Toledo Harbor Sediment Management and Use Solutions

Thursday, June 16, 2011
Toledo Maritime Center
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Beneficial Uses of Dredged Material

- Beach nourishment
- Aquaculture
- Parks and recreation
- Strip mine reclamation & solid waste management
- Brownfields restoration
- Shoreline stabilization and erosion control

- Construction and industrial use (port development, airports, urban, & residential)
- Material transfer (fill, dikes, levees, parking lots, roads)
- Habitat development (wetland, upland, island, aquatic, others)
Great Lakes Restoration Initiative

- Blueprints established by Regional Collaboration Strategy in 2005
- Enacted in 2009 for Fiscal Years 2010-2014, authorized for $2.35 million
- Funded for FY 2010 at $475 million
- Funded for FY 2011 at $350 million
- President’s budget for FY 2010: $300 million

Five focus areas
- Cleaning up toxics and areas of concern
- Combating invasive species
- Promoting nearshore health by protecting watersheds from polluted run-off
- Tracking progress and working with partners on outreach
- Restoring wetlands and other habitats
Welcome and Event Overview

John H. Hull, P.E.
Chairman
Hull & Associates, Inc.

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Toledo Harbor Sediment Management and Use

- Issues and Opportunities
- Technical Approaches
- Project Identification
- Prioritization for Implementation
Toledo Harbor Sediment Management and Use Planning

• Introduction to the Project
  – The Ohio Lake Erie Commission was awarded a GLRI grant to create a sediment management strategy/plan for the Toledo Harbor that identifies and addresses:
    • recommended short-term (1-5 years) options
    • recommended long-term (30 year) options
    • funding needs/sources/mechanisms
    • timelines for implementation of recommended approaches

  – The Hull & Associates, Inc. Team was retained to assist in developing this plan
Today’s Objectives

• Introduce issues and challenges related to sediment management
• Gain public ideas and input on:
  – Potential sediment use options and project concepts
  – Constraints and concerns
  – Relative importance of goals and related issues
Next Steps

- Technical Team will assist the Toledo Harbor Long-Term Dredge Management Task Force to:
  - Review sediment use opportunities recommended at forum
  - Review factors recommended at forum
  - Prepare draft evaluation of approaches based on identified factors
  - Present draft prioritized approach to stakeholders at Forum #2 in fall 2011
Background Information from the Environmental Perspective

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Toledo Harbor Sediment Management and Use Solutions
Lake Erie Economic Values

- Lake Erie
  - $10.7 Billion Lake Erie Tourism
  - $1 Billion Lake Erie Fishing
  - 3 million Ohio drinking water users
ANNUAL DREDGING REQUIREMENT (CY)

- 800K
- 100K – 250K
- 50K – 95K
- <50K

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.
Sediment Entering Lake Erie on 4/2/08
Impacts of Nutrient Loading
Toledo Harbor - Sediment

Current: 850,000 yd³
- 850,000 yd³
- Equivalent to 2.2x One SeaGate*

Proposed: 1,250,000 yd³
- 1,250,000 yd³
- Equivalent to 3.3x One SeaGate*

*Numbers are not exact, but estimations are instructive.
## WWTP Effluent vs. Dredged Sediment

For Quantity Perspective Only

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Toledo Bay View WWTP Effluent (based on 2008 data)</th>
<th>Toledo Harbor Dredged Sediment (based on 2004 data &amp; 1.25 million cu. Yds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium</td>
<td>Samples below detection limit</td>
<td>2.50 tons/yr</td>
</tr>
<tr>
<td>Lead</td>
<td>Samples below detection limit</td>
<td>48.03 tons/yr</td>
</tr>
<tr>
<td>Mercury</td>
<td>2.18 pounds/yr</td>
<td>620 pounds/yr</td>
</tr>
<tr>
<td>Silver</td>
<td>Samples below detection limit</td>
<td>0.61 tons/yr</td>
</tr>
<tr>
<td>Zinc</td>
<td>5.1 tons/yr</td>
<td>250.74 tons/yr</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>69.4 tons/yr</td>
<td>1208.82 tons/yr</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>983 tons/yr</td>
<td>2,062,500 tons/yr (total solids)</td>
</tr>
<tr>
<td>Selenium</td>
<td>Samples below detection limit</td>
<td>1.25 tons/yr</td>
</tr>
<tr>
<td>Ammonia</td>
<td>20.4 tons/yr</td>
<td>311.65 tons/yr</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>$41 million based on 2007 Annual Report</td>
<td>FY10 Budget - $5 million</td>
</tr>
</tbody>
</table>
Ohio’s Position

- Ohio has long (25 years) consistent position on this issue
- Toledo Harbor must be kept open
- Lake Erie must be restored & open lake disposal is not acceptable
- Beneficial use and source reduction-best
- Strongly support cooperative partnerships
- Sustainable practices
Toledo Harbor Dredging Task Force

• Membership
  - Toledo-Lucas County Port Authority
  - State agencies
  - Federal agencies
  - Local officials
  - Non-governmental organizations (environmental, commercial, and recreational)
The Economic Impact of the Port of Toledo

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toledoexpress.com
Great Lakes Shipping: Economic Strength to the Nation

• 10% of all U.S. waterborne domestic traffic is on the GLNS

• GLNS saves approx $3.6 billion per year over the next least costly mode of transportation

• 44,000 jobs directly related to maritime transport; 54,000 mining industry jobs; 138,000 steel industry jobs and hundreds of thousands more in agriculture, automotive, and manufacturing depend on the GLNS

• One thousand-foot Laker holds 3000 truckloads

• Ships emit 90% less carbon dioxide than truck and 70% less than rail
The Port of Toledo’s Economic Impact

• Toledo’s 15 Marine Terminals handle over 700 vessel calls and 12 million tons of cargo per year. Thousands of jobs rely on the industry supported by the Port of Toledo.

• Majority of trade with US and Canadian Seaports within the GLNS. Port also trades with ports in Mexico, South America, Europe and Asia.

• Up to 20 vessels lay-by in Toledo each year generating millions of dollars of economic activity for shipyard workers and supply industries.

• Port of Toledo is the largest land mass port on the Great Lakes and the most cargo diverse.
The Port of Toledo – $35 M Invested in Seaport Improvements

- George Hardy Drive
- Rail Spur
- Ironville Rail Loop
- Bulk Loader
- Cranes
- Island 18
- Facility 1
- Facility 2
- Facility 3
- St. Lawrence Drive
- Lay Down Area
- Ironville
- Heidtman Steel
- Beazer
- Ship Yard
- Grain Handling System
- Dock Improvements
- Rail Loop
- Lay Down Area
- Facility 1
- Facility 2
- Facility 3
NW Ohio Intermodal Projects 2009-2011

- Port Authority $35.2 M
  - Ship/Rail/Truck
- Airline Yard $12.8 M
  - Rail/Truck
- Toledo Express $7.2 M
  - Air/Truck
- CSX Gateway $175 M
  - Rail/Truck

Total Intermodal Construction: $230.2 M
But…

- Investments in infrastructure & economic impact won’t matter unless Toledo’s dredging issues are addressed with sustainable solutions considering the needs of industry, community and environment.

- For every one inch of reduced draft, a lake trading vessel forfeits 50 to 270 tons of cargo from their payload. Ocean vessels lose 115 tons of cargo for each inch of lost draft.

- The International Reputation of the Port of Toledo is on the Line! One bad experience is cause never to return.

- If we can work together to address the needs of commerce and the environment we will achieve great things!
Sediment Management Options, Breakout Sessions & Assignments

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Today’s Focus

Sediment Management

• Erosion control
• BMPs
• Nutrient management
• **Dredged Material Management**
In-Water Dredged Material Management Options

• Submerged Aquatic Habitat Restoration Unit (HRU)
• Emergent HRU
• Confined Disposal Facility (CDF)
Nearshore Dredged Material Management Options

• Wetland Restoration
• Shoreline Protection
Upland Dredged Material Management Options

- Brownfields and Landfills Caps
- Mine Reclamation
- Agricultural Improvements
- Inland Monofill
Product Options from Dredged Material Management

- Manufactured Soil
- Asphalt, Concrete and Construction Materials
- Structural Fill Material
- Other
Planning Process

Today’s Forum

1. Define problem
2. Generate project concepts
3. Identify criteria to compare project concepts
4. Gather value judgments on relative importance of criteria
5. Screen/eliminate locally impractical project concepts
6. Determine performance of project concepts for criteria
7. Rank/select final project concepts/combinations
8. Stakeholder Final Review

Toledo Harbor Sediment Management and Use Solutions
Combination of Approaches

- Both short-term and long-term plans will likely consist of a combination of approaches due to:
  - Demand constraints
  - Logistics
  - Dredged material composition
Breakout Session Instructions

Table Assignments

• In-Water
  – TABLE #1: Submerged Aquatic Habitat Restoration Unit (HRU) – John Hull
  – TABLE #2: Emergent HRU – Kristin Gardner
  – TABLE #3: Confined Disposal Facility – Pete Kotulak

• Nearshore
  – TABLE #4: Wetland Restoration – Keith Carr
  – TABLE #5: Shoreline Protection – John Watkins

• Upland
  – TABLE #6: Brownfields and Landfills Caps, Mine Reclamation – Steve Garbaciak
  – TABLE #7: Agricultural Improvements – Jenny Carter-Cornell
  – TABLE #8: Inland Monofill – Kelly Bensman

• Products
  – TABLE #9: Manufactured Soil – Joe Cappel
  – TABLE #10: Asphalt & Concrete Mixtures, Specialty Concrete Material, Other – David Knight
### Breakout Session Instructions

#### Submerged Aquatic Habitat Restoration Unit (HRU)

<table>
<thead>
<tr>
<th>Idea</th>
<th>Location</th>
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</tbody>
</table>
### Breakout Session Instructions

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Human Benefits</th>
<th>Ecological Benefits</th>
<th>Economic Benefits</th>
<th>Feasibility</th>
<th>Implementation Costs</th>
<th>Environmental Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recreation</td>
<td>Improved Hydrologic Functions</td>
<td>Revenue Generating Activity</td>
<td>Technical</td>
<td>Dredging</td>
<td>Location</td>
</tr>
<tr>
<td></td>
<td>Flood Protection</td>
<td>Habitat Enhancements</td>
<td>Job Creation</td>
<td>Logistical</td>
<td>Transportation</td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td>Aesthetics</td>
<td>Improved Water Quality</td>
<td>Cost Savings</td>
<td>Institutional</td>
<td>Maintenance</td>
<td>Post-Construction</td>
</tr>
<tr>
<td></td>
<td>Economic Development</td>
<td></td>
<td></td>
<td>Constructability</td>
<td>Monitoring</td>
<td></td>
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<td></td>
<td>Navigational Safety</td>
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Toledo Harbor Sediment Management and Use Solutions
## Breakout Session Instructions

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rank Criteria in Order of Highest Priority (1 is highest priority and 6 is lowest priority)</th>
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<tbody>
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<td>Human Benefits</td>
<td></td>
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</table>
Ground Rules

• All ideas are fair game
• Ensure that everyone has the opportunity to speak and that all ideas are expressed
• Be mindful of our time constraints
• Continue to think about the ideas discussed today and follow up with team members if you have additional thoughts to share
Wrap Up – Next Steps

• Technical Team will work with Task Force to:
  – Review sediment use opportunities recommended at forum
  – Review factors recommended at forum
  – Prepare draft evaluation of approaches based on identified factors
  – Present draft prioritized approaches to stakeholders in fall 2011
Thank You for Your Participation!

For additional information or to provide follow up input, please email lakeeriecommission@ameritech.net or call 419.245.2514.

Updates, forum results, and this presentation will soon be available at:

Ohio | Lake Erie Commission
lakeerie.ohio.gov
glc.org/dredging

toledoportauthority.org
toledoseaport.org
toledoexpress.com