

REGIONAL SEDIMENT MANAGEMENT SOLUTIONS IN SOUTHERN CALIFORNIA



PART 1: HOW DID WE GET HERE AND WHY?

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SOUTHERN CALIFORNIA SEDIMENT MANAGEMENT

- Largest port complex in U.S.
- Highly urbanized watershed
- Heavily protected marine environment
- Low contaminant standards
- Local gov't and federal management responsibility
- Grain size ranges limit beach nourishment options



SOUTHERN CALIFORNIA SEDIMENT MANAGEMENT

- Maintenance dredging for navigation
- Capital improvement programs to accommodate new marinas and larger vessels
- Economic pressure for ports and marina owners to improve infrastructure and remain competitive
- New regulatory pressures from regional TMDLs

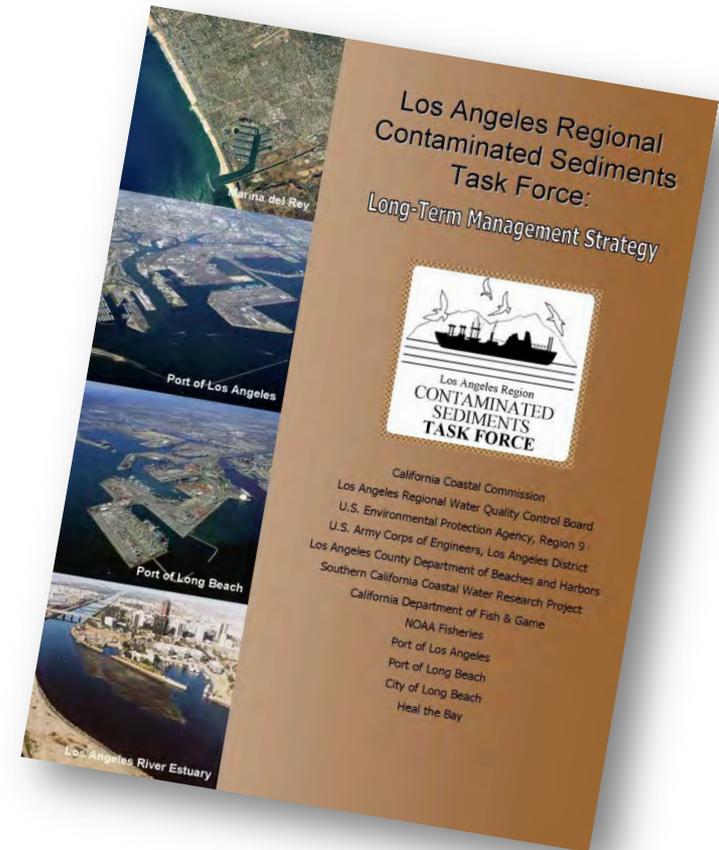




- State of California initiated the development of a formal sediment management approach for Southern California in 1999
- Los Angeles Contaminated Sediment Management Task Force
- Result of a lawsuit from several NGOs against state agencies over Clean Water Act violations

CSTF LONG TERM MANAGEMENT STRATEGY

- Decision framework for selecting management options
- Goal for achieving 100% beneficial reuse of dredge materials
- Highest priority given to beach placement (clean) and Port fills (contaminated)
- Low priority given for other fill sites like CAD and ocean disposal
- Treatment technologies identified but additional research needed



CSTF DEVELOPMENT PROCESS



- Market Survey on Beneficial Reuse
- Pilot Studies
 - Sand separation
 - Cement stabilization
 - Aquatic Capping/CAD
- STAR Facility
- Dredge Material Management Team

MARKET SURVEY ON BENEFICIAL REUSE

- Study conducted to determine opportunities and limitations for dredge material reuse
- Potential markets identified included:
 - Wetland restoration
 - Port or construction fill material
 - Brownsfields
 - Manufactured soil or landfill cover
 - Concrete

MARKET SURVEY ON BENEFICIAL REUSE

- Major limitations:
 - Regulatory
 - Risk/Liability
 - Economics
 - Public perception

PILOT STUDIES - SAND SEPARATION

- Proven technology used nationally for “treating” contaminated sediments to achieve lower disposal costs
- Modify process to produce beach suitable sand
- Test process in small and full-scale pilot studies

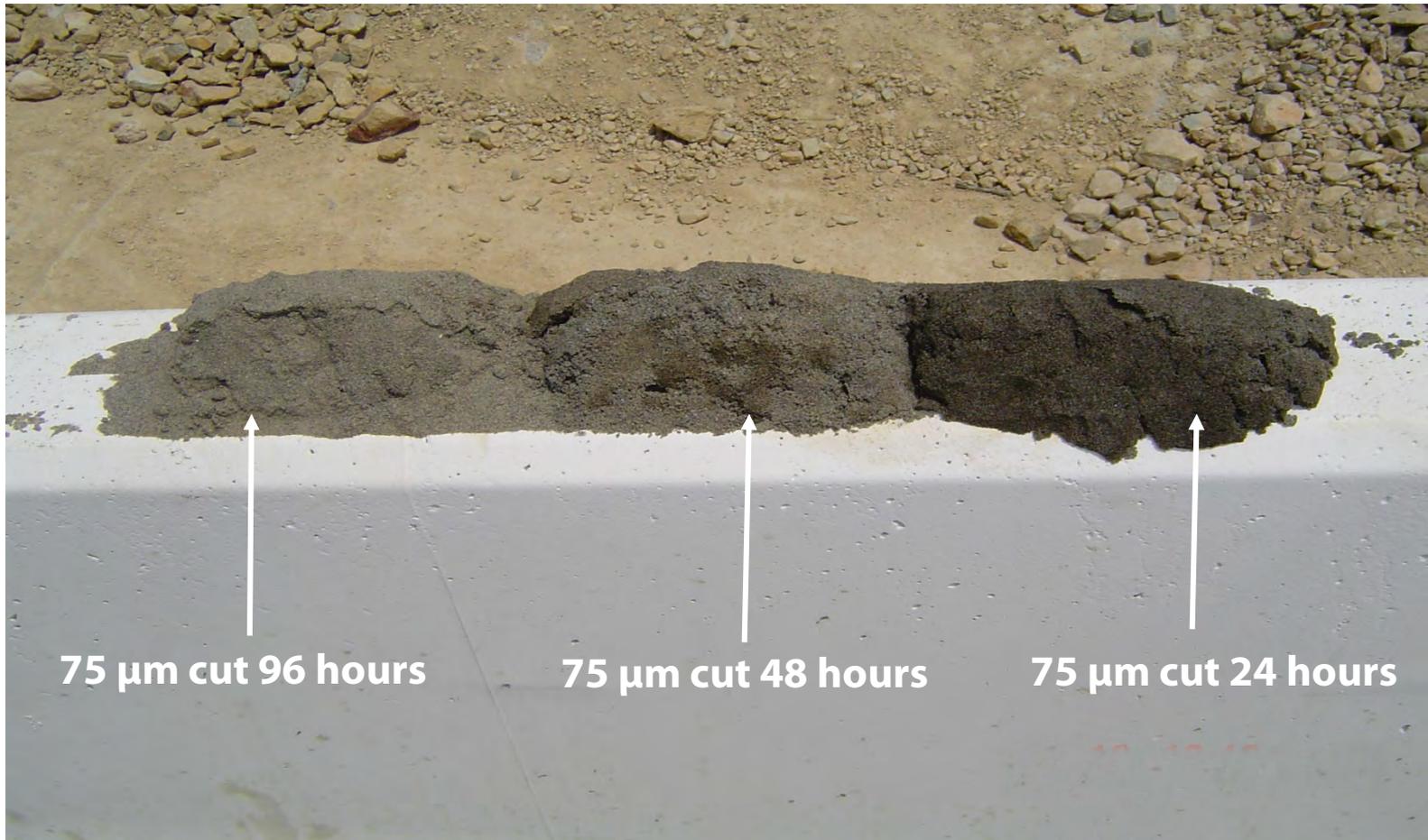
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PILOT STUDIES - SAND SEPARATION

- Proven effective at removing most COPCs
- Costly treatment option unless very large scale
- Material not approved for unrestricted uses after treatment
- Only applicable to material with high sand content which limits use

PILOT STUDIES – CEMENT STABILIZATION



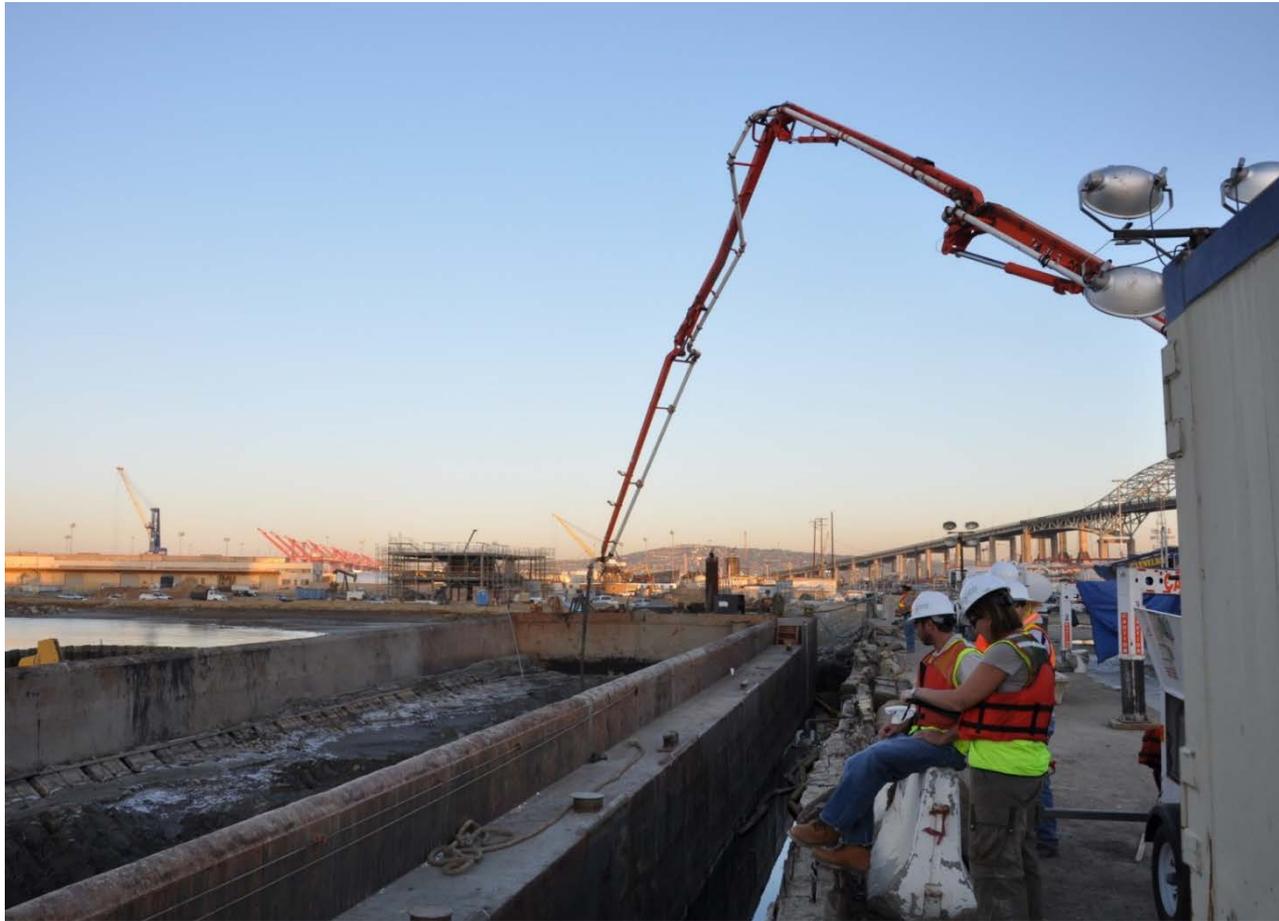
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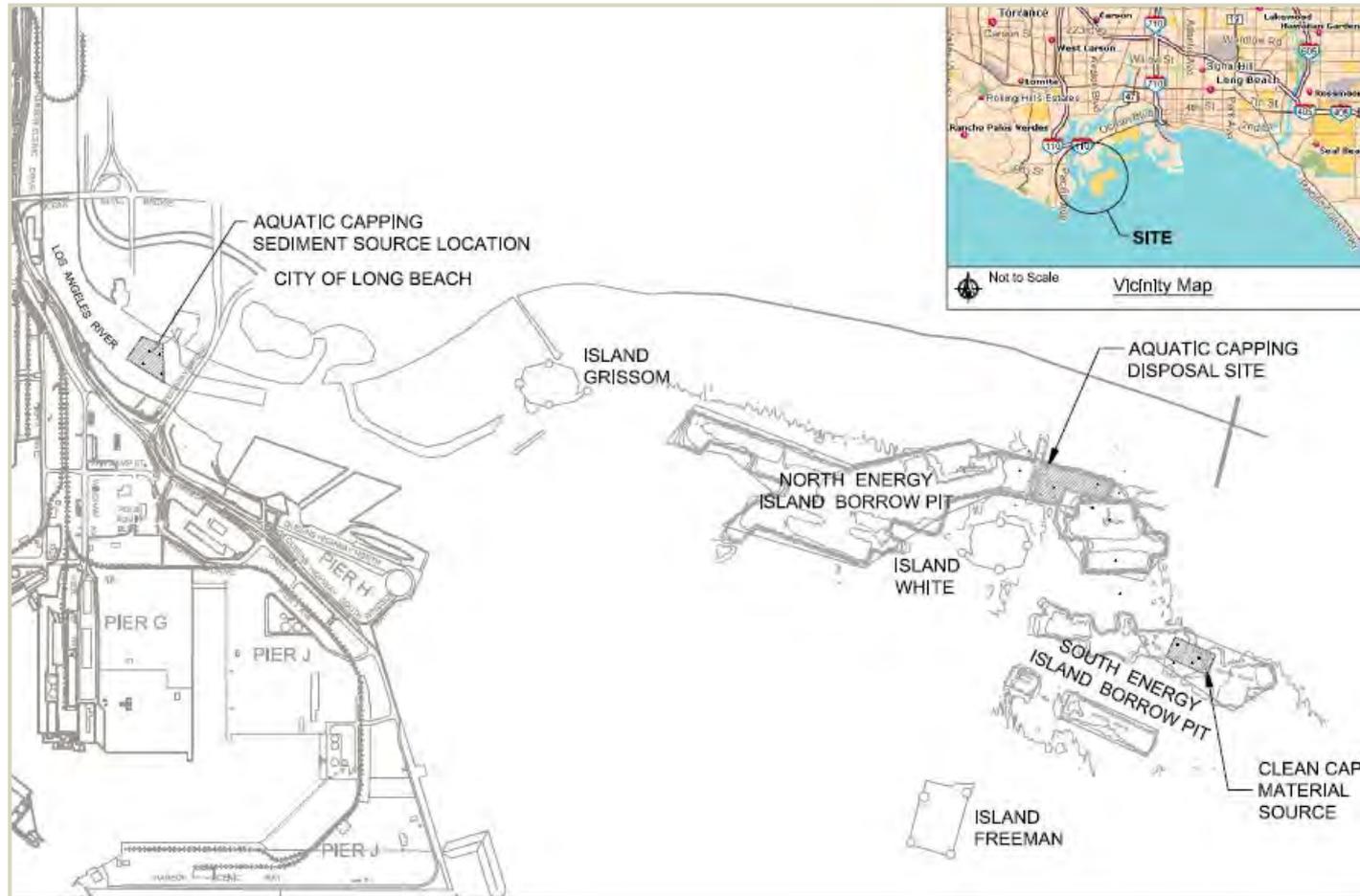
PILOT STUDIES – CEMENT STABILIZATION



PILOT STUDIES – CONFINED AQUATIC DISPOSAL

- Proven technology but had not yet been conducted in California
- Demonstrate to local regulators that it could be effective
- Conduct pilot study and monitor effects

PILOT STUDIES – CONFINED AQUATIC DISPOSAL



PILOT STUDIES – CONFINED AQUATIC DISPOSAL

- 12 years of extensive monitoring showed successful containment
- Minimal losses during placement
- Benthic community quickly recolonized surface
- No upward chemical flux detected

CSTF “STAR” TREATMENT FACILITY

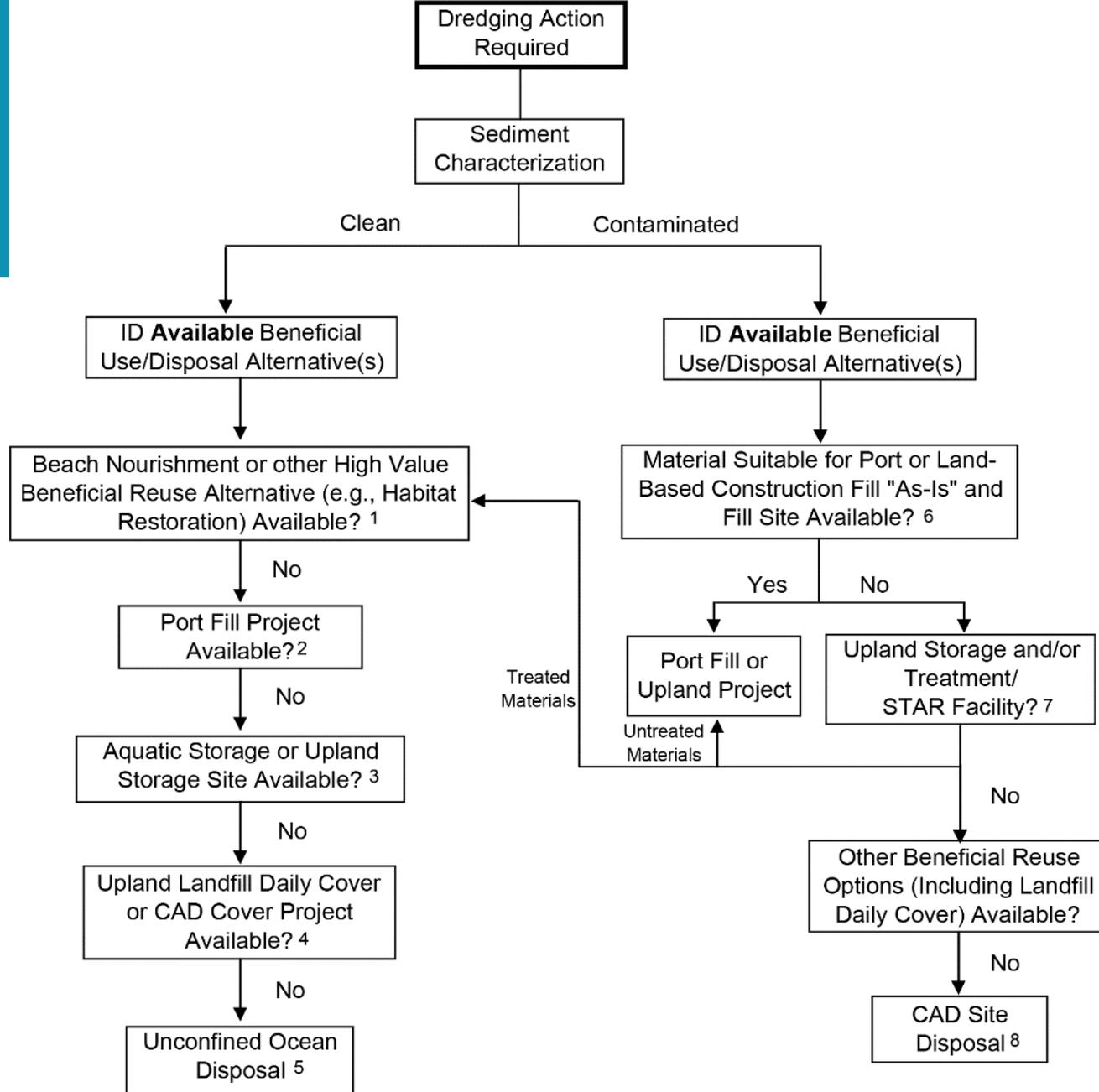
- CSTF concept for creating a Sediment Treatment And Reuse facility similar to Europe
- Operate in port complex and allow users to barge in sediments for treatment
- Range of products created for regional use

CSTF “STAR” TREATMENT FACILITY

- USACE conducted feasibility study:
 - Select one or more potential locations
 - Work through regulatory issues
 - Determine “backlog” and economics
 - Find “sponsor”
- Concept eventually abandoned

DREDGE MATERIAL MANAGEMENT TEAM

- Similar to other regions, create a multi-agency/stakeholder group for reviewing and approving management options
- Led by USACE, EPA, CCC and Water Board
- Includes ports, resource agencies, NGOs and local cities/counties



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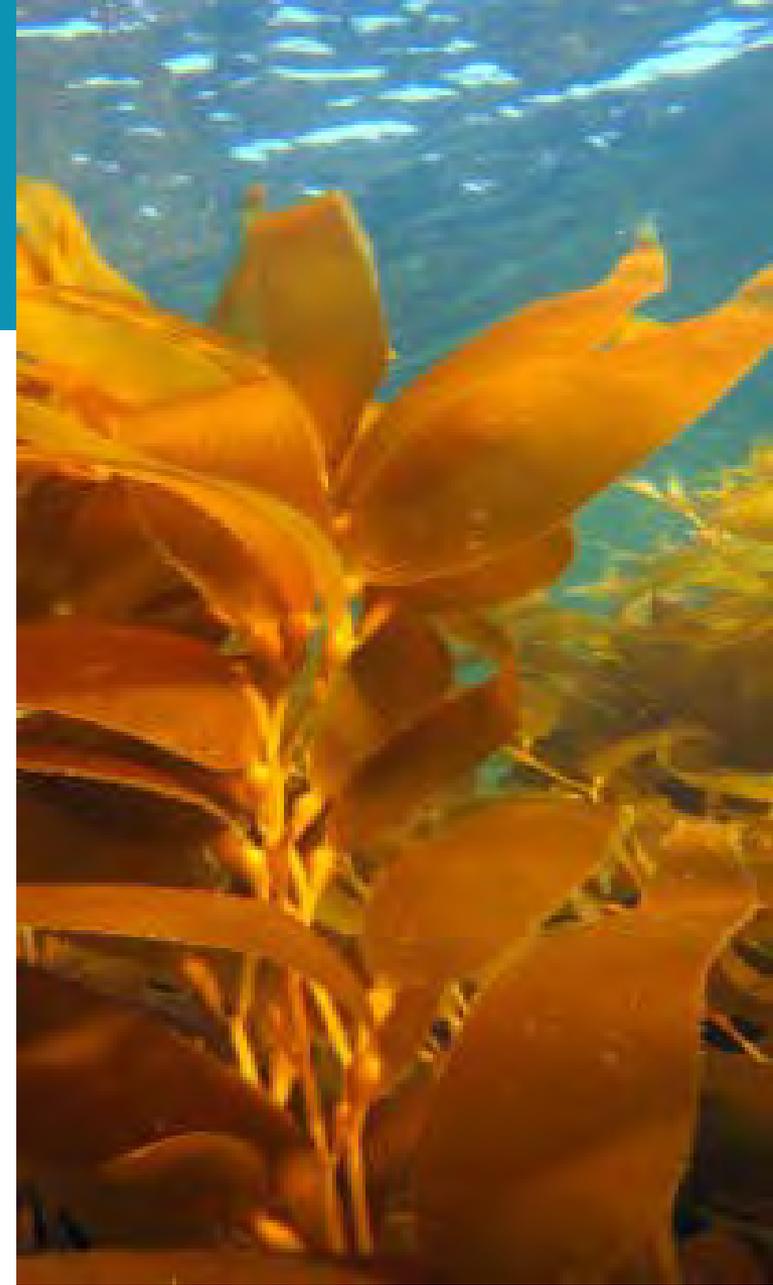
PART 2: 20 YEAR SUMMARY OF BENEFICIAL REUSE AND NEEDS MOVING FORWARD

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ADVANCEMENTS

- Temporary aquatic storage
- Shallow water habitat
- Knockdown dredging permits
- Re-handling material into upper lifts of fill sites
- CAD



Temporary Storage



Shallow Water Habitat



KEY PROJECTS – PORT HUENEME CAD



- Multiple benefits
- Relied on CSTF pilot study information
- Tested local use of CAD as a management approach

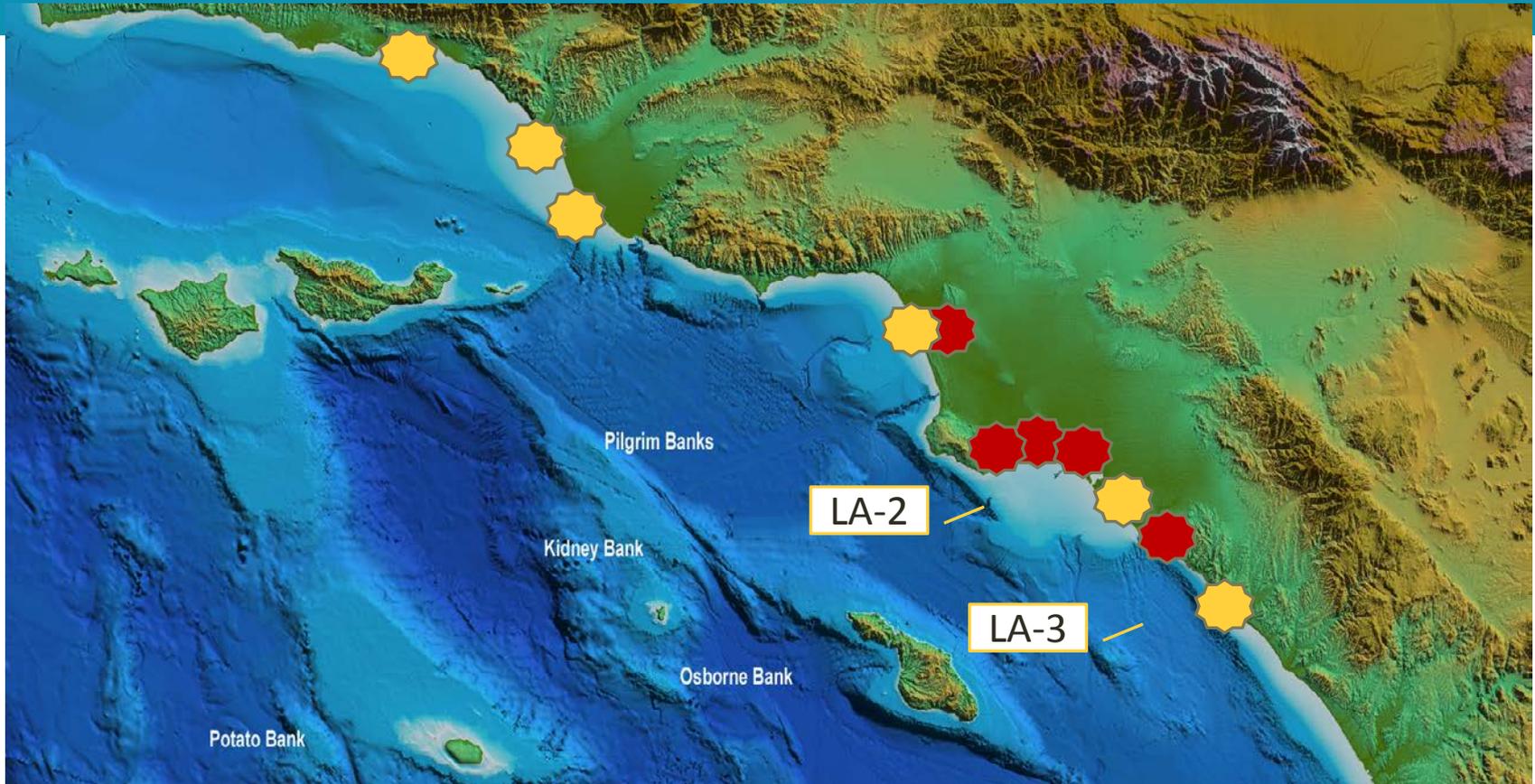
PORT HUENEME CAD SEQUENCE OF EVENTS



GREATER CHALLENGES FOR MANAGING SEDIMENT

- Limited options for sediment management
 - Beneficial reuse options not panning out
 - Ocean disposal is being challenged
 - Salt content, costs and traffic limits local landfill disposal
 - No planned fills for contaminated material
- Regulatory pressure for Ports to provide sediment management solutions for region

NATURE OF DREDGING IN REGION

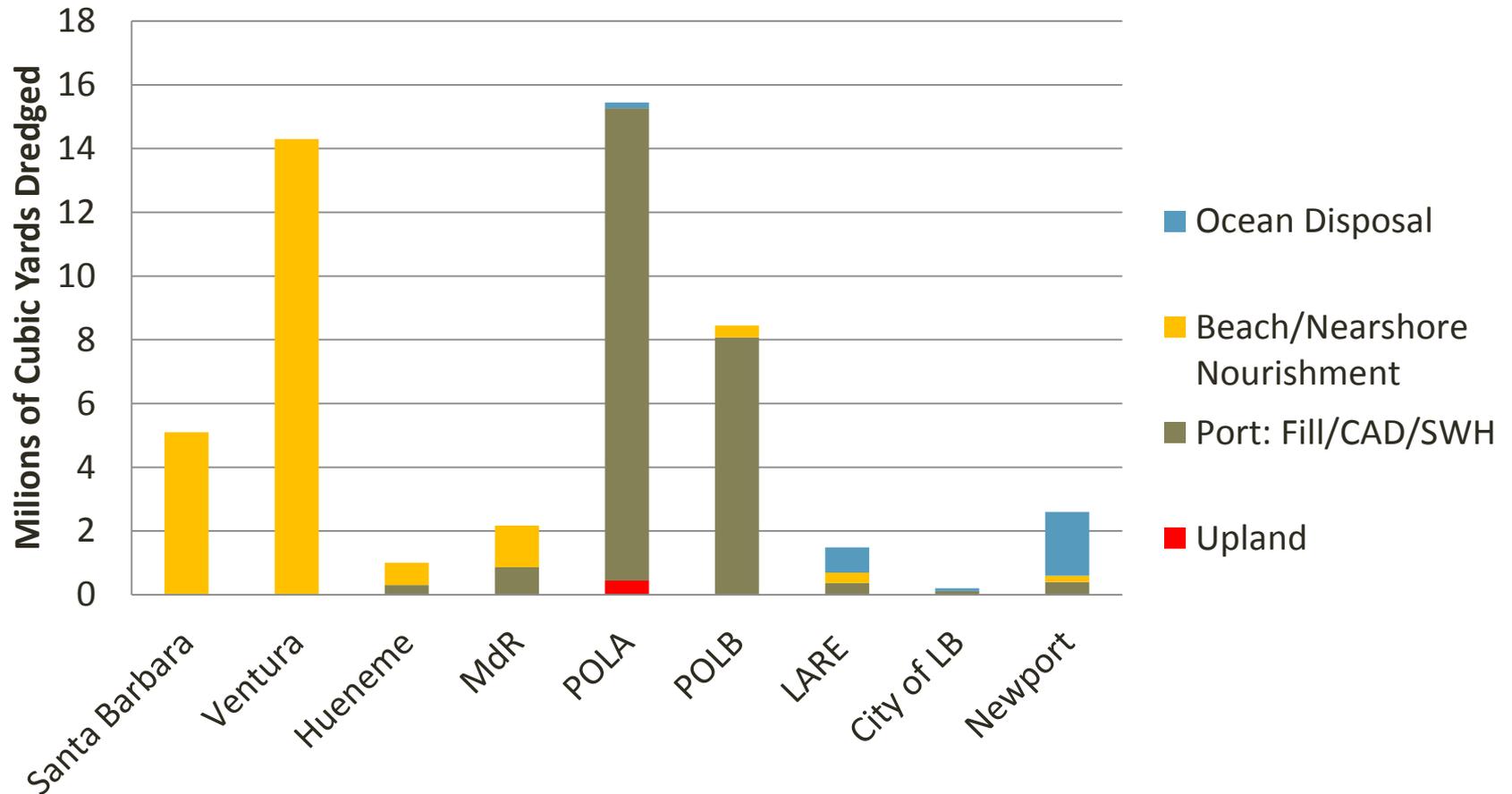


Consistent nearshore/beach nourishment



Urban runoff impacted materials/mixed placement

DREDGE MATERIAL PLACEMENT IN LA REGION 2000 TO 2017



DREDGED MATERIAL MANAGEMENT SUMMARY

- 50,600,000 cy dredged
- 92% beneficially reused
- 6% ocean disposal
- 1% upland disposal

PATTERN WITH CLEAN SEDIMENTS

- Limited by beach nourishment guidelines
- Starting to see issues associated with low-level contaminant disposal in ocean

PATTERN WITH CONTAMINATED SEDIMENTS

- Driven by Corps funding limitations and project authority
- Local sponsor responsible for difference in costs between beach/ocean disposal and confinement
- Relies on availability of Port fills or need to create own disposal site

REGIONAL NEED FOR CONFINED DISPOSAL

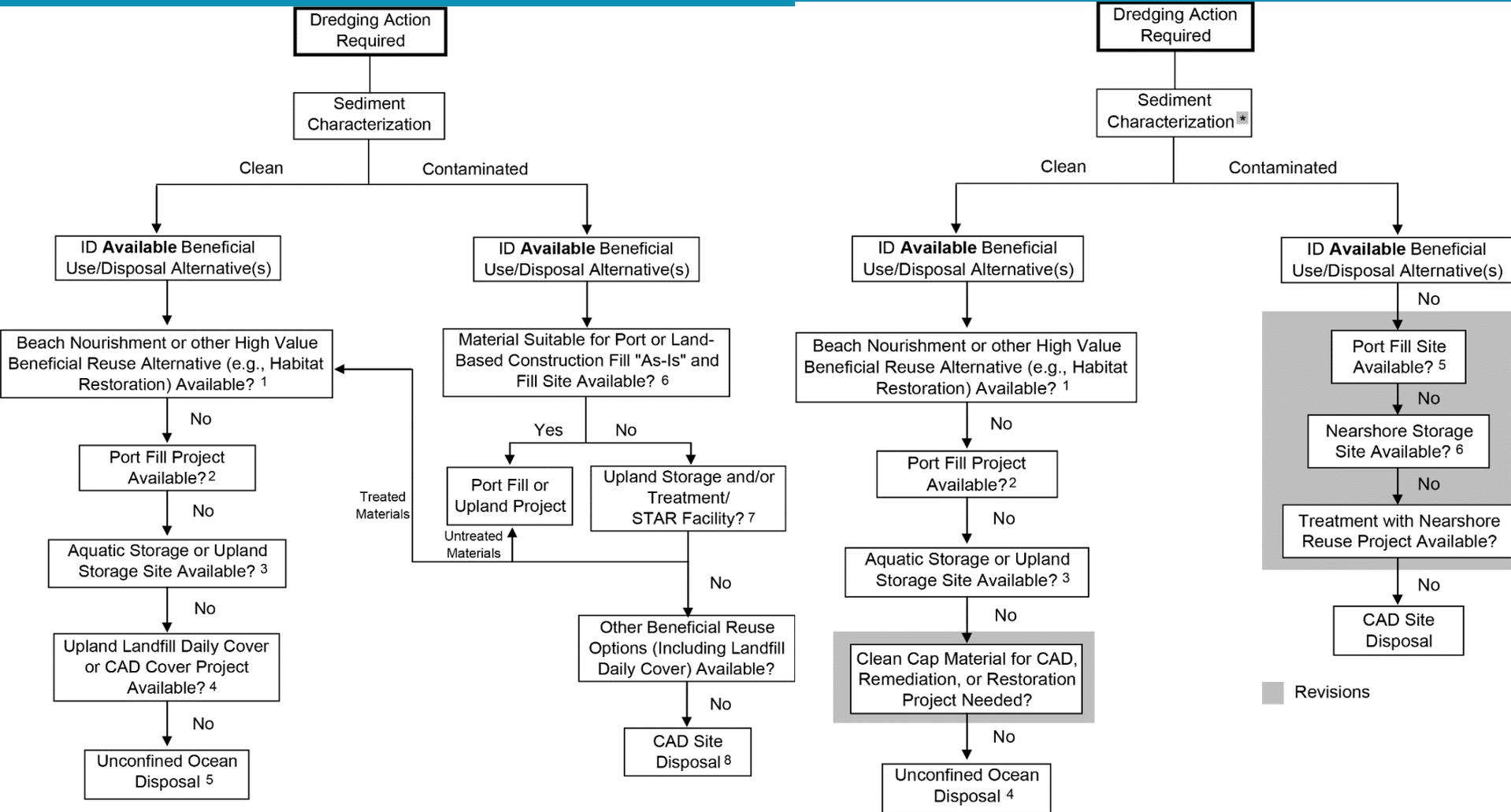


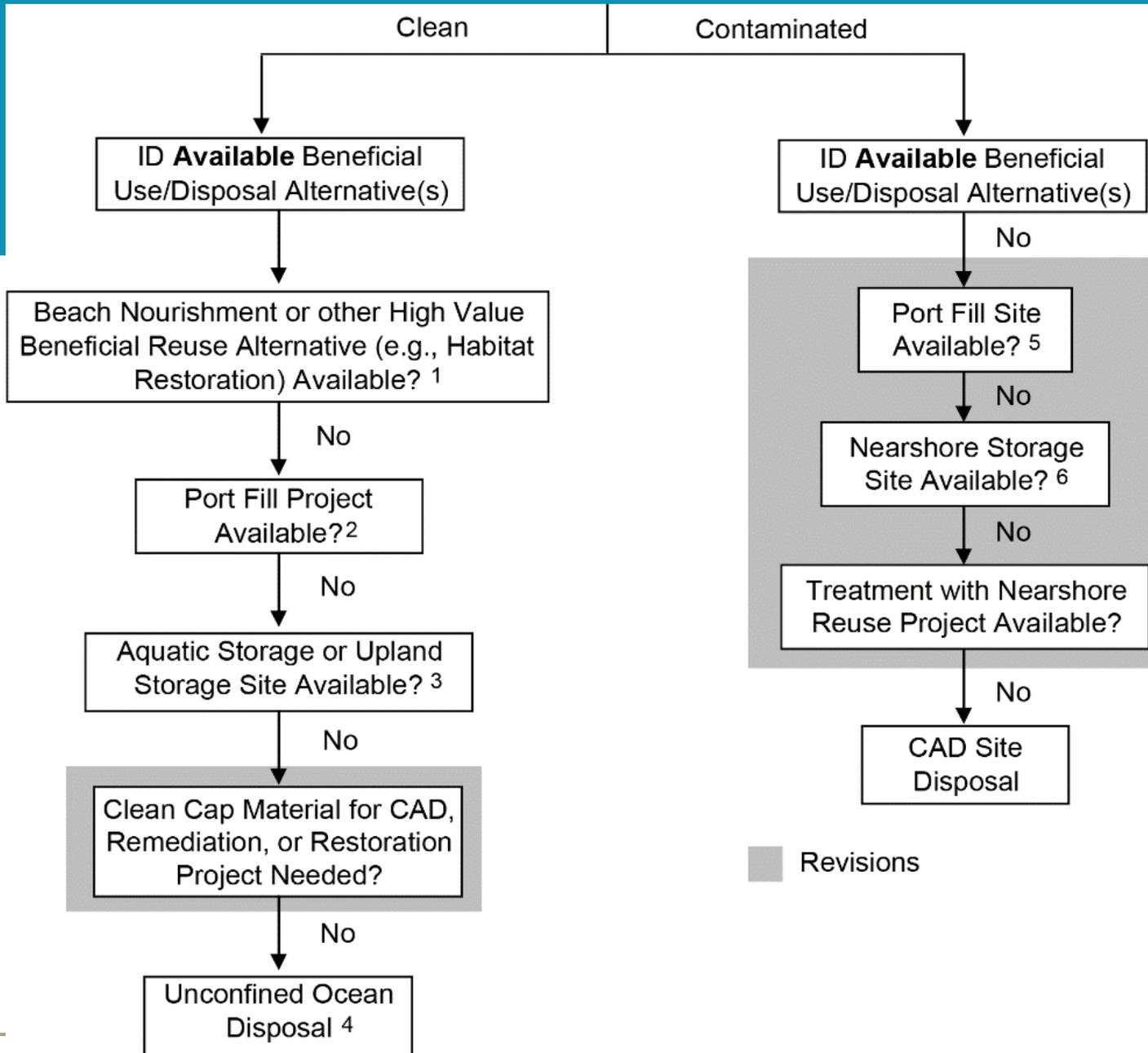
- Port of Long Beach received requests to place 4.5 million cy from region

LONG-TERM MANAGEMENT SOLUTIONS

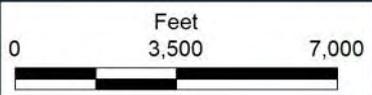
- Preserve capacity for contaminated material in fills
- Promote designation of shallow water habitat areas
- Align CAD/SWH development with restoration opportunities to give the financial means and regulatory acceptance for long-term management planning
- Maintain ocean disposal/nearshore placement as a viable sediment management option, invest in the science to build flexibility in placement options:
 - Threshold for placement of fines in nearshore
 - Bioaccumulation risks for ocean disposal

FLOW-CHART COMPARISON





Confined Aquatic Disposal – Ecosystem Restoration



QUESTIONS



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