

Great Lakes Navigation U.S. Army Corps of Engineers – Detroit District

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Great Lakes Navigation System

Great Lakes

Inter-dependent system that spans all five Great Lakes and connecting channels from Duluth, MN to Ogdensburg, NY

2,400 miles of deepwater navigation

140 Harbors

Nation-wide

12,000 miles of shallow-draft (9'-14') inland and intracoastal waterways

13,000 miles of deep-draft (14' and greater) coastal channels

400 ports, harbors, and turning basins



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Great Lakes Navigation System

- On average, 140 million tons of commodities are transported between and within U.S. ports in the Great Lakes system annually
- 95% of traffic within system stays internal to the Great Lakes
- The Great Lakes system holds 23 of the nation's top 100 harbors/ports by tonnage



Transportation Mode Comparison

70,000
Net Tons

1

Ship



47

Barges



700

Railroad Cars



2,800

25-Ton Trucks



Value of the System to the U.S. Economy

Annual transport of **140M** tons on the Great Lakes

\$35B generated in economic activity

238,000 U.S. and Canadian direct jobs generated

138,000 **steel** industry job dependent on the GLNS

44,000 jobs directly related to **maritime transport** (ports, shippers, etc.)

Additional 447,600 in **related user** jobs (e.g. steel or stone company)

Economic Impacts of Maritime Shipping in the Great Lakes – St .Lawrence Region, Martin Associates, 2018

Industry

Iron ore/steel products

Petroleum products & crude oil

Coal

Other Ores

Aggregates

Grain

Chemicals

Other commodities



Drives

National Primary Steel Production

Regional Electrical Power

Construction

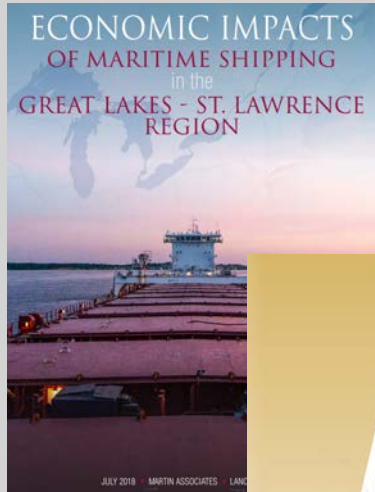
Regional/National Manufacturing

Farming

Coal and Ore Mining



Great Lakes Navigation System Economic Impacts



THE PERILS OF EFFICIENCY: AN ANALYSIS OF AN UNEXPECTED CLOSURE OF THE POE LOCK AND ITS IMPACT
October 2015



NATIONAL PROTECTION AND PROGRAMS DIRECTORATE
OFFICE OF CYBER AND INFRASTRUCTURE ANALYSIS

"This report bears out what we've long known - that the Great Lakes-St. Lawrence Seaway is crucial to the U.S. economy. Not only is marine transportation the single most fuel-efficient and cost-effective way to haul goods from one place to another, but it also supports hundreds of thousands of essential jobs and generates billions of dollars in economic activity."
- U.S. Transportation Secretary, Ray LaHood, on 2011 report



Major System Requirements



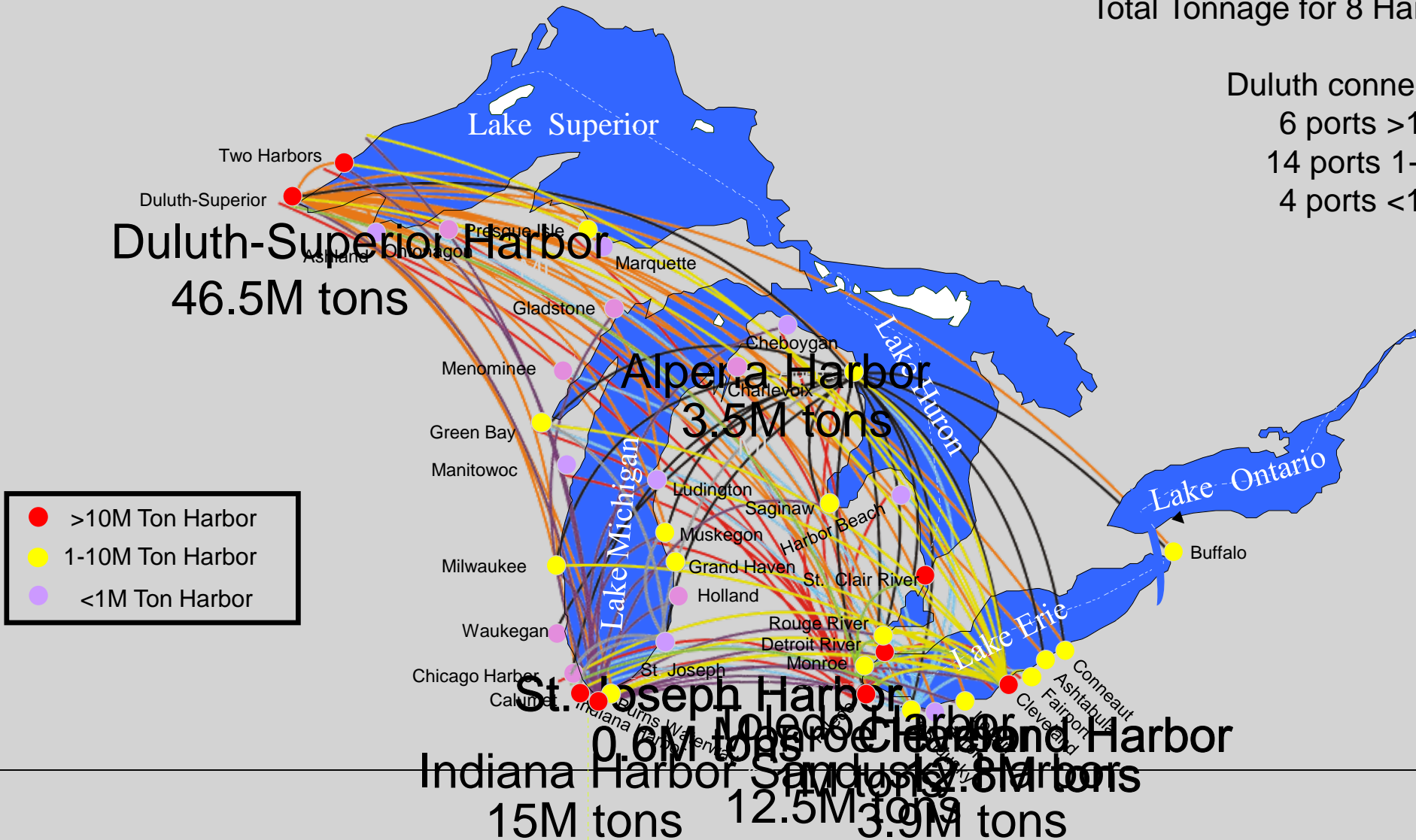
Dredging
Dredged Material Management
Navigation Structures
Lock Reliability



System Connectivity

Total Tonnage for 8 Harbors = 96M tons

Duluth connected to:
 6 ports >10M
 14 ports 1-10M
 4 ports <10M



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Automatic Identification System Analysis Package (AISAP)

- Visualize navigation network through vessel records
 - Allows for unprecedented access to quantitative and statistical data to measure project performance
- Engineer Research and Development Center (ERDC)
 - Uses USCG NAIS (Nationwide Automatic Identification System)
 - Provides vessel ID, location, speed, etc.
 - Data transmitted every 6 minutes
 - Channel Portfolio Tool (CPT) – tracks tonnage by commodity



AISAP

- Data for a deepening study
- Vessel traffic at a certain spot/time
- Investigating a grounding
- Vessel speed and shoreline erosion
- Individual vessel query
- Heat/density maps
- Historical tonnage data for economical analysis
- Trip counts
- Port system resiliency
- Functional channel area determination



Great Lakes Vessel Transit

Week of Aug 9-16, 2017

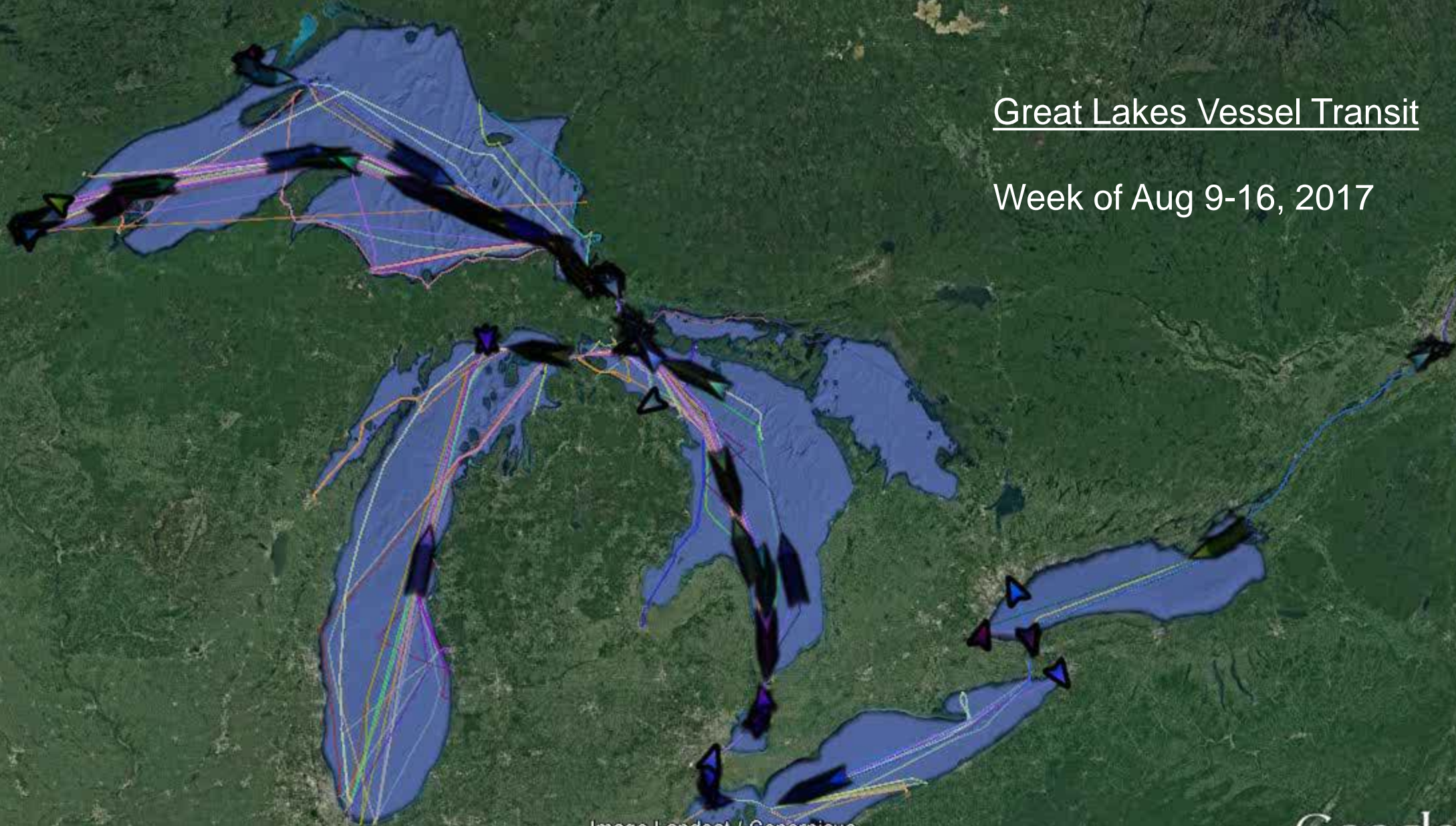


Image Landsat / Copernicus
Image NOAA
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Google earth

Vessel Grounding Timelapse

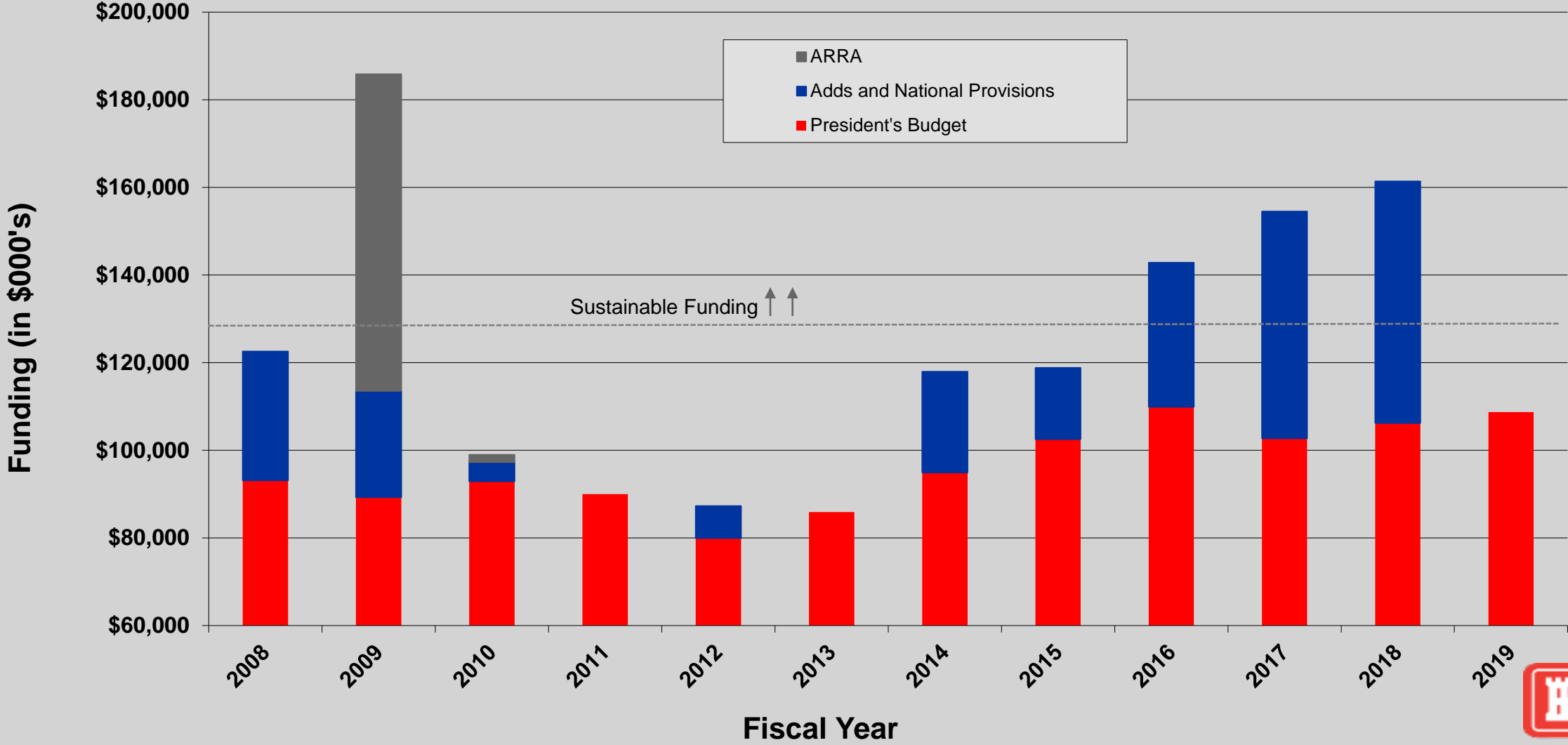
Week of Aug 9-16, 2017
Whitefish Bay and Soo Locks area



Image NOAA

Google earth

Great Lakes Navigation Funding



FY 18 Great Lakes Navigation President's Budget + **Work Plan** Funding

Great Lakes Navigation Operations & Maintenance
\$106.23M + 55.2M = \$161.4M

Key Items

\$37.86M + **\$17.8M** in Dredging (40 projects; 4.5M cy)

\$11.3M in Dredged Material Management

\$8.9M + **\$6.92M** in Soo Locks Maintenance

\$0 + **\$21.8M** in Contract Navigation Structure Repair



Harbor Maintenance Trust Fund (HMTF)

- Prior to 1986, GL dredging was conducted at full federal expense
 - Water Resource Development Act (WRDA) 1986 required users of federal navigation to pay tax on value of cargo into a harbor maintenance trust fund for maintenance of channels and harbors
 - In 1990, Supreme Court struck down tax on exports; now tax is paid only on domestic cargo and imports
- HMTF generates about \$1.7B per year
 - Paid for by cargo owners, not shipping industry
 - U.S. ports only
- Collected funds pay for all coastal O&M and construction of Confined Disposal Facilities (CDFs)
 - Dredging
 - Breakwater maintenance
 - Lock operations and maintenance
 - Operations, maintenance, and construction of CDFs



Harbor Maintenance Funding Roadmap

WRRDA 2014 HARBOR MAINTENANCE TRUST FUND SPENDING TARGETS

FY2015:	67% of 1.79B = \$1.17B (\$1.11B appropriated) ✓
FY2016:	69% of \$1.81B = \$1.25B (\$1.263B appropriated) ✓
FY2017:	71% of \$1.7B = \$1.2B (\$1.3B appropriated) ✓
FY2018:	74% of the HMT received in 2017 (\$1.4B appropriated) ✓
FY2019:	77% of the HMT in FY2018
FY2020:	80% of the HMT in FY2019
FY2021:	83% of the HMT in FY2020
FY2022:	87% of the HMT in FY2021
FY2023:	91% of the HMT in FY2022
FY2024:	95% of the HMT in FY2023
FY2025:	100% of the HMT in FY2024



Marine Freight Transportation

The GL system's savings rate → **\$3.6 Billion/year**
for a ~\$100 Million/year total investment!

More competitive American steel
Essential to sustaining U.S. auto industry
Lower cost energy
Lower cost concrete (construction)

More competitive grain for export
Less fuel consumption and greenhouse gas emissions
Less congested highways/rails



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