Great Lakes Navigation
2013-2014 Program

Marie T. Strum
Great Lakes Dredging Team Meeting
July 16, 2013
 Agenda

- Great Lakes Dredging 2013, 2014
- Historical Dredging Perspective
- Great Lakes Water Levels
- Great Lakes Dredged Material Management
- DMM Projects of interest
- Regional Risk Communication
Federal Projects on the Great Lakes

A non-linear navigation system with 60 federal commercial projects and 80 federal shallow draft/recreational projects.
Great Lakes Navigation System

Interdependent Ports

- GL ports trade with other GL ports delivering raw materials to users
- Dredging is essential to maintaining a viable system, contributing to national economy, manufacturing jobs, reliable source of energy for electrical demand
- Metrics focus on tonnage – system approach recognized but not used in metrics
### Characterization of Coastal Projects vs. Great Lakes Projects

<table>
<thead>
<tr>
<th>Category</th>
<th>Coastal Nationwide</th>
<th>Great Lakes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># Projects</td>
<td>% Tonnage</td>
</tr>
<tr>
<td>High Use</td>
<td>59</td>
<td>90%</td>
</tr>
<tr>
<td>Moderate Use</td>
<td>100</td>
<td>9%</td>
</tr>
<tr>
<td>Low Use</td>
<td>908</td>
<td>1%</td>
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</tbody>
</table>
Corps Great Lakes Navigation Funding Status
$85.9M  Great Lakes Navigation President’s Budget O&M

Key Items in FY13 President’s Budget
- $31.0M in Dredging (15 projects - 2.4M cubic yards)
- $12.0M in Dredged Material Management
- $3.1M in Soo Asset Renewal

Workplan
- Modest decreases – 1-10% due to sequestration
- Additional funding for emergency dredging at Saginaw

Sandy Funding
- Approx $24M for 25 dredging projects
FY 14 President’s Budget
Great Lakes Navigation

$94.9M  Great Lakes Navigation Operations & Maintenance

Key Items in FY13 President’s Budget
$39.9M in Dredging (18 projects – 3.1M cubic yards)
$10.6M in Dredged Material Management
$1.6M in Soo Asset Renewal

House and Senate Bills – include additional funds for ongoing work that would be allocated by Corps HQ if included in the final appropriation.
Dredging Funding Trends 2007 - 2013

- FY12 National Provisions
- ARRA (Stimulus)
- L. Superior Regional Provisions
- Michigan Regional Provisions
- Commercial Regional Provisions
- Energy & Water Adds
- President's Budget

$40 M Annual Reqm’t
Great Lakes Dredging

Funding $41M in GL dredging has a return on investment of $335M, an 8:1 BCR!

- Initiatives to optimize dredging efficiencies:
  - Investigating the use of sediment traps
  - Working with states on dredging windows flexibility
  - Optimizing acquisition strategies
  - Partnering with local sponsors to find beneficial use opportunities
  - Reduce sediment load to harbors – making use of 516 program developing land best management practices models
  - Maximizing the efficiencies of regional dredging provisions – applying dredging dollars to highest needs in the year of execution
Period of Record Water Levels (1918 – 2012)

Lake Superior

Lake Michigan-Huron
Changes in Great Lakes Evaporation by Decade

Notes:
*Data used to estimate the 2010's decade is provisional data from 2010 - 2012.
**Water temperature data is a combination of modeled and observed water surface temperatures.
### Percent of Time Levels are Below LWD

<table>
<thead>
<tr>
<th>Period</th>
<th>Superior</th>
<th>Mich-Huron</th>
<th>St. Clair</th>
<th>Erie</th>
<th>Ontario</th>
</tr>
</thead>
<tbody>
<tr>
<td>1918-1929</td>
<td>33%</td>
<td>15%</td>
<td>12%</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>1930-1939</td>
<td>2%</td>
<td>48%</td>
<td>25%</td>
<td>24%</td>
<td>28%</td>
</tr>
<tr>
<td>1940-1949</td>
<td>3%</td>
<td>1%</td>
<td>4%</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>1950-1959</td>
<td>10%</td>
<td>8%</td>
<td>4%</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>1960-1969</td>
<td>14%</td>
<td>22%</td>
<td>9%</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>1970-1979</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>1980-1989</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>1990-1999</td>
<td>11%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2000-2009</td>
<td>43%</td>
<td>40%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2010-2012</td>
<td>69%</td>
<td>36%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
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</table>
Dredged Material Management
Current Dredged Material Management Conditions

**DREDGED MATERIAL MANAGEMENT STATUS**
- **Critical** – Dredged Material Management issues could severely restrict channel availability within 5 years
- **Pressing** – Dredged Material Management issues could severely restrict channel availability within 10 years.
- **No pressing issues within next 10 years; continue to work on long range planning such as DMMPs.**

**ANNUAL DREDGING REQUIREMENT (CY)**
- 800K
- 100K – 250K
- 50K – 95K
- <50K
Dredged Material Management Initiatives

Initiatives underway to reduce requirements/increase efficiencies:

✓ Leverage EPA funding from **Legacy Act and GLRI** (both dredging and dredged material management)

✓ Work with states and local sponsors on finding beneficial uses of dredged material and reuse for CDF material

✓ Work with states on acceptability of testing protocols for open lake placement
Duluth Harbor CDF Capacity

- Raised Berms +500,000 CY
- Raised Berms +250,000 CY
- Mineland Reclamation +30,000 CY

- 21st Avenue Site - 75 acres, 800k CY capacity, $1.5M
- Pursuit of Open Water Placement - testing ongoing
- Mineland Reclamation - pilot study, 30,000 CY
- Exterior Berm Raising – performed in 1990s - increased capacity by 750k CY
- Fill Management - Interior berm raising, pond excavation, construction of MSE Wall/Intermediate Offloading Platform ongoing
Green Bay – Cat Islands

Funded by GLRI and E&W
Provide for 2.35M cy of disposal capacity
Provide significant reduction in M/D costs
Restores over 1400 acres of habitat
CALUMET HARBOR

CHICAGO CDF CURRENT ACTIVITIES:

- Dredged Material Management Plan
- Closure Plan and Life-Extension Measures

- Chicago CDF was constructed in 1984, and was designed to hold minimally 1.3 M CY of contaminated sediment.

- The facility is nearly full, & life-extension measures are underway.

- DMMP completion is scheduled in 2015, but future disposal solution is 7-10 years away.

- Sediment management efforts will focus on grading, and trenching to accelerate sediment drying, and piling to optimize available space.

- All future material dredged from the Outer Harbor will be segregated and stockpiled outside of the CDF for beneficial uses, such as the future site closure cap.
Cleveland Harbor - Evaluation of Open Lake Placement Suitability

- Biological testing was completed in late November
- Low levels of contaminants in sediment
- Complex Tiered Evaluation is now underway
- Engaging Ohio EPA on USACE process
DMM Summary

- Relying on new CDF construction, in general, is not viable;
- Recognize that state and local governments must be active participants in search for new solutions to dredged material disposal and placement needs.

Strategies

1. **Extend CDF Life** through Fill Management
2. Create CDF Capacity through **Beneficial Reuse and Use**
3. **Reduce Material** Entering Federally Maintained Navigation Channels
4. Engage State Agencies in Solutions to participate in studies or expert elicitation to **improve basis for environmental dredging windows**
5. **Reinforce the Federal Standard** for open-lake placement to maintain efficiency of the Crops dredging program while protecting the environment.
6. Foster Partnership with USEPA to **Leverage Funding** for Projects Supporting Environmental Goals and Navigation Benefits

Dredged Material Management Strategy –
Breakwater Repair and Maintenance
Great Lakes Navigation Structure Conditions

- 50% of GL coastal structures were built before WWI
- Over 80% of all coastal structures exceed 50 years of age
- 45% have never undergone any significant repair effort due to funding constraints
- Over 30% of structures have timber crib core sections; recent low water levels have accelerated deterioration of the wood
Navigation Structure Condition Assessment

Regional Asset Management Team assessed conditions of navigation structures:

- Assessments completed to date
- Conditions assessment by segments: 45% of structures are rated C or worse
  - 22 miles (21%) rated C – Probably inadequate
  - 22 miles (21%) rated D - Inadequate
  - 3 miles (3%) rated F – Failed
- Cost to conduct major repair of structures: $15 – 20M per mile

Team is conducting Risk Communication Meetings to convey message of risk and low priority for funding.
The navigation structure holds back sediment to keep it out of the channel. An estimated 3.3M cu yds is sitting just to the west of the harbor. If the structure deteriorates, this material will move into and block the navigation channel. Dredging requirements will increase significantly.
Fairport Harbor – Accretion Filet
Communication

- Great Lakes Brochure
- Web Site: www.lre.usace.army.mil/greatlakes/navigation
  - Fact Sheets
  - Presentations
- Mailing Lists – send information to glnavigation @usace.army.mil
Questions