The World of Dredging and Dredges

Dredging Projects and the Environment:

U.S. Army Corps of Engineers Navigation Projects, Business Processes, and Real World Issues

John F. Tavolaro
US Army Corps of Engineers, New York District
What You Will Learn

- Why the U.S. Army Corps of Engineers is involved in dredging projects
- The process we follow to build and maintain navigation projects
- Environmental considerations and how they affect the project
- “Nuts and bolts” of construction contracts
Overview

Background and History

Projects and Project Management

- Phases of a Corps of Engineers Project
- Regulatory / Environmental Considerations
- Construction Contracts

Video Clip
Background and History
Brief History:

- June 1775 - Continental Congress Establishes “Chief of Engineers”
- Rufus Putnam – First Chief of Engineers
- 1802 – West Point – First US Engineering School
- 1780 to 1820 – Roads and Railroads
- 1824 – First Navigation Project – Dredging and De-Snagging on Ohio and Mississippi Rivers
- 1834 – Improvements of Navigation on Hudson River
Corps Of Engineers Divisions and Districts
“I am firmly convinced that but for the existence of the Corps of Engineers’ peacetime organization and its resources of men, methods, training and supply, and its close association with the military through the years, the history of the Pacific area in World War II would have been written more in blood than in achievement.”

General Dwight Eisenhower, Chief of Staff, in the Hearing Before the Committee on Armed Services on H.R. 3830, 80th Cong., 1st session (Washington, DC: GPO, 1947).
Types of Dredges
Six Phases of a Corps of Engineers Project:

1. Enthusiasm
2. Disillusionment
3. Panic
4. Search for the Guilty
5. Punishment of the Innocent
6. Praise and Honors for Those Who Did Nothing

Well, NOT REALLY........
Five (Real) Phases of a Corps of Engineers Project:

1. Authorization by Congress
2. Planning
3. Engineering and Design
4. Construction
5. Operations and Maintenance (O&M)
Authorization by Congress

- Water Resources Development Act (WRDA)
  - Formerly called “Rivers and Harbors Act”
  - Called WRDA since 1986
  - Passed every two years
  - Authorizes studies and construction

- Annual Appropriations Bills (the cash)
From The Water Resources Development Act of 1996:

“SEC. 424. PORT OF NEW YORK - NEW JERSEY NAVIGATION STUDY.

The Secretary shall conduct a comprehensive study of navigation needs at the Port of New York – New Jersey (including the South Brooklyn Marine and Red Hook Container Terminals, Staten Island, and adjacent areas) to address improvements, including deepening of existing channels to depths of 50 feet or greater, that are required to provide economically efficient and environmentally sound navigation to meet current and future requirements.”
Corps of Engineers Planning Phase

1. WRDA Authorization
2. Reconnaissance Study
3. Feasibility Cost Sharing Agreement (FCSA)
4. Feasibility Study
Projects and Project Management

Reconnaissance Study

- Determines “Federal Interest”
- Identifies Potential Local Sponsors
- Fully Funded by Federal Government
- Normally no more than 12 Months to Complete
Projects and Project Management

Feasibility Cost Sharing Agreement (FCSA)

- Project Sponsor Identified
  - State and/or Local Government & Agencies
  - Bi-State Agencies / Authorities
- Project Sponsor Responsibilities
  - Provides Cash or In-kind Services (incl. Disposal Sites)
  - Provides LERR During Construction
  - Hold and Save US Free from Damages during Construction and O&M
Feasibility Study

- Identifies Problems and Opportunities
- Forecast “Without Plan” Conditions
- Develops Alternative Plans
  - “Net Economic Development” (NED) Benefits
- Evaluates Effects
- Compares Alternative Plans
- Selects “Recommended Plan”
  - B/C Ratio > 1.00
Projects and Project Management

Project Design Phase

- Pre-Construction Engineering & Design (PED)
  - PED Project Cooperation Agreement
  - General Design Memorandum (GDM)
    - Final Project Design
    - Cost-sharing Considerations
    - Environmental Requirements (EIS, etc.)
Construction Phase

- WRDA Authorization
- Project Cooperation Agreement (PCA) for Construction
- Preparation of Plans & Specifications
- Award and Manage Construction Contracts
Projects and Project Management

Operations & Maintenance Phase

- Project Condition Surveys
- Programming and Budgeting / Priorities
- Engineering & Design
  - Environmental Permits
  - Plans & Specifications
- Construction Contracts
- Publication of Controlling Depths
Environmental Laws & Environmental Issues
Key Environmental Laws

- Rivers and Harbors Act 1899
- National Environmental Policy Act (NEPA)
- Clean Water Act
- Ocean Dumping Act
- Coastal Zone Management Act
- Endangered Species Act
- Magnuson–Stevens Fishery Conservation and Management Act
- Fish and Wildlife Coordination Act
Rivers and Harbors Act 1899

- Applies to Navigable Waters
- Section 10 Prohibits:
  - Unauthorized Obstruction or Alterations
  - Unauthorized Construction of Structures
- Authorization = Corps Permit
National Environmental Policy Act (NEPA) 1969

- National Policy = “Productive and enjoyable harmony” with Environment
- Federal Agencies must give “appropriate consideration” to Environment

Environmental Assessments

Environmental Impact Statements
Clean Water Act 1977

Section 404:
- Discharges of Dredged or Fill Material into Waters of U.S.
- Secretary of Army Can Issue Permits
- EPA Administrator has “veto power”

Section 401:
- Applies to Section 404 Actions
- State Certification – Discharge Meets State WQ Standards
Ocean Dumping Act 1972

No dumping **anything** in the Ocean Except as Authorized by Permit

Permitting Agencies: USEPA (Sect. 102) and USACE (Sect. 103)

Exclusions: Fish Waste
Artificial Fishing Reefs
Vessel Propulsion and Fixed Structures
Emergency to Safeguard Life at Sea
Ocean Dumping Ban Act of 1988

- Amends the Ocean Dumping Act
- Makes it unlawful for any person to dump sewage sludge or industrial waste into ocean waters after December 31, 1991;

United States Public Vessel Medical Waste Anti-Dumping Act of 1988

- Prohibits, 6 months after enactment, disposal of potentially infectious medical waste into ocean waters by a "public vessel".
- Also adds medical wastes to the list of materials prohibited under the Ocean Dumping Act

What's Left? ----- Dredged Materials!
Coastal Zone Management Act 1972

States Can Develop Coastal Zone Management (CZM) Plans

CZM Plans Approved by Secretary of Commerce

Section 307:

- Requires Federal Agencies to Comply with CZM Plan to "Maximum Extent Practicable"
- Permit Applicants Must Comply or No Permit Can Be Issued
Endangered Species Act 1973

Intent Of Congress = Conserve Threatened & Endangered Species and Habitats

For Federal Actions Agencies Must:

- Consult with USF&W and/or NMFS
- Carry Out Programs for Species Conservation
- Ensure Their Actions Won’t Likely Jeopardize Species Continued Existence

Federal Action = Authorized, Funded, or Carried Out
Magnuson–Stevens Fishery Conservation and Management Act Amendments 1996

- Governs U.S. Marine Fisheries Management
- NMFS Establishes “Essential Fish Habitat”
- Agencies Evaluate their Actions – Consult with NMFS
- NMFS Provides “Conservation Recommendations”
- Agencies Respond

Conservation Recommendation are not binding
Fish and Wildlife Coordination Act 1956

Intent of Congress = Protect Quality of Aquatic Environment Concerning Fish and Wildlife Resources

Agencies must consult with USF&W and/or NMFS on their Actions
Key Environmental Issues

- Seasonal Dredging Windows
- Endangered Species Protection
- Water Quality Protection
- Habitat Protection
- Dredged Material Disposal
Regulatory / Environmental Considerations

Seasonal Dredging Windows

- Windows of Time When Dredging is Allowed
- Wildlife Protection
  - Fish / Shellfish Migration and Spawning
  - Fish / Shellfish Overwintering
  - Bird Nesting and Foraging
  - Endangered Species Protection
- Water Quality Protection
  - Dissolved Oxygen
  - Turbidity
Endangered Species Protection

Key Species:
- Piping Plover and Least Tern
- Sea Turtles
- Shortnose Sturgeon
- Sea Beach Amaranth
- Whales
- Bald Eagles

Primary Protective Measures:
- Seasonal Windows
- Endangered Species Inspectors
- Relocations
Water Quality Protection

Key Issues:
- Dissolved Oxygen
- Turbidity
- Toxicity
- Bioaccumulation of Contaminants

Primary Protective Measures:
- Seasonal Windows
- “Best Management Practices”
- Restrictions on Barge Overflow / Effluent
- Monitoring with Action Levels
Habitat Protection

Key Issues:
- Spawning Areas
- Nesting Areas
- Overwintering
- Wetlands

Primary Protective Measures:
- Seasonal Windows
- Avoidance
- “Best Management Practices”
Dredged Material Disposal

- Aquatic Placement
- Upland Placement

Corps of Engineers Policy:

- Least Cost, Environmentally Acceptable
- Beneficial Use of Dredged Material
Aquatic Placement

Open Water Placement

Key Issues:

- Toxicity
- Bioaccumulation
- Location

Beach Nourishment

Key Issues:

- Endangered Species
- Habitat
Upland Placement

Key Issues:
- Effluent
- Habitat
- Conflicting Land Use

Biggest Challenges:
- Cost
- Land Availability
Construction Contracts

Key Issues:

- Bid Guarantee
- Performance and Payment Bonds
- Competitive Prices
- Prevailing Wages (Davis-Bacon Act Wage Rates)
- Safety
- Environmental Compliance
Key Contract Clauses for Dredging:

- Variation in Estimated Quantity – VEQ (+/- 15%)
- Differing Site Conditions
  - Different Dredged Materials
  - Weather or Sea Conditions
- Changes in Dredging or Disposal Site
- Changes Clause
Port of New York and New Jersey

- 240 miles of federal channels
- 230,346 direct & indirect jobs
- $14 B in NJ & NY wages & taxes
- Serves 35 percent of America’s population
Significance of the Port

Largest port on the East Coast

Largest petroleum products importing port & cocoa port in the country.

$100.36 B in ocean-borne cargo

4 M containers (TEUs) annually

Largest vehicle import/export handling port in the country (625 K)

Passenger Ship Terminal
Passengers: 397,340
Deepening the Port

Arthur Kill (40’-41’) $362 M
Kill van Kull and Newark Bay (45’) $736 M
Port Jersey (41’) $121 M
Pathways to Existing Destinations and Depths

- AMBROSE AND ANCHORAGE CHANNELS (45’)
- BAY RIDGE, RED HOOK, AND BUTTERMILK CHANNELS (40’)
- PORT JERSEY AND CLAREMONT TERMINAL CHANNELS (35’ & 28’, authorized to 41’ & 38’)
- KILL VAN KULL (40’, auth 45’)
- NEWARK BAY CHANNEL (40’, auth 45’)
- ARTHUR KILL (35’, auth 41’)

Harbor Navigation Study