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

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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

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Port of Hueneme

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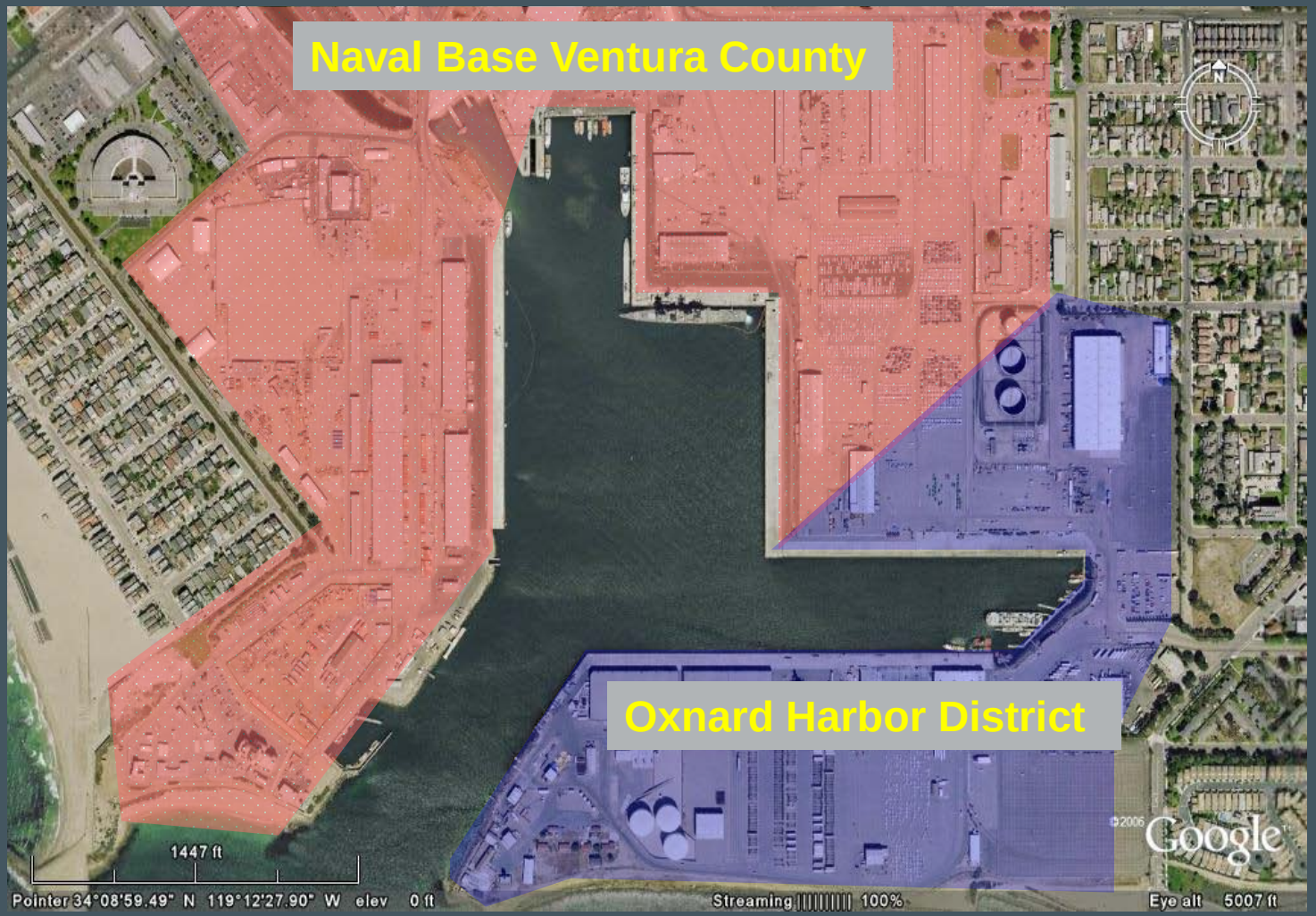
Port of Hueneme – Joint Use



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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

Multiple Sediment Issues in Harbor

- 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

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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

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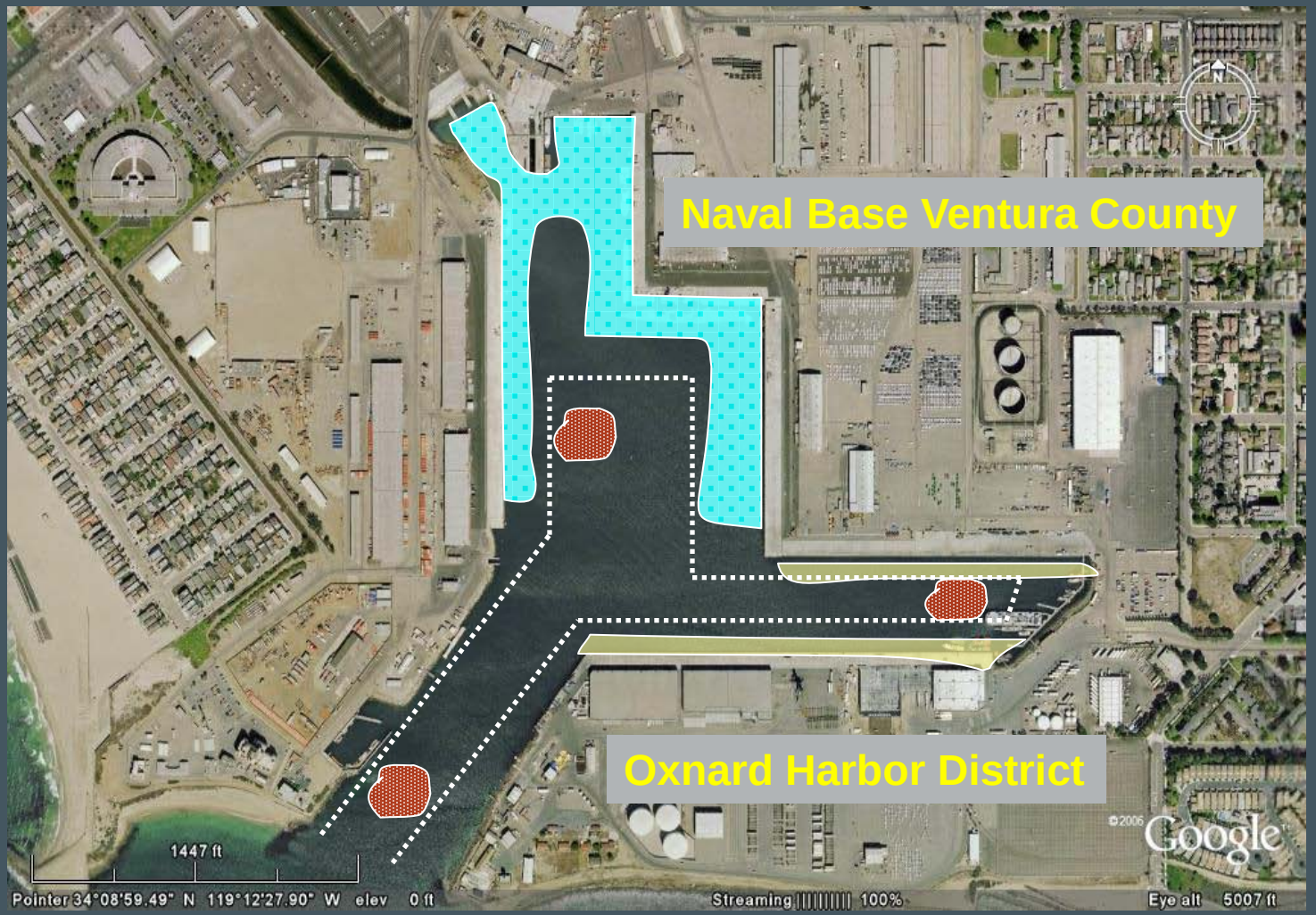
Contaminated Sediment



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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

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Construction Sequencing

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Construction Sequencing

Construction Sequencing

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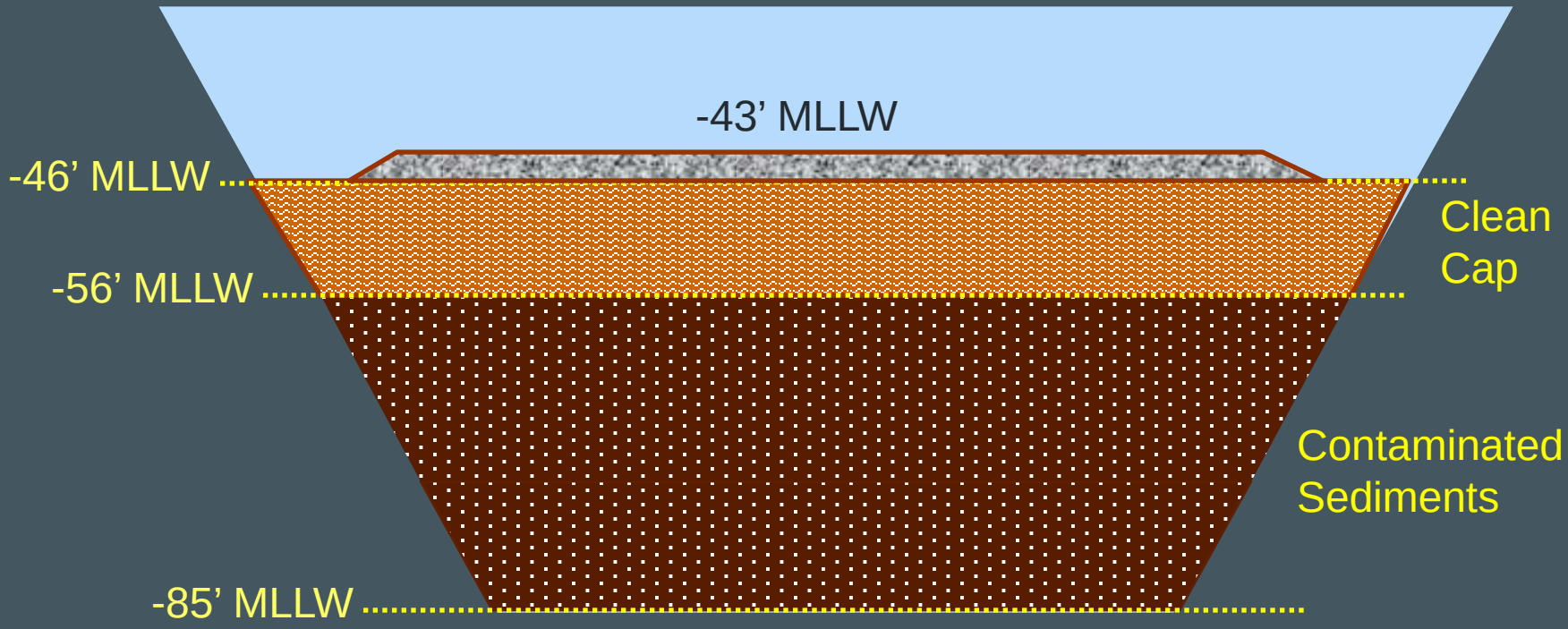
Port of Hueneme CAD Cross Section



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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

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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

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Cost Sharing Approach Responsibilities

Project Feature	Responsibility		
	USACE	USN	OHD
Project Development			
– CEQA/NEPA Permitting		X	X
– Engineering Design		X	X
Contracting			
– Contract Management	X		
Construction			
- Equipment Mobilization	X		
- CAD Cell Excavation		X	X
- Dredging USN Wharves		X	
- Dredging OHD Wharves			X
- Dredging “Hotspots” within O&M Channel	X		
- Capping	X		
- Placing Rock Armor		X	X
- Water Quality Monitoring	X	X	X
- Sediment Confirmational Sampling	X	X	X
- Construction Management	X	X	X
Post-Construction Activities			
- Long-term Monitoring		X	X

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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

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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

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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

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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

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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

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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

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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

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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

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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

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Biggest Accomplishment – A Successful Model for a Teaming Approach

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