2011 Great Lakes System Dredged Material Management Strategy
Historical Perspective

1960 - River and Harbor Act and Flood Control Act of 1970 (PL 91-611) passed

1970 - Dredged material nearly exclusively disposed via open water placement

1980 - Federal Standard defined

1990 - Section 201 of the 1996 WRDA requires cost-sharing

1996 - Current CRITICAL situation. DMM strategies must be developed.

2000 - 45 Great Lakes CDFs constructed and/or operated by USACE at a cost of $900M (2009 dollars)

Execute sustainable DMM solutions
Current Dredged Material Placement Methods

- Open Water Placement
- Beach Nourishment / Near Shore Placement
- Upland Placement
  - Often employed in harbors without nearby open-water placement sites
  - Common placement sites include brownfield sites, farm fields, construction sites, reclaimed mines
- Confined Disposal Facilities
  - There are currently 20 active CDFs on the Great Lakes
  - Existing CDFs are over 80% full
The Federal Standard for Placement of Dredged Material

- USEPA-Corps Section 404 testing/evaluation requirements
- “Federal Standard” determines general placement or disposal method
- “Base Plan” recognizes site-specific considerations
- Added costs due to non-Federal conditions that cannot be reasonably accommodated are a non-Federal responsibility
- USACE “cooperate to the maximum extent practicable…to prevent violation of Federally approved state WQ standards and to achieve consistency to the maximum degree practicable with an approved CZM program.”
Open-Water Placement

State Policies

► **IL, IN, NY & PA**: allowed in compliance with federal laws & regulations

► **MN & WI**: prohibited with limited exceptions for beneficial use

► **MI**: prohibited if sediment is contaminated; MI DEQ practices and positions limit open water placement

► **OH**: No promulgated regulation or laws, but OEPA has withheld Sec. 401 WQ Certifications for disposal in shallow west basin of Lake Erie. Objections focused on Toledo.
Evaluation of Harbor Conditions

- PCBs are a typical contaminant analyzed in most USACE Great Lakes harbor sediments
  - Bulk sediment criteria for PCBs can be shown to have changed over time
- Evaluation methods for PCB testing have changed over time

### Historic Methods of PCB Testing

<table>
<thead>
<tr>
<th>Method</th>
<th>Year</th>
<th>PCBs (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USEPA &quot;Jensen Criteria&quot;</td>
<td>1977-1989~</td>
<td>10</td>
</tr>
<tr>
<td>USEPA policy for Ashtabula Harbor</td>
<td><del>1989-1993</del></td>
<td>1</td>
</tr>
<tr>
<td>USEPA/USACE guideline (predicted)</td>
<td>~1993-present</td>
<td>0.1</td>
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</tbody>
</table>
Evaluation of Harbor Conditions

Great Lakes Harbors Maximum Concentrations of PCBs

- Saginaw
- Green Bay
- Buffalo
- Cleveland
Current Dredged Material Placement Methods

Percent of Harbors Employing Each Method:
- Near Shore: 45%
- CDF: 28%
- Open Water: 25%
- Upland: 16%

Percent of Volume of Material Employing Each Method:
- Near Shore: 50%
- CDF: 19%
- Open Water: 30%

Map of the Great Lakes showing the placement methods for dredged material.
Current Dredged Material Placement Methods by State

- **Michigan**: 1,044,000 CY
  - CDF: 44%
  - UPLAND: 51%
  - NEAR SHORE: 1%
  - OPEN WATER: 4%

- **Minnesota**: 62,000 CY
  - CDF: 62%
  - UPLAND: 37%
  - NEAR SHORE: 1%
  - OPEN WATER: 1%

- **Illinois**: 158,000 CY
  - CDF: 48%
  - UPLAND: 52%
  - NEAR SHORE: 3%
  - OPEN WATER: 3%

- **Wisconsin**: 267,000 CY
  - CDF: 85%
  - UPLAND: 13%
  - NEAR SHORE: 2%
  - OPEN WATER: 3%

- **Indiana**: 85,000 CY
  - CDF: 68%
  - UPLAND: 27%
  - NEAR SHORE: 5%
  - OPEN WATER: 1%

- **Pennsylvania**: 11,000 CY
  - CDF: 66%
  - UPLAND: 31%
  - NEAR SHORE: 3%
  - OPEN WATER: 1%

- **Ohio**: 1,650,000 CY
  - CDF: 100%

- **New York**: 172,000 CY
  - CDF: 66%
  - UPLAND: 31%
  - NEAR SHORE: 3%
  - OPEN WATER: 1%

Placement Methods:
- **UPLAND**
- **CDF**
- **NEAR SHORE**
- **OPEN WATER**
Historic Material Placement Methods in Ohio

Dredged Material Placement in Ohio (1998-2010)

- Upland
- Near Shore
- CDF
- Open Water


Percent Dredged: 0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%
Historic Material Placement Methods in Michigan

Dredged Material Placement in Michigan (1984-2010)
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

MINNESOTA
- Grand Marais
- Two Harbors
- Duluth Superior
- Ashland
- Keweenaw Waterways
- Ontonagon

WISCONSIN
- Green Bay
- Menominee
- Manitowoc
- Sheboygan
- Port Washington
- Milwaukee
- Kenosha
- Waukegan
- Chicago River & Harbor
- Calumet

MICHIGAN
- Lake Michigan
- Lake Huron
- Lake Superior
- Menominee
- Grand Marais
- Two Harbors
- Duluth Superior
- Ashland
- Keweenaw Waterways
- Ontonagon
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CANADA
- Lake Ontario
- St. Lawrence River
- Montreal
- Quebec City
- Trois-Rivières
- Cornwall
- Kingston
- Thunder Bay

NEW YORK
- Buffalo Harbor
- Oswego

Pennsylvania
- Philadelphia
- Pittsburgh

Michigan
- Detroit River
- Campau
- New Buffalo
- St. Joseph Harbor
- Muskegon Harbor
- Manistee River
- Alpena
- Cheboygan River
- Holland
- St. Clair
- Detroit
- Rouge River
- Sanilac
- Lake St. Clair
- St. Clair River
- Cuyahoga River
- Maumee River
- Lake Erie
- Presque Isle
- Grays Reef
- Little Bay de Noel

Illinois
- Chicago River & Harbor
- Calumet
- Monroe
- Michigan City
- Whiting
- Hammond
- Calumet
-不受影响

Indiana
- Michigan City
- Whiting
- Hammond
- Calumet
Timeline for Critical and Pressing CDFs in GLNS
Extending CDF Life through O&M CDF Fill Management Activities

Where established management practices for a CDF include:

Regularly recurring **dike re-shaping and raising**, Dewatering associated with each dredging cycle, or Regular **excavation, transportation and placement of material** from CDF

...these measures will be considered O&M with no change in Fed/non-Fed responsibilities *(limit ~ 1-2 dredging cycles)*
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
QUESTIONS?