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Long-term Success of the Port of Hueneme Confined Aquatic Disposal Site

Presented by John Demers, Chief Operations Officer, Oxnard Harbor District

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San Rafael, California

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Port of Hueneme

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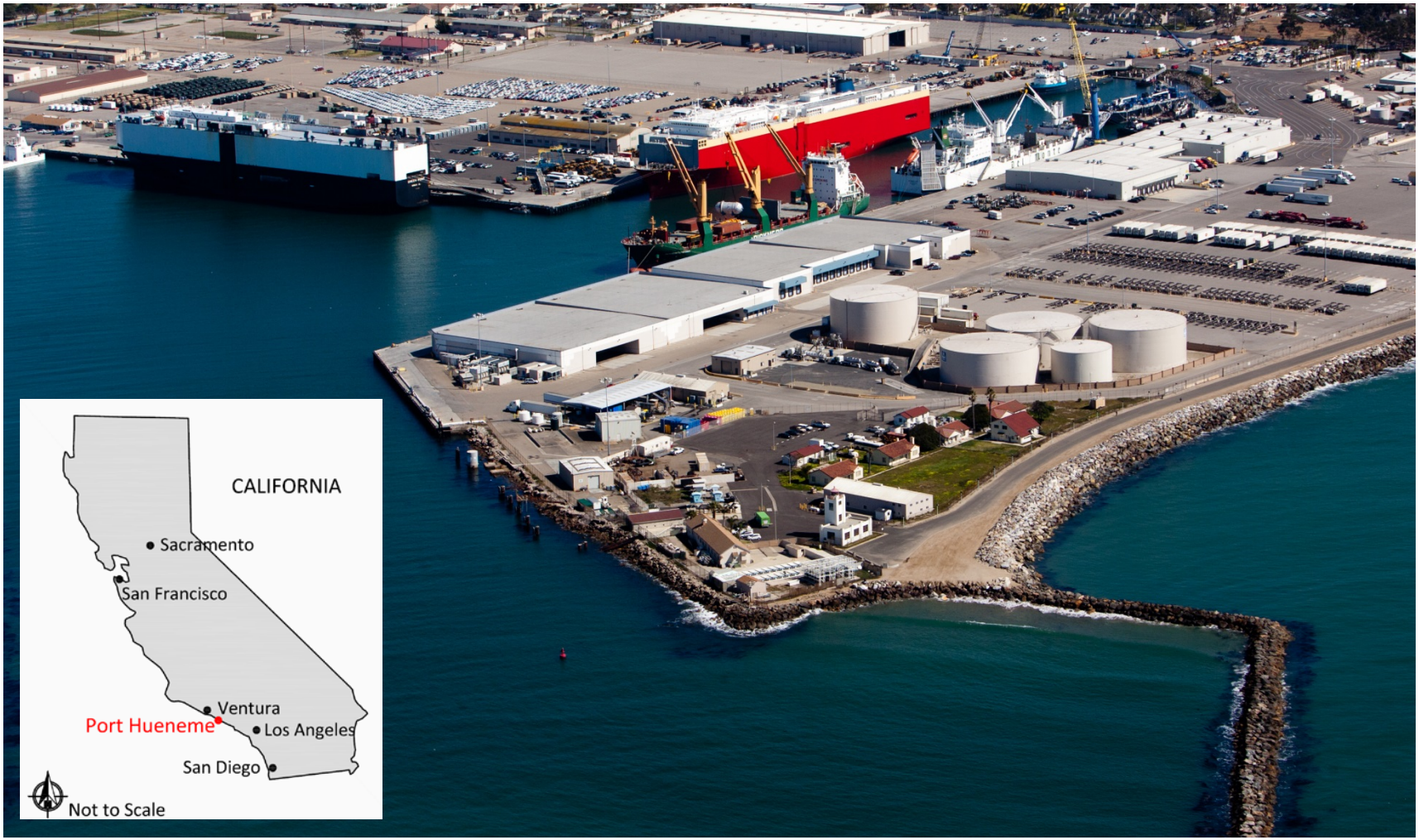

Port of Hueneme: Joint Use

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Project Team

- Oxnard Harbor District (OHD)
- USACE, Los Angeles District
- U.S. Navy (USN)
  - Naval Base Ventura County
  - Naval Facilities Engineering Command (NAVFAC) Southwest Division
- Anchor QEA, LLC
  - Everest International Consultants, Inc.
  - iLanco Environmental

Multiple Sediment Issues in Harbor

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- Federal Channel had approximately
  260,000 cubic yards of mostly clean maintenance material
- OHD and USN berths had not been dredged in decades, resulting in operational constraints
- Contaminated sediments existed within much of Port of Hueneme Harbor
- USACE had authority to deepen Federal Channel and OHD berths by approximately 5 feet

Contaminated Sediment

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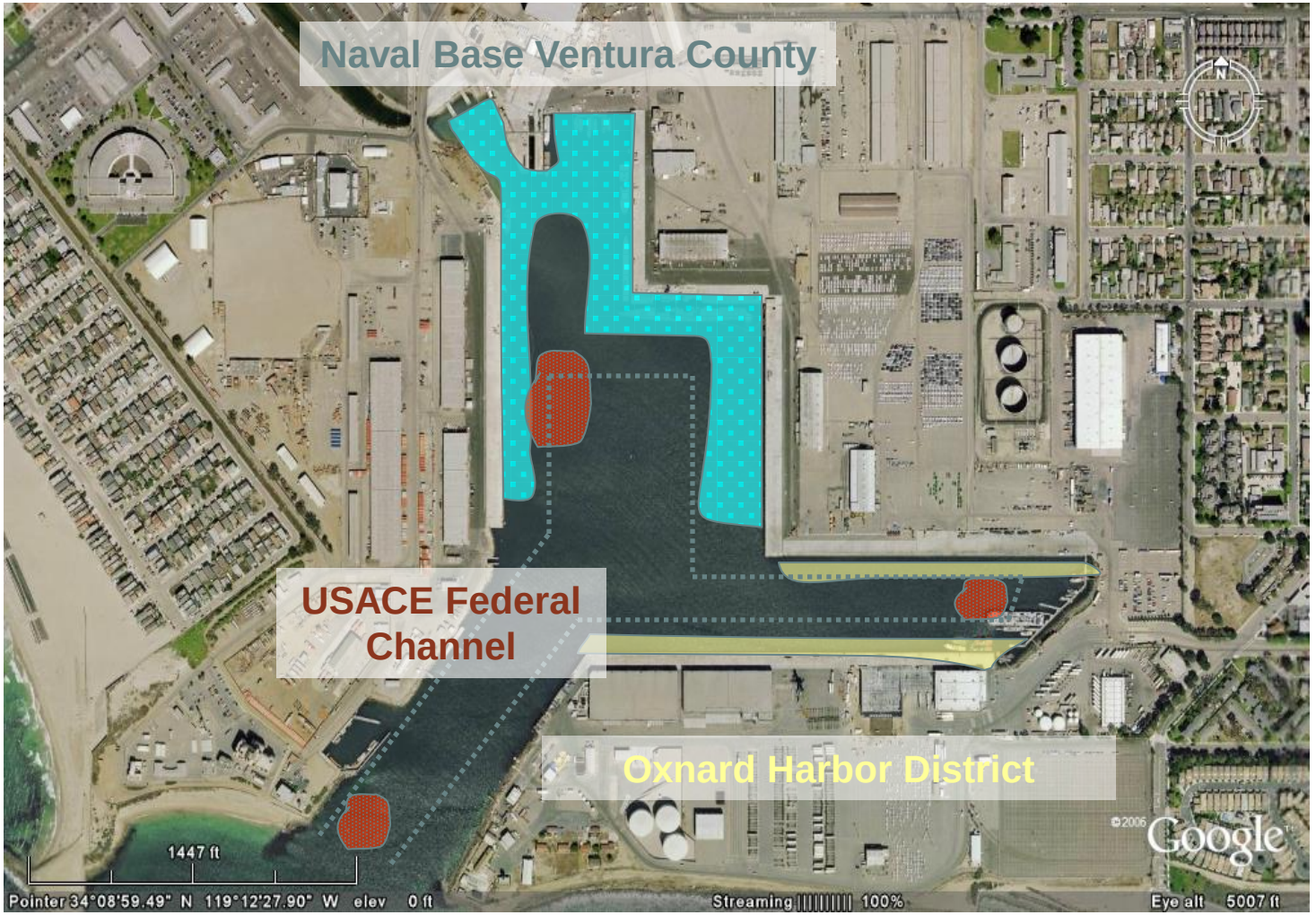

Sediment Contamination

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- Approximately 290,000 cubic yards to be dredged
  - 60% from OHD and USN berths
  - 40% from Federal Channel
- Chemicals of concern included PAHs, PCBs, DDT, and TBT
- Sediments composed mostly of fine sands, silts, and clays with low organic carbon

Rationale for CAD Approach

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- 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% use of OHD wharves and USN berths
- Provided complete solution for all three parties
- Shared resources allowed cost effectiveness

Construction Sequence

CAD Excavation

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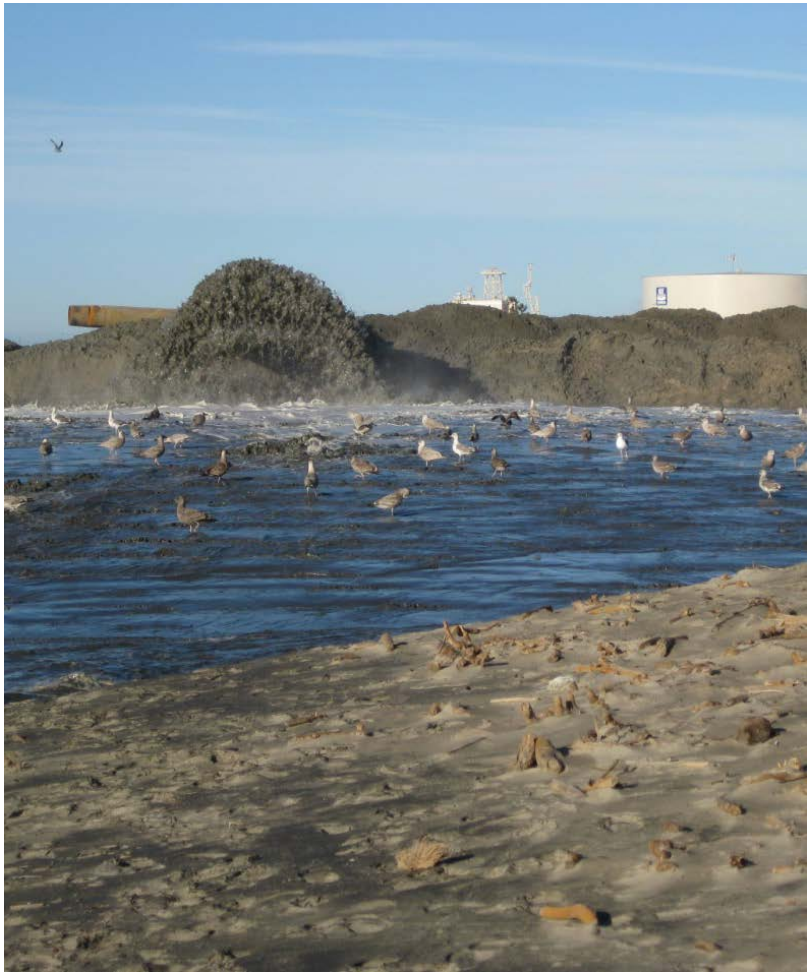

Contaminated Sediment Dredging

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Contaminated Sediment Placement

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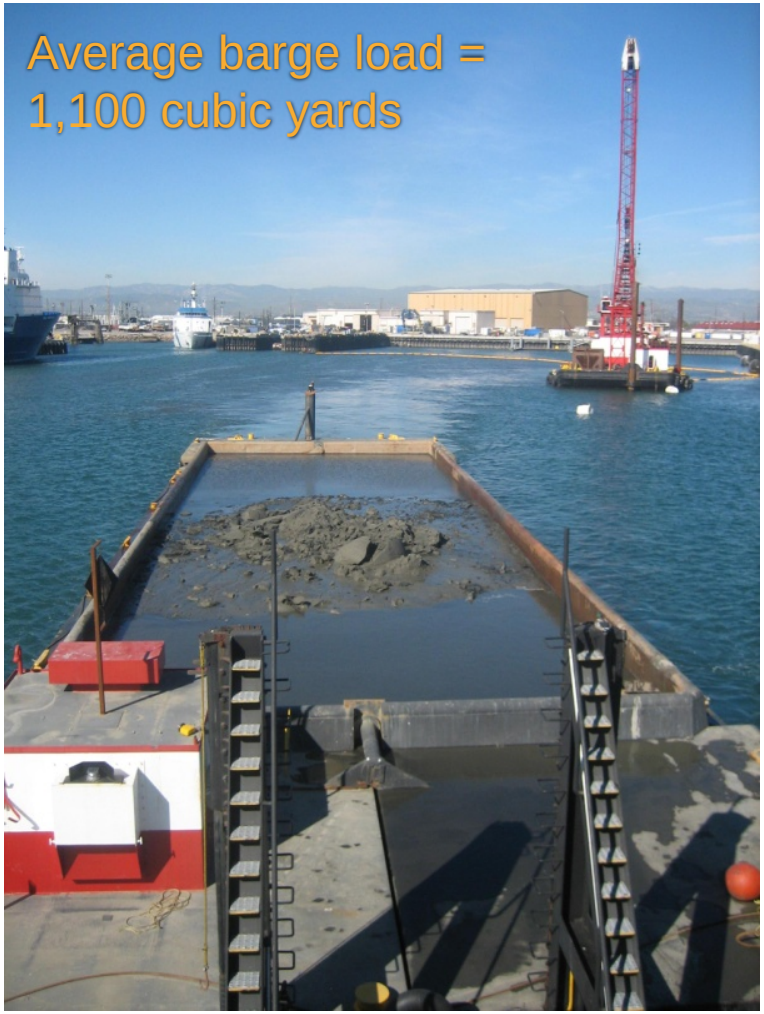

CAD Cell Capping

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CAD Cell Armor Rock

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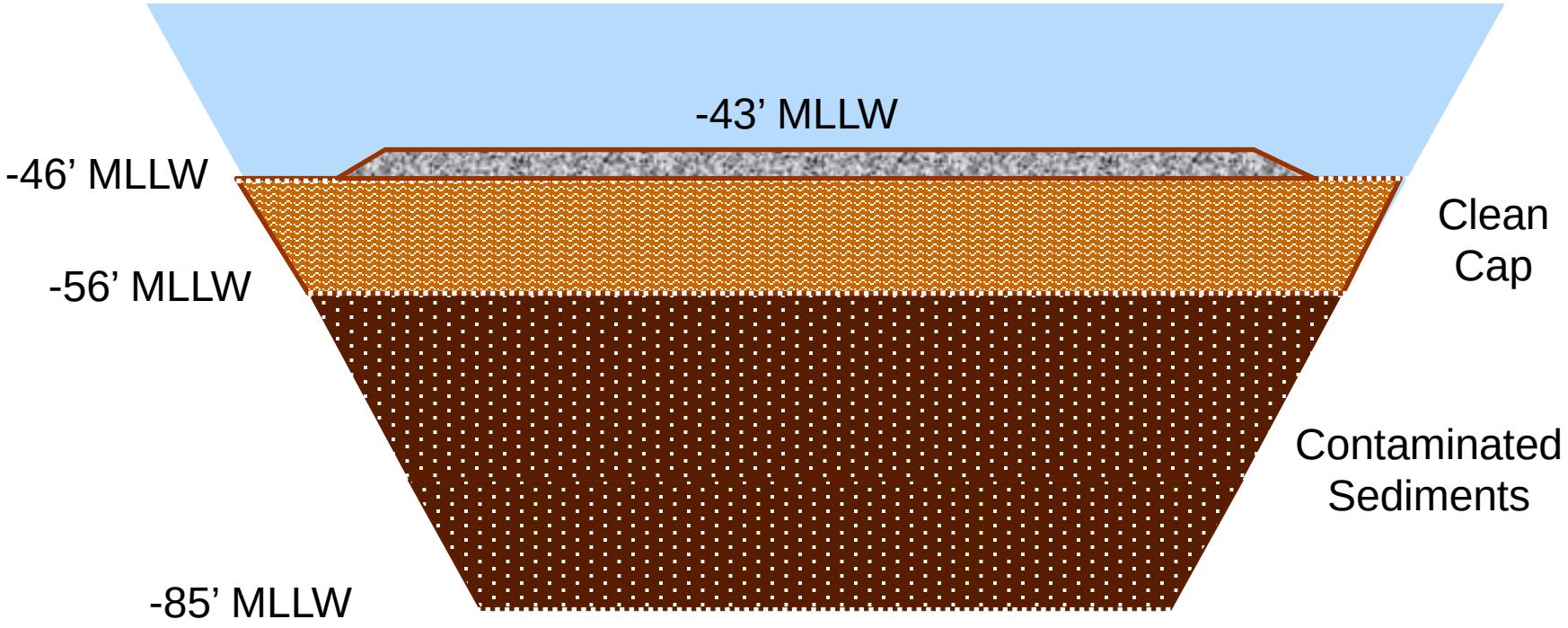
Port Hueneme CAD Cross Section



CAD Cell Excavation and Filling

Funding Strategy

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- Challenges
  - Raising funds (total project cost ~$14 million)
  - Coordinating budget schedules
  - Negotiating and scheduling with contractor
- Opportunities
  - All participants had funds allocated for smaller individual projects
  - Project partners committed from the top down
  - Significant project momentum

Cost Sharing Approach

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- Separate project into components
  - 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 ownership, limitations in authority, funding schedules, and secondary agreements

Cost Sharing Approach Responsibilities

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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 Berths		X	
- Dredging OHD Wharves			X
- Dredging “Hotspots” within O&M Channel	X		
- Capping	X		
- Placing Armor Rock		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

Contracting Approach

- USACE had an existing contract with Manson Construction for O&M dredging in Port of Hueneme and Channel Islands harbors
- Contract modification issued for additional work
- All funds transferred to USACE for overall contracting and construction management
- Used existing cost sharing agreements between partners and developed new agreements when required

Long-term Monitoring Status

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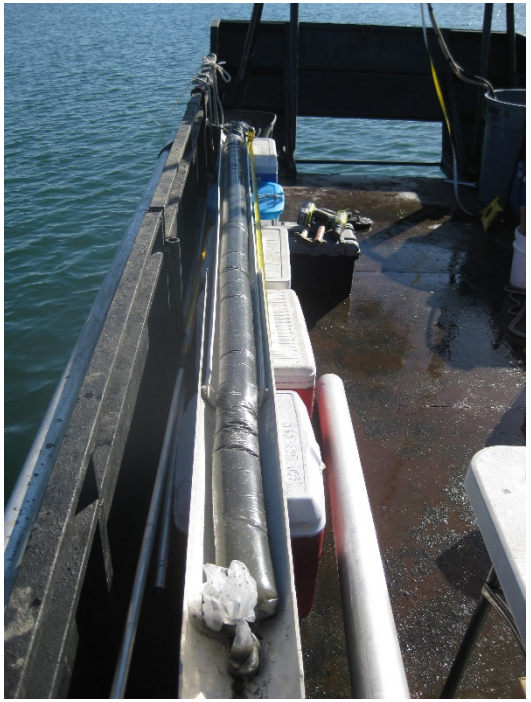
- Five years of monitoring completed
  - Hydrographic surveys, sediment cores, sediment porewater samples



Long-term Monitoring Measurements

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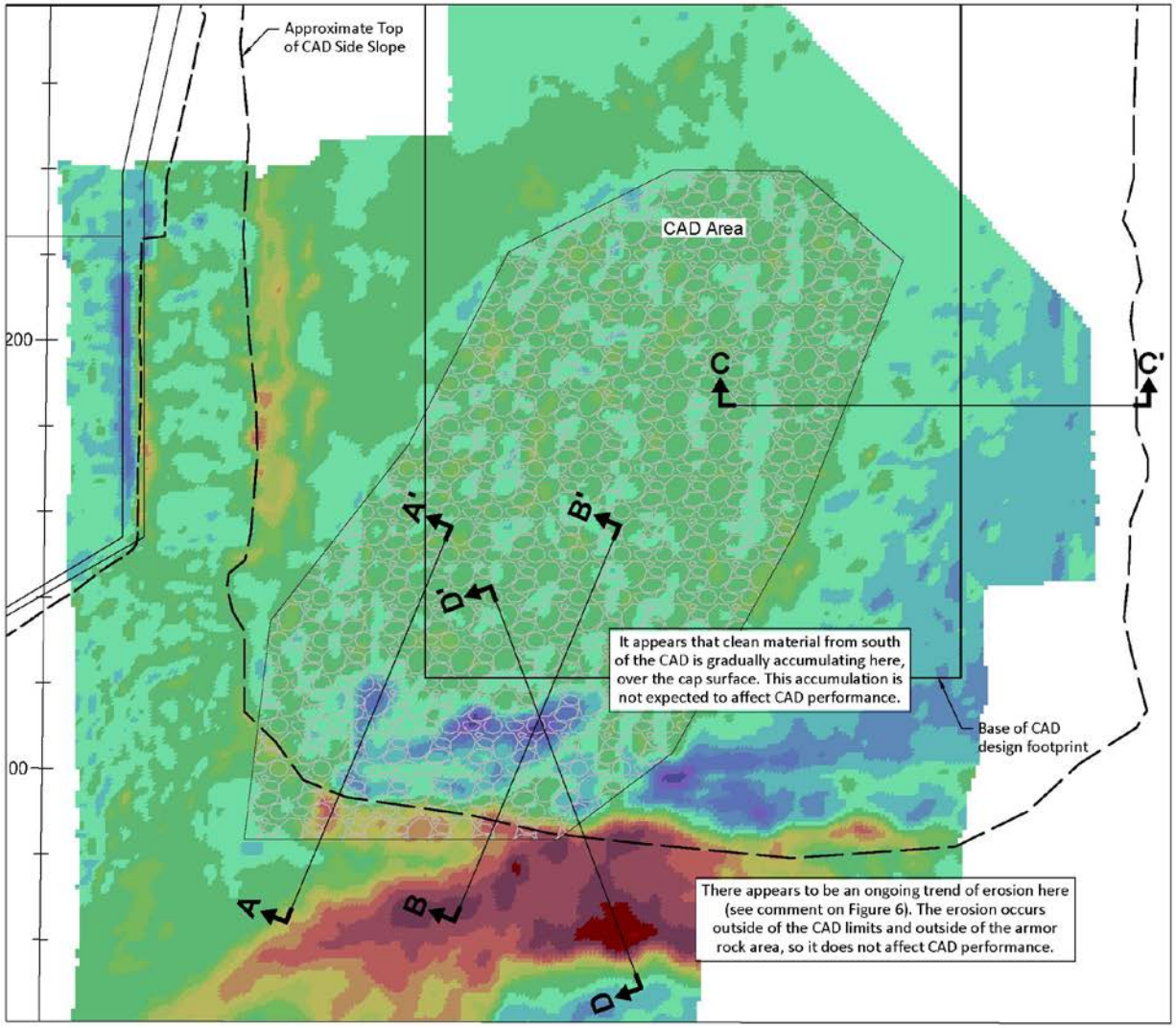
- Sediment chemistry and grain size
  - Metals, TBT, DDT, PCBs
  - Multiple sample intervals extending through cap
- Porewater chemistry
  - Metals and PCBs
  - Consistent 3-foot interval in cap
- Bathymetry
  - Annual surveys to quantify changes in CAD surface

Long-term Monitoring Results



Legend:

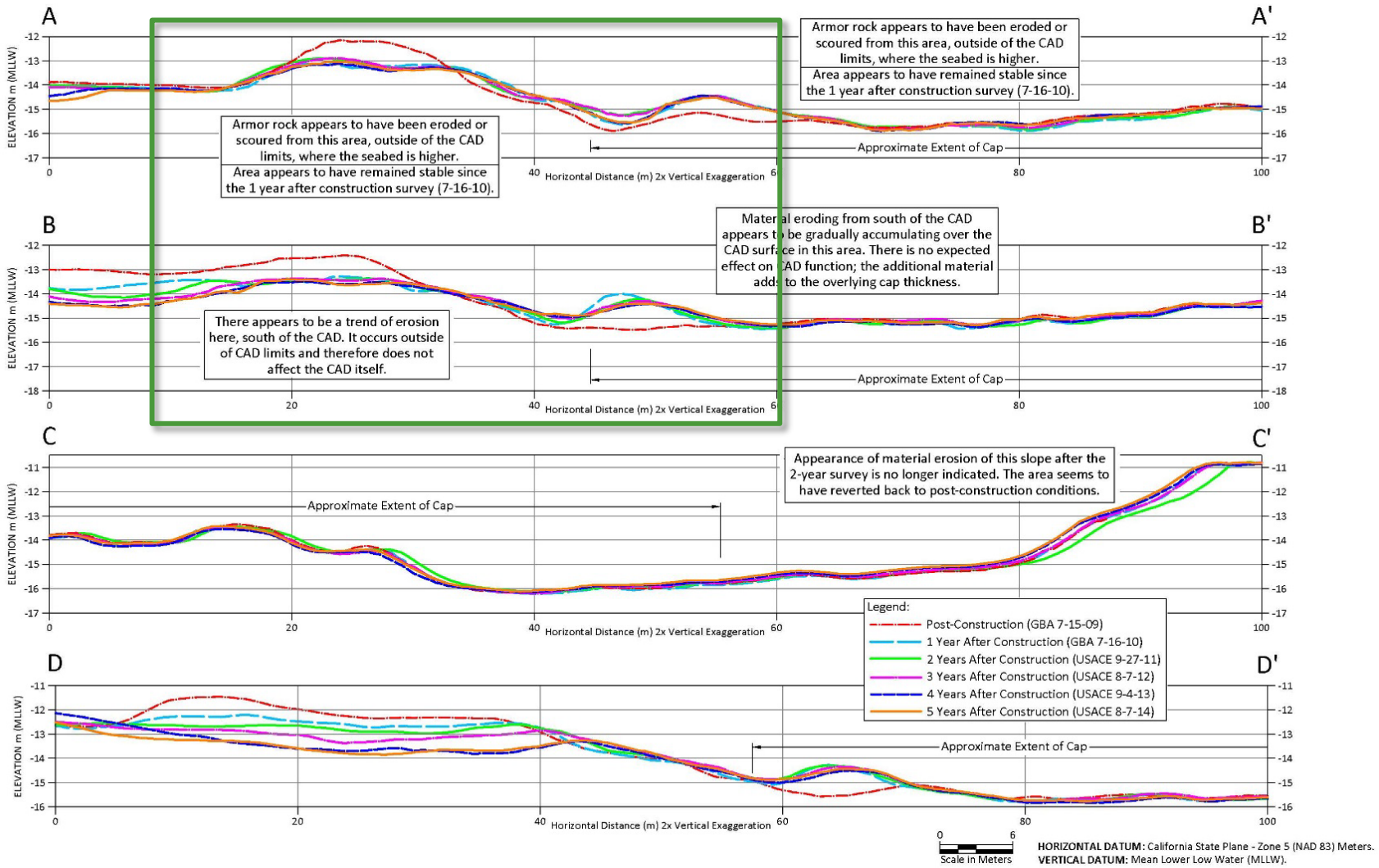
- Armor Rock Area
- Top of CAD Side Slopes
- A A' Cross Section as depicted on Figure 6

Elevation Difference between Post-construction Survey (9-4-13) and 5 Years after Construction Survey (8-7-14)			
Elevation Range (m)	Color	Elevation Range (m)	Color
-2.0 to -1.8		0.0 to 0.2	
-1.8 to -1.6		0.2 to 0.4	
-1.6 to -1.4		0.4 to 0.6	
-1.4 to -1.2		0.6 to 0.8	
-1.2 to -1.0		0.8 to 1.0	
-1.0 to -0.8		1.0 to 1.2	
-0.8 to -0.6			
-0.6 to -0.4			
-0.4 to -0.2			
-0.2 to 0.0			

0 20
Scale in Meters

HORIZONTAL DATUM: California State Plane - Zone 5 (NAD 83) Meters.
VERTICAL DATUM: Mean Lower Low Water (MLLW).
NOTE: Surveys by USACE on 8-7-12, 9-4-13, and 8-7-14 were converted from U.S. survey feet to meters.

Long-term Monitoring Results



Long-term Monitoring Conclusions

- Sufficient cap thickness (7 to 10 feet as designed)
- Contaminant isolation
  - Low chemical concentrations in porewater
  - Elevated chemical concentrations in sediment occur in lower core intervals, typically greater than 8 to 10 feet below the sediment surface
- Stable cap surface resistant to scour

Project Benefits

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- Recreation: restored Hueneme Beach
- Operations: restored Harbor design depths
- Future growth: provided clear path for Harbor deepening, which is moving forward
- Financial: more than $30 million in benefits achieved for less than $14 million in costs
- Regional: Provides vital data to support regional use of CAD for long term sediment management

Biggest Accomplishment: A Model for a Teaming Approach

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Questions/Discussion

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