The Port of Hueneme Confined Aquatic Disposal Project: A Unique Partnership for Contaminated Sediment Management

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Overview

- Site and project history
- Confined Aquatic Disposal (CAD) concept
- Partnership strategy and cost allocations
- Permitting and design
- Post-construction monitoring
- Lessons learned
- Project benefits
Project Team

- U.S. Navy (USN)
  - Naval Base Ventura County
  - Naval Facilities Engineering Command (NAVFAC) Southwest
- Oxnard Harbor District (OHD)
- U.S. Army Corps of Engineers (USACE), Los Angeles District
- Anchor QEA, L.P.
  - Everest International Consultants, Inc.
  - iLanco Environmental, LLC
Port of Hueneme
Current Uses

- **USN**
  - Construction Battalion Center
  - Naval Surface Warfare Center
  - Pacific Missile Test Range

- **OHD**
  - Produce import/export
  - Roll On/Roll Off automobile import/export
  - Break bulk/specialty cargo
Federal Channel had accumulated approximately 200,000 cubic meters of mostly clean maintenance material.

USACE had authority to deepen Federal Channel by approximately 1.5 meters.

None of the OHD or USN berths had been dredged in decades, resulting in operational constraints.

Contaminated sediments existed within much of Port of Hueneme Harbor.
Sediment Contamination

- Totaled approximately 220,000 cubic meters
- Approximately 60 percent from berths and 40 percent from Federal Channel
- Chemicals of Concern (COCs) include PAHs, PCBs, DDT, and TBT
- Mostly fine sands, silts, and clays
Management Alternatives

- Landfill disposal
- Beneficial reuse
- On-site near shore confined disposal facility (CDF)
- Port fill site at Port of Los Angeles (POLA) or Port of Long Beach (POLB)
- On-site CAD
Rationale for CAD Approach

- Provided an on-site solution
- Not tied to other development or funding
- Provided environmental protection
- Provided local beach nourishment
- Allowed for future Port of Hueneme Harbor deepening to advance
- Restored 100 percent use of USN/OHD wharves
- Provided complete solution for all three parties
- Shared resources = cost effective
Construction Sequencing

Step 1: Excavate CAD

Hueneme Beach Nourishment
Construction Sequencing

Step 2: Place Contaminated Sediment into CAD
Construction Sequencing

Step 3: Place Cap Material onto CAD
Port of Hueneme CAD Cross Section

-85’ MLLW
-56’ MLLW
-46’ MLLW
-43’ MLLW

Clean Cap
Contaminated Sediments
Funding Strategy

• Challenges
  - Raising funds (total project cost approximately $14 million)
  - Coordinating budget and funding schedules
  - Contractor negotiations and scheduling

• Opportunities
  - All partners had some funds allocated for smaller individual projects
  - Management and staff committed to success
  - Significant project momentum
Cost Sharing Approach

- Break project into components (e.g., CAD cell excavation, USN berths, OHD berths, cap armor placement, long-term monitoring)
- Estimate costs associated with each component
- Assign components to partners based on either ownership or limitations in authority
Cost Sharing Approach

• Fine tune cost components to accommodate secondary cost sharing strategies and funding schedules
  - Financial balancing to make project more equitable among all partners
  - Recognize previous agreements between partners
  - Account for contaminated sediment ownership allocation
## Cost Sharing Approach Responsibilities

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<td>- Dredging OHD Wharves</td>
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Contracting Approach

- USACE had existing contract with Manson Construction for O&M dredging in Port Hueneme and Channel Islands Harbor
- Contract modification issued for additional work
- OHD/USACE signed Cost Sharing Agreement
- USACE/USN Cost Sharing Agreement for dredging was already in place
Contracting Approach

- OHD/USN signed Cost Sharing Agreement for CAD construction and long-term monitoring/liability
- All funds transferred to USACE for contracting and management
Permitting Strategy

- Project subject to California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) regulations
  - Joint NEPA/CEQA document to streamline processes
- Also subject to Clean Water Act (CWA) regulations
Permitting Strategy

• Separate regulatory components
  - USACE O&M dredging and disposal component (NEPA)
    • Supplemental NEPA document for CAD disposal
  - USN berth dredging and disposal (NEPA and CWA)
  - OHD berth dredging and disposal (CEQA and CWA)
  - CAD cell construction and beach nourishment (NEPA, CEQA, and CWA)
• Joint USN/OHD application for permits to construct the CAD and dredge respective wharves
Initial Design Elements

- Contaminated sediment removal
  - Total of approximately 220,000 cubic meters
  - Mechanically dredged using clamshell
  - Restricted dredging required for some berths

- CAD cell construction and contaminated dredged material disposal
  - Hydraulic excavation of CAD cell
  - Material pumped to beach
  - Contaminated material placed via bottom-dump scow
Initial Design Elements

- CAD cell cap design
  - Chemical isolation
  - Hydrodynamic modeling
  - Geotechnical (i.e., bulking and settling)
  - Bioturbation
Cap Design Critical Elements

- Ship propeller wash scour from USN destroyers
  - Modeled bottom velocities up to 11.4 feet per second
  - Worst-case assumptions capable of producing greater than 5 feet of scour

- Chemical flux
  - Some aquifers in region experience artesian conditions
  - Final elevation critical to prevent significant upward flux
Project Timeline

- Conceptual design for project completed in April 2007
- Design and permitting completed in August 2008 (16 months from conception)
- Construction began in December 2008
- Construction completed in July 2009
- Approximately 1 million cubic yards of dredging
Monitoring Results

• One year of monitoring completed
  - Hydrographic surveys, sediment cores, sediment chemistry, porewater samples

• CAD cell performing as designed
  - Sufficient cap thickness achieved
  - Contaminant isolation achieved
  - Scour resistance achieved

• Authorized depths restored to USN and OHD berths and to Federal Channel
Lessons Learned

- Commitment to succeed from project partners
  - Managers set the tone for staff
- Leverage existing agreements
  - Streamline legal review and contracting processes
- Internal and external communication is critical throughout process
  - Project team coordination is open and continuous
  - Be proactive in communicating with external stakeholders
Project Benefits

- **Recreational:** Restored Hueneme Beach
- **Operations:** Restored full navigation use to Harbor
- **Future Growth:** Provides clear path for Harbor deepening
- **Financial:** More than $30 million in benefits achieved for less than $14 million in costs
Biggest Accomplishment – A Successful Model for a Teaming Approach