

GREAT LAKES NAVIGATION UPDATE

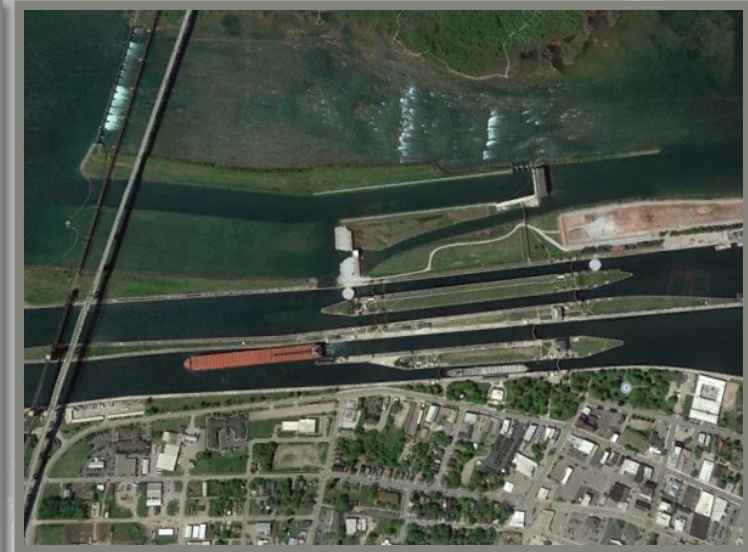
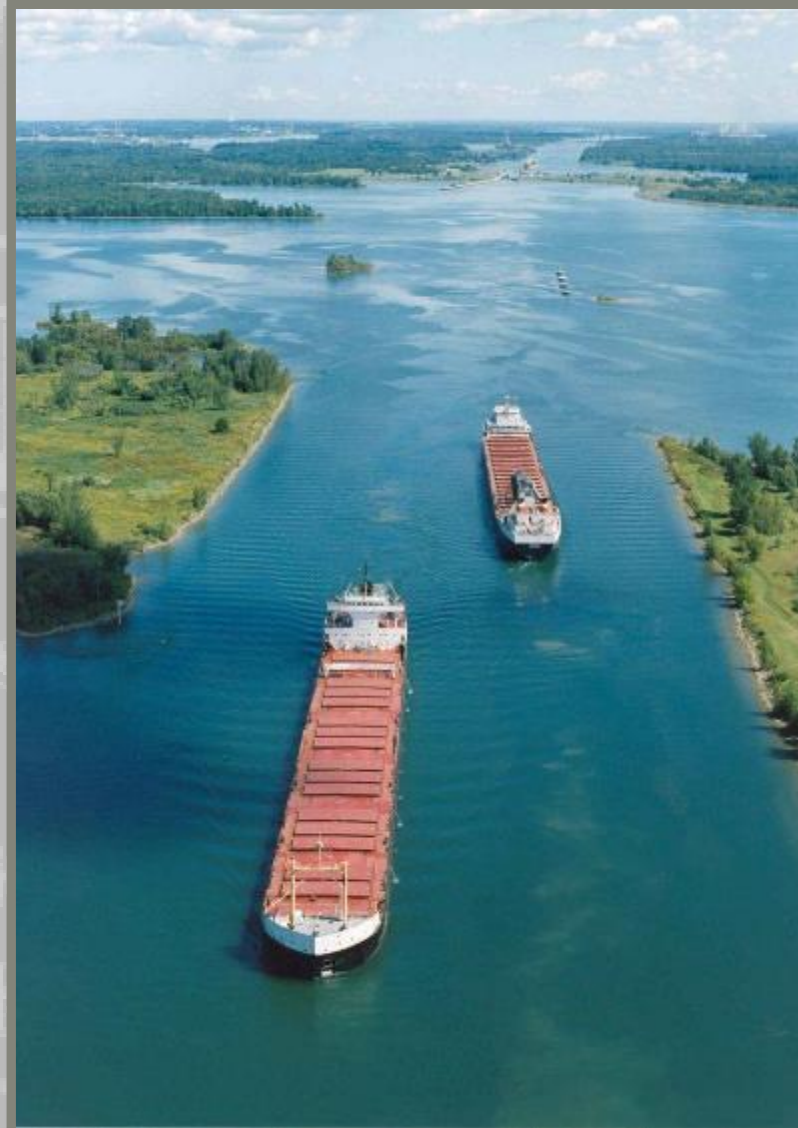
Marie T. Strum, P.E.
U.S. Army Corps of Engineers
Great Lakes Navigation Team
Leader

February 26, 2021
GL Dredging Team

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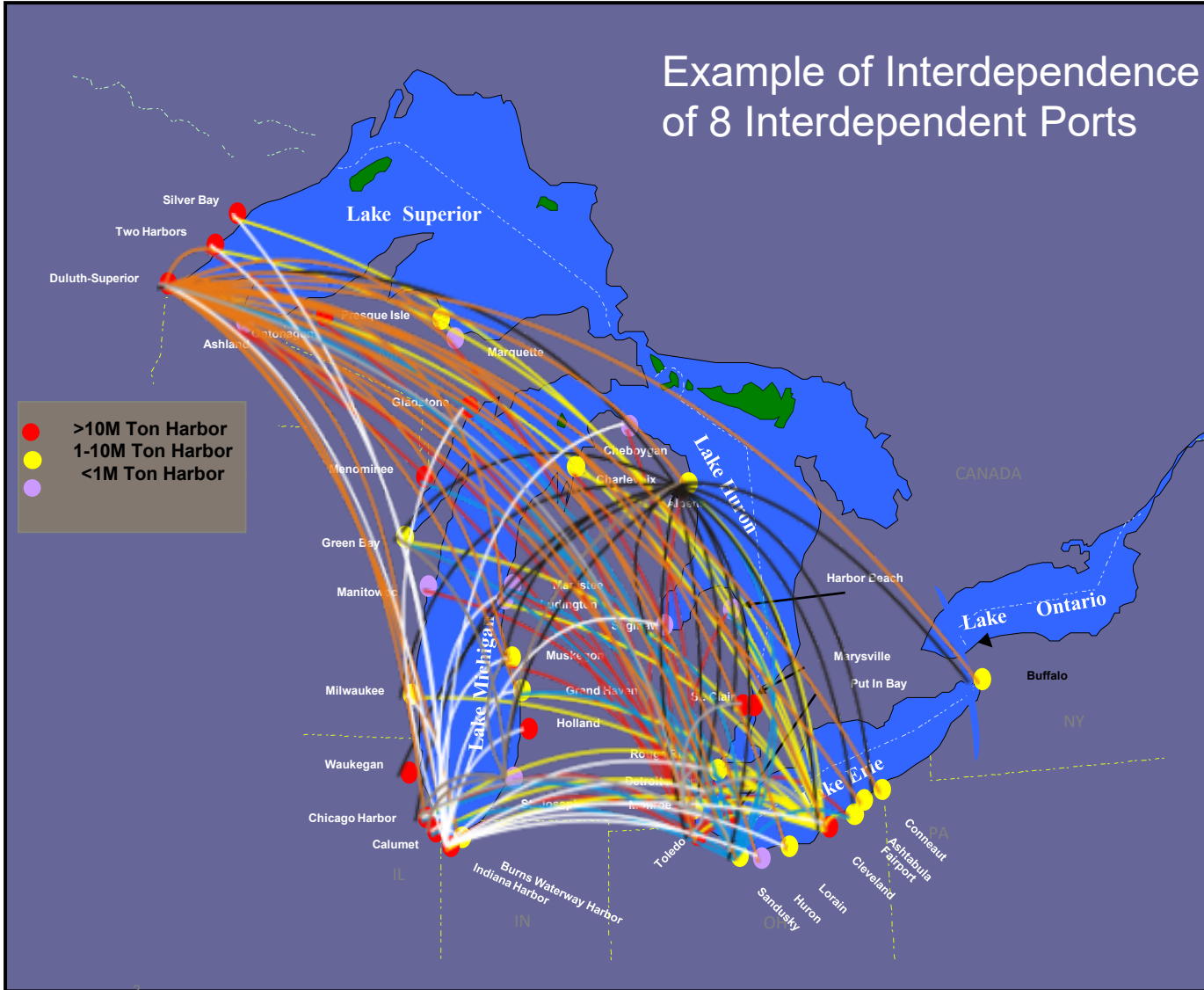




GREAT LAKES NAVIGATION SYSTEM



Example of Interdependence of 8 Interdependent Ports



- Non-linear complex system of interdependent
 - Commercial are ports dependent on each other
 - 95% of traffic is internal to the Great Lakes
 - System saves **\$3.9* Billion per year** over next least costly mode of transportation
- * Updating to incorporate latest information on overland rail capacity



WRDA 2020

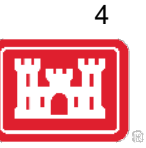
Significant changes in Water Resources Development Act (WRDA) 2020 related to Harbor Maintenance Trust Fund (HMTF)

- HMTF “off budget” – CARES Act March 2020
- No less than 13% of annual expenditures from HMTF to GL
- Not less than 15% for emerging harbors (<1M tons)
- For the first time, direction to spend the HMTF “surplus”
- Directs appropriation from HMTF = HMTF deposits two year prior plus:
 - \$500M for fiscal year 2021
 - \$600M for fiscal year 2022
 - \$700M for fiscal year 2023
 -
 -
 - Continuing up to 2030 to spend down the \$10B surplus



FY21 GREAT LAKES NAVIGATION PRESIDENT'S BUDGET

PRESIDENT'S BUDGET + WORKPLAN



Great Lakes Navigation Operations & Maintenance
\$107.6M + **\$103.2M** = **\$210.9M**

Key O&M Items

\$48.6M in Dredging (22 projects; 3.7M cy) (\$37.6M + **\$11.1M**)

\$10.4M in Dredged Material Management (\$5.9M + **\$4.5M**)

\$32.0M in Soo Locks Maintenance

\$20.2M in Chicago Lock Maintenance

\$4.5M in Black Rock Lock Maintenance

\$34.8M in Navigation Structure Maintenance/Repair

Construction General

\$123.2M + **\$46.5M** = **\$169.8M** New Soo Lock Construction

\$16M Calumet CDF Construction



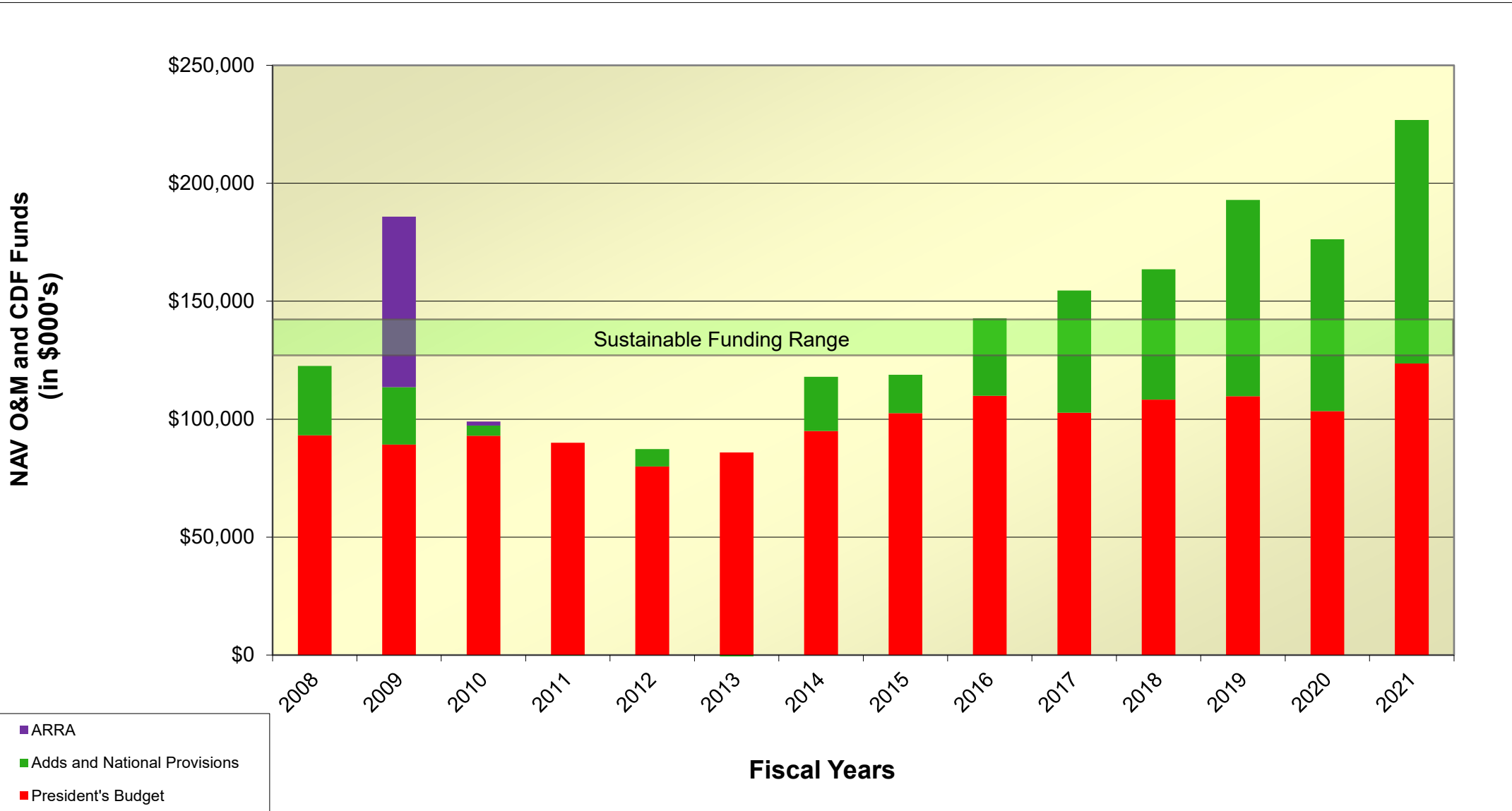
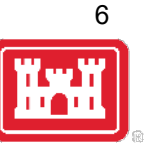
FY22 CORPS FUNDING STATUS

Awaiting FY22 President's Budget; expected by late April – early May 2021





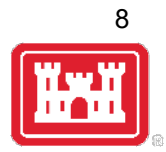
GL NAVIGATION FUNDING HISTORY





DREDGING





FY21 PRESIDENT'S BUDGET + **WORK PLAN** DREDGING (\$48.6M)

- Ashtabula Harbor
- Burns Harbor
- Calumet Harbor
- Cleveland Harbor +
- Conneaut Harbor
- Detroit River
- Duluth-Superior Harbor
- Erie Harbor
- Green Bay Harbor
- Huron Harbor
- Indiana Harbor
- Rochester Harbor
- Rouge River
- Saginaw River
- Sandusky Harbor
- Toledo Harbor

- Channels in Lake St. Clair
- Grand Haven Harbor
- Holland Harbor
- Fairport Harbor
- Lorain Harbor
- Waukegan Harbor

Red: Received funding in workplan





FY21 PBUD + **WORK PLAN** STRUCTURE DESIGN & REPAIR (\$34.8M)

- Buffalo Harbor - repair
- Cleveland Harbor - repair
- Kenosha Harbor – repair
- Port Washington Harbor – repair
- Sheboygan Harbor – repair
- Waukegan Harbor – repair

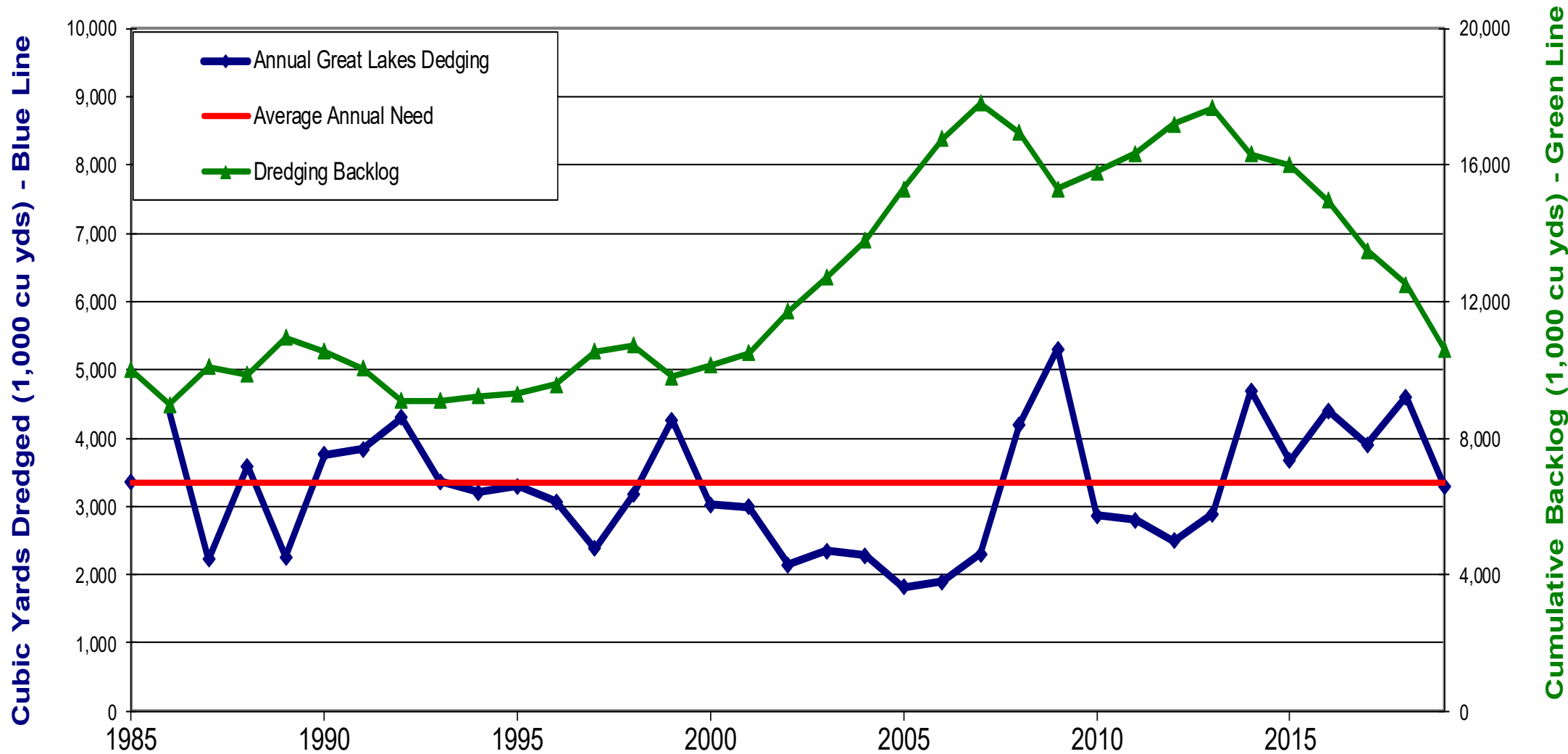
- Milwaukee Harbor – design
- Sturgeon Bay Harbor – design

Red: Received funding
in Work Plan



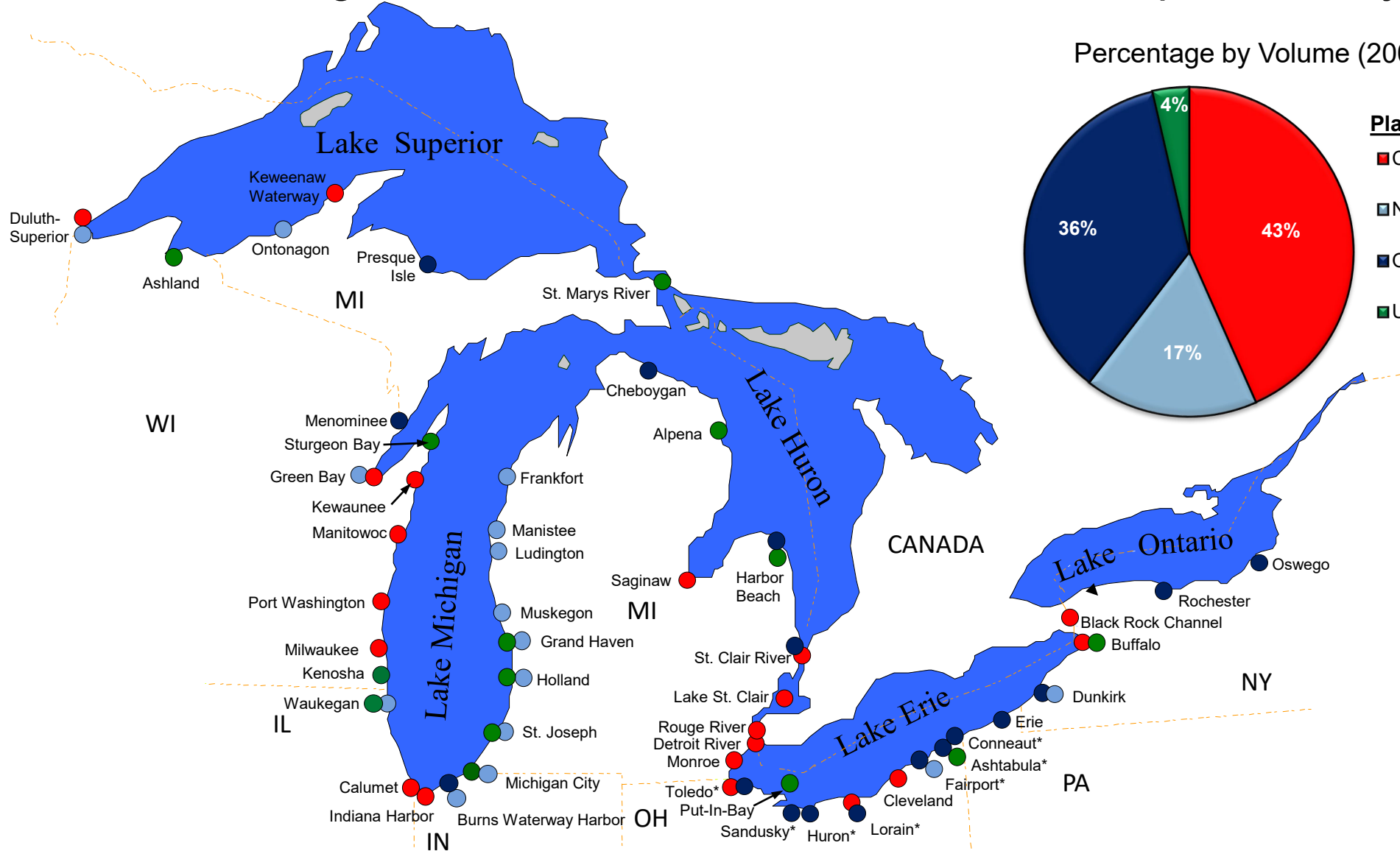


Great Lakes Dredging Backlog 1985-2019





Current Dredged Material Placement Methods – Deep Draft Projects



*Placement method likely to change due to restrictions on open water placement in Ohio beginning July 2020.



SOO LOCK RELIABILITY





MAINTAINING EXISTING SOO LOCKS FACILITY (O&M FUNDED)



O&M – Asset Renewal

- Higher cost component repairs and replacements (Asset Renewal) - \$162M thru FY21



FY21 Funded Work

- \$6.5M Construction of new power raceway
- \$14.25M New tug for strike removal
- \$6.5M Critical repairs to Poe Gate 1
- \$2.5M Repair and replace Poe miter gate anchorages
- \$1.25M Strike removal crane barge outfitting

Winter Maintenance (Jan-Mar 2021)

- Poe Lock Gate 1 Repairs – crack/diagonal repairs
- Poe Lock Gate 1 – install new flushing valves
- Poe Lock Gates 1 & 3 Sill Repairs – concrete spalling
- Poe Lock Gate 1 Emptying and Filling Valve Repair
- Fender Timber replacement
- Blasting/coating 2 tugs and a barge

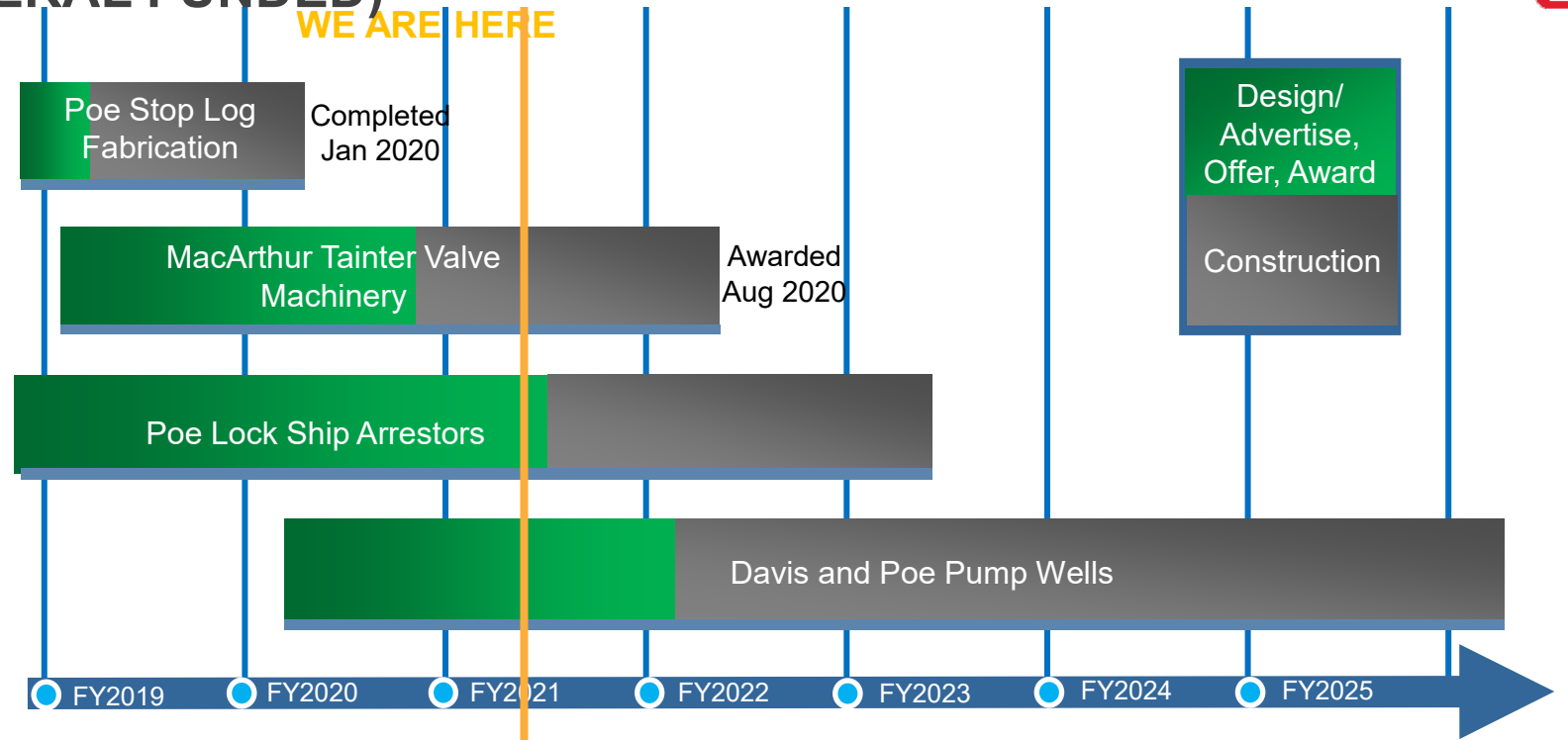
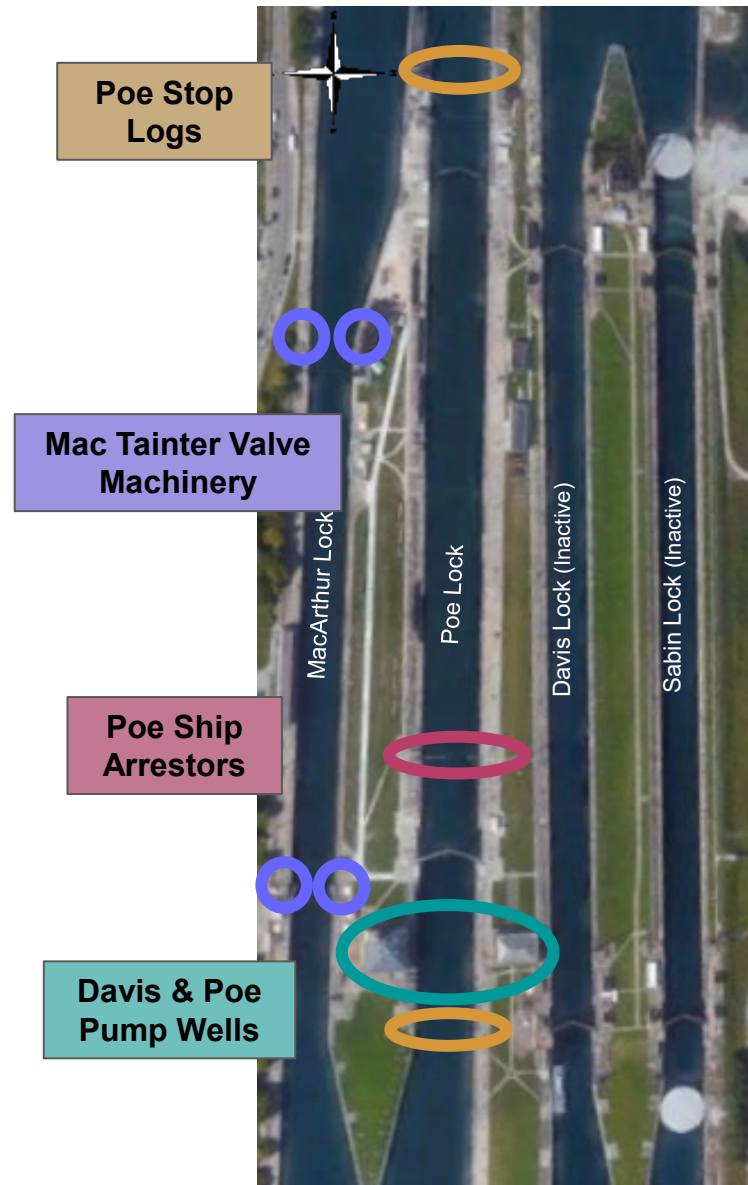
FY22 Priorities

- Poe and Mac Locks structural handrail design and installation
- Poe Lock emptying and filling valve repairs
- Crane barge Harvey replacement



MAINTAINING EXISTING SOO LOCKS FACILITY

(CONSTRUCTION GENERAL FUNDED)

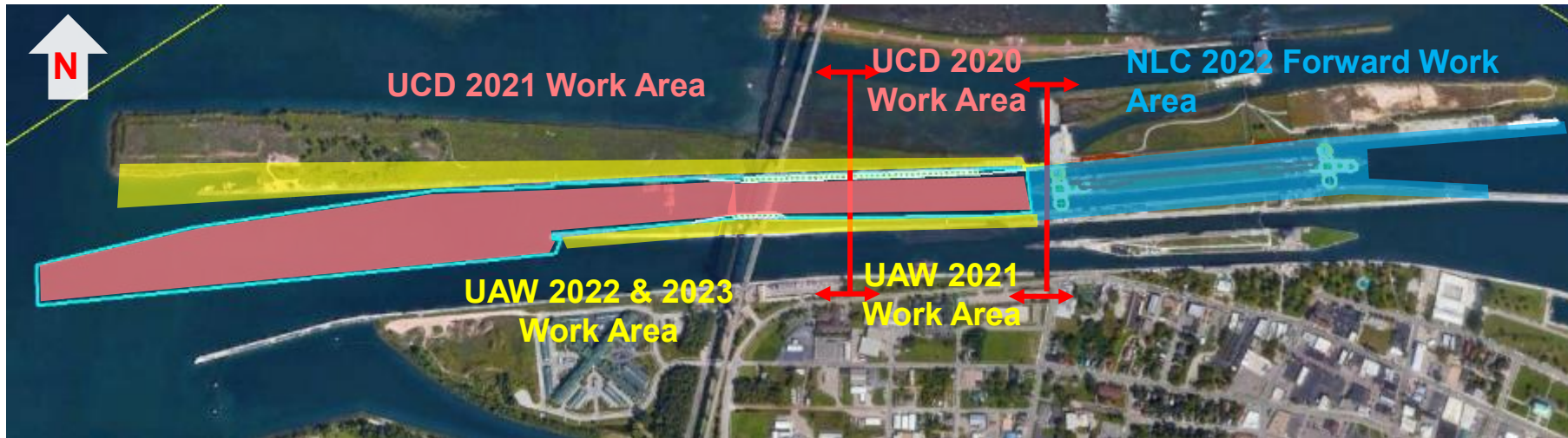
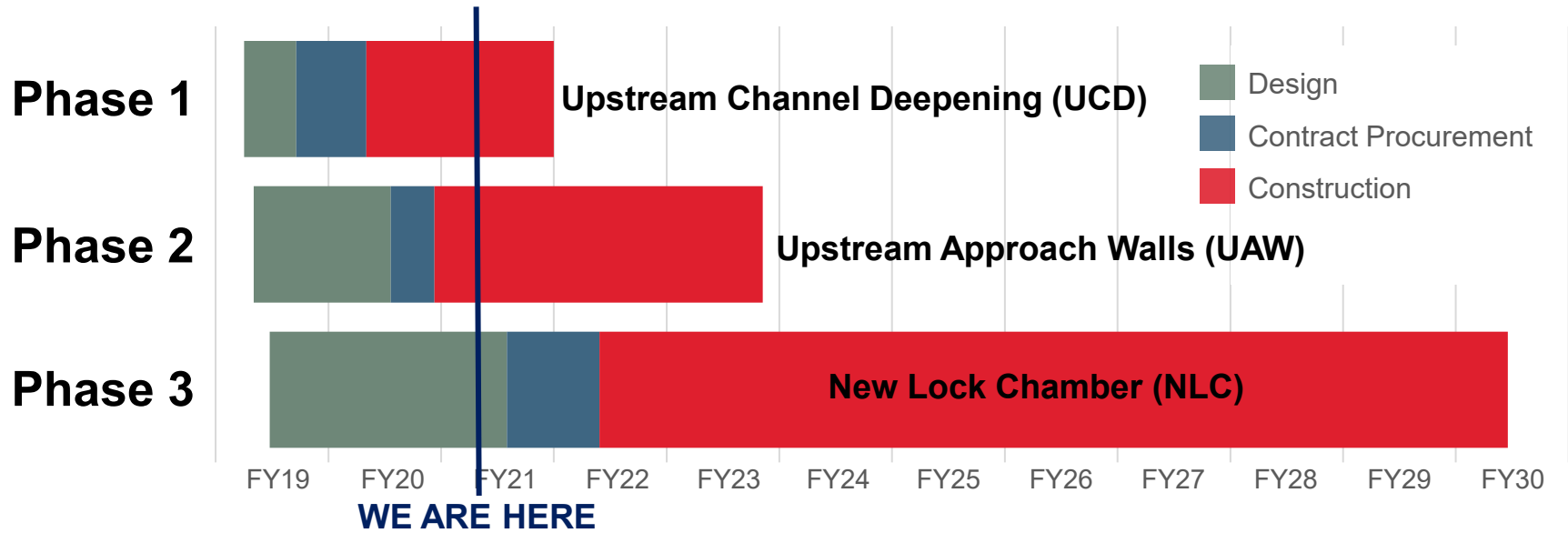


Davis and Poe Pumpwells (\$37.3M FY21 Capability)

- The pumpwell system will serve all locks (including new lock); system >100 yrs old
- Delayed funding for repair increases O&M every year with additional interim risk reduction measures required and increasing probability of failure; greatly increases operational risk to navigation. Locks must be dewatered in 10 hours due to extreme cold temps in January.
- Original 1914 manifold is most critical component; has lost half its wall thickness
- New Pump Well will be contracted with the New Lock to reduce risk associated with 2 contractors working in close proximity at the same time.

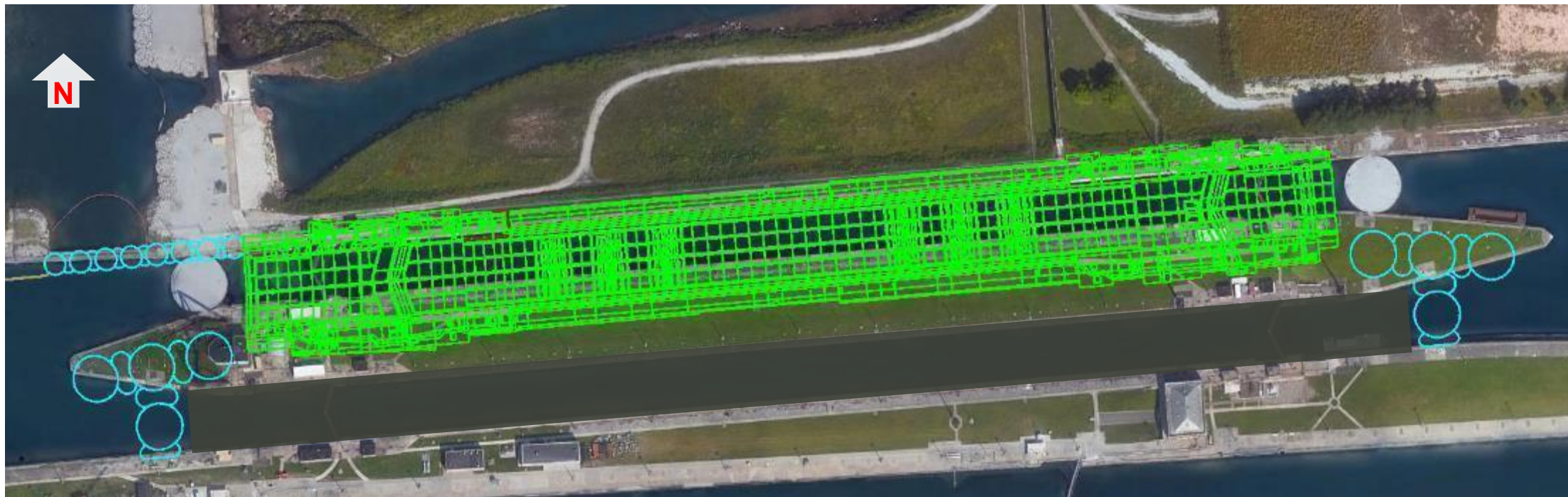


NEW LOCK STATUS





PHASE 3: NEW LOCK CHAMBER



Scope: Construct new 1,200' long by 110' wide by 32' deep chamber and rehabilitate downstream approach walls

Project Status:

- 100% Design to be complete in July 2021
- Contract award expected in late winter 2022

Estimated Performance Period: 5-8 Years

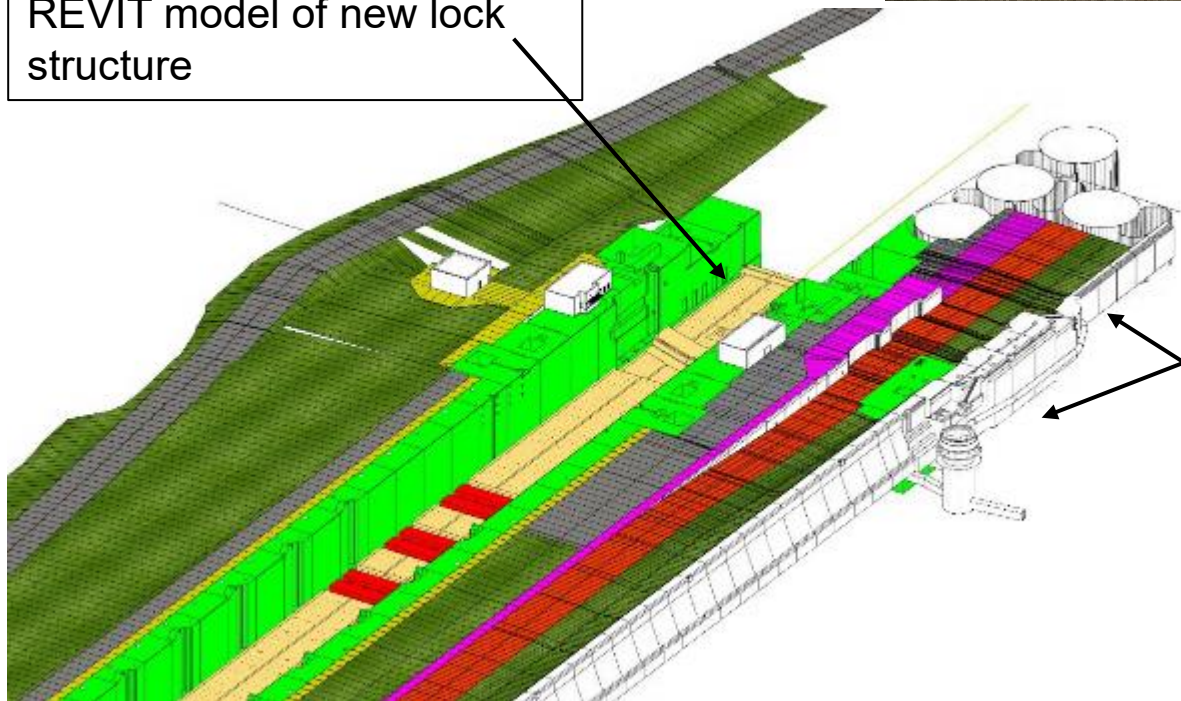


NEW LOCK CHAMBER- TOOLS USED FOR DESIGN



REVIT model of new lock structure

Virtual reality used for 70% design review by Soo Locks Operations and Maintenance Personnel



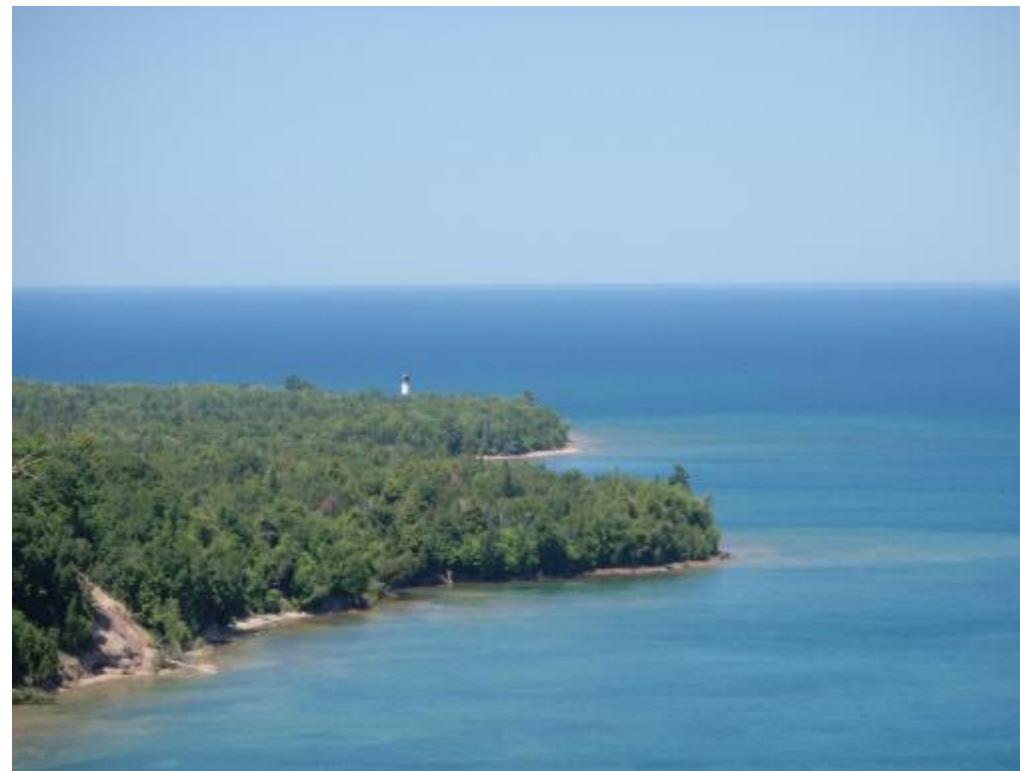
REVIT model of existing lock structure

Changes made based on Virtual Reality Review

- Operating shelter sightlines
- Additional lock floor catch basins
- Addition of miter gate tie back recesses



GREAT LAKES WATER LEVELS

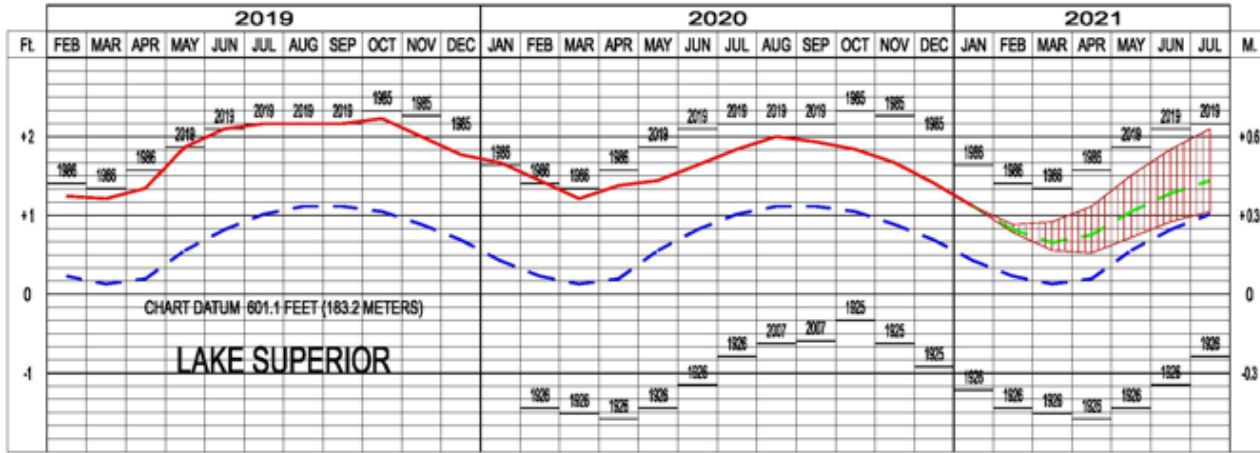




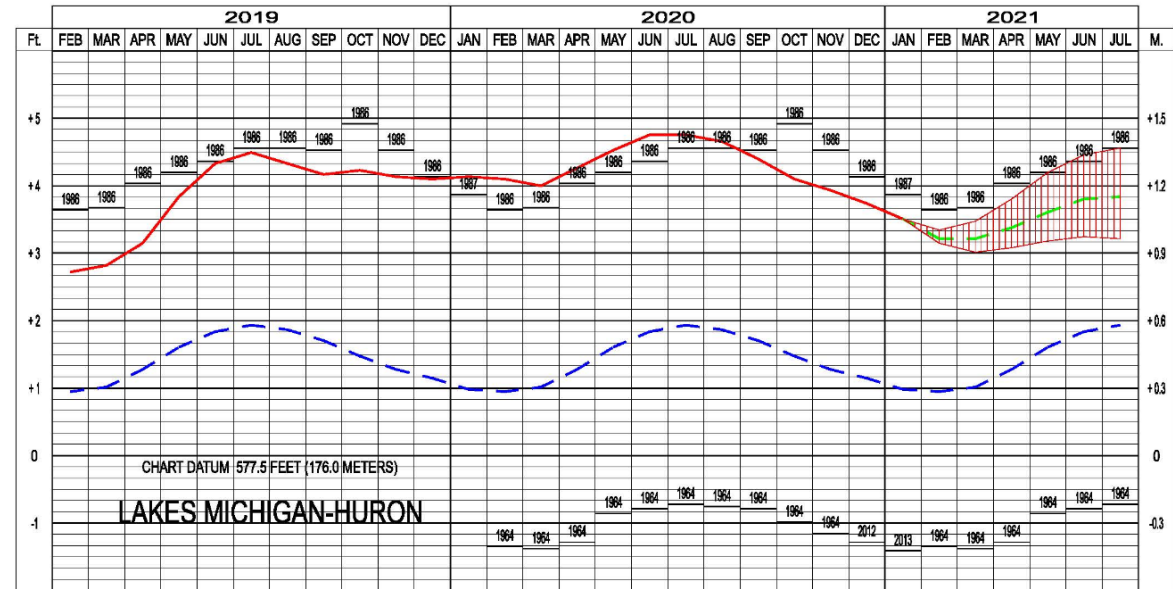
SIX MONTH WATER LEVEL FORECAST



LAKE SUPERIOR WATER LEVELS - FEBRUARY 2021



LAKES MICHIGAN-HURON WATER LEVELS - FEBRUARY 2021

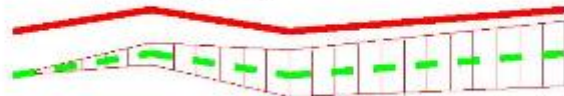


LEGEND

LAKE LEVELS

RECORDED

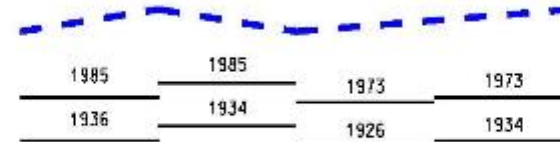
PROJECTED



AVERAGE **

MAXIMUM **

MINIMUM **



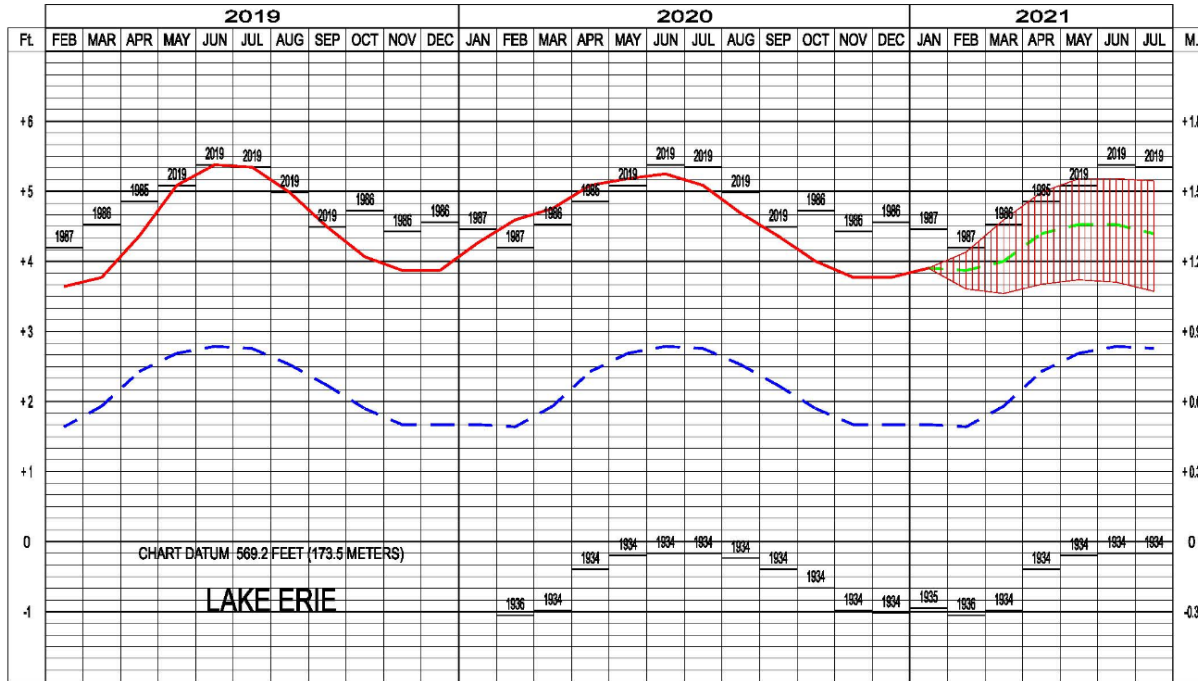
** Average, Maximum and Minimum for period 1918-2018



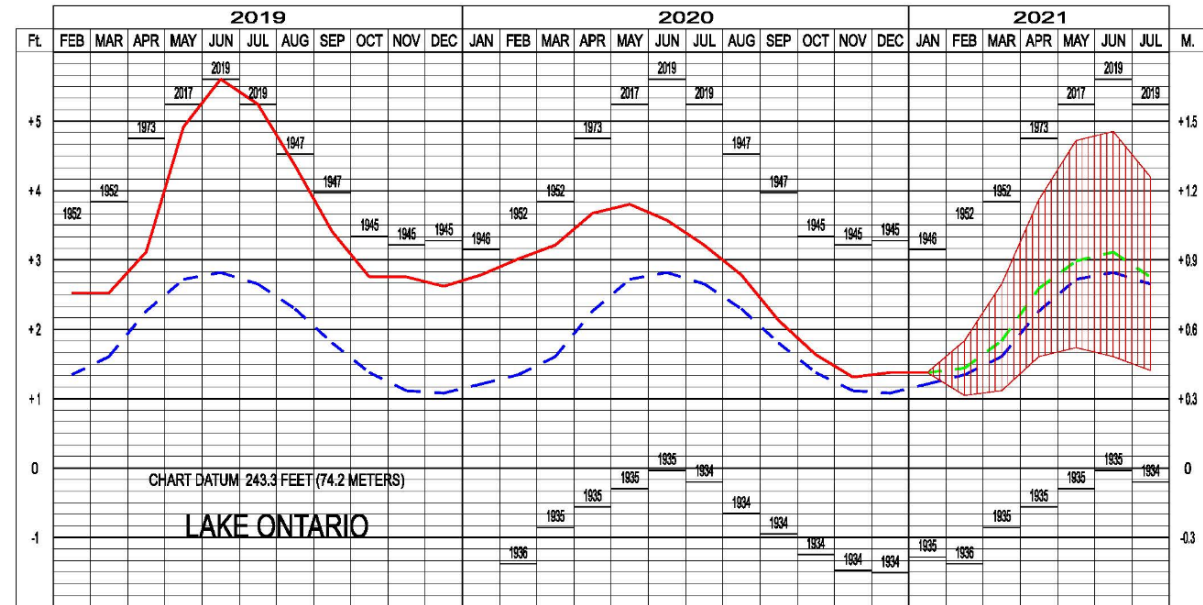
SIX MONTH WATER LEVEL FORECAST



LAKE ERIE WATER LEVELS - FEBRUARY 2021

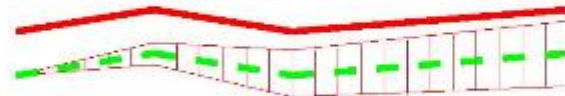


LAKE ONTARIO WATER LEVELS - FEBRUARY 2021

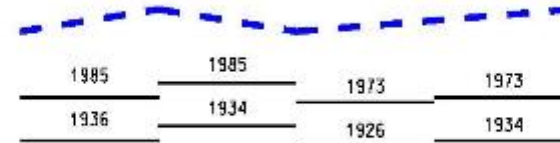


LEGEND
LAKE LEVELS

RECORDED
PROJECTED



AVERAGE **
MAXIMUM **
MINIMUM **



** Average, Maximum and Minimum for period 1918-2018



NEW LOW WATER DATUM DEVELOPMENT

- New International Great Lakes Datum 2020 (IGLD20) to be implemented in 2025
- Low Water Datum (LWD) will be updated
- NOAA is the lead U.S. agency

- Team analyzed elevation exceedance values for multiple scenarios (85%, 90% and 95%)
 - 90% exceedance likely set of values to be used, though more analysis needed
 - Final values will not be generated until after GPS campaign at all GL gages is completed

<u>Great Lake</u>	<u>Prelim LWD Delta (between current and proposed)</u>
Lake Superior	- 0.79 ft = - 9 inches
Lake Michigan-Huron	- 0.98 ft = - 11.7 inches
Lake St. Clair	- 0.13 ft = - 1.6 inches
Lake Erie	+ 0.26 ft = + 3.1 inches
Lake Ontario	- 0.13 ft = - 1.6 inches

- Expect the international Great Lakes Coordinating Committee to engage stakeholders

- USACE is currently calculating volumes to determine impact of new LWD at federal projects



OUTREACH



Web Site: www.lre.usace.army.mil/greatlakes/navigation

- Harbor Fact Sheets
- Updated CDF Fact Sheets
- Presentations

Shallow Draft Stakeholder Meeting – April 30, 2021 Virtual

Mailing Lists: send information to glnavigation@usace.army.mil

Marie Strum

(313) 226-6444

Marie.T.Strum@usace.army.mil



QUESTIONS?

