Innovative Approaches to Port Challenges

Masonville Dredged Material Containment Facility Project

September 23, 2010
The Need For Masonville

(Harbor maintenance dredging average 1.0 Mcy/yr)

• By mandate of the Dredged Material Management Act of 2001, the Hart-Miller Island Dredged Material Containment Site would cease operations at COB, December 31, 2009

• Without a new option, the only site remaining to accept dredged material from Baltimore Harbor would be the Cox Creek Containment Site, with an annual capacity of 0.5 Mcy/yr, about half of the annual maintenance need

• Masonville, recommended by the Harbor Team for further study in October, 2003 was needed to be operational in six years, in time to meet the 2010 dredging season
Harbor Placement Options Selection

• Stakeholders participate in option selection (Harbor Team), provide options/ideas, community enhancement proposals

• MPA professional team provides technical support

• Stakeholder involvement continues throughout option design, construction, and operation

• Partnership; Harbor Team initiated in 2003, members represent local communities, local governments, maritime industry, environmental groups, and other stakeholder organizations
Masonville Project Location
Masonville Project Site Is Environmentally Degraded

- Former site of Maryland Shipbuilding & Drydock Company
- Former site of Kurt Iron and Metal facility, Coral Sea aircraft carrier ship-breaking
- Derelict vessels and barges (27)
- Contaminated bottom sediments; elevated concentrations of metals (including mercury), organic compounds (including polychlorinated biphenyls, polyaromatic hydrocarbons, and dioxins)
- Extensive dumping of waste, trash and debris from many sources along the shoreline
- To date, total of over 61,000 tons of trash and debris removed from project site
MASONVILLE PROJECT

Legend:
- Demo Pier 1 & 3
- Storm Drain PH 1
- Derelict Vessel
- Pre-Dredging
- Cofferdam/Waterline
- Dike
- Storm Drain PH 2

- Masonville DMCF
- Mercedes-Benz Phase 2
- KIM
- Ferry Bar Channel
- ATC
- Non-Tidal Wetland
- Reef
- Fringe Marsh
- Masonville Cove
- Substrate
- Built Sanctuary
- Environmental Education Center
Masonville
Environmental Benefits

• Cleaning up and restoring one of the worst brownfields in Baltimore Harbor
• Over 130 acres of seriously contaminated river bottom is being capped and contained within the DMCF footprint
• Over 50 acres of contaminated uplands are being capped, contained, and restored to beneficial biological productivity within Masonville Cove
• Over 100 acres of tidal and non-tidal wetlands are being restored or created in Masonville Cove
• A conservation easement on Masonville Cove held by a community trust to ensure that its function in support of wildlife and community access will not change
• Additionally, 5 trash interceptors, 2 major stream restoration projects, and 3 fish ladders are being implemented, monitored, and maintained in and around Baltimore Harbor and the Patapsco River watershed
• An Environmental Center for the communities, operated by Living Classrooms to provide environmental classes for students from local schools
Former Shipyard, Ship Breaking Area
Conditions at Shipyard before Cleanup

Began
DMCF Containment Structure

Includes 4 Different Section Types
- Fringe Wetland (habitat enhancement)
- Armored Dike
- Cofferdam (future berth area)
- Landside Dike
Borrow, Key to Project

• Upland borrow sources over 2 times cost of onsite ($30/cy vs $12/cy)
• Use of onsite borrow adds value to project as it creates capacity ($10/cy)
• Additional borrow was obtained by combining Masonville mechanical dredging of unsuitable material with channel deepening (a borrow source) at Seagirt
Borrow Material in Short Supply

Typical Design Approach

Keyway Design Chosen – Saves significant amounts of excavation and borrow material
Geotechnical Information

Key to Project

• Investigations performed along alignment and in borrow area to allow 3D modeling of subsurface
  – Over 300 probings and 150 STP borings inside 150 acres

• Enabled removal of unsuitable without removing suitable borrow material
  – Contractor able to “see” suitable/unsuitable deposits of material, maximize volume of onsite borrow obtained

• Investigations continued during construction to refine dredging efficiency, maximize borrow
Bucket Dredge
Removal of Unsuitable & Deepening of Seagirt Access Channels

Deepened to 45’

Deepened to 50’

PHASE 1 – M&S CONTRACT 07-07-15
CLAMSHELL DREDGING AT SEAGIRT/DUNDALK CHANNELS AND MASONVILLE WITH PLACEMENT AT HART-MILLER ISLAND.
Bucket Dredging of Borrow While Deepening Seagirt Berth 4 to 50’
Hydraulic Dredging/Placement for Dike Construction
Dike Construction
What the Community Gets from This Project

• Habitat restoration and urban environmental education experience (Living Classrooms)
• Conservation easement on restored Cove held by Shores of Baltimore Land Trust
• Community access to the shoreline and water
• Center for community meetings, environmental education classrooms in a green building
• Traffic improvements to provide community, pedestrian access to the environmental center and shoreline
• Connection to other park areas, Gwynns Falls Trail extended to Cove natural area
• Cleanup of neighborhood Brownfield area
Masonville Dredged Material Containment Facility

• Located in Baltimore City in the Patapsco River
• 141 acre footprint
  – 131 acres of open-water
• Capacity of DMCF: 15.4 Mcy
• Annual placement capacity: 0.5 Mcy
• Final elevation +36 feet (equivalent to adjacent land)
• End use: marine terminal
Proposed, Future Terminal