Wetland Development with Dredged Material

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Speaker’s Background

- Professor at Rutgers (1975-1987)
- Member of NJ Wetland Mitigation Council (1989)
- President of Shisler Environmental Consultants (1990-2000)
- Senior Ecologist for BBL (2000-present)
History of Wetland Development with Dredged Material

- Intercoastal Waterway Dredging
  - Incidental development of levees, bay islands, and wetlands

South Amboy, circa 1940

Intercoastal Waterway
History of Wetland Development with Dredged Material

• USACE
  – Developing wetlands research since 80s
  – Many long-term, successful projects
History of Wetland Development with Dredged Material

• Several large-scale projects in region
  – Hart-Miller Island, MD
  – Kelly Island, DE
  – Egg Island Point, NJ

http://www.mpasafepassage.org/projects/projects.htm
“Wetland Development”
- terminology

• Creation – development of a wetland where an upland previously existed

• Restoration – returning a former wetland (drained/filled/subsided) to wetland conditions
“Wetland Development” - terminology

• Enhancement – improving conditions of an existing wetland

• Mitigation – (regulatory context) creating, restoring, or enhancing wetlands to compensate for impacts to other wetlands
Beneficial Reuse Options for Wetland Development

• Tidal Wetlands
  – High salt marsh
  – Low salt marsh
  – Mudflats
  – Shallow water areas & SAV
Beneficial Reuse Options for Wetland Development

• Freshwater, Riverine
  – Floodplain development where sediment has been intercepted by dams

Mount Holly, NJ

Somerville, NJ

http://www.mercoinc.com/_wsn/page4.html
Beneficial Reuse Options for Wetland Development

- Multi-purpose Uses with Wetlands
  - Protection from beach erosion
  - Restoration of bay islands
  - Replacement of subsiding coastlands

http://www.mpasafepassage.org/projects/projects.htm

Poplar Island, MD
Benefits of Reusing Dredged Material for Wetland Development

- Disposal site for material, cost savings
- Erosion protection
- Storm surge control
- Water quality improvement
- Wildlife habitat…
Benefits of Reusing Dredged Material for Wetland Development

- Wildlife habitat
  - Fish
  - Crabs, shrimp, and other crustaceans
  - Shellfish
  - Wading birds
  - Turtles and other reptiles/amphibians
Planning Wetland Development Projects with Dredged Material

• Project Specific Considerations
• Typical Problems
• Keys to Success
Planning Wetland Development Projects with Dredged Material

Project Specific Considerations

• Approvals and permits
  – State, county, municipal
    • Dredging
    • Erosion control
    • Wetland impacts
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Project Specific Considerations

- Funding / costs
  - Material removal, transport, placement, and grading
  - Permitting, planning, and design
  - Planting
  - Maintenance
  - Cooperative arrangement?

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Project Specific Considerations

- Type of material
  - Sandy, best suited for beach renourishment
  - Fine, best suited for wetland development
  - Contaminated or Clean
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Project Specific Considerations

• Volume of material
  – Enough to make wetland project worthwhile?
    • Cost effective
    • Significant ecological / environmental benefit
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Project Specific Considerations

• Ecological Trade-off
  – Habitat destroyed vs. Habitat created
  – i.e. shallow water habitat vs. low salt marsh
  – Is there a net ecological benefit?

URL: http://noaa.chesapeakebay.net
Planning Wetland Development Projects with Dredged Material

Typical Problems

• Poor location choice
  – Erosion (wind, wave) hard to control

• Subsidence / Settling
  – Wetland hydrology impacted
  – Potential negative effect on plants

• Invasive species
  – Dredged material provides a good environment for their establishment
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Keys to Success

• Monitoring & Adaptive Management Plans
  – Account for settling, erosion, invasive species
Planning Wetland Development Projects with Dredged Material

Keys to Success

• Consistency through planning, implementation, and M&M stages

• Cooperative Arrangements
  – Material volume
  – Funding
  – Shared expertise / experience
Questions ?