Presentation Overview

- Great Lakes – our context / introduction to topic
- Issues with keeping Great Lakes Working Waterfronts functioning & open from the water side
  - Broken federal funding $$ mechanisms are causing non-access to harbors, impacting coastal community ability to have a functioning working waterfront
    - Working waterfronts are affected by forces which communities cannot control or anticipate.

- Next Steps / Conclusion
Great Lakes Coastlines
Great Lakes Basin
<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>Surface area (km²)</th>
<th>Surface area (mi²)</th>
<th>Volume (km³)</th>
<th>Volume (mi³)</th>
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<tbody>
<tr>
<td>Caspian Sea</td>
<td>Multiple</td>
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<td>143,000</td>
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<td>Superior</td>
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<td>31,820</td>
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<td>Tanganyika</td>
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<td>Great Slave Lake</td>
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<td>9,094</td>
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<td>19,477</td>
<td>7,520</td>
<td>1,639</td>
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</tbody>
</table>

**Table:** Water volume and surface areas of the earth’s twelve highest surface area continental water bodies.
SHORT TERM FLUCUATIONS

STORM SURGE

Lake profile showing wind set-up

Wind Pressure on Water Surface Produces Downwind Water Displacement for Potential Seiche Development
Dust bowl years
1930-1942

Difference of 6 ft. 4"

Oct. ‘86
1999 – 2013
Jan. ‘13

MI-HU Lake Levels
1900
2013

MICHIGAN SEA GRANT
Issues with keeping working waterfronts open from the water side

- Pre-World War I coastal protection infrastructure (deteriorating)
- Broken funding mechanisms
- Longshore currents drive “rivers of sand”
- All Time Record Low Great Lakes Levels (MI-HU) in Jan. 2013
- Emergency Funding from State of Michigan spring, 2013
Low water levels and deteriorating Great Lakes infrastructure top priorities of Great Lakes Commission

Washington, D.C. – 100-year-old water resources infrastructure, built before World War I, is trying to serve 20th century needs in the Great Lakes region. Delegates to the Great Lakes Commission’s Semiannual Meeting, which concluded today in Washington, D.C. will now be descending on Capitol Hill to impress upon lawmakers the importance of investments in infrastructure, ecosystem protection and restoration.

The January 2013 monthly mean for lakes Michigan and Huron was the lowest that has ever been recorded, dating back to the early 1900s. Michigan-Huron levels rose slightly in February 2013 but, according to Keith Kompoltowicz, hydrology chief for the U.S. Army Corps of Engineers-Detroit District, long-range forecasts illustrate that the lakes will remain near or below their long-term averages over the next six months.
Coastal Structures

Great Lakes Navigation

- 104+ miles of navigational structures on the Great Lakes
- Most built between 1860 and 1940
- Timber crib construction (typical)
- Low Lake water levels since the 1990’s have accelerated deterioration
Structure Function/Consequences

Contain and reduce shoaling in navigation channel

Calumet Harbor, IL&IN

Protect navigation channel and shoreline infrastructure

Milwaukee Harbor, WI

Control wave climate within navigation channel and harbor

St. Joseph Harbor, MI
Navigation structures are regularly subjected to extreme winds, waves and ice forces.
Typical Coastal Structures

- Steel Sheet Pile Structures
- Rubble Mound/Laid-Up Stone Structures
- Other Components: safety (railings, walking surface, etc.)
- Typical Wood Crib/Concrete Cap Structures Cross-section
Some Great Lakes Navigation Structure Conditions are Failing

Port Washington Harbor, WI

Michigan City, IN
East Pier Failure
High Level Display of Potential Impact Areas

- Three potential impact areas were defined at 500 ft intervals

- Shows potential value of land and infrastructure within each "potential impact area" based on tax assessment data
Condition: Water Level Below Datum w/Dredging Backlog

- Long Term Average Lake Level
- Datum
- ~1.5'
- Current Lake Level
- Authorized Project Depth 12'
- Available for Navigation << 12'
- Dredging Backlog
Backlog Growth Under Constrained Dredging Funding 2012-2017

Dredging Backlog Grows to 23M CY by 2017

Assume FY13-FY17 Ann. Dredging Equal to FY13PB Level of 2.4M CY
GOVERNORS APPLAUD INTRODUCTION OF LEGISLATION TO FIX HARBORS

Chicago, IL – The Great Lakes Governors today applauded recently introduced legislation in Congress that would permanently fix the nation’s dysfunctional funding program to maintain ports and harbors. Specifically, the Governors pledged their support for the Realize America's Maritime Promise (RAMP) Act, H.R. 335, and commended the sponsors for their leadership in introducing this bill. Once enacted, this legislation will immediately help to put Americans to work on improving ports and harbors, while representing a long-term investment to enhance both the nation’s and the region’s global economic competitiveness.

Governor Rick Snyder of Michigan, Co-Chair of the Council of Great Lakes Governors, said, “I applaud the Congressmen for working to enact what is really a simple solution to a major problem—actually spending funds already collected for the purpose of harbor maintenance on harbor maintenance. This solution is critical for our region’s ports and harbors, and for the national economy.”
Harbor Maintenance Trust Fund (HMTF)

Figure 1. HMTF Balance
($ in millions)

Note: Figures not adjusted for inflation.

Congressional Research Service, 2011
State of Michigan Emergency Dredging $$ 2013

- $9.5M from state Waterways Commission (all other projects on hold) and special $11.5M appropriation general fund = $21M total
- Local community match requirements suspended (from 50% to 0%)
- Goal: Protect Harbors of Refuge, Preserve Access to Recreational Harbors & Boating Access Sites
- Proposed temporary state-level emergency permitting changes
- Also proposed FY2014-15 state budget of $9.4M from transportation investment package (ongoing)
October, 2012 ~ Hurricane Sandy, Port Sanilac, MI

Courtesy Justin Selden
Thank You.

QUESTIONS, COMMENTS OR REMARKS?

National Working Waterfronts & Waterways Symposium
March 25-28, 2013

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