California Coastal Sediment Management Plan

Overview for SMP Public Workshop #1

Costa Mesa

June 12, 2014

Coastal Sediment Management Workgroup

Coastal Sediment Management Workgroup

CALIFORNIA natural resources AGENCY

US Army Corps of Engineers®

A collaborative effort by federal and state agencies chaired by the U.S. Army Corps of Engineers South Pacific Division and the California Natural Resources Agency

Federal Participation

- **USACE - South Pacific Division (co-chair)**
- USACE - Los Angeles District
- USACE - San Francisco District
- National Oceanic Atmospheric Administration
- U.S. Geological Survey
- U.S. Environmental Protection Agency
- National Park Service (GGNRA)
- Tijuana River National Estuarine Research Reserve

Regional Assistance

- SANDAG
- BEACON
- Orange County Parks
- ABAG
- LA Beaches and Harbors
- City of Monterey
- Humboldt Bay RCD
- MBNMS
- SLOCOG

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State Participation

- **California Natural Resources Agency (co-chair)**
- Division of Boating & Waterways
- Coastal Commission
- Coastal Conservancy
- Parks & Recreation
- State Lands Commission
- California Geological Survey
- Dept. of Transportation
- Dept. of Fish and Game
- SF Bay Conservation and Dev. Commission
- California Ocean Sciences Trust
- State Water Resources Control Board

Advisory

- CalCoast (local agencies)
- CMANC (Ports & Harbors)

CSMW

- Initiated in late 1999
  - Response to concerns raised in meeting between USACE and CNRA on shore protection needs in California
- A collaborative taskforce
  - Concerned about adverse impacts of coastal erosion (habitat, economics, recreation, public safety)
  - Site specific solutions don't address regional imbalances in sediment supply causing the erosion (hence need for Regional Sediment Management or RSM)
- MOU South Pacific Division & State Natural Resources Agency
  - Develop means to implement RSM along the coast
  - 50/50 cost sharing agreement for studies, tools, strategies, demonstration projects
  - DBW State funding arm, USACE LA District Federal funding arm
- Leverage State & Federal Funds
  - Collaboration on coastal sediments activities.
- Prepare a Adaptive Sediment Master Plan
  - Help guide political, regulatory, environmental, educational and process-related efforts anticipated when implementing RSM
  - Focus on educational documents, computer-based tools, RSM Strategy /Plans, and Outreach/Agency coordination
- Share information, including common data bank
  - Website
  - Geospatial browser

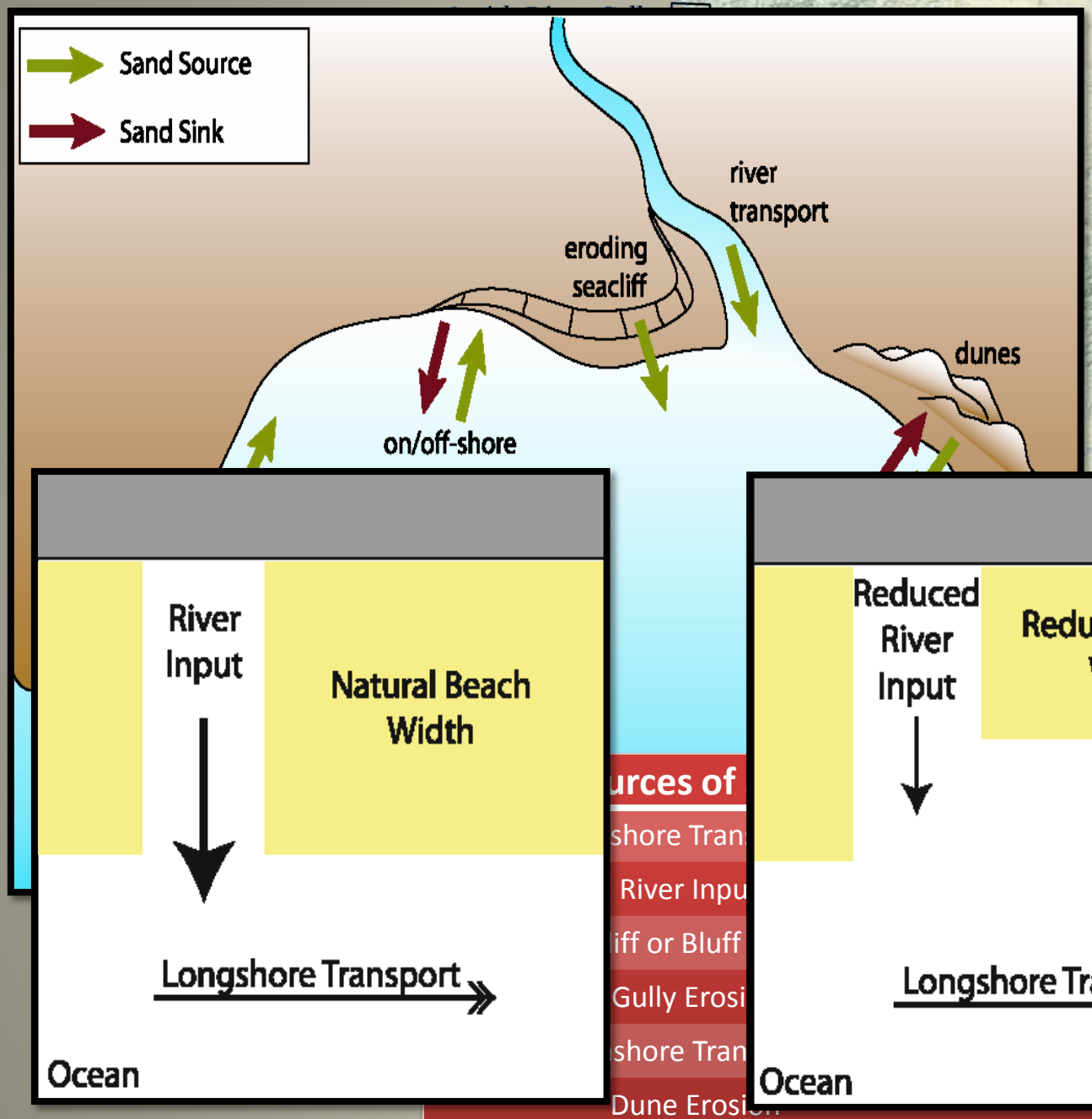
Coastal Sediment Management Workgroup

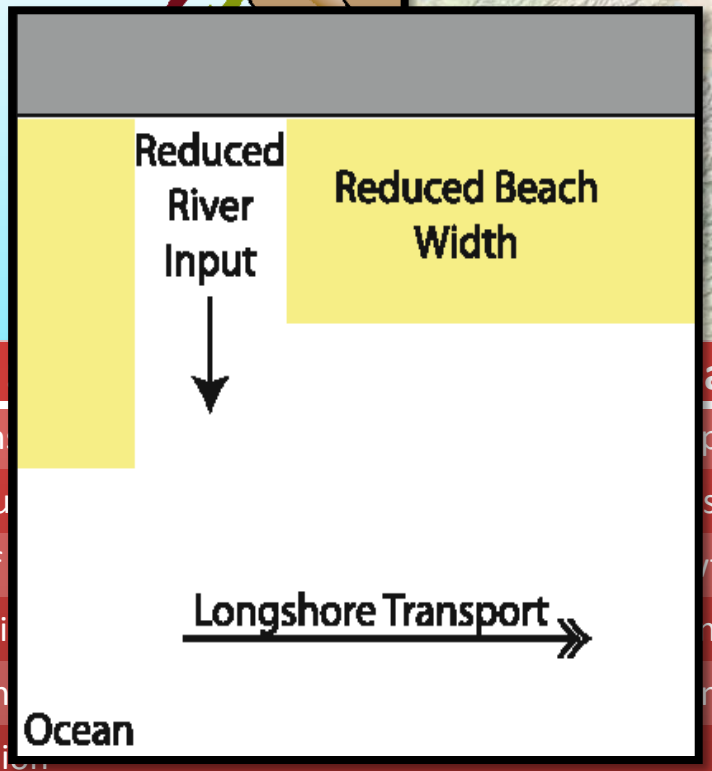
MISSION

California's coastal resources
by
developing and facilitating
regional approaches
to
managing sediment imbalances

Littoral Cells and Beach Width

Source- Patsch, 2007





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DECREASED COASTAL SEDIMENT SUPPLY

- Dams, Debris basins
- Channelized rivers
- Coastal Armoring
- Sand & Gravel Mining
- Wetlands, harbors

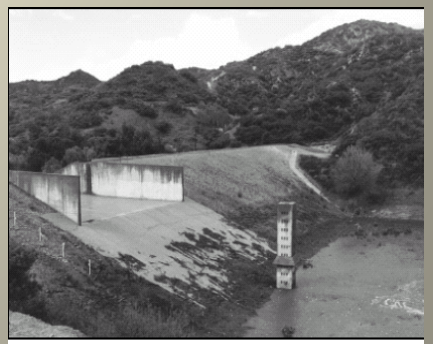
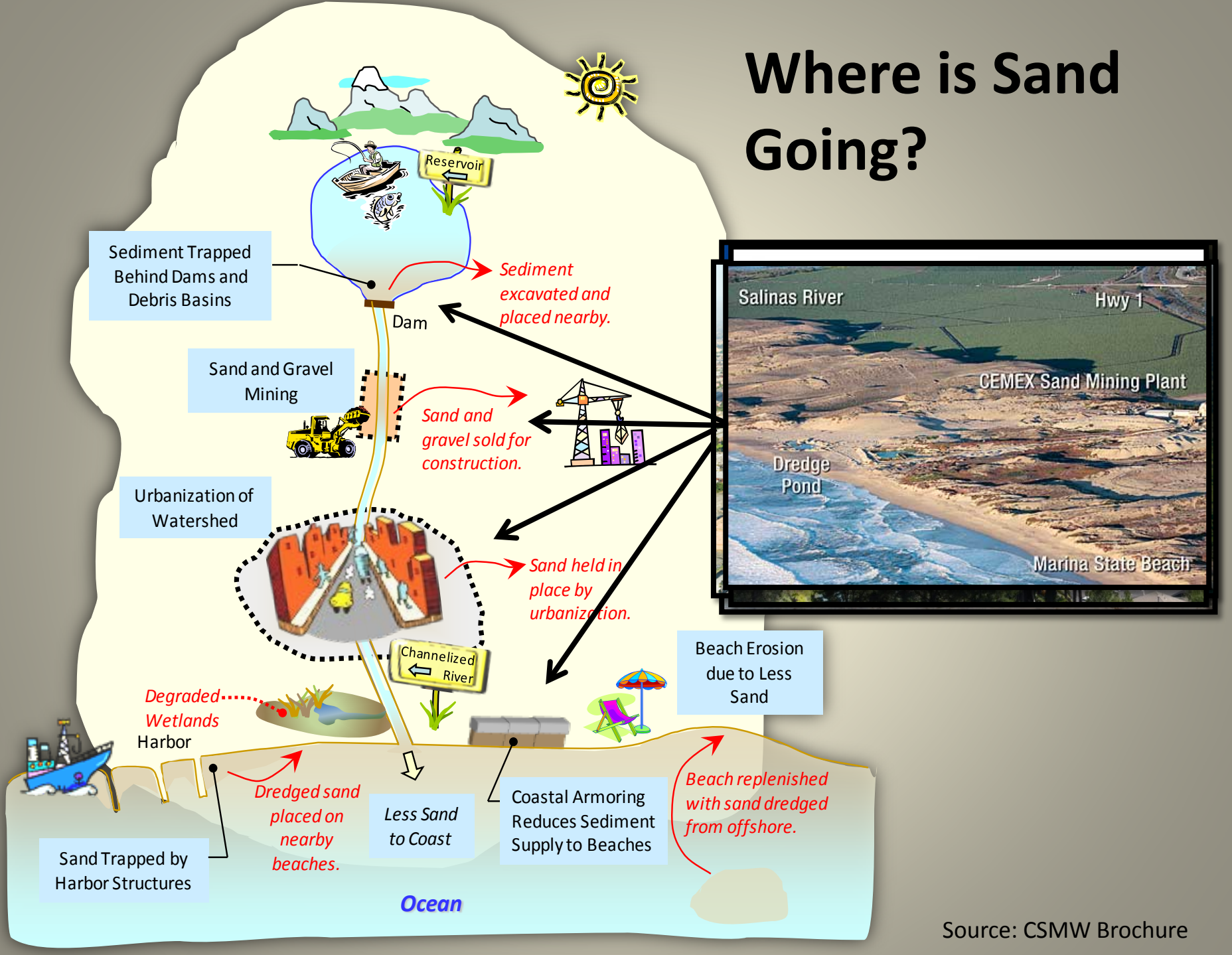
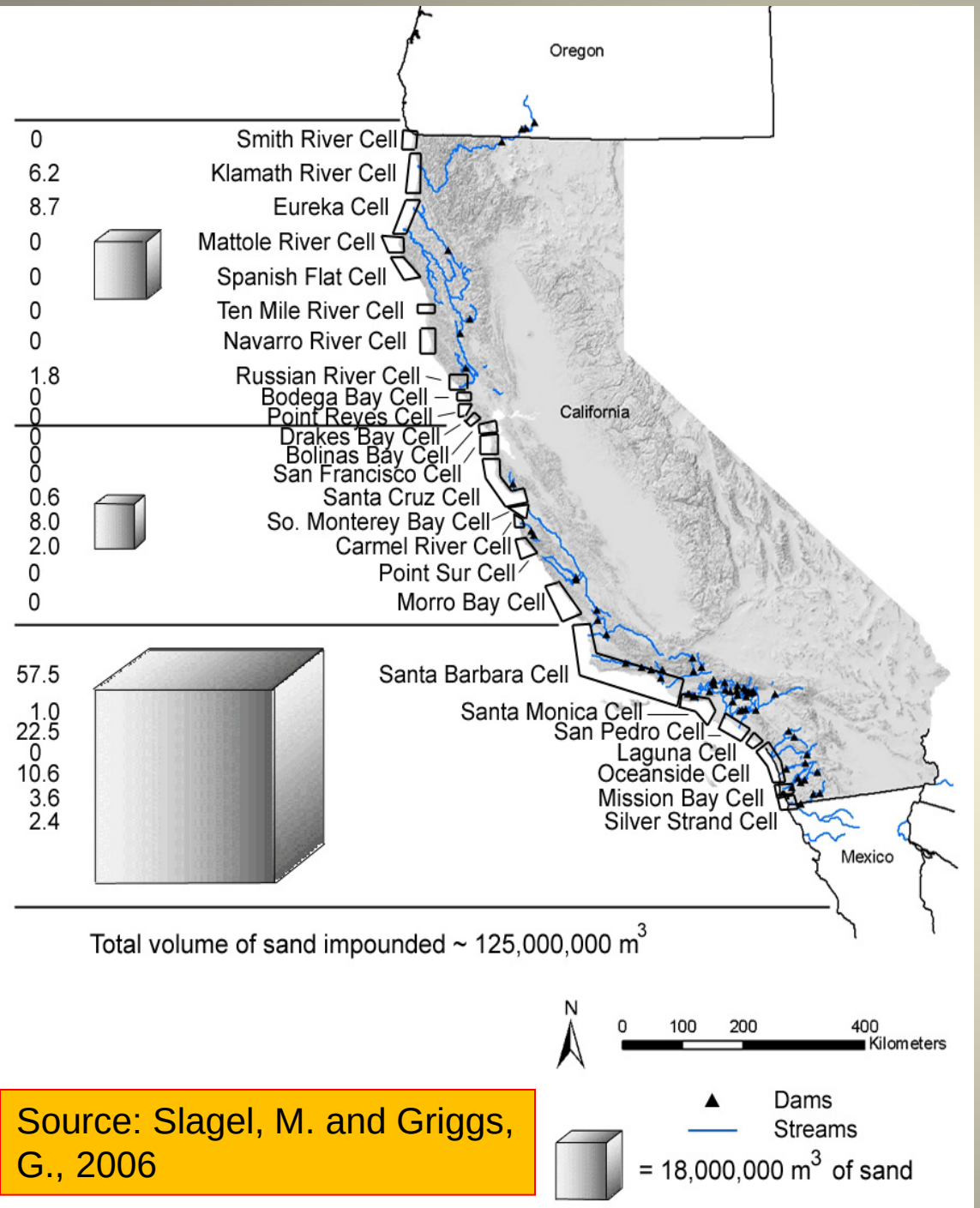


Plate 7.1 The La Tuna Canyon debris basin (Photograph courtesy of K. Barron)

Where is Sand Going?



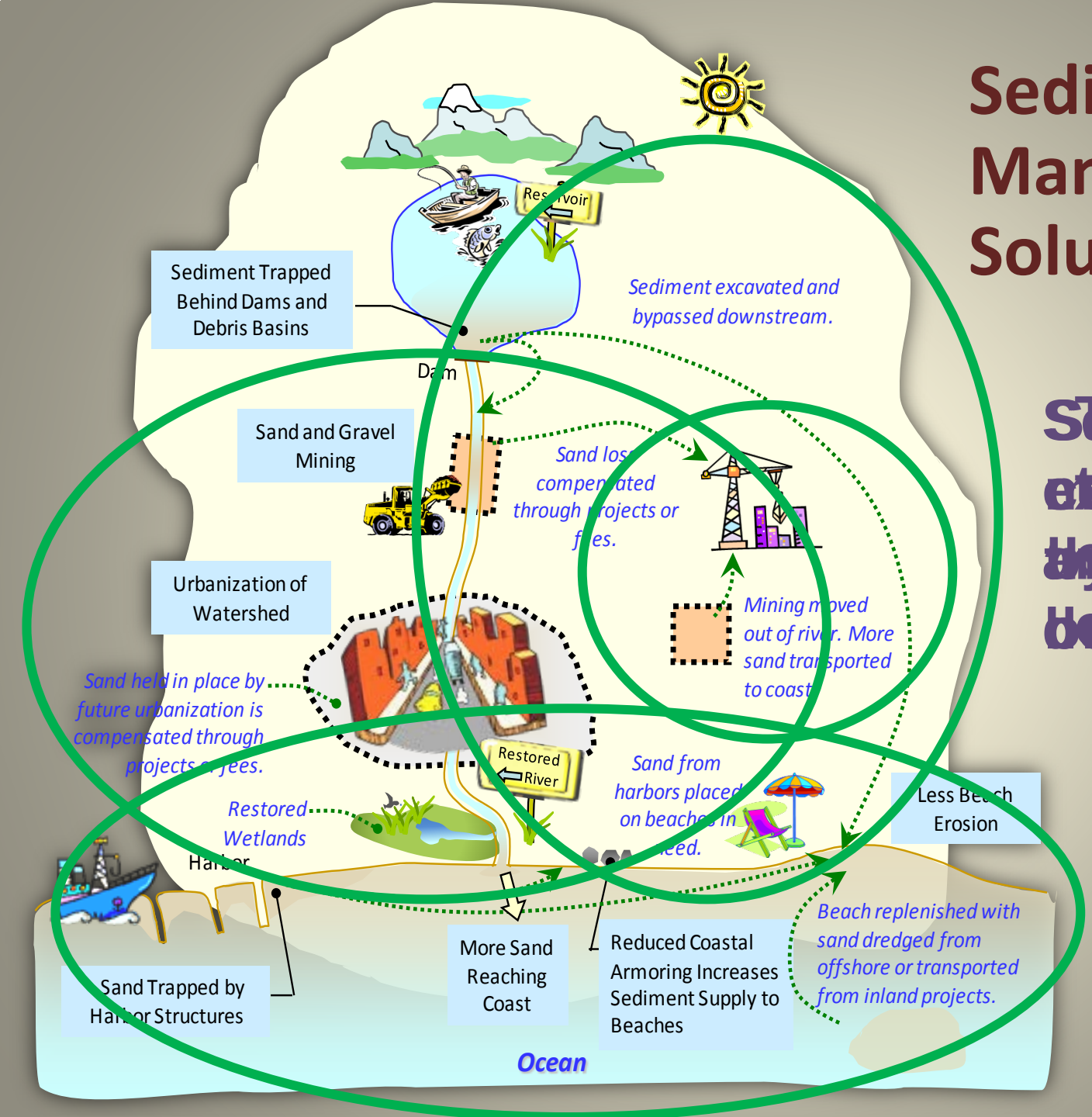
Source: CSMW Brochure



Source: Slagel, M. and Griggs, G., 2006

Figure 7. Cumulative sand impounded by dams in each of California's 25 major littoral cells. The numbers are millions of cubic meters of sand that have been trapped by dams in the watersheds draining into each littoral cell. The cubes are scaled in size relative to each other to depict impoundment in northern, central, and southern California. Littoral cell names and divisions are from Patsch and Griggs, 2005

Sediment Management Solutions

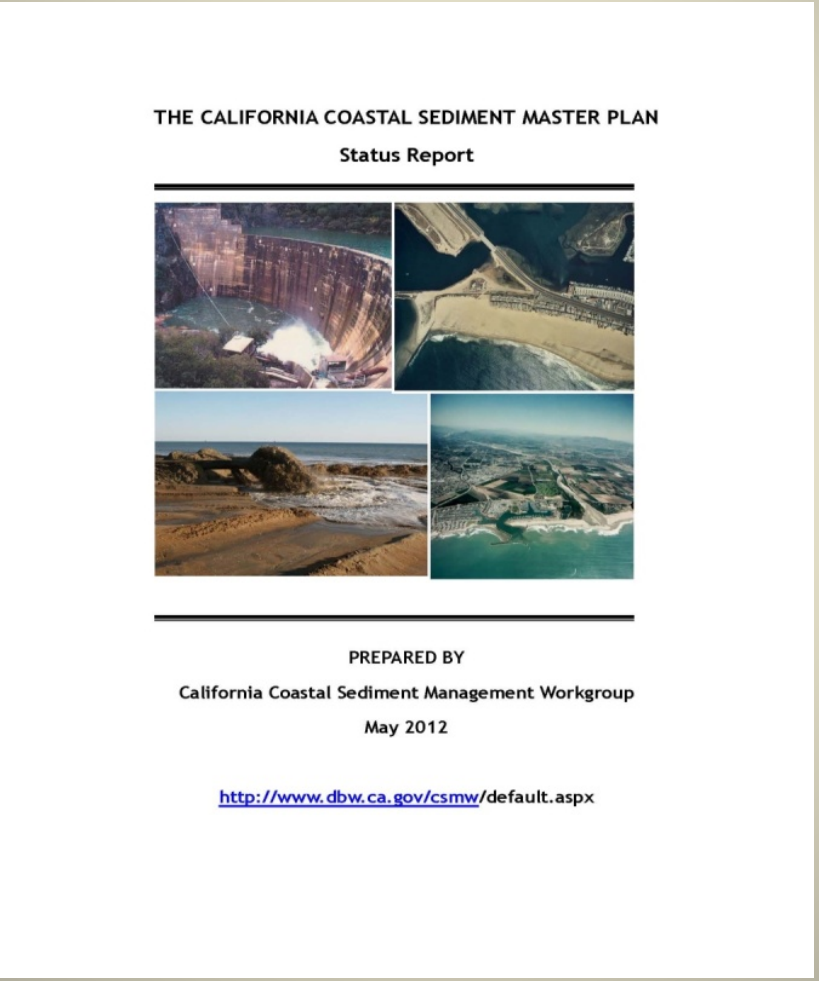


Source: CSMW Brochure

COASTAL SEDIMENT MASTER PLAN

"Deliverables"

- Educational materials, reports & data
- Computer-based decision support tools
- Work with watershed groups, regulatory agencies, etc. to incorporate RSM
- Regional-based strategies to implement RSM: **Coastal RSM Plans**.


THE CALIFORNIA COASTAL SEDIMENT MASTER PLAN

Status Report

PREPARED BY

California Coastal Sediment Management Workgroup

May 2012

http://www.dbw.ca.gov/csmw/default.aspx

What Will It Do?

- Improve beach conditions and reduce erosion attributed to human causes.
- Improve wetland quality.
- Improve and leverage the use of federal and state agency resources.
- Optimize project execution by programmatically assessing environmental impacts of regional coastal projects
- Holistically integrate discrete solutions into comprehensive regional solutions.

Office of Governor
Jerry Brown
Visit his Website

- Mission
- Meetings
- Ocean Action Plan
- New Contact Form
- Public Outreach
- Contact CSMW

thankyouocean.org

WEST COAST GOVERNORS' AGREEMENT on OCEAN HEALTH
CALIFORNIA OREGON WASHINGTON

Coastal Sediment Management Workgroup

CALIFORNIA natural resources AGENCY

US Army Corps of Engineers®

A collaborative effort by federal and state agencies chaired by the U.S. Army Corps of Engineers South Pacific Division and the California Natural Resources Agency

Welcome to CSMWs website! Our collaborative taskforce of state, federal and local/regional entities, concerned about adverse impacts of coastal erosion on our coastal habitats, is working to implement Regional Sediment Management (RSM) in order to augment or restore natural processes. Our urbanizing society has significantly changed natural sediment supply and transport patterns, and some coastal areas (e.g., beaches) are eroding while others (e.g., wetlands, ports & harbors) are being deluged with excess sediment. Facilitating beneficial reuse of excess clean sediment from inundated locations at areas experiencing severe erosion is the substance of RSM.

Sediment is an integral component of the coastal ecosystem, representing a public good that must be managed to provide for quality of life, natural resource protection, and economic sustainability. Sediment imbalances resulting from alteration of the natural environment therefore threaten the viability of the public good and require management to restore the natural balance. Coordinated beneficial reuse of sediment resources within a regional context helps to restore natural processes and simultaneously address sediment imbalances.

CSMW is developing a coastal "Sediment Master Plan" (SMP) to guide political, regulatory, environmental, educational and process-related efforts anticipated when implementing RSM. The physical setting for coastal sediment imbalance problems and CSMWs vision for the "road to solutions" are discussed in the overview, "Why a SMP is needed". The SMP Baseline Report 2006 describes the initial SMP development process, planned future activities, and CSMW priorities. The SMP Status Report 2008 provides a progress reporting of CSMW and SMP activities to date. The SMP envisions three types of products produced during Plan development- informational reports, computer-based tools, and RSM strategies/Plans.

Currently, CSMWs main thrust for SMP development is preparation of regionally-based RSM strategy plans. We are working with various regional entities to implement RSM within their jurisdictional area through Coastal RSM Plans. These Plans specify how governance, outreach and technical approaches can support beneficial reuse of sediment resources within and throughout that region without causing environmental degradation or public nuisance. CSMW has historically focused on the development of informational documents and computer-based tools to assist coastal managers obtain and utilize the information they need to provide sound decision-making. Links to these tools and documents lie within the column to your right and/or on our Library page.

Information on the various coastal sediment-related programs of CSMW member agencies is available, as are CSMW meeting minutes since 2003. Our outreach program has included workshops, development of and mailings to our Public Outreach Contact List, and is part of each Coastal RSM Plan development. Comments received to date from our public outreach activities can be viewed by workshop/region location.

We encourage you to contact us. Please direct technical issues to the CSMW Project Manager. Policy or procedure related questions can be directed to the CSMW co-chairs. A questionnaire may assist in identifying your concerns. If you would like to be added to our mailing list, please fill out the New Contact form.

www.dbw.ca.gov/csmw/default.aspx

Last modified: 02/07/2011

CSMWs Current Activities

RSM Related Reports
- Why a SMP is needed
- Coastal Regional Sediment Management Plans
- SMP Status Report 2008
- SMP Baseline Report 2006
- Sand Compatibility and Opportunistic Use Program (SCOUP)

Computer Based Tools
- Spatial Data Website
- Coastal Sediments Benefit Analysis Tool
- Coastal Sediment References Searchable Database

Outreach
- National Shoreline Management Study (Draft Outline)
- Public Outreach Contact List
- Natural Resources Protection Workshops

Informational Documents

RSM Partners
- Monterey Bay National Marine Sanctuary
- State Water

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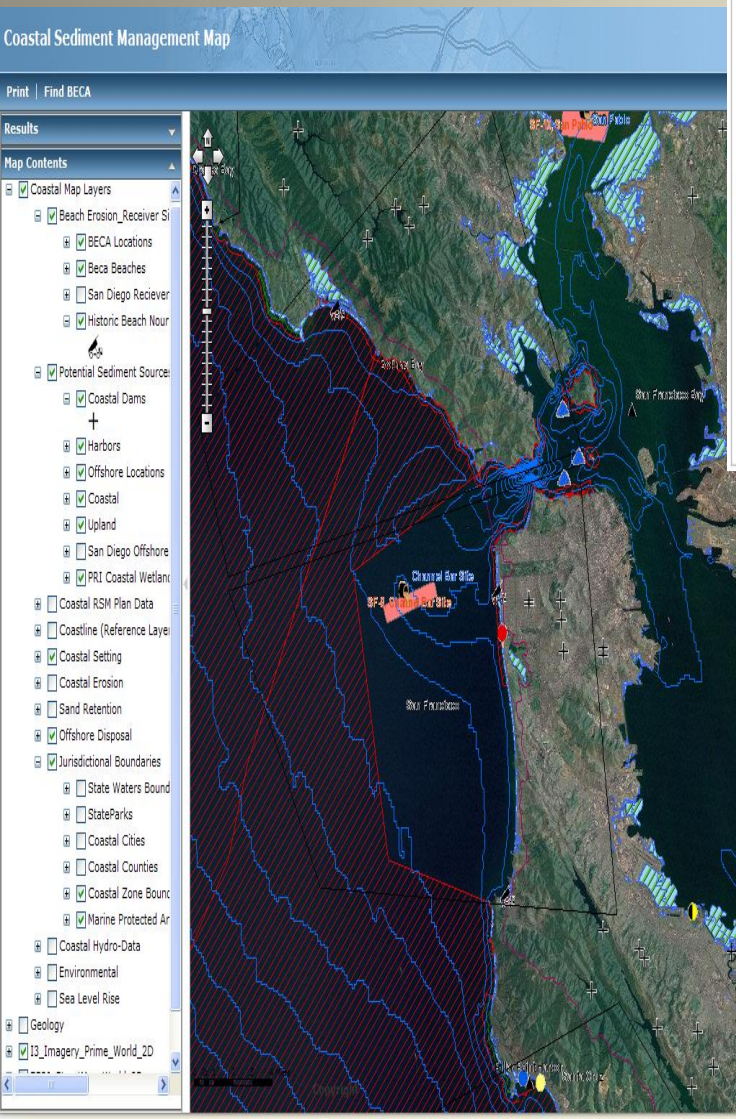
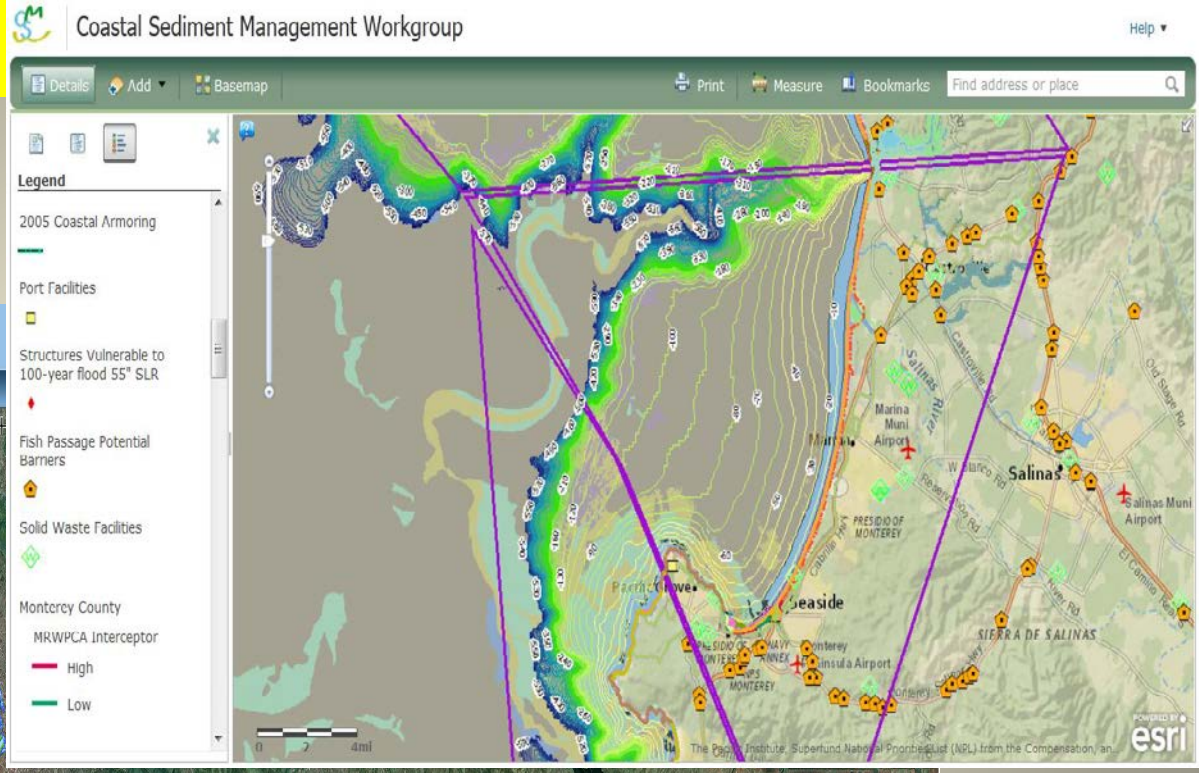
SMP On-Going Activities & Products

- Biological Impacts analysis and Recommendations
- California Beach Restoration Strategy
- Coastal RSM Plans and Environmental Documents
- Coastal Sediment Benefit Analysis Tool (CSBAT)
- Conceptual Plan to Capture/Reuse Coastal Sediments Lost to Submarine Canyons
- CSMW Website
- Development of Sand Budgets for California's Major Littoral CellsGIS User's Survey
- Initial Data Inventory and Collection - GIS Database
- Mud Budget Final Report- Fine Grained Sediment Sources, Transport and Sinks: Phases 1 and 2
- Policies, Procedures and Regulations Analysis
- Public Outreach including Multiple WorkshopsSand Lost from Dams
- SMP Brochure and Project Sheets
- The Economics of Regional Sediment Management in Ventura and Santa Barbara

Computer Based Tools

"WebMapper"





Agency Coordination

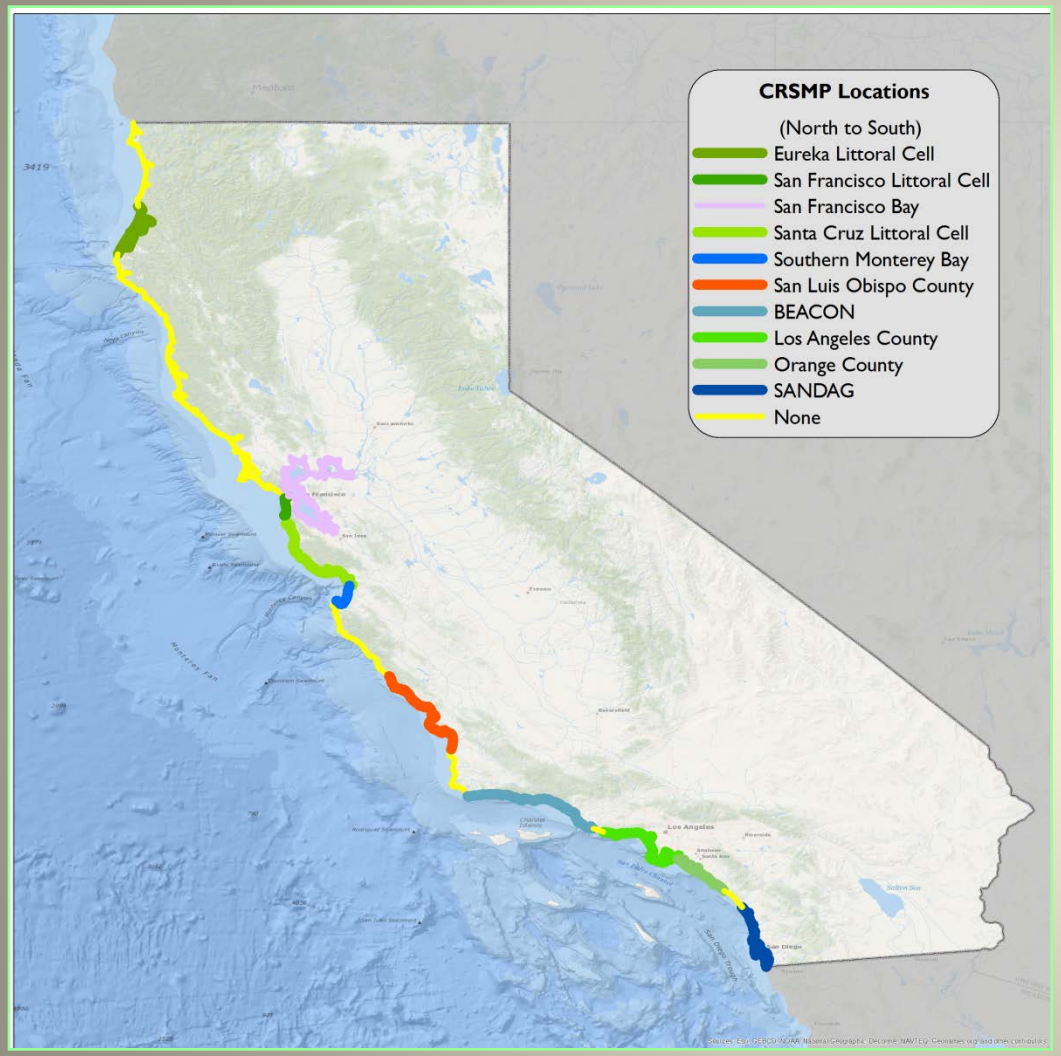
USEPA- Addressing 80/20 Rule of Thumb for nourishment materials and Beneficial Reuse Option

Monterey Bay National Marine Sanctuary- working on ways to conduct nourishment activities within the Sanctuary given their restrictive regulations

Fish & Game/State Parks- incorporating RSM implementation needs in developing Marine Protected Area boundaries and classifications

State Water Quality Control Board- TMDLs and facilitating transport of coarse-grained materials to the coast

Coastal RSM Plan Development



- Formulate and seed regional consensus-driven sediment management policy and guidance
- Restore and maintain coastal beaches and other critical areas of sediment deficit
- Reduce the proliferation of protective shoreline structures
- Sustain recreation and tourism
- Enhance public safety and access
- Restore coastal sandy habitats.

CRSMP Objectives

Region-Specific

Consistent with CSMW Goals

Governance, Outreach, “Science-Based”

Developed by local/regional stakeholders

Focus on Implementation

Extent of Completed & In-Progress Regional Sediment Management Plans

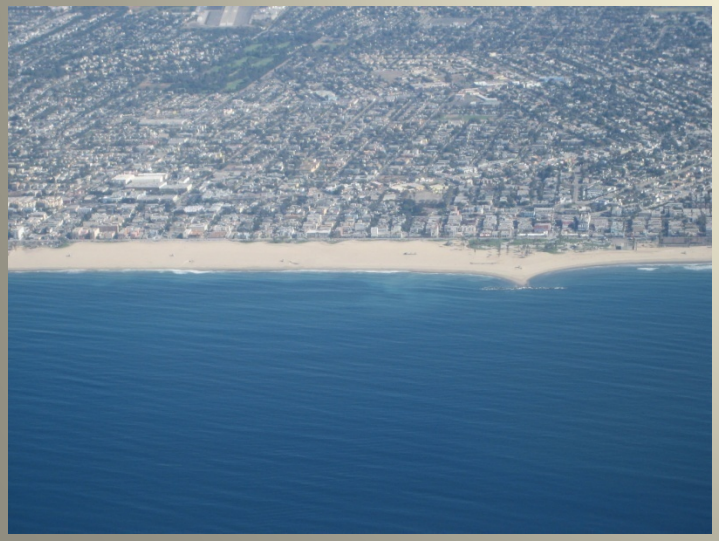
Challenges For Effective Implementation of RSM

- No state-federal office that coordinates RSM projects (like DMMO)
- Sediment currently defined as a pollutant
- Inability for locals to match state/fed dollars
- Lack of dedicated revenue source to fund beach restoration program
- No state or federal regulations that require restoration of beaches eroded due to sand mining, navigation projects, etc.
- Difficult to find entity with jurisdiction, political will and funding to take on implementation
- **HOW DO WE INCORPORATE THE REGIONAL CRSMPS INTO ONE STATE-WIDE DOCUMENT**

Contact:
Clif.Davenport@conservation.ca.gov

SMP ISSUES AND FINDINGS

Why are beaches important to California?



Provide:

Recreation
Tourism
Habitat
Revenue

Protect:

Bluffs
Roads
Buildings
Dunes

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SEDIMENT MANAGEMENT ISSUES

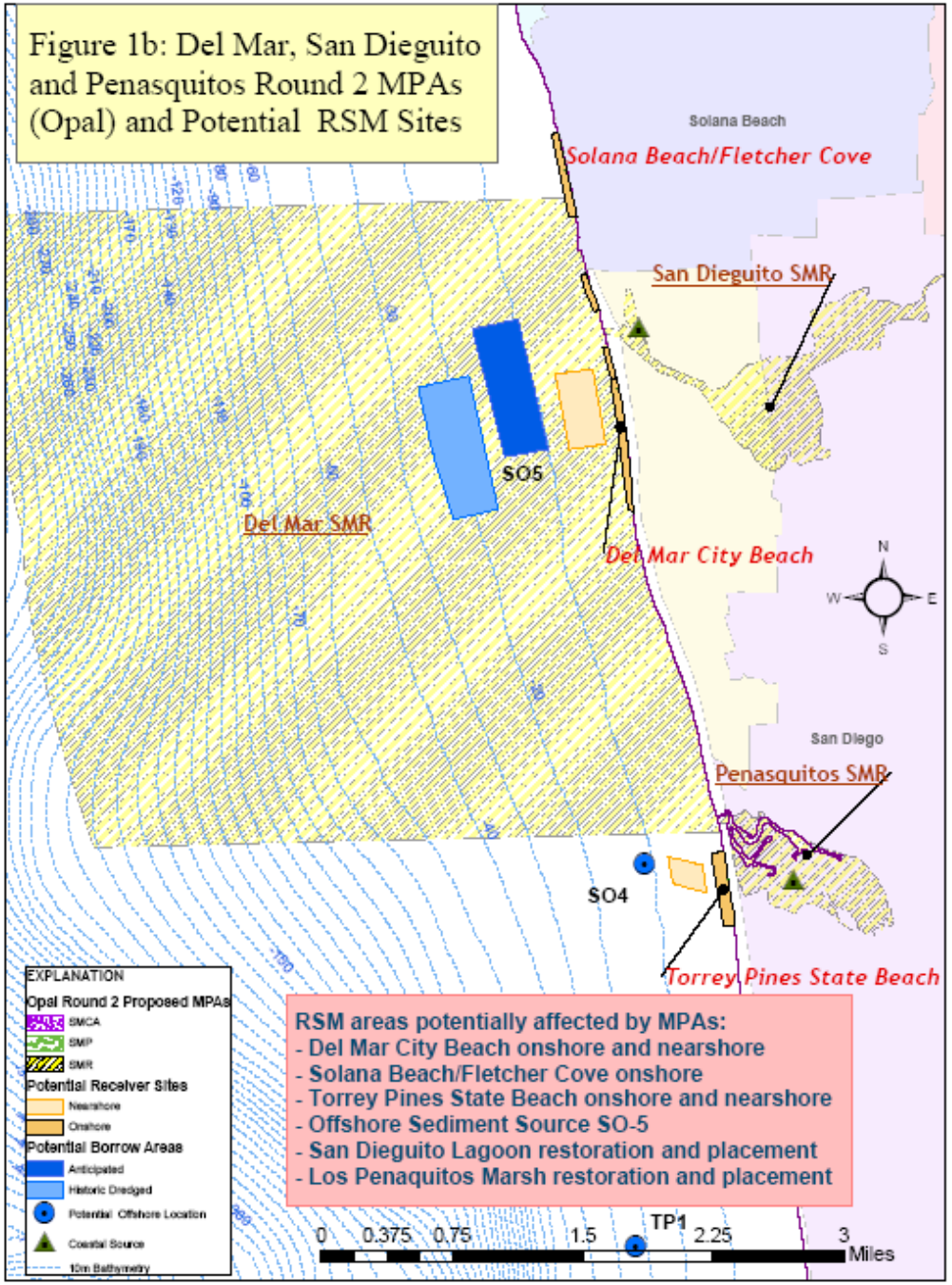
Coastal Sediment Management Workgroup

- Beneficial Reuse consideration
- Fine-grained sediment transport
- Source/beach sand compatibility
- Fines & project operations effect on natural resources
- Potential contaminants/bacterium
- Sediment Budgets
- Guidelines for regional opportunistic programs
- Economics
- Inadequate information for decision making

Agency Coordination

Coordinating RSM needs with Biological Protection

- Preserving access to potential placement areas and offshore sand sources during development of Marine Protected Areas



CRSMPs: Governance & Outreach

Governance

- Regional Entity guiding Plan direction
- Involve Stakeholder Advisory Group
- Formal Acceptance or Adoption

Outreach

- Engage existing stakeholder group
- Provide Agency coordination
- Public Outreach Program

CRSMPs: Technical

- Identify critical eroding areas
- Determine potential sediment sources
- Locate critical species and habitats
- Compile physical processes info
- Data gaps, other issues of concern
- Permitting requirements
- Identify potential funding streams

Lessons Learned

- An easily readable Plan is important to getting buy-in from the public, local managers and politicians
- Establish an appropriate advisory group at the onset of Plan development
- Utilize existing Regional Planning or Resource Management Authority (JPAs) to address regional sediment management concerns
- Regional Authority's Executive Officer needs a funded staff member to effectively manage sediment management activities
- Coordinate with State and Federal Regulatory programs to integrate RSM needs
  - TMDLs, MLPA, Sanctuaries
- Pursue sediment stockpile areas for upland sand
  - Utilize SCOUP protocols
- Assess feasibility of sediment management devices to retain sand
  - Technical, political, environmental
- Dedicated revenue streams needed
  - Local to match federal/state funds, State/Federal to cover incremental costs
- Focus on the 80% of points everyone agrees on rather than the 20% that people don't
- Important to emphasize soft solutions

Lessons Learned- Outreach

1. An easily readable Plan is important to getting buy-in from the public, local managers and politicians

2. Establish an appropriate advisory group at the onset of Plan development
   - Local cities, academics, industry, politicians
   - regulatory/resource/funding agencies
   - NGOs
   - Early involvement of locals
   - Continual involvement of policy people

3. Coordination with watershed and similar groups

Lessons Learned- Governance

1. **Utilize existing Regional Planning or Resource Management Authority to address regional sediment management concerns**

   - Lead Agency, funds, environmental, regional permits, local assistance

2. **Regional Autority's Executive Officer needs a funded staff member to effectively manage sediment management activities**

3. **Integrate Plan into various permitting streams**

   - CEQA

   - Local Coastal Programs, CCC permits

   - Local Zoning Ordinances and permit processing

   - County General Plans

Lessons Learned- Regulatory

1. **Coordinate with State and Federal Regulatory programs to integrate RSM needs**
   - **TMDLs, MLPA, Sanctuaries**
   - **GIS provides standardized inventory of relevant data**

2. **Pursue regional general permits from all permitting agencies**
   - **USACE General Permit 67**
   - **CCC General permits**

3. **Pursue sediment stockpile areas for upland sand**
   - **Utilize SCOUP protocols**

Lessons Learned- “Technical”

1. Characterize and pursue offshore sediment,
   - Sea Floor Mapping
   - augment with upland and wetland restoration when available
2. Assess feasibility of sediment management devices to retain sand
   - Technical, political, environmental
3. Dedicated revenue streams needed
   - Local to match federal/state funds
   - State/Federal to cover incremental costs

4- Focus on the 80% of points everyone agrees on rather than the 20% that people don’t

5- Important to emphasize soft solutions

CSMW TOOLS FOR RSM

Library of Project and Related Reports

Library Tab CSMW Website (www.dbw.ca.gov/csmw/default.aspx)

This page provides links to documents relevant to CSMW's mission. Please check back for updates.

CSMW Reports:

- California Coastal Sediment Management Master Plan Workplan
- Initial Report of the CSMW
- Sediment Master Plan Baseline Report 2006
- Sediment Master Plan Status Report 2008
- California Beach Erosion Assessment Survey 2010
- Coastal Sediment References 2004
- Drafts

Coastal Erosion:

- CA Resources Agency Shoreline Erosion Protection Policy 1978
- Coastal Change - Beaches and Cliffs
- Dept. of Parks and Recreation Memo 1999

Coastal Engineering:

- SLC Shoreline Protective Structures
- USACE Coastal Engineering Manual
- California Sand Retention Structure Impacts
- California Sand Retention Structure Impacts - Appendix A

Economic Studies:

- Economics of RSM
- Economic Losses from failure to maintain California's Beaches
- Fiscal Impacts of Beaches in California
- Beach Spending/Recreational Benefits, City of San Clemente
- Beach Spending/Recreational Benefits, City of Carpinteria
- Overcrowding & Demand for Beaches, Southern California

Environmental

- DRAFT Biological Impacts Analysis
- CEQA Statues and Guidelines
- SCOUP Pilot Project MND
- San Diego CBSMP- Proposed Actions & Alternatives

Outreach

- Beach Restoration Regulatory Guide
- California Coastal Sediment Master Plan Informational Brochure
- Coastal Sediment References
- Explore the California Coast
- How Beach Nourishment Works
- Littoral Cells, Sand Budgets and Beaches

GeoSpatial Data Websites:

- Cal-Atlas Geospatial Data Clearinghouse
- CSMW's "WebMapper"
  - This "WebMapper" / GIS product is funded in part with qualified outer continental shelf oil and gas revenues by the Coastal Impact Assistance Program, Bureau of Ocean Energy Management, Regulation, and Enforcement, U.S. Department of the Interior.
- CDFB&G's Marine Map DST
- San Diego Nearshore Program
- USDAs Natural Resources Data Gateway
- USGS Coastal and Marine IMS
- USGS's usSEABED

Planning and Policy

- Regional General Permit for Beach Nourishment
- Ocean Protection Council Strategic Plan
- West Coast Governors Agreement on Ocean Health - Action Plan
- Florida's Beach Restoration Program
- Texas's Beach Restoration Program

Regional Sediment Management:

- ASCE Policy Supporting RSM
- Coastal RSM Plan for Southern Monterey Bay
- Coastal RSM Plan Pt. Conception to Pt. Mugu
- Coastal RSM Plan for the San Diego Region
- RSM Informational Bulletins
- RSM Primer
- Sand Compatibility and Opportunitistic Use Program (SCOUP)
- Sandshed Management

Sea Level Rise

- California Coastal Erosion Response to Sea Level Rise
- Impacts of Sea Level Rise on the California Coast
- USACE Policy on Sea Level Rise

Sediment Assessments:

- California Beach Restoration Study 2002
- Cumulative Loss of Sand to the California Coast by Dams
- Development of Sand Budgets for California Major Littoral Cells
- Effects on Turbidity from Dredging Operations - CSTF Review
- Offshore Canyon Sand Capture
- Reservoir Sedimentation Database (RESSED)
- Sources, Disperal and Fate of Fine Sediment Supplied to Coastal California

Miscellaneous:

- USACE Digest H2O Resources Policies and Authorities
- USACE Publications
- MMS Publications
- Process Based Landslide Prediction
- Pressure Equalizing Modules (PEMs) Reports
  - Jutland Field Test PEMs June 2008 Part I
  - Jutland Field Test PEMs June 2008 Part II
  - Jutland Field Test PEMs June 2008 Part III
  - Jutland Field Test PEMs June 2008 Appendices
  - Holmsland Barrier Field Tests June 2008 Burcharth

Brochure: Why a Sediment Master Plan is needed

California Coastal Sediment Master Plan

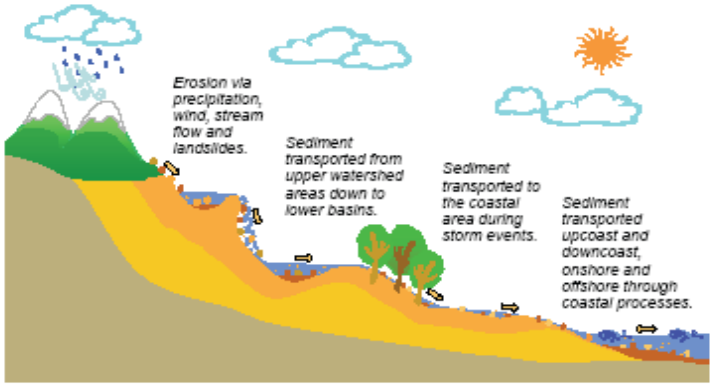
Mission

Develop a comprehensive master plan for the conservation, restoration, and preservation of the valuable sediment resources along the coast of California to reduce shoreline erosion and coastal storm damages, provide for environmental restoration and protection, increase natural sediment supply to the coast, restore and preserve beaches, improve water quality along coastal beaches, and optimize the beneficial use of material dredged from ports, harbors, and other opportunistic sediment sources.

The California Coast – An Important Resource

The California coastline consists of a variety of landforms such as sand and cobble beaches, rocky intertidal areas, rocky cliffs, and loosely consolidated bluffs. These landforms provide habitat for hundreds of wildlife species covering the spectrum of birds, mammals, reptiles, amphibians, fishes, and invertebrates. The California shoreline also provides residential, industrial, commercial, and military land uses for humans as well as recreational and educational opportunities.

Natural Sediment Processes



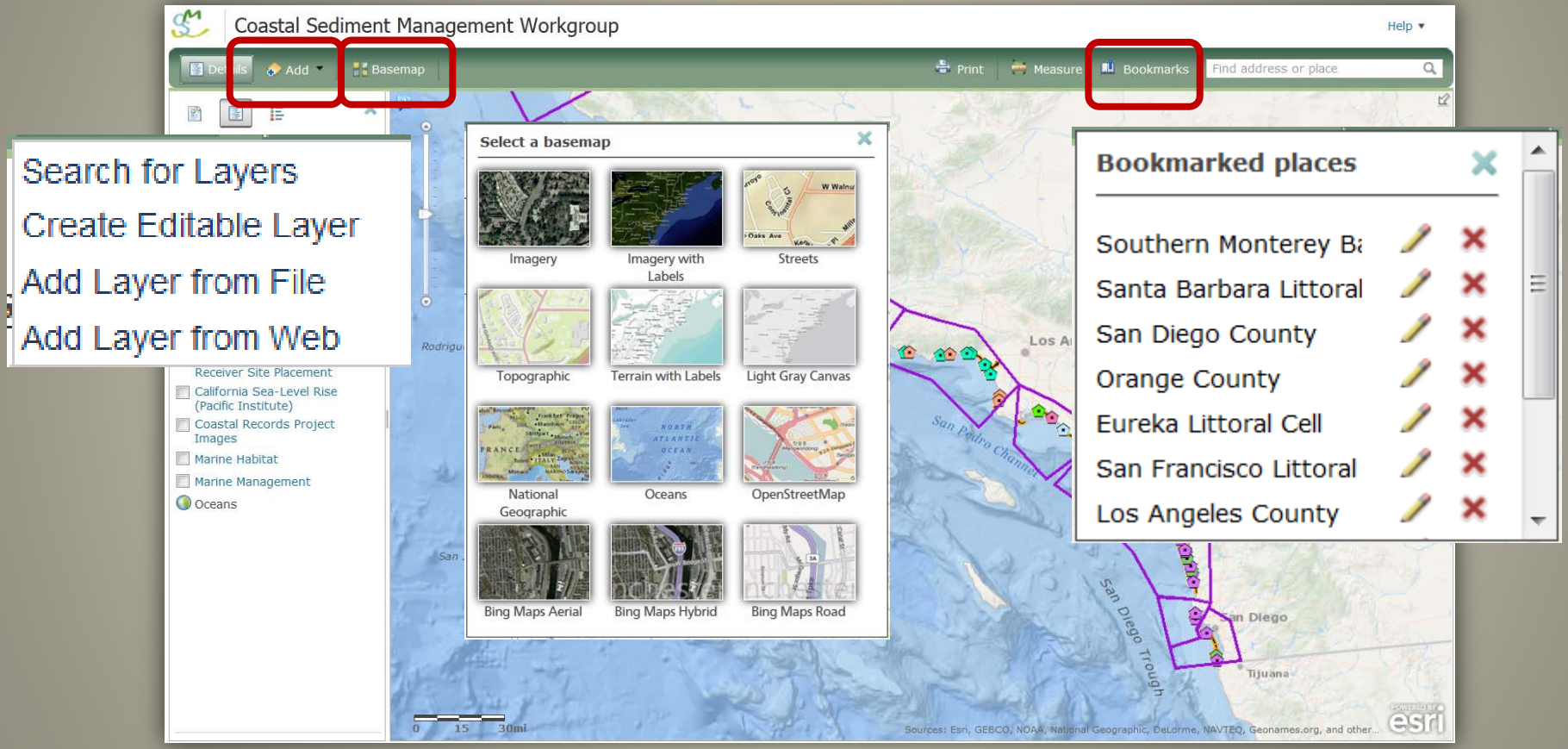
Much of the sediment that makes up the sand and cobble beaches of the coast is material carried to the coast by rivers and streams. Under natural conditions, weathering processes erode sediment from the watershed via precipitation, wind, stream flow, and landslides. Streams transport gravel, sand, silts, and clays from the upper watershed areas down to the lower basins, where the sediment is subsequently transported to the coast during storm events. The volume and size of the sediment transported by streams depends upon the stream forces. Larger storms cause increased volumes of sediment with higher proportions of sand and gravel to be transported to the coast. Upon reaching the coast, waves, currents, and winds transport the sediment upcoast and downcoast as well as onshore and offshore, contributing to the dynamic nature of coastal beaches.

Beneficial Uses of Coastal Sediment

Coastal sediment provides many beneficial uses for humans and wildlife. Sand and gravel provide habitat for various wildlife species that use streams and beaches, while sand also provides recreational beach space for humans and shoreline protection. Additionally, silts and clays carried from river substrates, supplies needed nutrients for nearshore habitats. Sand and gravel, extracted from in-stream and offshore sources, is used by the construction industry for infrastructure development. Easy access to this important construction material has been a factor in California's economic growth.

Coastal Sediment Management Workgroup

WebMapper Geoportal



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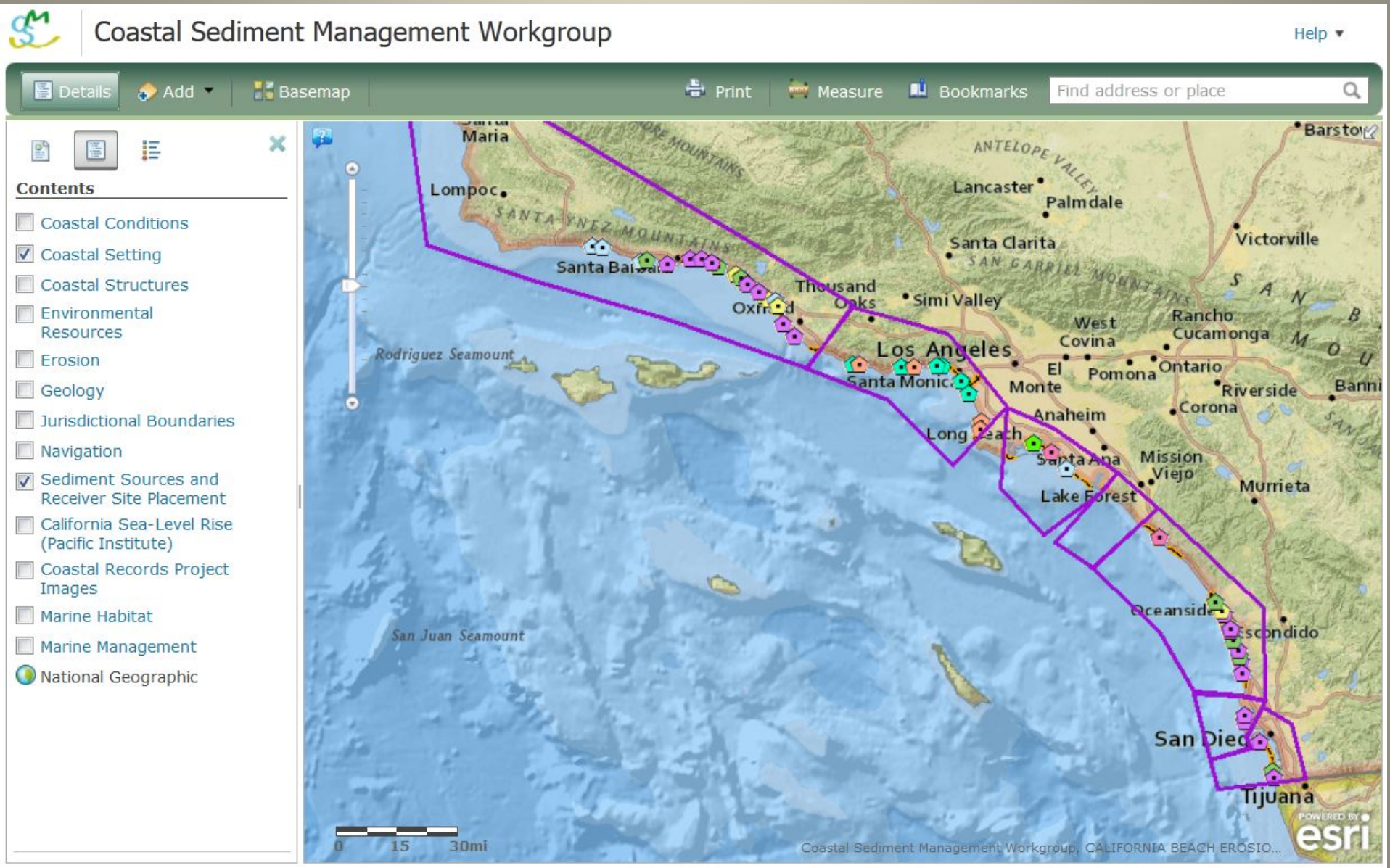
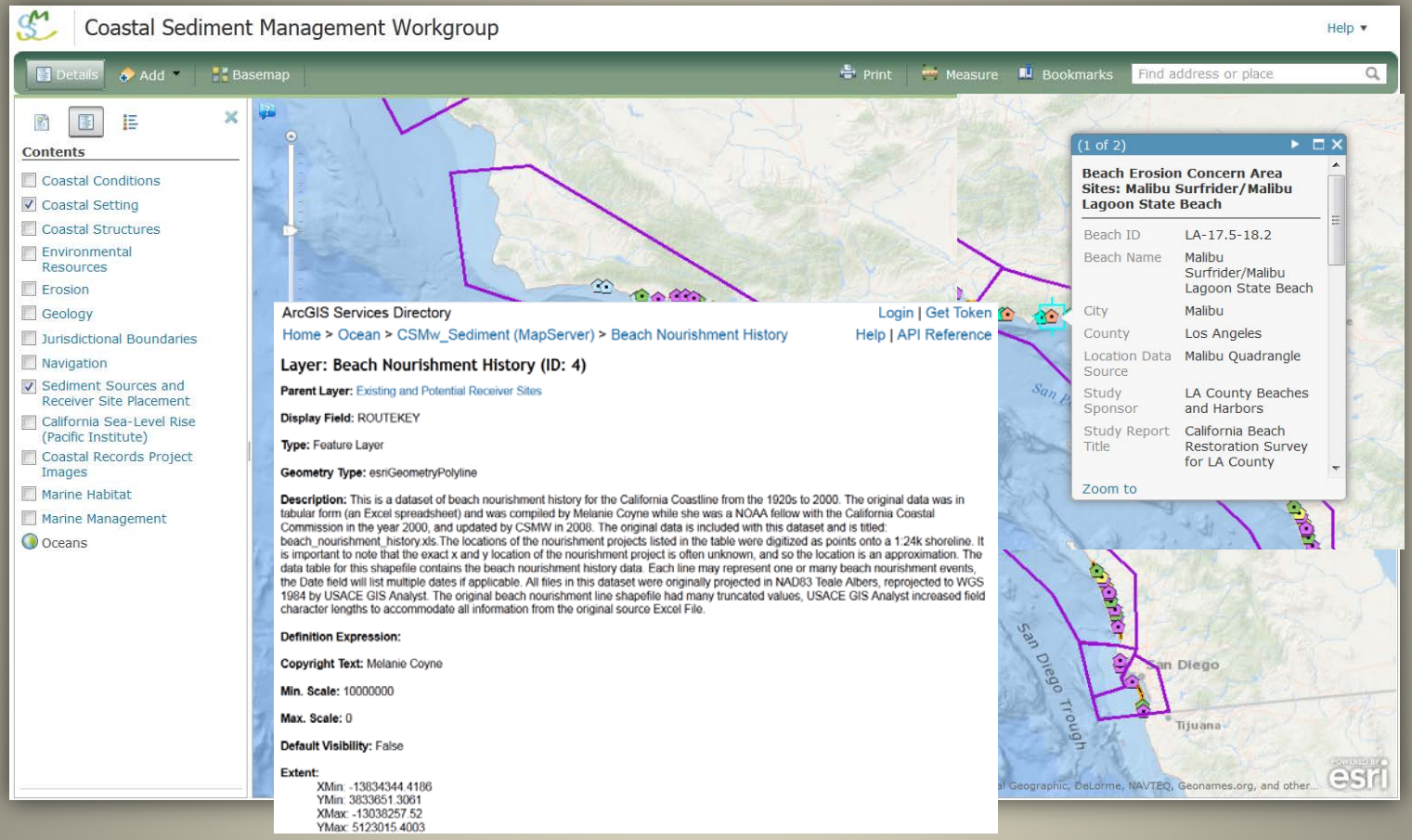


WebMapper Geoportal



California Sediment Master Plan

Coastal Sediment Reference Database

Coastal Sediment Management Workgroup

US Army Corps of Engineers

Contact the Content Manager

clear Search by **Subject** | Begin by selecting a category. Options for a subcategory and, if applicable, a subsubcategory will autopopulate based on your category selection.

Select a Category

Select from the items below ....

clear Search by **Location** | Begin by selecting a general area. Options for Region, County and Littoral Cell will autopopulate based on your selections.

Select a General Area

Select from the items below ....

Search records by **author, title,** or **keywords** | The more fields entered, the more selective the search results.

Author Name	Title	Keyword

SCOUP

Regional Sand Management Plan

- Protocols for compatibility comparisons, potential sources and receiver sites
- Assess regional approaches for reuse of upland sands
- Roadmap for regulatory consultations

Coastal Sediment Management Workgroup

Study: Fate and Transport of Sediment

Sources, Dispersal, and Fate of Fine Sediment Supplied to Coastal California

Evaluate physical impacts and fate of fine-grained materials within/deposited from turbidity plumes

Scientific Investigations Report 2007–5254
U.S. Geological Survey

Where are the problem areas?

BECA's

CALIFORNIA BEACH EROSION ASSESSMENT SURVEY2010

October 2010

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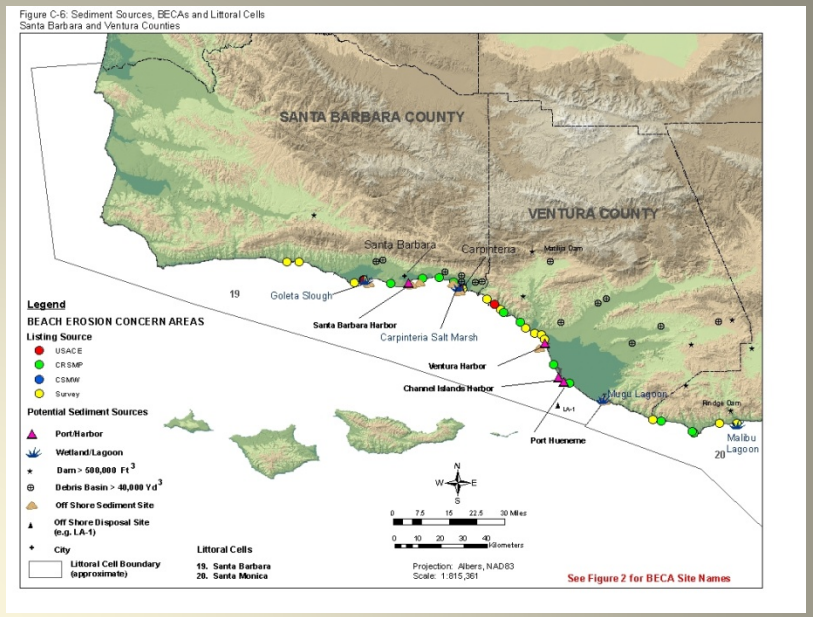


TABLE 1- Potential BECA Locations

County	Location	List Source	Page No. (Appendix A)
Alameda	Robert W. Crown Memorial State Beach	Survey	15
San Mateo	Coyote Point	Survey; County	15
San Francisco	Ocean Beach (San Francisco)	USACE	16
San Mateo	Princeton	CSMW	16
San Mateo	El Granada County Beach	Survey	17
Monterey	Southern Monterey Beaches	CRSMP	17
Santa Barbara	Refugio State Beach	Survey	18
Santa Barbara	El Capitan State Beach	Survey	18
Santa Barbara	Isla Vista	Survey	19
Santa Barbara	Goleta Beach County Park	Survey; USACE	19
Santa Barbara	Arroyo Burro County Beach	CRSMP	20
Santa Barbara	Butterfly Beach	CRSMP	20
Santa Barbara	Summerland Beach	CRSMP	21
Santa Barbara	Santa Claus Beach	CRSMP	21
Santa Barbara	Carpinteria City Beach	Survey; USACE	22
Santa Barbara	La Conchita	Survey	22
Ventura	Oil Piers	USACE	23
Ventura	Hobson County Park	Survey	23
Ventura	North Rincon Parkway	CRSMP	24
Ventura	South Rincon Parkway/Emma Wood County Beaches	CRSMP	24
Ventura	Emma Wood State Beach	Survey	25
Ventura	Surfers Point Park	Survey; CRSMP	25
Ventura	San Buenaventura State Beach	Survey	26
Ventura	Pierpont Beach	Survey	26
Ventura	Oxnard Shores/Mandalay Beach	CRSMP	27
Ventura	Hueneme Beach	CRSMP	27
Los Angeles	Leo Carrillo State Park	Survey	28
Los Angeles	Nicholas Canyon County Beach	CRSMP*	28
Los Angeles	Zuma County Beach	CRSMP*	29
Los Angeles	Point Dume County Beach	CRSMP*	29
Los Angeles	Dan Blocker Beach	Survey; CRSMP*	30
Los Angeles	Malibu Surfriders/ Lagoon County Beach	Survey; CRSMP*	30
Los Angeles	Topanga County Beach	Survey; CRSMP*	31
Los Angeles	Will Rogers State Beach	Survey; CRSMP*	31
Los Angeles	Venice City Beach	Survey; CRSMP*	32
Los Angeles	Dockweiler State Beach	Survey; CRSMP*	32

El Granada County Beach
San Mateo County
Shoreline Mile 20
List Source- Survey

Setting: Narrow sandy beach backed by a low bluff. An unimproved parking area exists at the edge of the bluff downcoast (south) of Half Moon Bay breakwater. A rock revetment exists to the north of the parking area.

Project Lead: San Mateo County

PROBLEM ASSESSMENT

High beach usage/access area. Erosion of the bluff occurs during high tides and storm wave activity. Erosion has undermined the parking area and threatens a wetland behind the former parking area. Undermining of Highway 1 is imminent- some revetment in place to forestall such erosion.

Southern Monterey Beaches
Monterey County
Shoreline Miles: 16.2-19.2
List Source- CRSMP

Setting: This stretch of shoreline is a highly desirable beach combing and strolling area located along the picturesque Monterey Bay National Marine Sanctuary and fronting the Cities of Sand City and Monterey.

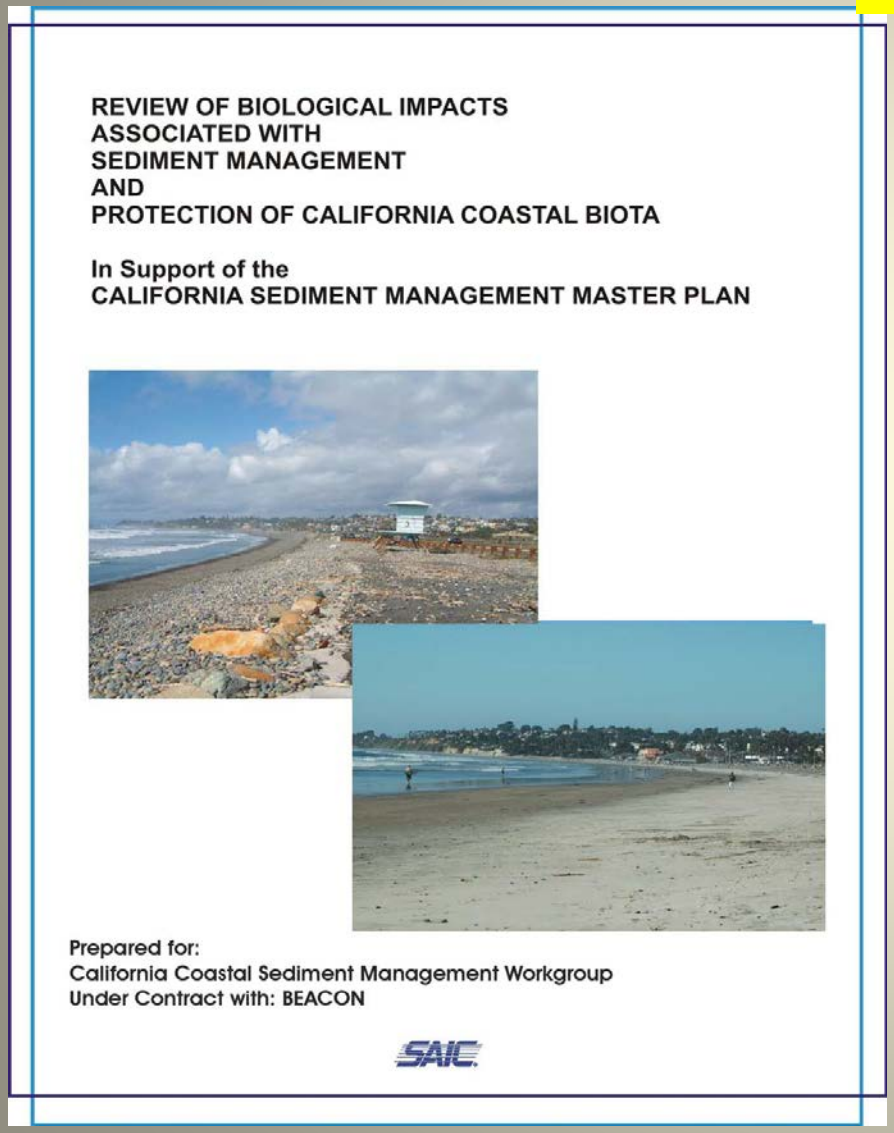
Project Lead: Association of Monterey Bay Area Governments

PROBLEM ASSESSMENT

Rapid erosion of the beach and coastal dunes are impacting critical habitats, coastal access, and threatening public infrastructure such as a raw sewage transport trench. Passive erosion fronting areas of hardened shoreline will eventually prohibit lateral beach access through narrowing of the beach. Seawalls continue to be built to protect individual structures from erosion-related damages. A 3-mile stretch of shoreline from Wharf II north to Sand City recommended for restoration in the CRSMP. CRSMP indicates erosion rate of 1.0-3.5 ft/year along this stretch.

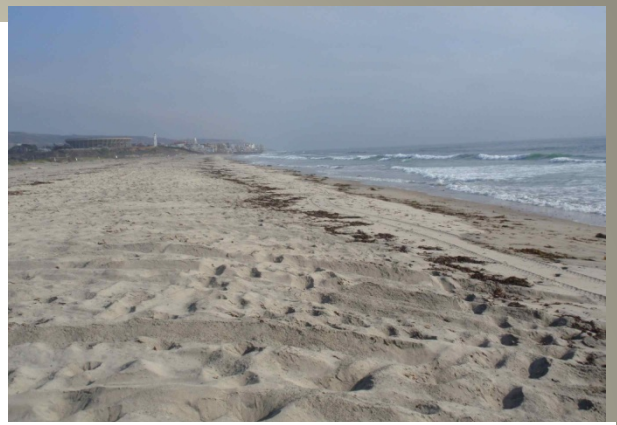
Biological Impacts Analysis/Resource Protection Guidelines

What are the environmental consequences of sediment management?



- Assess potential adverse and beneficial biological impacts from sediment management activities
- Identify recommended practices to eliminate or mitigate negative impacts
- Develop guidelines to assist resource managers protective efforts
- Reviewed by agencies, awaiting peer review

Demonstration Project- Develop information on the transport and fate of fines



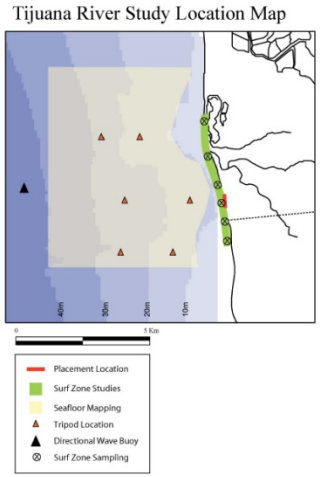


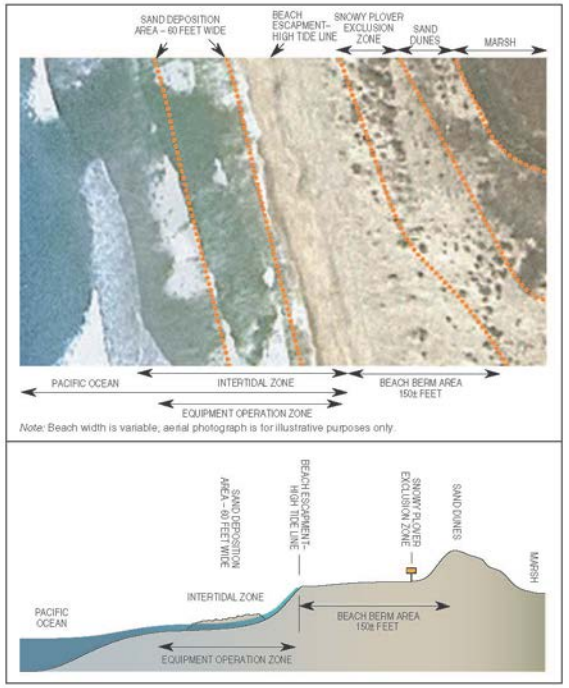
Figure 4: Map showing study area and in-situ equipment locations.

Tijuana Estuary Sediment Study

Greater Project Area
Tijuana River Estuary

FIGURE 2-3

2-5



Schematic of Proposed Beach Work Zone
Tijuana River Estuary

FIGURE 2-4

2-13

Coastal Sediment Management Workgroup

Study: Sediment Budgeting

Evaluate the major littoral sediment budgets along the CA coast for guidance on project-based studies

DEVELOPMENT OF SAND BUDGETS FOR CALIFORNIA'S MAJOR LITTORAL CELLS

KIKI PATSCH
GARY GRIGGS

JANUARY 2007
INSTITUTE OF MARINE SCIENCES
UNIVERSITY OF CALIFORNIA, SANTA CRUZ
CALIFORNIA COASTAL SEDIMENT MANAGEMENT WORKGROUP

Education and Information

How do beaches form and change?

BEACHES, LITTORAL DRIFT, AND LITTORAL CELLS- UNDERSTANDING CALIFORNIA'S SHORELINE

KIKI PATSCH
GARY GRIGGS

"Handout"

SEPTEMBER 2006
UNIVERSITY OF CALIFORNIA, SANTA CRUZ
CALIFORNIA COASTAL SEDIMENT MANAGEMENT WORKGROUP

How does the beach nourishment regulatory process work?

CALIFORNIA COASTAL SEDIMENT MASTER PLAN

BEACH RESTORATION REGULATORY GUIDE

Prepared For:
California State Coastal Conservancy
1330 Broadway, 11th Floor
Oakland, California 94612-2530

Coastal Sediment Management Workgroup
135 Ridgway
Santa Rosa, CA 95401

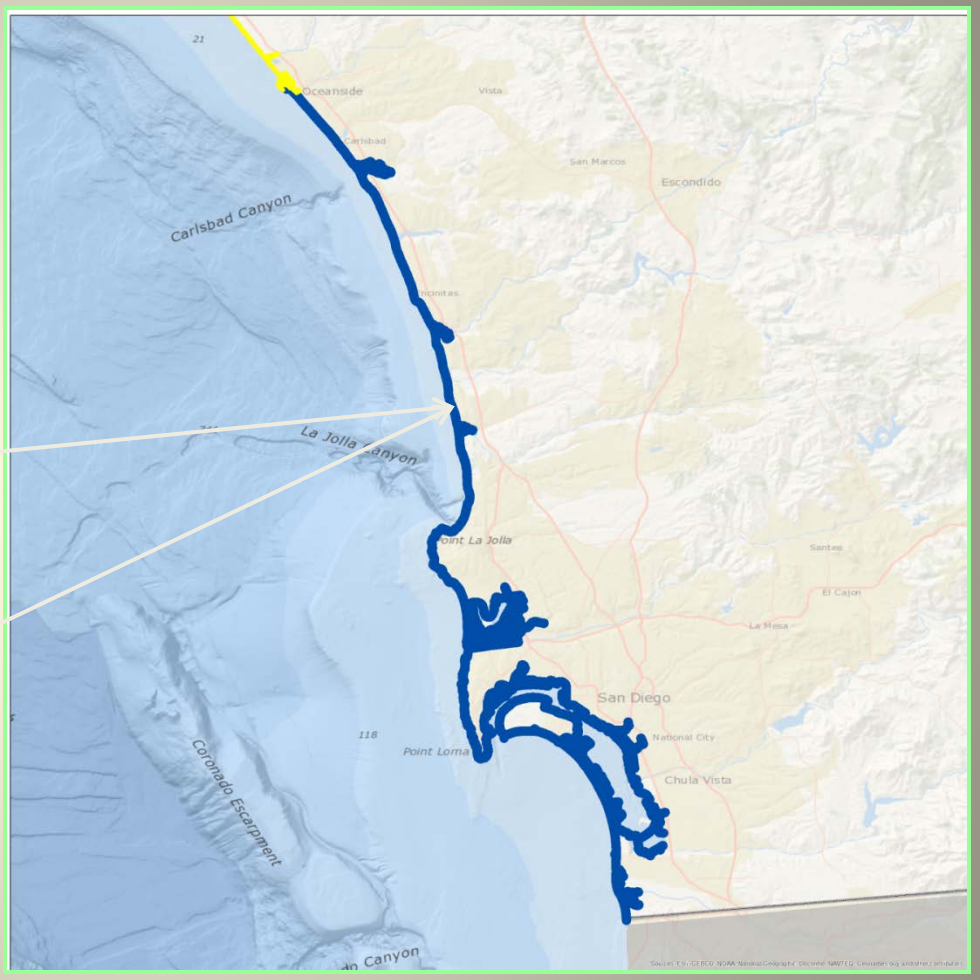
Prepared By:
Everest International Consultants, Inc.
444 West Ocean Boulevard. Suite 1104
Long Beach, CA 90802
December 2006

SPECIFIC CRSMP ISSUES

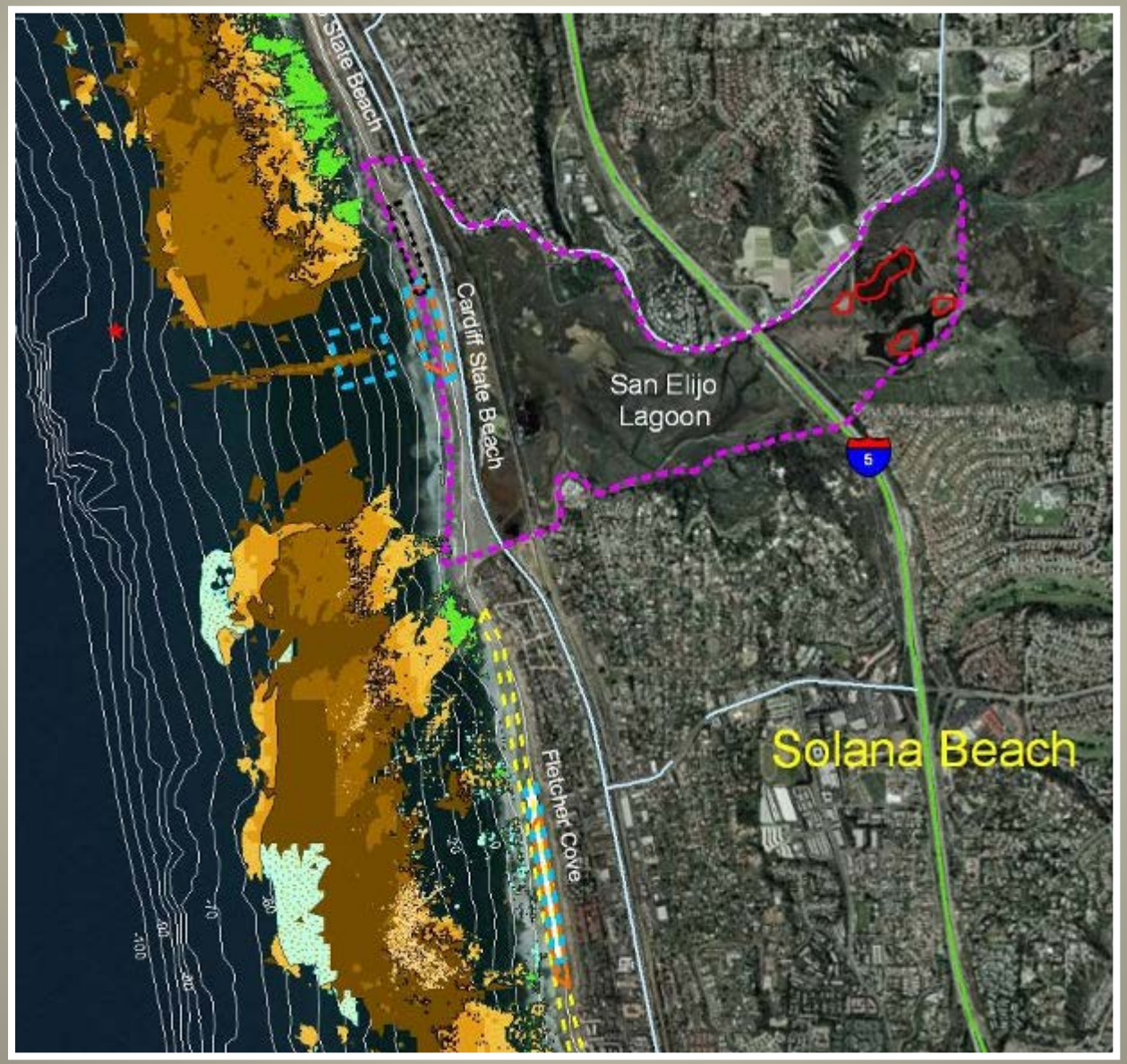
SANDAG

(Source: SANDAG)

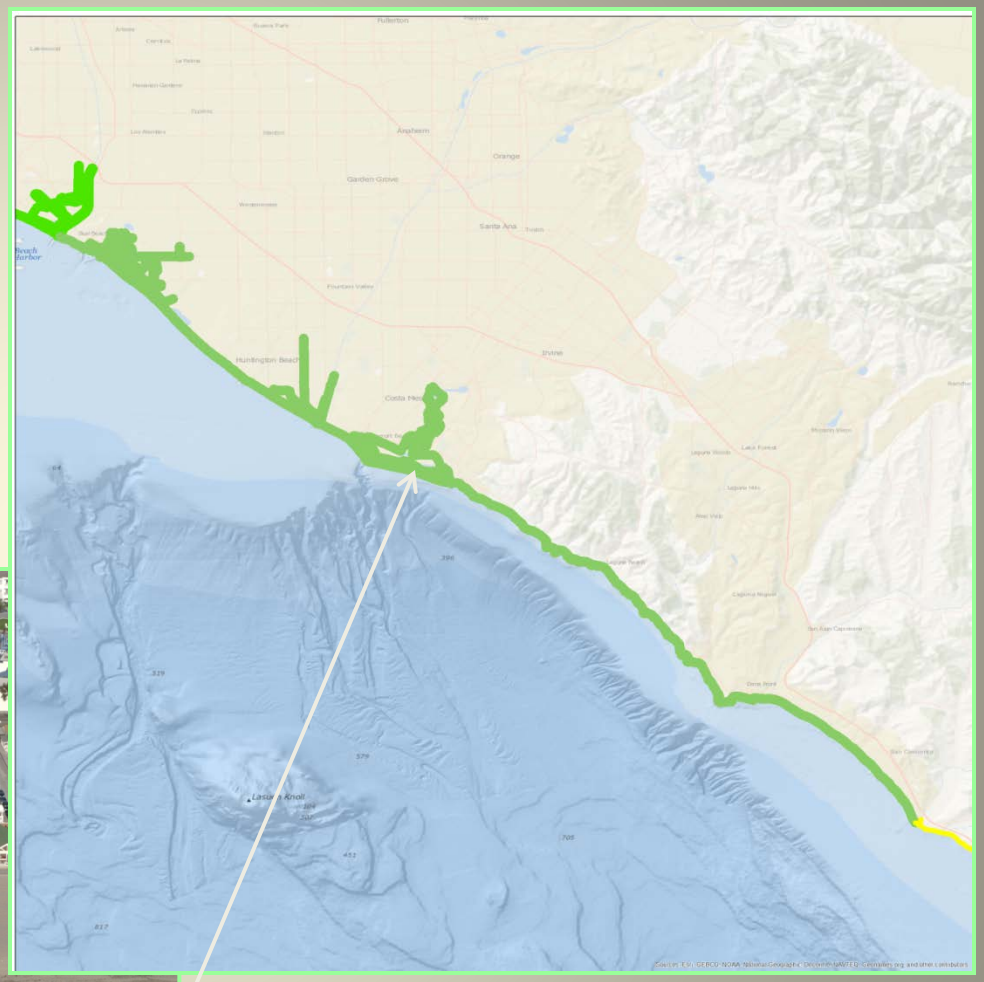
(Source: SANDAG)


Oceanside
Vista
Carlsbad
San Marcos
Escondido
Carlsbad Canyon
La Jolla Canyon
Point La Jolla
Santee
El Cajon
La Mesa
San Diego
National City
Point Loma
Chula Vista
Coronado Escarpment

Biological Constraints Guide Coastal Source and Receiver Site Locations



Orange County



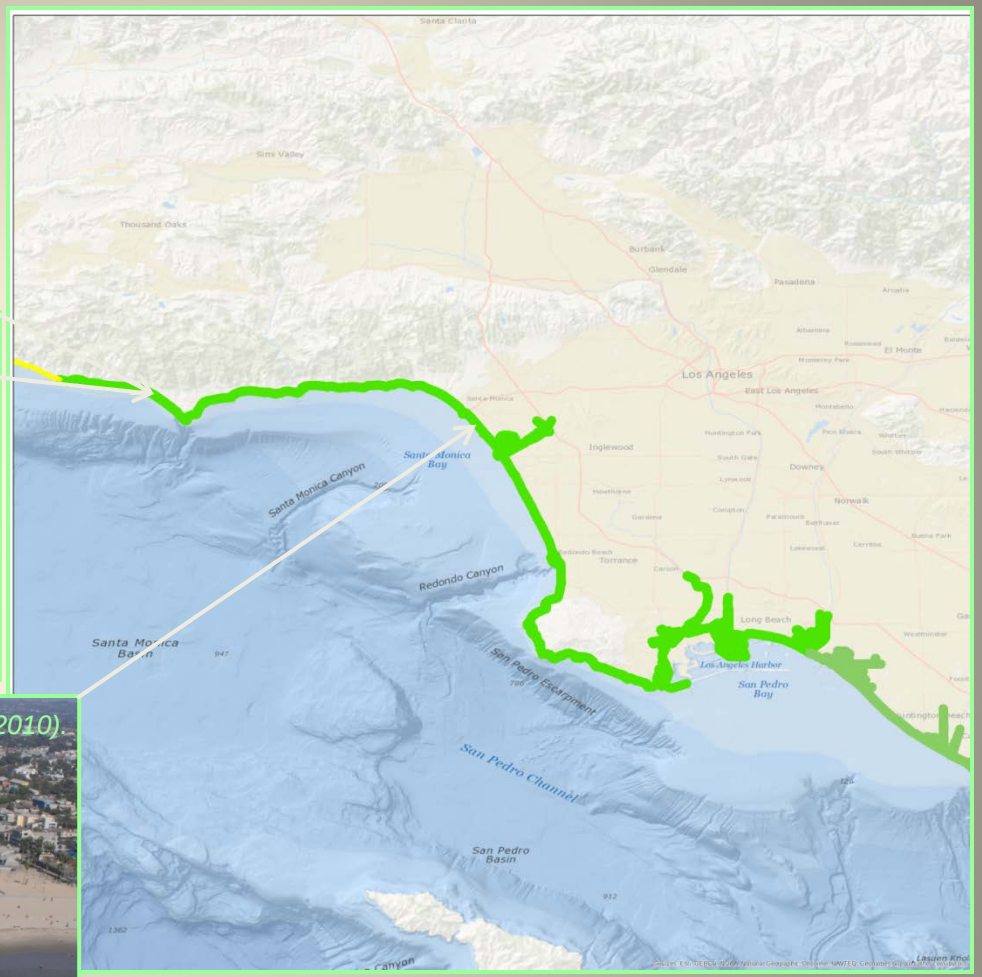
(Source: Adelman and Adelman 2002–2010).

Los Angeles County

(Source: Ken Hively / LA Times)

(Source: Hans Laetz / Malibu Surfside News)

(Source: Adelman and Adelman 2002–2010).



BEACON

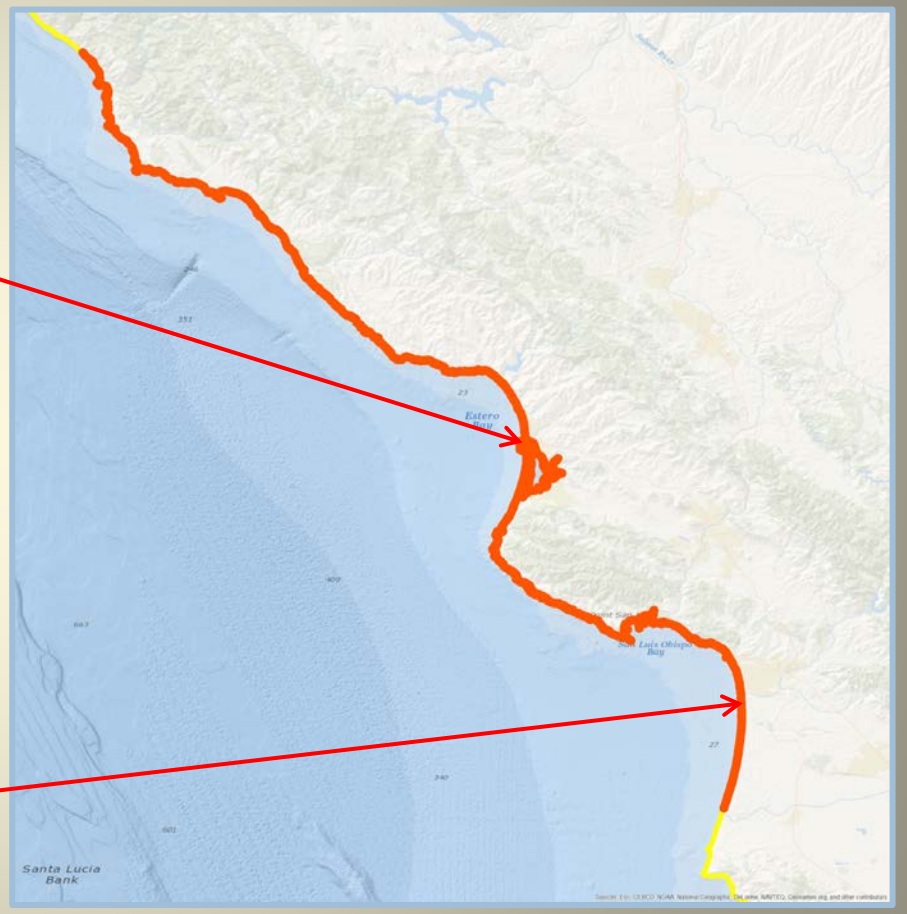
(Source: PWA)

(Source: yelp.com)

Santa Maria
Goleta
Santa Barbara
Santa Barbara Channel
612
Oxnard
Channel Islands
85
San Miguel Passage
Santa Cruz Channel
Santa Cruz Island
Santa Rosa Island
Santa Cruz Canyon
Hueneme Canyon
Mugu Canyon
1956
Santa Cruz Basin

San Luis Obispo County

Morro Rock and Bay



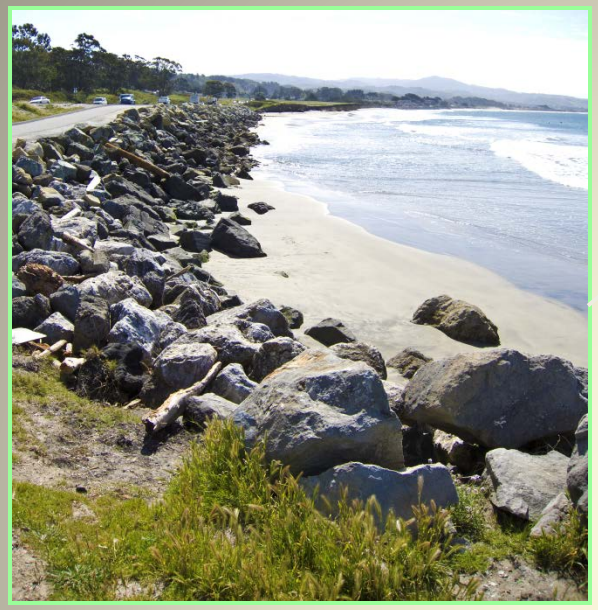
Pismo Beach

Southern Monterey Bay

(Source: California Coastal Records Website)

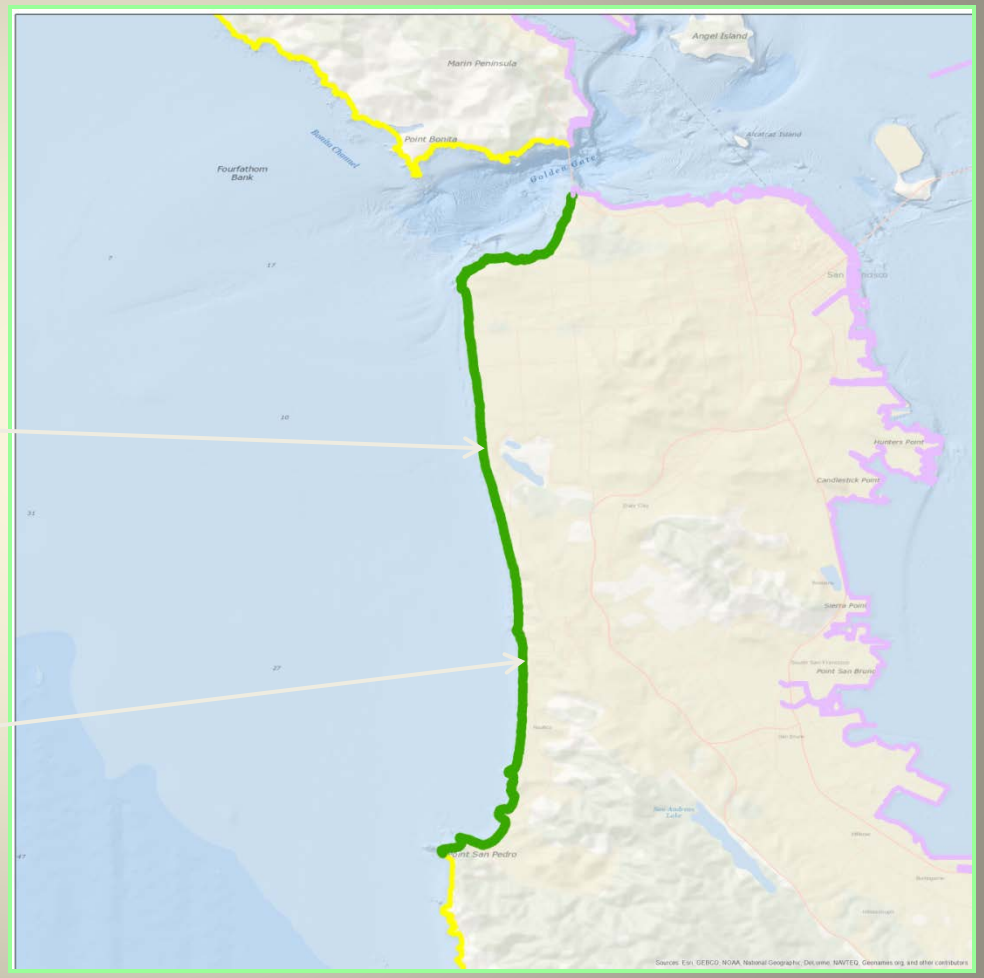
(Source: Edward Thornton)

Santa Cruz Littoral Cell



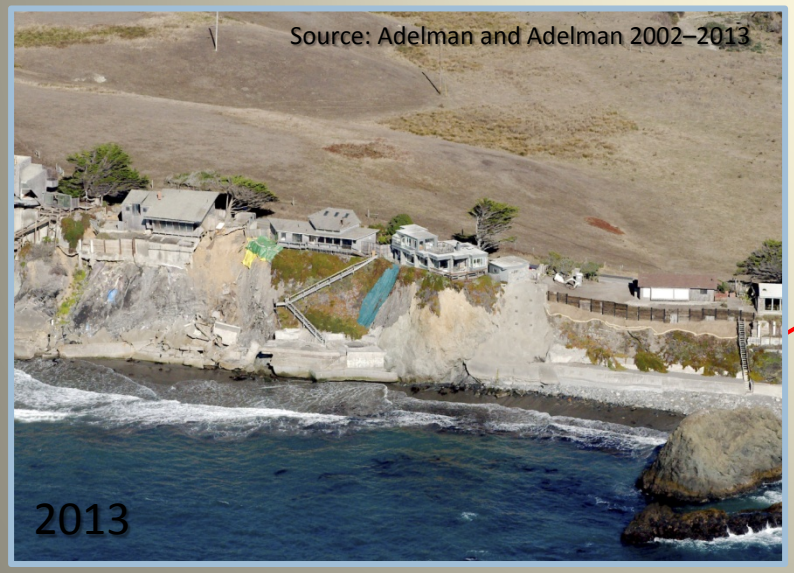
(Source: Gary Griggs / Santa Cruz Sentinel, 2010)

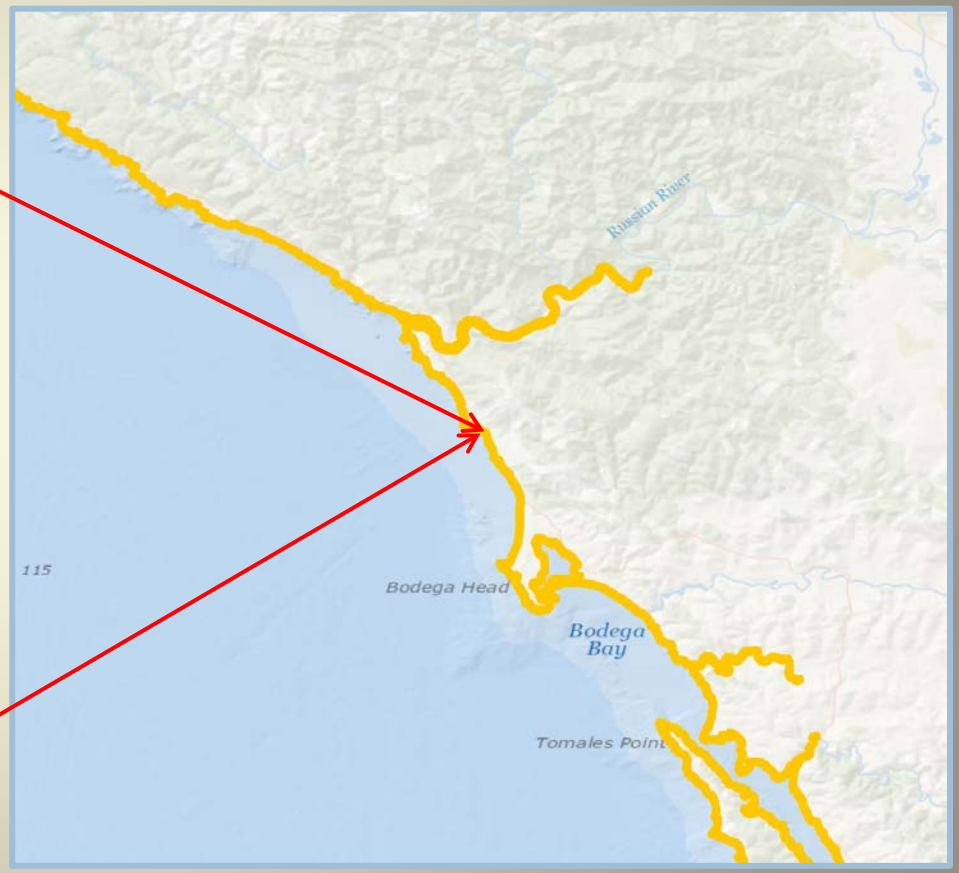
San Francisco Littoral Cell



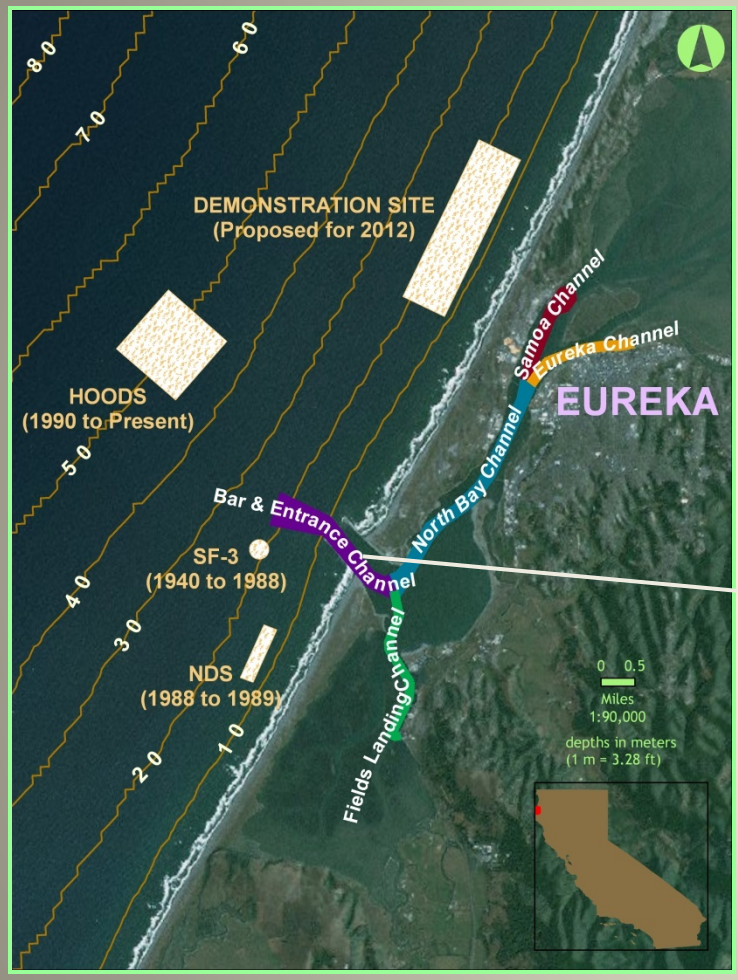
Sonoma County

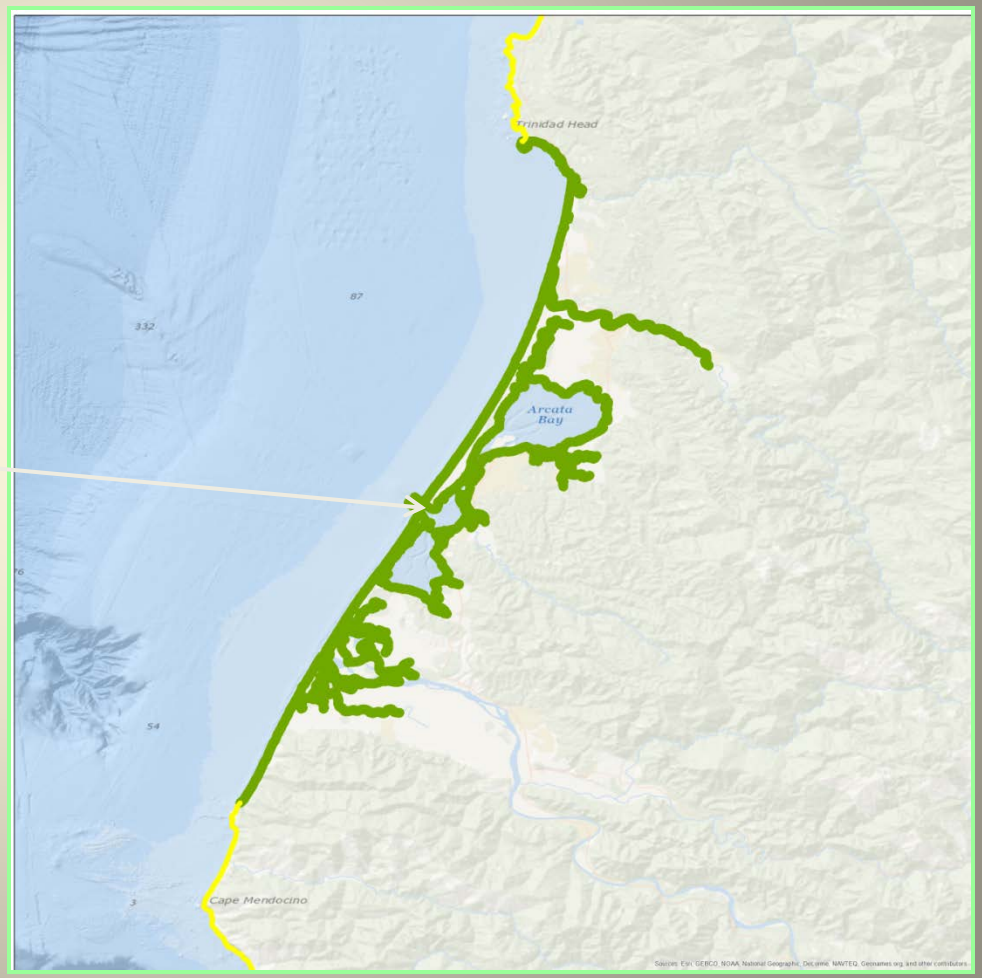
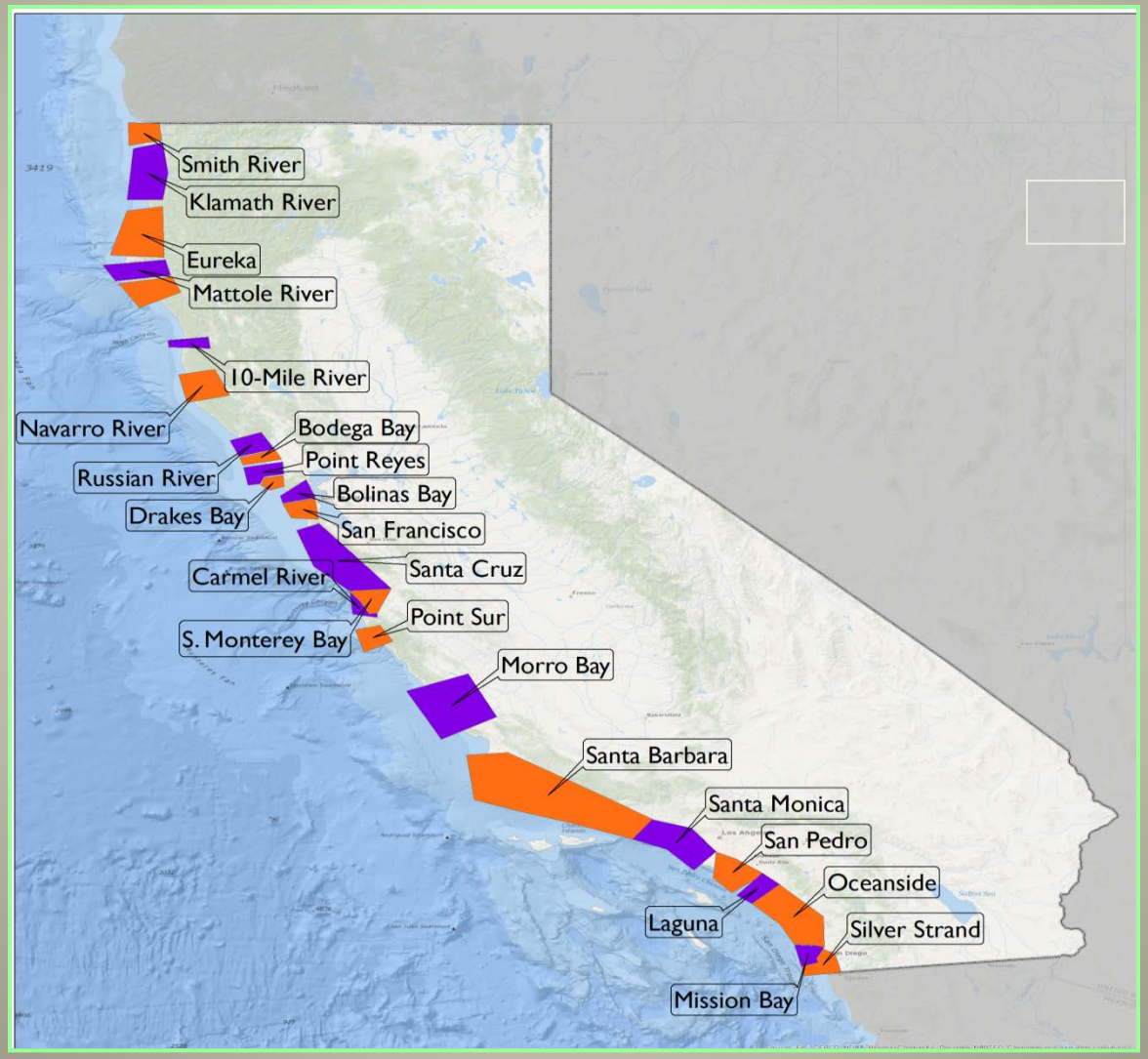
Gleason Beach





Eureka Littoral Cell





California Littoral Cells