The Soo Locks

Lynch Pin of the Great Lakes Navigation System

70% of the commercial commodities transiting the Soo Locks are limited by size to the Poe Lock

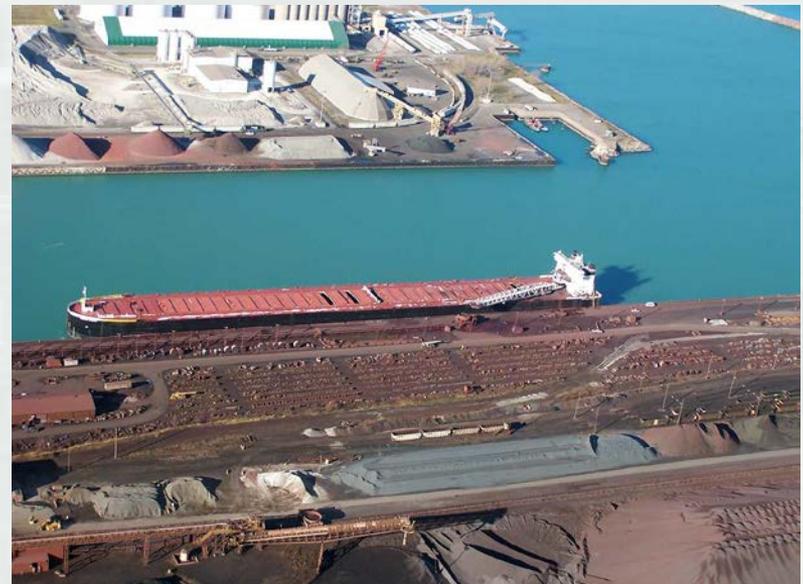
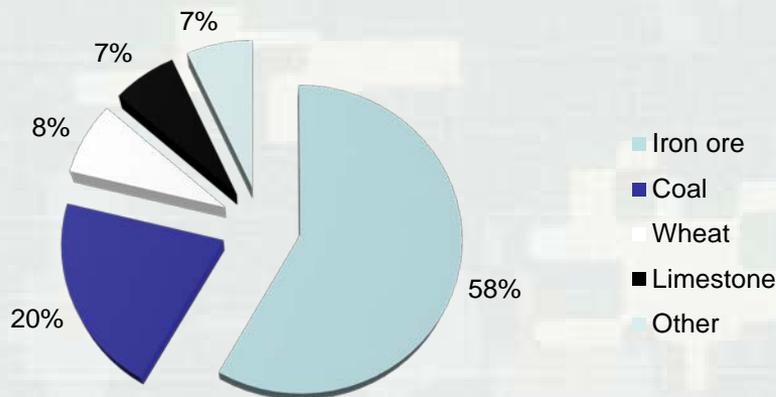
- Aging and deteriorating infrastructure; unscheduled outages are increasing
- There is currently no redundancy for the Poe Lock
- The economic impact of a 30-day unscheduled closure of the Soo Locks = \$160M



Soo Locks – Iron Ore Impact Assessment

- Iron ore is by far the number one commodity transiting the Soo Locks
- 97% of iron ore mined in U.S. comes from Mesabi Range in MN or Marquette Range in MI.
- Integrated steel mills are located on the lower lakes Great Lakes; do not have the infrastructure to accept iron ore by any means but ship.
- Most of this iron ore passes through the Soo Locks.

Soo Locks 2013 Tonnage





US Army Corps of Engineers

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.



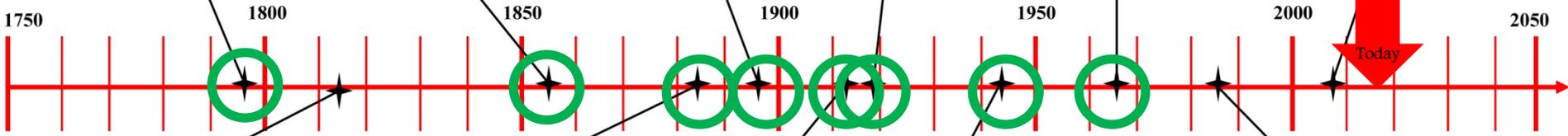
1968
Second Poe Lock opens

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.

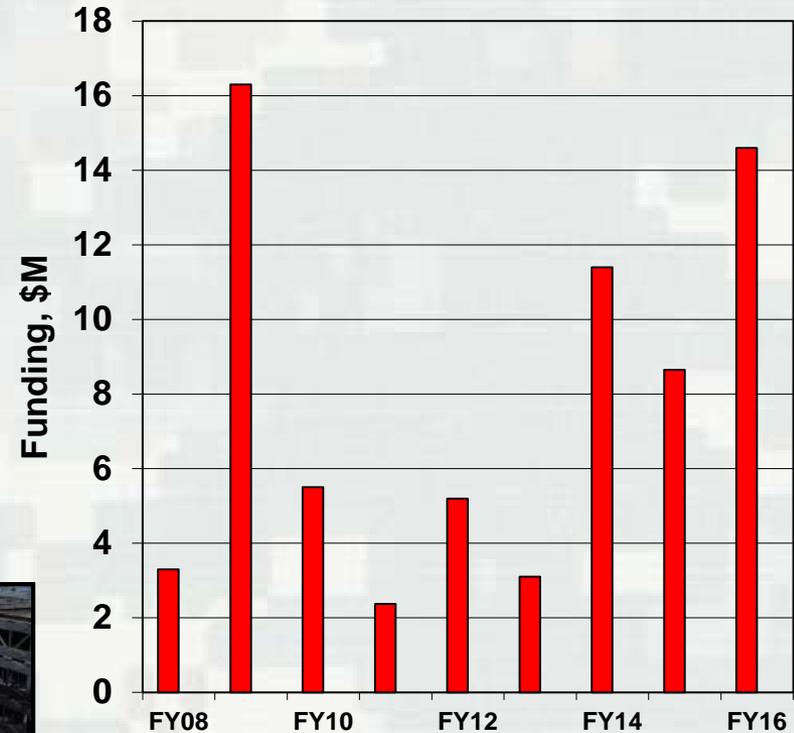


It has been nearly 50 years since a new lock was built at the Soo

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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Major Rehabilitation Report Efforts

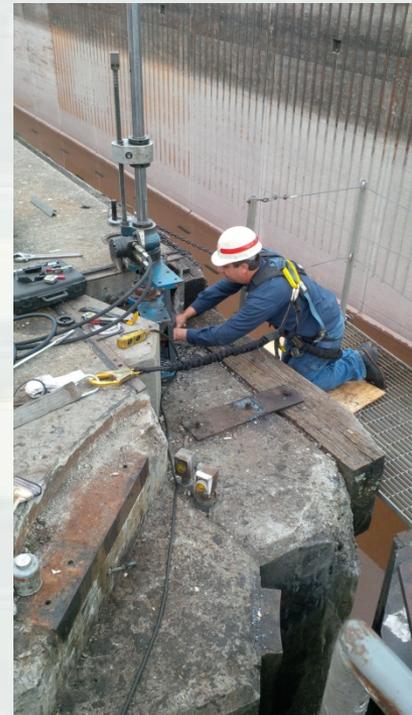
- First step was an SQRA (Semi Quantitative Risk Assessment), conducted in summer 2014 with a report completed in 2015 - Used for portfolio ranking and determination of whether further and more detailed analysis is necessary
- Purpose is to identify Probable Failure Modes that warrant further analysis
- Four primary concerns were identified:
 - West Center Pier
 - Embedded Anchorages
 - Mis-mitering of gates
 - Gas line leak or break in deep service tunnel



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MacArthur Lock Emergency Dewatering

- MacArthur Lock began mitering improperly on July 29
- Taken out of service; adjustments were unsuccessful; dewatering required
- Investigation found that anchorages needed to be replaced
- Gates needed to be re-stressed; resulted in a 20-day unscheduled closure
- Vessel delays ~140 ships for 260 hours total at the lock plus slow steaming



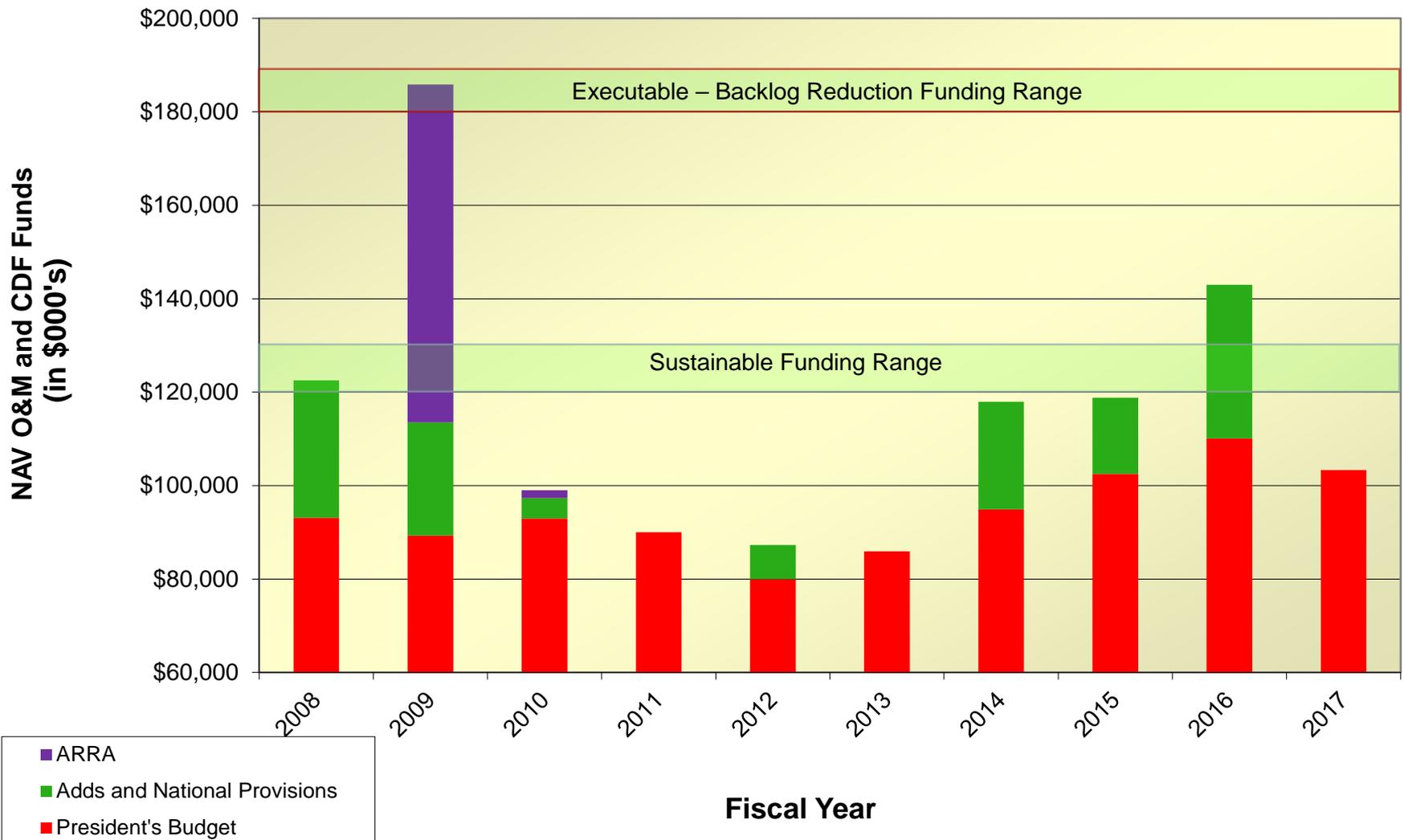
New Poe-Sized Lock



- WRDA 2007: Construction at 100% federal expense
- Inconsistent with Administration policy due to BCR of 0.73
- Currently conducting an economic reevaluation to update both the benefits and the costs to update the BCR.
- Economic Reevaluation began in Nov 2015; expected to take 24 months to complete.



GL Navigation Funding History



Communication

- Stakeholders Meetings
 - ▶ Shallow Draft/Recreational Harbor Stakeholder Meeting - March 2, 2016
Detroit, MI and all District and Area Offices
 - ▶ Annual Stakeholder Meeting
April 14, 2016 Chicago, IL
- Web Site:
www.lre.usace.army.mil/greatlakes/navigation
 - ▶ Fact Sheets, Presentations
 - ▶ Requests for information, to be added to mailing list, etc.: glnavigation@usace.army.mil



Key Great Lakes Contacts

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www.lre.usace.army.mil/greatlakes/navigation



Questions?

