

CRANEY ISLAND EASTWARD EXPANSION

Craney Island Eastward Expansion
Update

October 14, 2009



The Port of Virginia



Craney Island Dredged Material Management Area (CIDMMA)

- **Authorized by Rivers and Harbors Act of 1946**
 - **Constructed From 1956 to 1958**
 - **2,500 Acres**

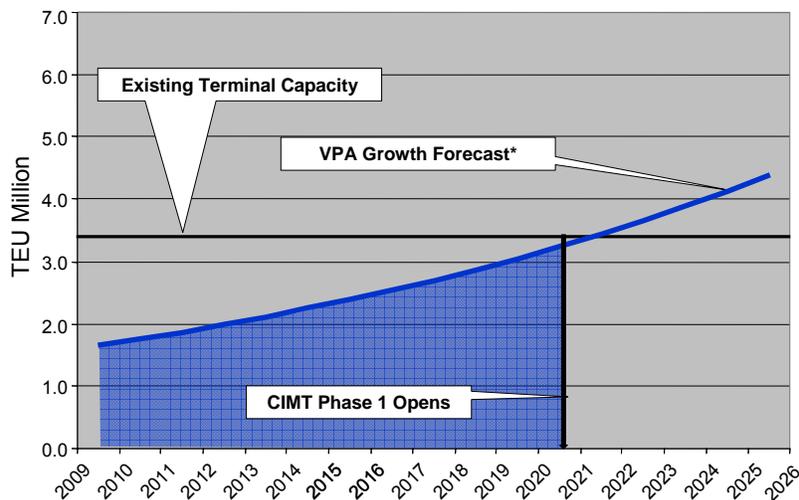


CIDMMA Capacity

- **Originally Designed to Hold 96 Million CY**
 - **Good Planning by Corps Has More than Doubled Original Lifespan**
 - Current Volume = 225 Million CY
 - Forecasted Future Capacity = 323 Million CY
- **CIDMMA Receives An Average Of 4.8 MCY of Dredged Material Annually**
- **Without Expansion, CIDMMA Will Reach Capacity in 2025**



VPA Growth Drives Schedule



* VPA Growth Forecast Based on Global Insight Projections of 6.3% for East Coast Port Demand



Project Construction



Construction Challenges

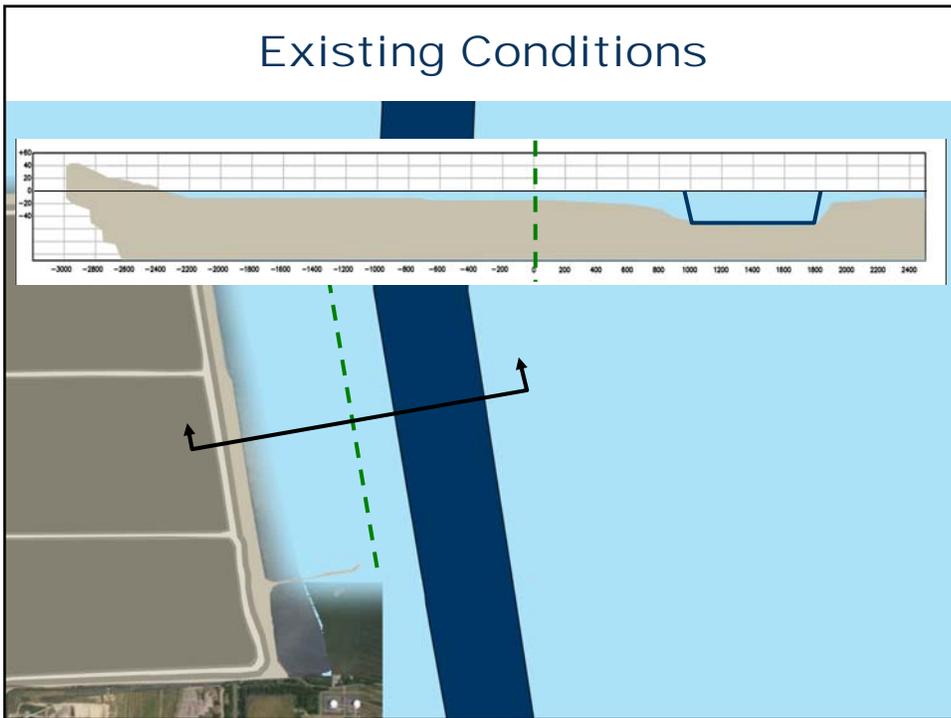
- **Poor Foundation - Large Settlements**
- **Availability of Suitable Materials**
- **Aggressive Ground Improvements**
- **Variety of Construction Alternatives**
- **Construction Schedule**



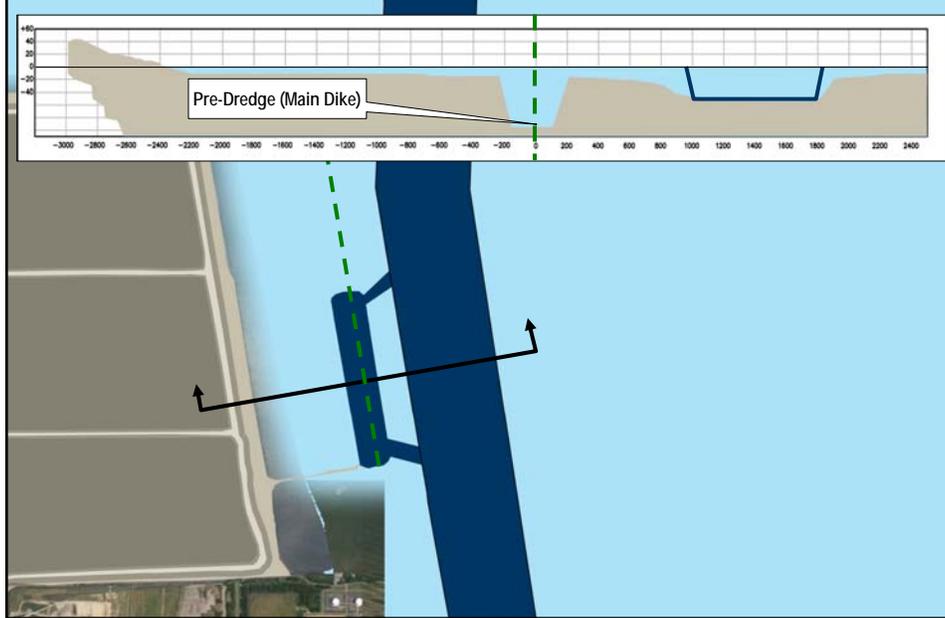
CIDMMA



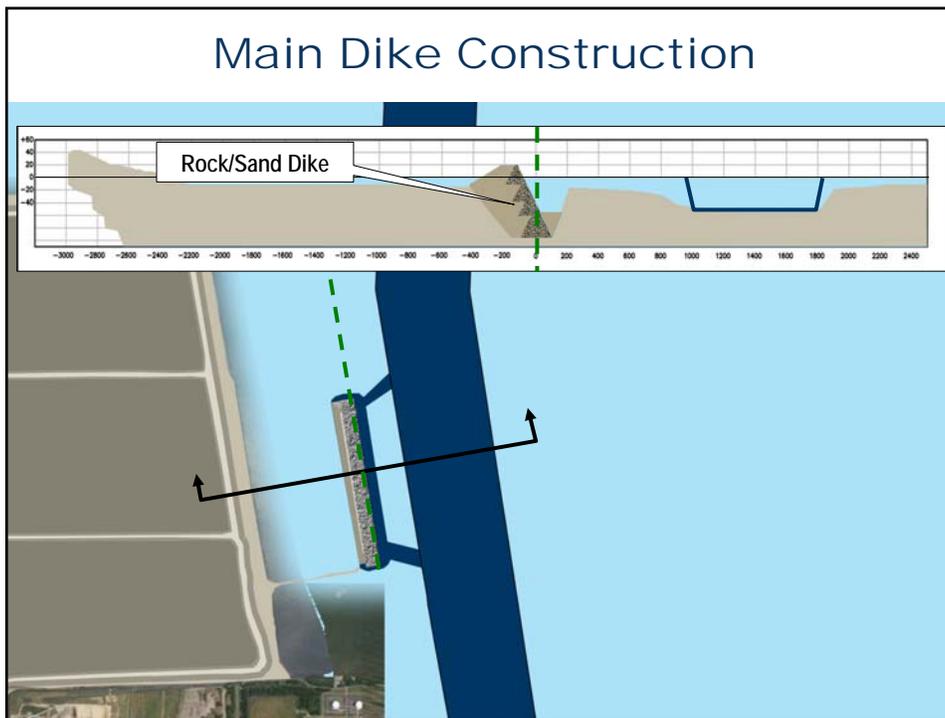
Existing Conditions



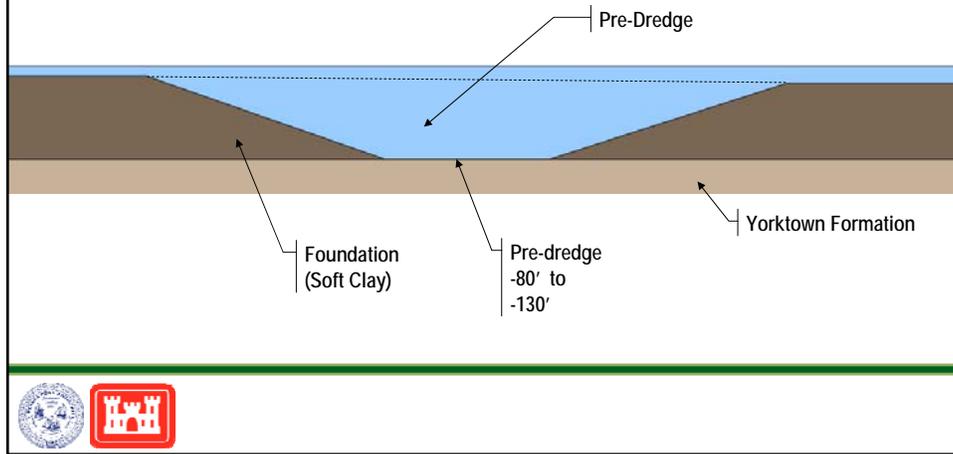
Pre-Dredging



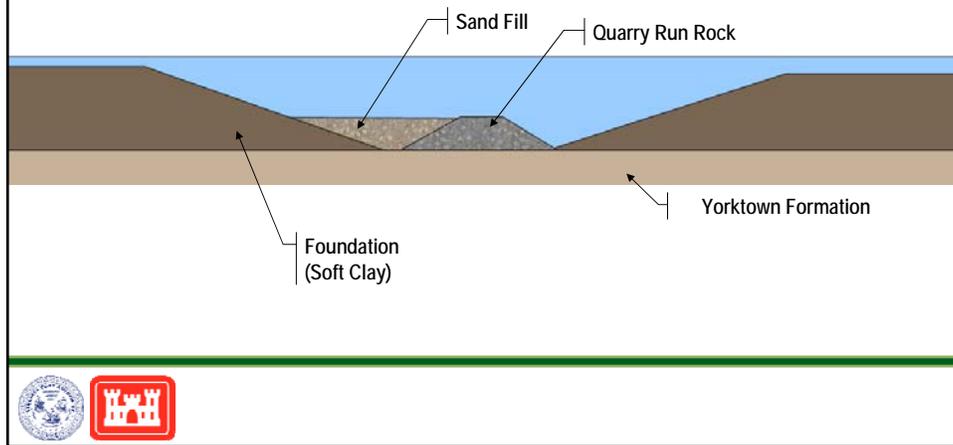
Main Dike Construction



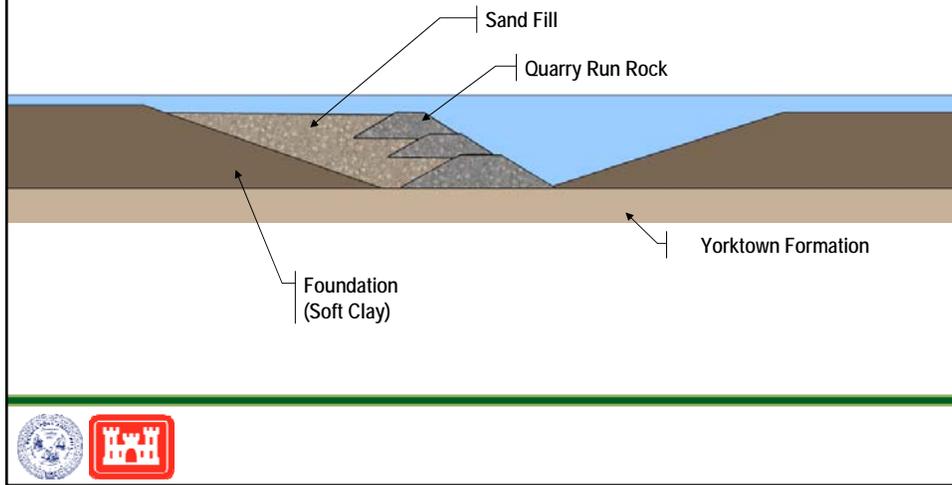
Rock/Sand Dike



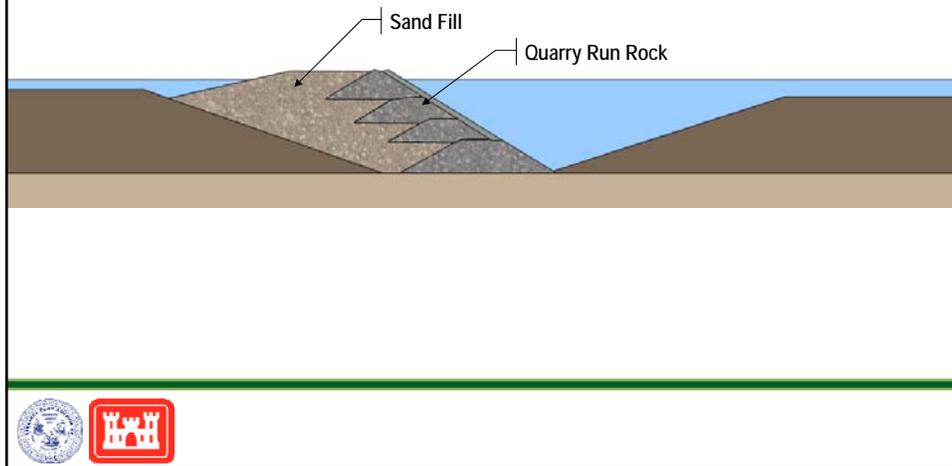
Rock/Sand Dike



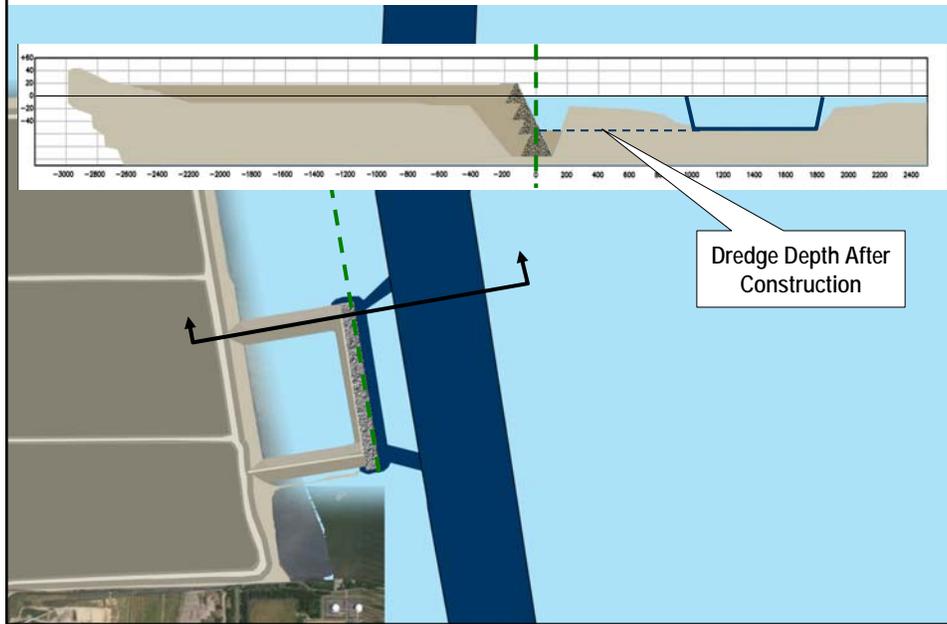
Rock/Sand Dike



Rock/Sand Dike

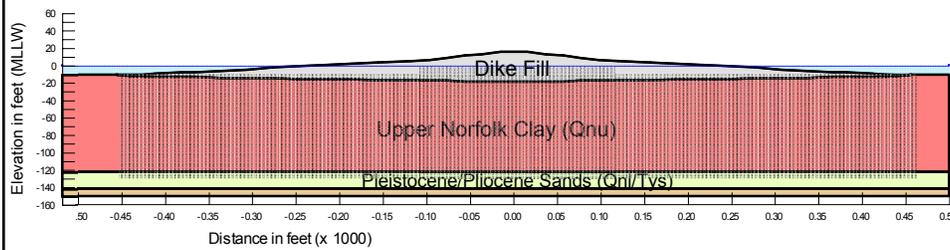


Cross Dike Construction

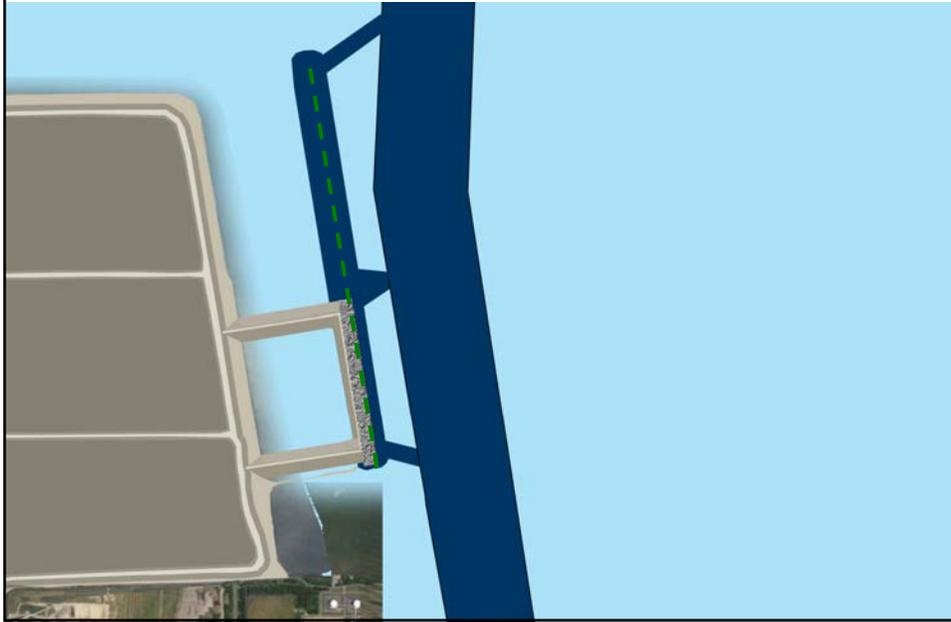


Typical Cross Dike

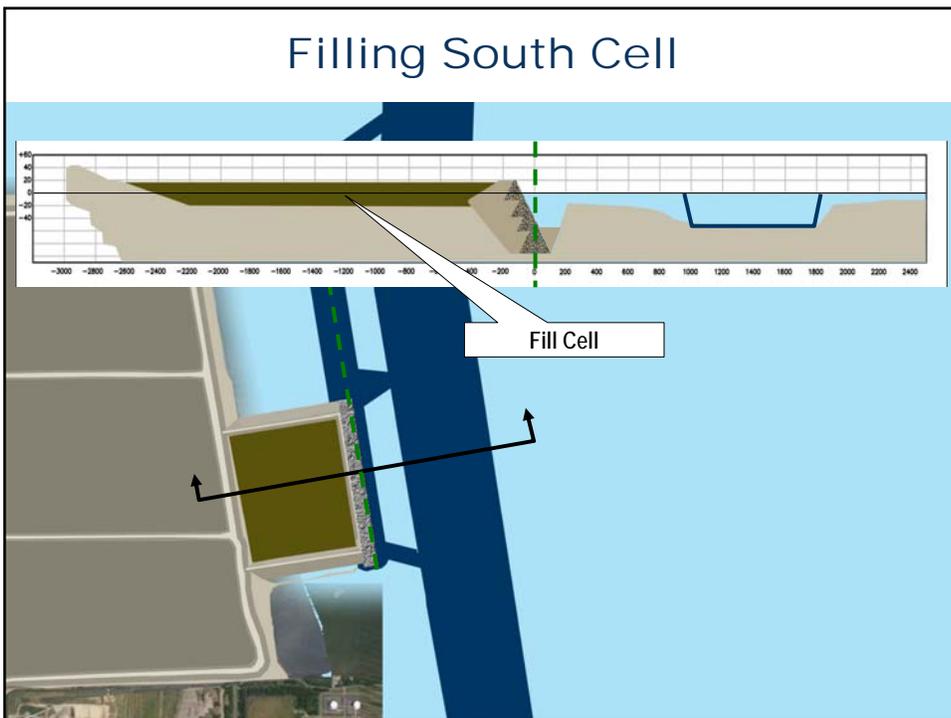
- Final target elevation = +18 ft (MLLW)
- Length of cross dike \approx 2400 lf



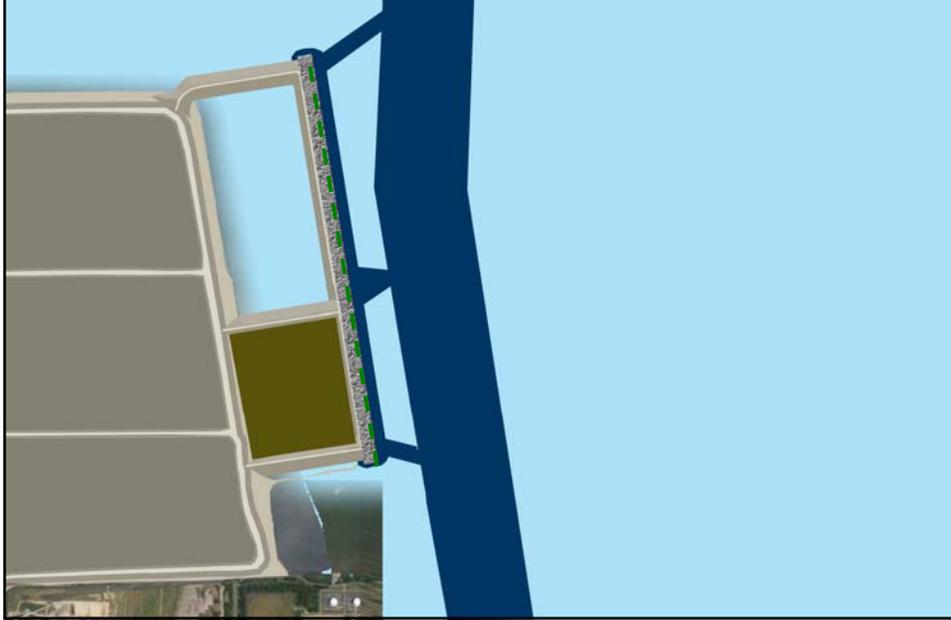
Pre-Dredging to the North



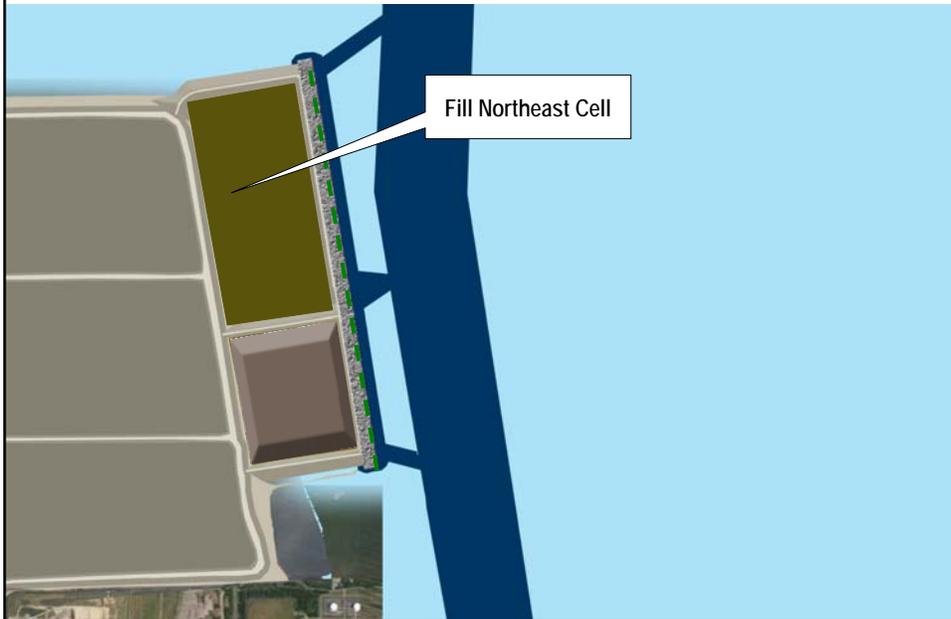
Filling South Cell



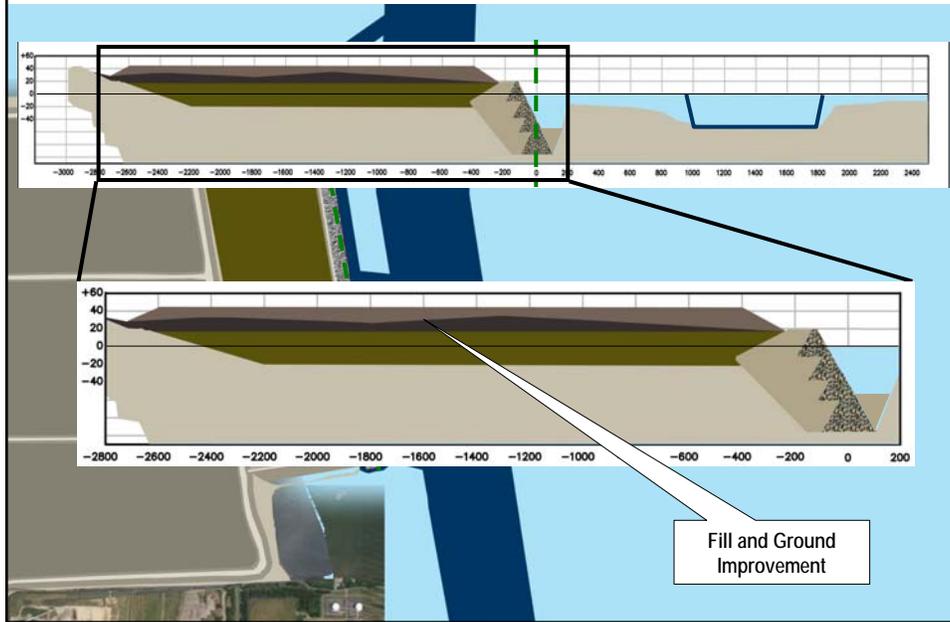
Construct North Dike



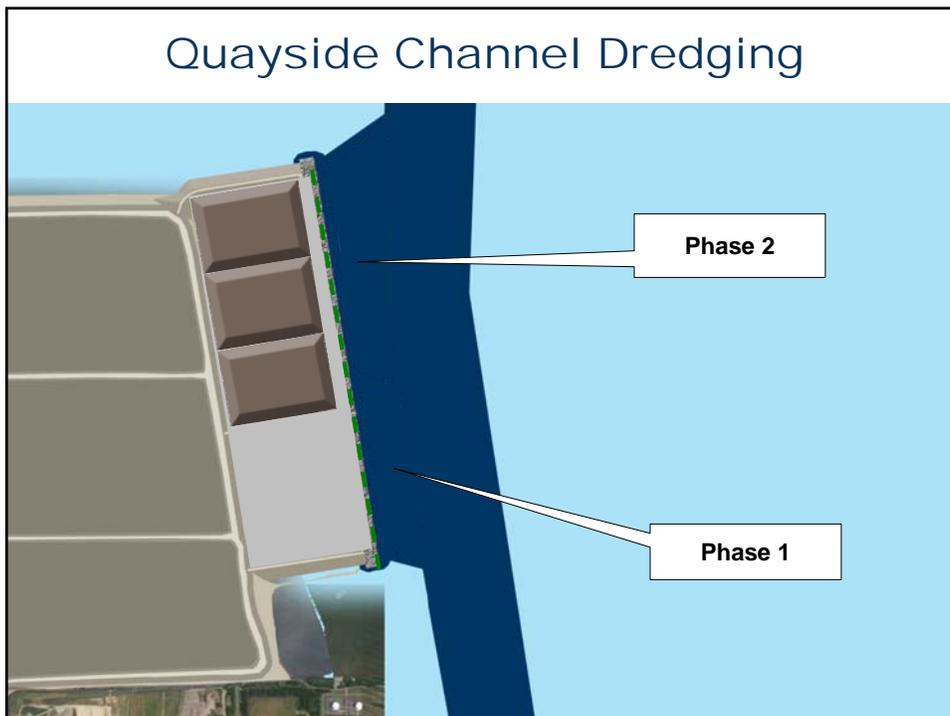
Filling North Cell



Achieving Final Grade



Quayside Channel Dredging



Multiple Placement Sites

- **CIDMMA Placement (~15%, ~4MCY)**
 - Minimize Fill / Maximize Life
 - Protect CIDMMA Borrow Material
- **CIEE Placement (~5%, ~2MCY)**
 - Mechanical Open Water Placement
 - Accelerates Land Reclamation
 - Better than Typical Low Quality Dredged Fill
- **Ocean Disposal (~80%, ~21MCY)**



Norfolk Ocean Disposal Site



Offshore Disposal Testing



- **Tier 3 Environmental Testing Required**
 - **Completed March 2009 – Favorable**
 - **~\$500,000 to Complete Sampling and Testing**
- **No Seasonal Restrictions**

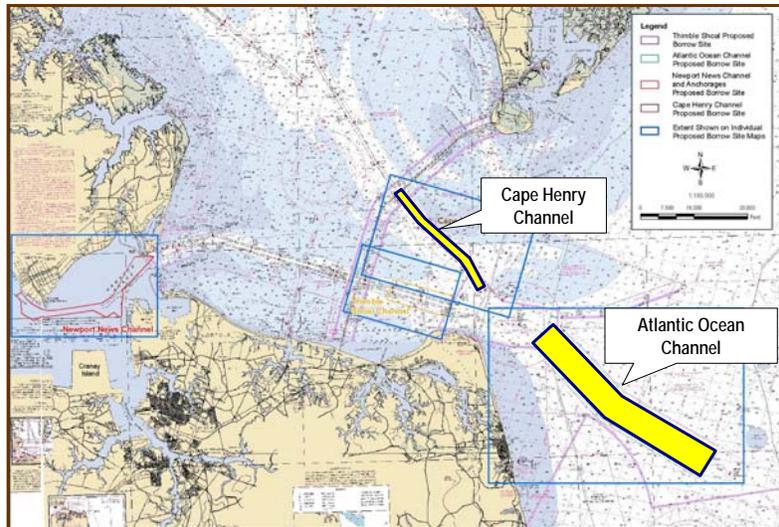


Cross-Dike Fill

- **~4.5 MCY of Hydraulically Placed Sand**
- **Sources:**
 - **Navigation Channels**
 - **Possibly Upland Borrow Pits**
- **Critical Properties:**
 - **Angle of Internal Friction, $\phi > 30^\circ$**



Navigation Channel Sites



Main Dike Sand Fill

- **~10 MCY Sand**
- **Mechanically or Hydraulically Placed**
- **Source:**
 - Upland Borrow Pits
 - Navigation Channels above -15'
- **Critical Properties:**
 - Angle of Internal Friction, $\phi > 33^\circ$



Rock Needed for Dikes

Quarry Run Rock ~ 6.5 Million Tons Total

- Shot Rock w/ Minimal Processing
- Phase 1: ~3 M Tons (2010 to 2013)
- Phase 2: ~3.5 M Tons (2014 to 2016)
- Production: 3,000 to 4,000 Tons per day
- Critical Properties:
 - Angle of Internal Friction, $\phi > 40^\circ$
- Riprap ($W_{50} = 500$ lbs)
 - 500,000 Tons Total



PVDs (Wick Drains)

- Marine Installed
 - ~8 Million LF per Cross Dike
- Land
 - ~ 4 Million LF per Cross Dike



Project Authorization



Where We Are Today

- **Project Authorized Through 2007 WRDA**
 - **50/50 Cost Share-Dike Construction**
- **Federal Appropriations Approved**
 - **\$100,000 in FY10 Energy and Water Appropriations Bill**
 - **Allows Dike Construction to Start**
- **All Environmental Permits Applied For**
 - **All Approvals Expected By Winter 2009**



Project Schedule

	Project Phase	Time Frame
Eastward Expansion	Engineering & Design	2007 – 2010
	Dike Construction	2010 – 2013
Marine Terminal Construction	Filling	2013 – 2016
	Phase I	2016 to 2020
	Phases II & III	2020 to 2026
	Phase IV	2026 to 2034



Funding Update



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