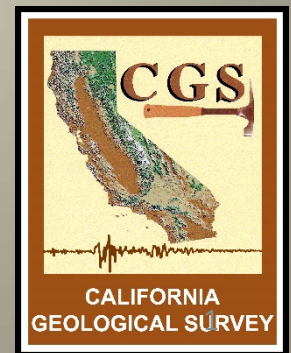


# California Coastal Sediment Management Workgroup and Beach Erosion Assessment Survey

Identifying Beach Erosion Concern Areas  
Along The California Coast



Clif Davenport  
Dept. of Conservation/California Geological Survey  
CSMW Project Manager



# Coastal Sediment Management Workgroup



## Federal Participation

- USACE - South Pacific Division (**co-chair**)
- USACE - Los Angeles District
- USACE - San Francisco District
- U.S. Geological Survey
- U.S. Environmental Protection Agency
- National Oceanic Atmospheric Administration
- USACE-ERDC
- USACE-IWR

## A collaborative taskforce of state, federal, regional, and local entities

- Initiated in late 1999
- MOU South Pacific Division & State Natural Resources Agency: RSM
- Leverage State & Federal Funds
- Collaborate on Coastal Sediments Activities
- **Prepare a Adaptive Sediment Master Plan**
- Restore Beach and Coastal Health
- Share information, including common data bank

## State Participation

- Natural Resources Agency (**co-chair**)
- Div. of Boating & Waterways
- Coastal Commission
- Coastal Conservancy
- Parks & Recreation
- State Lands Commission
- **California Geological Survey**
- Dept. of Fish and Wildlife
- SF Bay Conservation and Development Commission

## Advisory

- CAL COAST (LOCAL AGENCIES)
- CMANC (PORTS & HARBORS)

## Regional Partners

- Regional Planning JPAs (e.g., SLOCOG)

# Coastal Sediment Management Workgroup

## *MISSION*



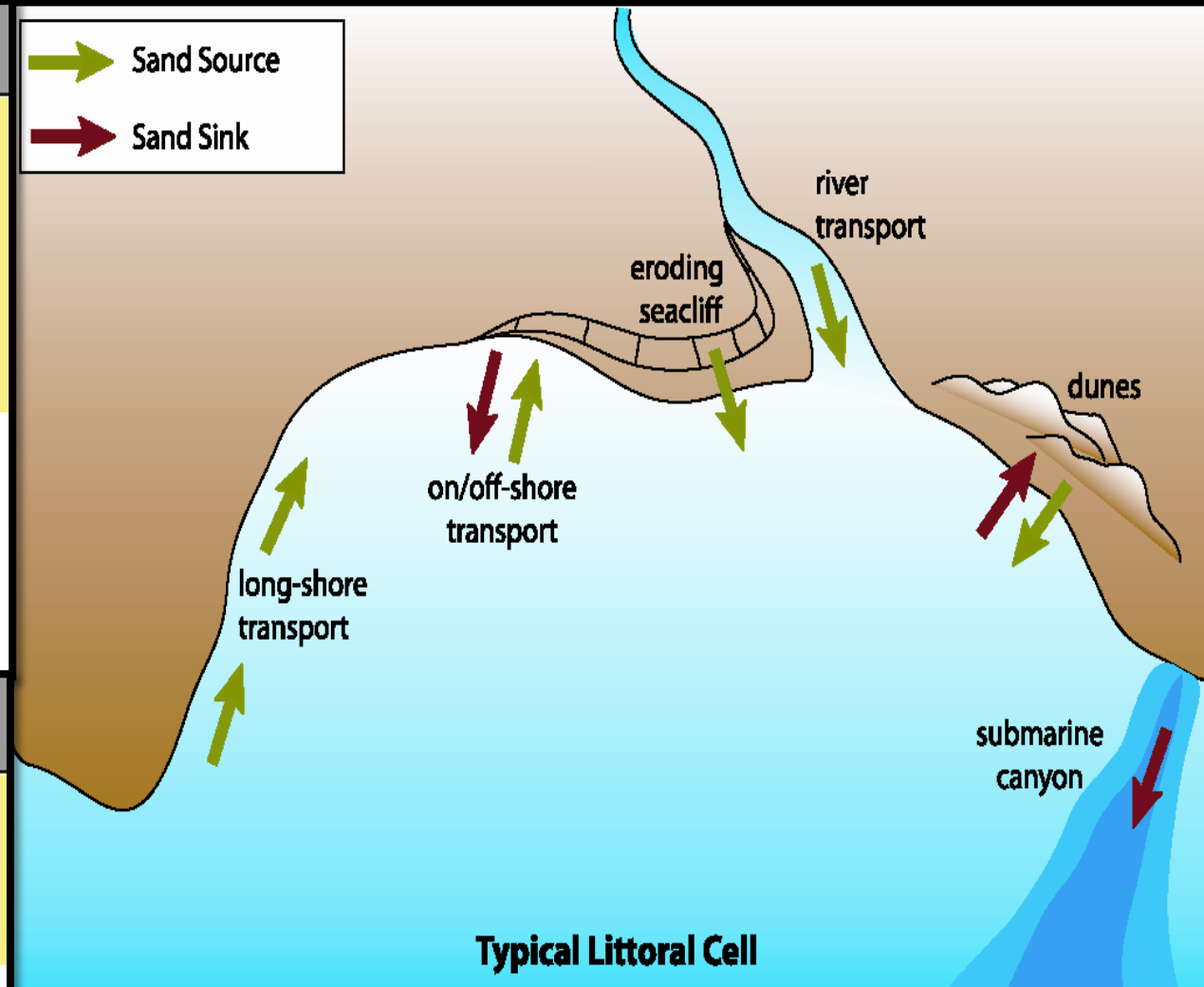
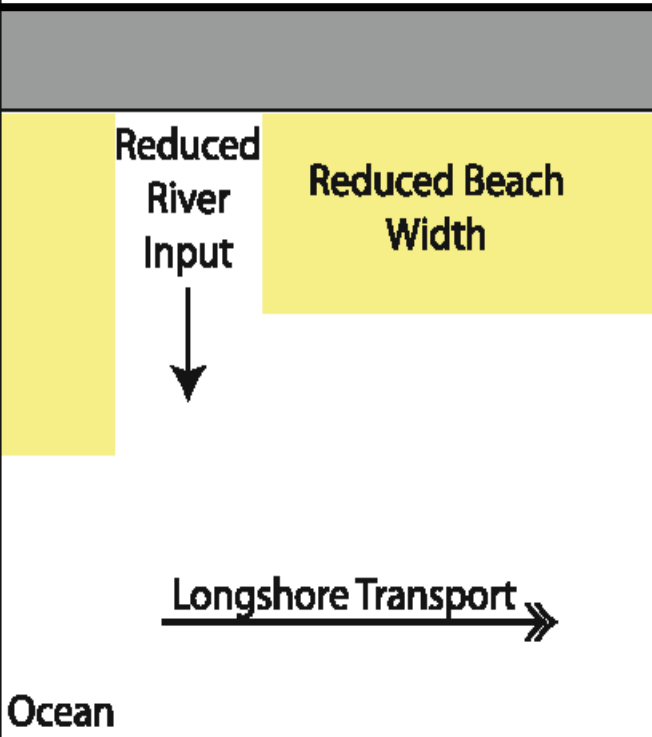
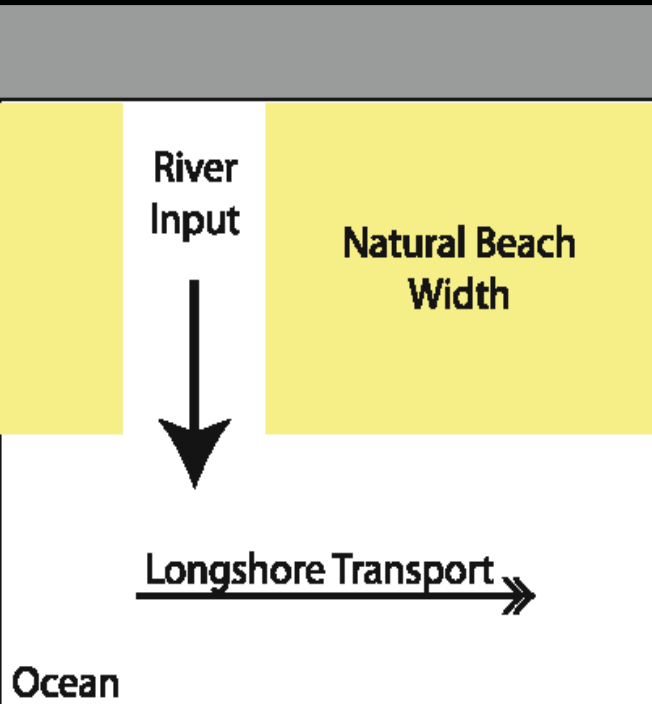
*California's coastal resources  
by  
developing and facilitating  
regional approaches  
to  
managing sediment imbalances*



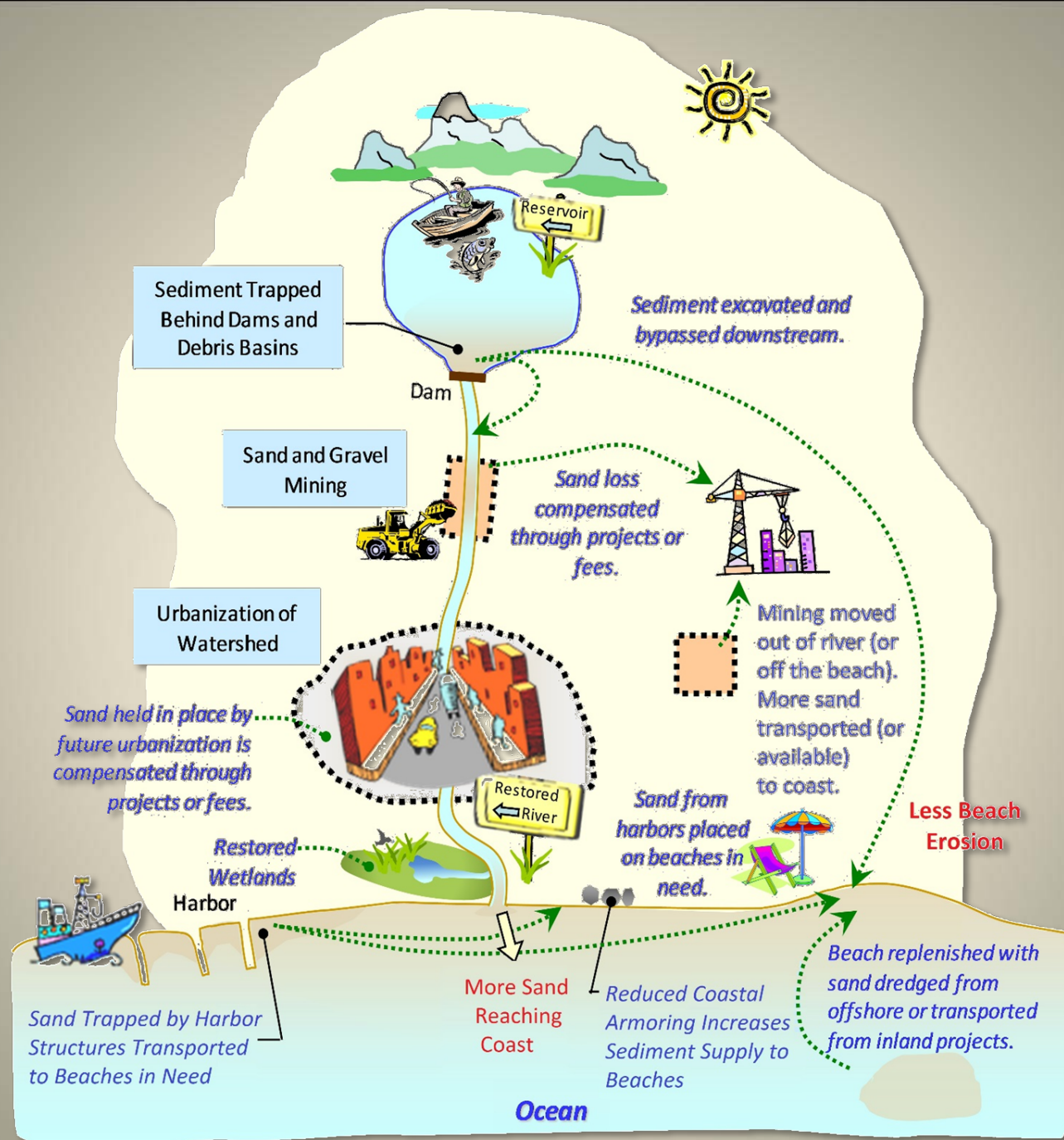
# California Littoral Cells







| <u>Sources of Sand</u>    | <u>Sinks for Sand</u>   | <u>Balance</u> |
|---------------------------|-------------------------|----------------|
| Longshore Transport in    | Longshore Transport out | Accretion      |
| River Inputs              | Offshore Transport      | Erosion        |
| Seacliff or Bluff Erosion | Dune Growth             | Equilibrium    |
| Gully Erosion             | Sand Mining             |                |
| Onshore Transport         | Submarine Canyons       |                |
| Dune Erosion              |                         |                |
| Beach Nourishment         |                         |                |



# Coastal RSM Plan Development





# Beach Erosion Concern Areas



## CALIFORNIA BEACH EROSION ASSESSMENT SURVEY 2010

October 2010

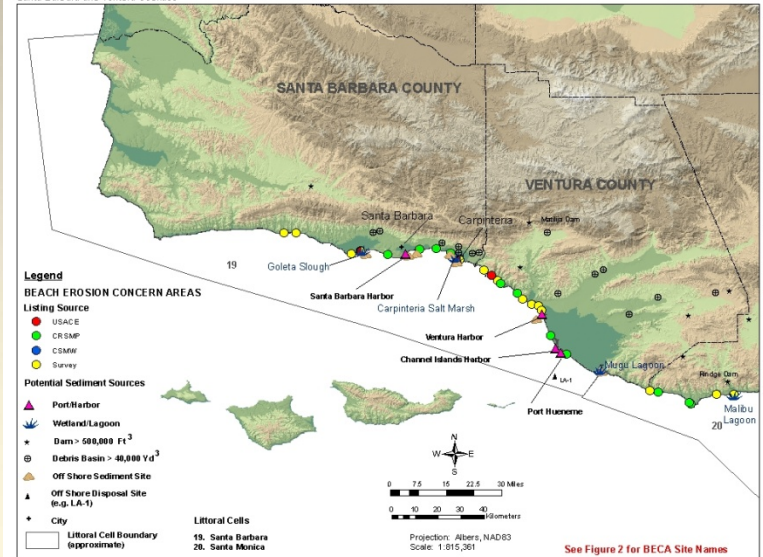


Coastal Sediment  
Management Workgroup



Coastal Sediment  
Management Workgroup

Figure C-6: Sediment Sources, BECAs and Littoral Cells  
Santa Barbara and Ventura Counties



See Figure 2 for BECA Site Names



TABLE 1- Potential BECA Locations

| County        | Location                                     | List Source    | Page No.<br>(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                                    | CSMP           | 16                       |
| San Mateo     | El Granada County Beach                      | Survey         | 17                       |
| Monterey      | Southern Monterey Beaches                    | CRSMP          | 17                       |
| Santa Barbara | Religio State Beach                          | Survey         | 18                       |
| Santa Barbara | El Capitlan State Beach                      | Survey         | 18                       |
| Santa Barbara | Isla Vista                                   | Survey         | 19                       |
| Santa Barbara | Groleta 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 Ricon Parkway                          | CRSMP          | 24                       |
| Ventura       | South Ricon Parkway/Emma Wood County Beaches | CRSMP          | 24                       |
| Ventura       | Emma Wood State Beach                        | Survey         | 25                       |
| Ventura       | Sarlin's 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       | Huamene 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

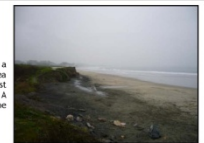
San Mateo County  
Shoreline Mile 20  
List Source: Survey

Setting: Narrow sandy beach backed by a low bluff. An unpaved parking area exists at the edge of the bluff downcast (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 area 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.



## Legend

-  Beach Erosion Concern Area Sites
-  Potential Sediment Sources
-  Critical Erosion Sites
-  Watershed Boundaries

Moss Landing and Elkhorn Slough  
Source: Santa Cruz Littoral Cell  
Coastal RSM Plan  
Added: March 2014

Problem: Erosion may threaten  
jetties stabilizing Moss Landing  
Harbor entrance. Loss of tidal  
marsh in Elkhorn Slough due to  
excessive inundation and  
sediment deficit.



# Southern Monterey Bay Littoral Cell

Regional Sediment Management Plan Extent



SANTA CRUZ  
LITTORAL CELL

S. MONTEREY BAY  
LITTORAL CELL

CARMEL RIVER  
LITTORAL CELL

SANTA CRUZ  
COUNTY

MONTEREY  
COUNTY

Moss Landing and Elkhorn Slough


CEMEX  
Sand Mine

Southern Monterey Bay Beaches






### Legend

 Beach Erosion Concern Area Sites


 Potential Sediment Sources

 Watershed Boundaries

 SF-8 Placement Site

 Cities

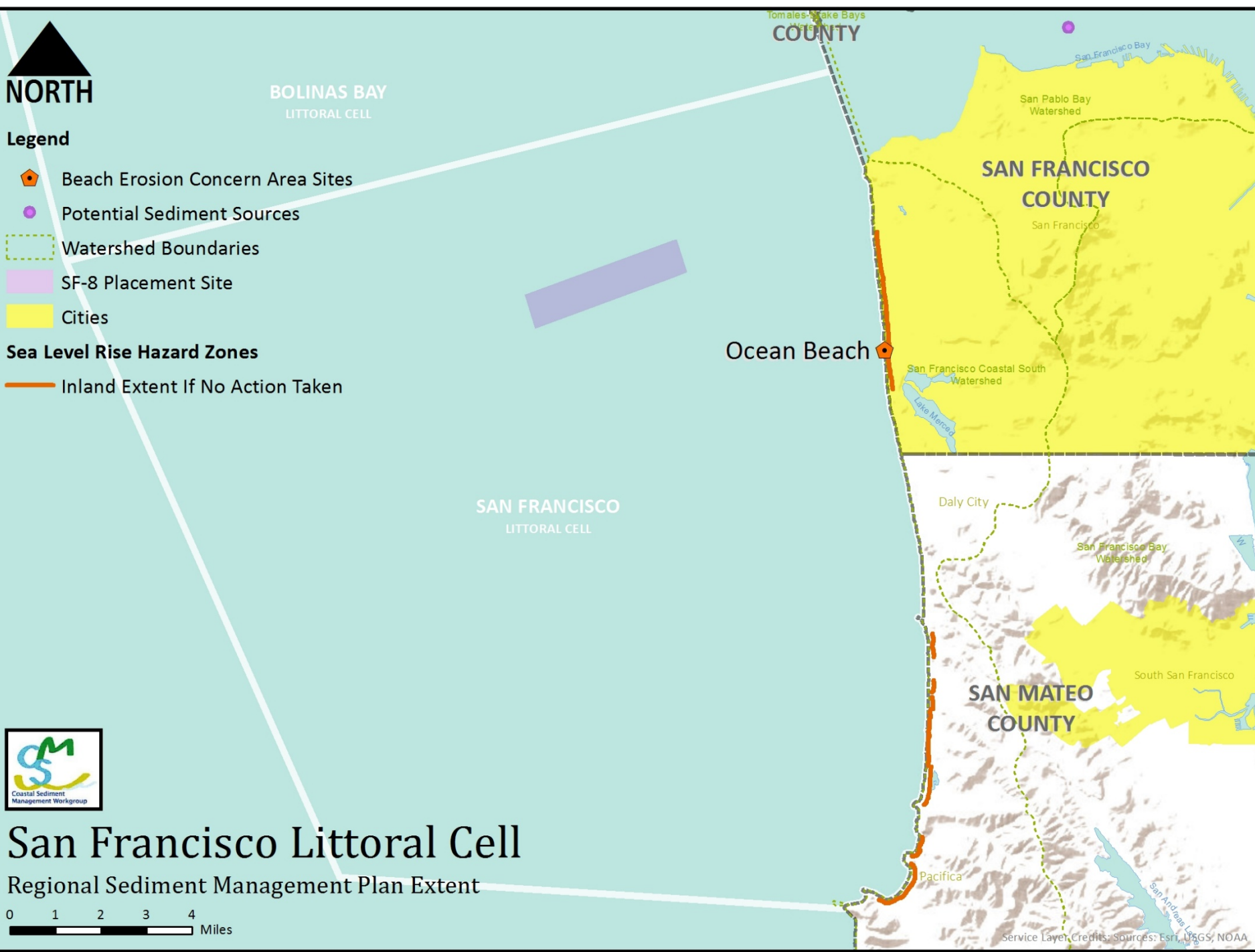
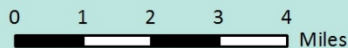
### Sea Level Rise Hazard Zones

 Inland Extent If No Action Taken



# San Francisco Littoral Cell





## Regional Sediment Management Plan Extent







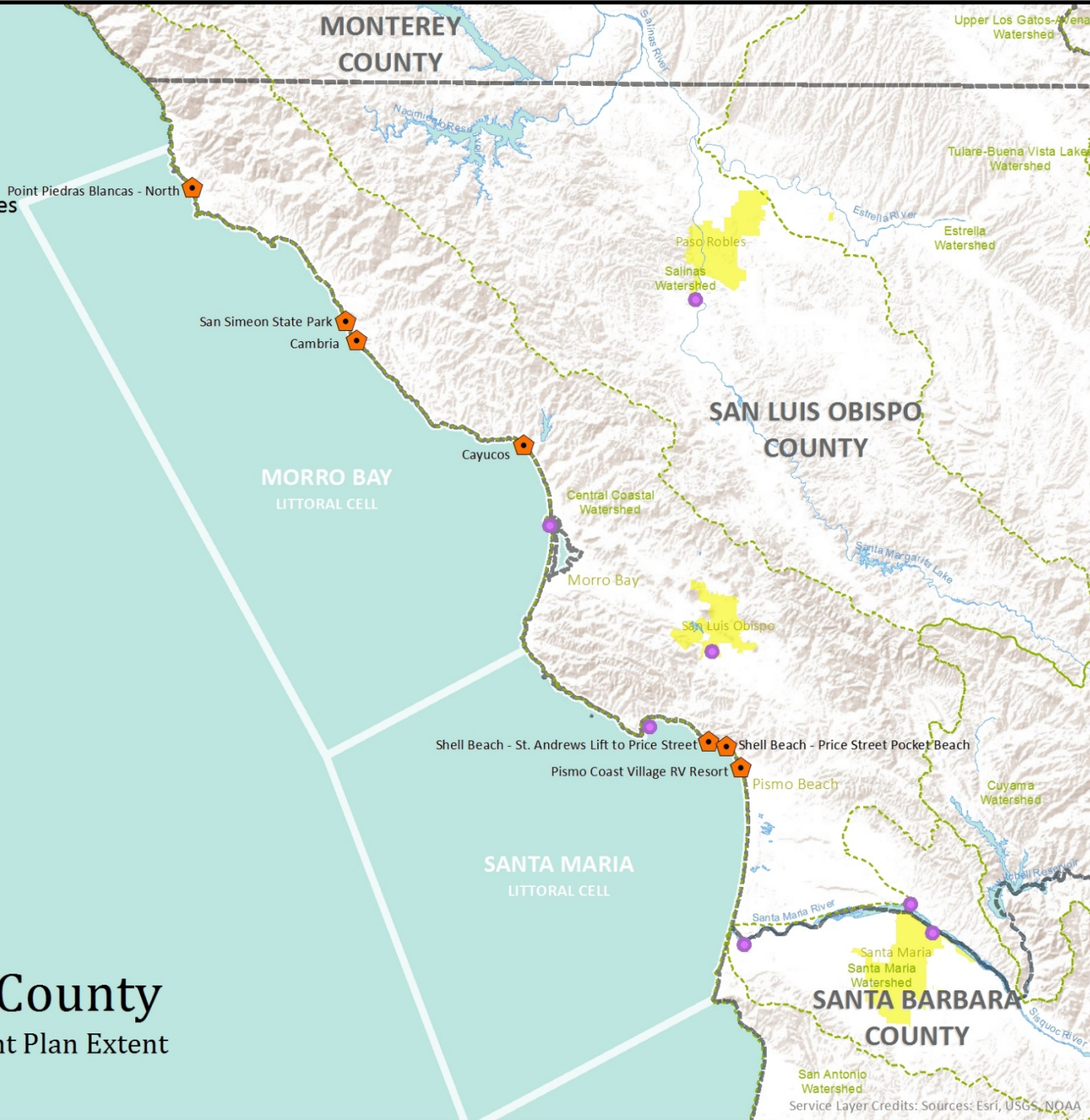
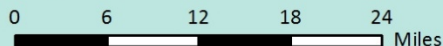
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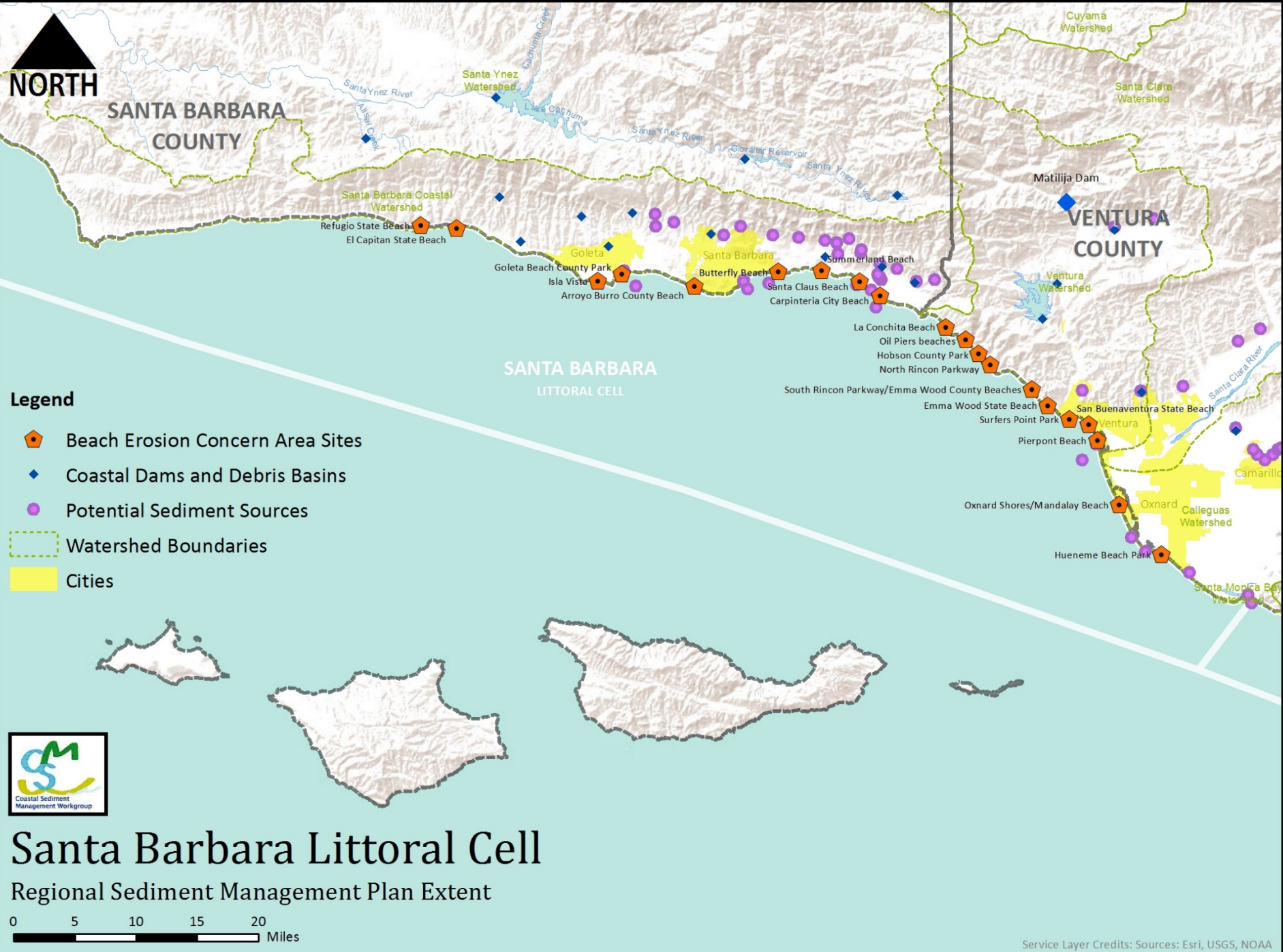
-  Beach Erosion Concern Area Sites
-  Potential Sediment Sources
-  Watershed Boundaries
-  Cities



# San Luis Obispo County

## Regional Sediment Management Plan Extent

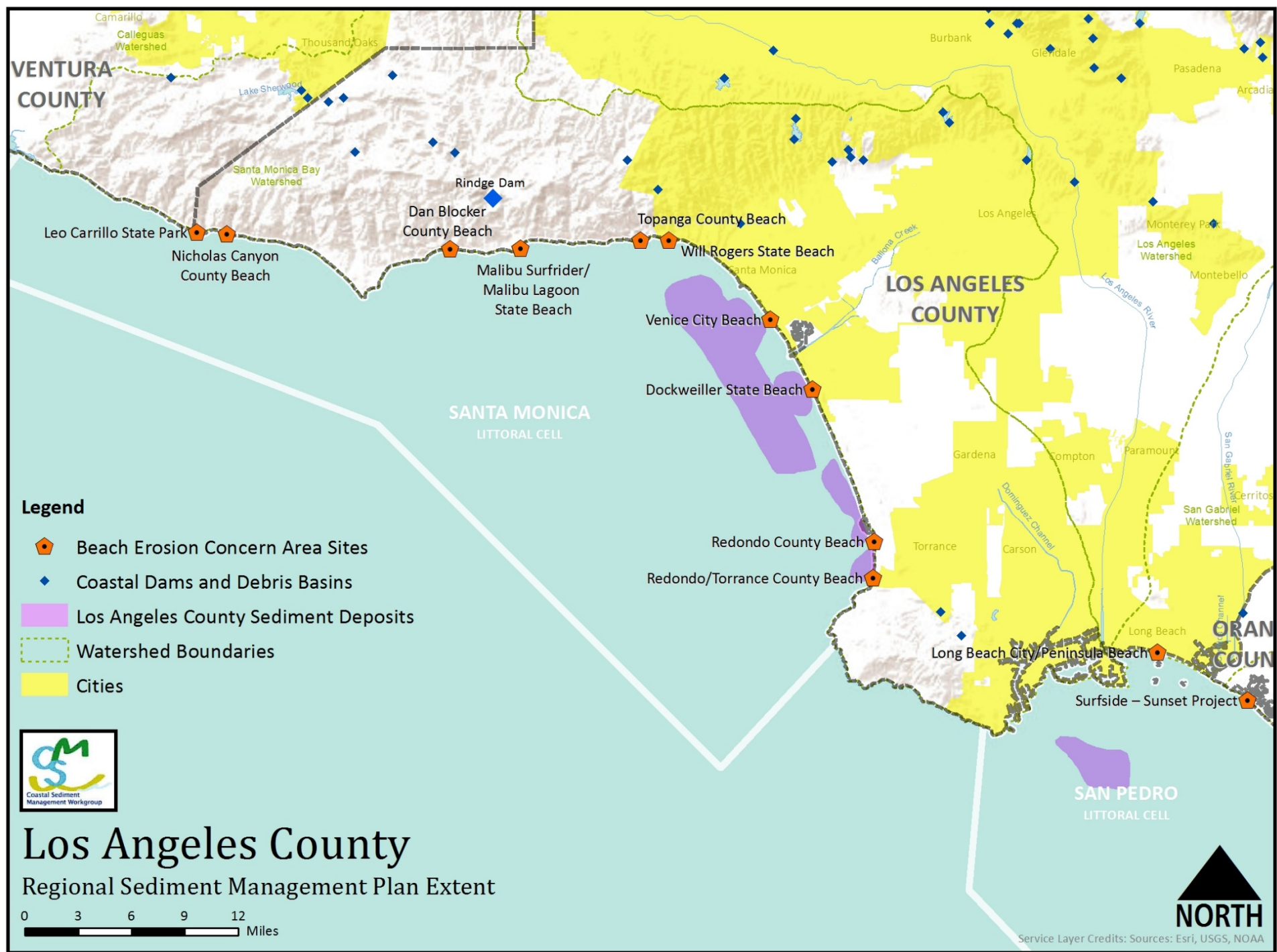




# Santa Barbara Littoral Cell

## Regional Sediment Management Plan Extent














## Legend

-  Beach Erosion Concern Areas
-  San Diego Receiver Sites
-  Potential Sediment Sources
-  Watershed Boundaries
-  Cities



# San Diego County

## Regional Sediment Management Plan Extent

0 3.5 7 10.5 14 Miles

South Oceanside/North County San Diego Beaches

North Carlsbad State Beach  
Agua Hedionda/Encinitas Beach

South Carlsbad State Beach/Encinitas Creek

Batiquitos Lagoon Beach North

Leucadia State Beach

Moonlight State Beach

Cardiff State Beach/San Elijo Lagoon Beach

Solana Beach/Fletcher Cove

Del Mar City/San Dieguito Lagoon Beach

Torrey Pines State Beach

Mission Beach

Ocean Beach (San Diego)

Coronado City Beach

Imperial Beach

Border Field State Park Beach

San Luis Rey-Escondido Watershed

SAN DIEGO COUNTY

San Diego Watershed

Murray River

National City

Cottonwood-Tijuana Watershed

Lake Wohlford

San Vicente River Water

San Diego River

Sweetwater Reservoir

Service Layer Credits: Sources: Esri, USGS, NOAA

# Challenges For Effective Implementation of RSM

- No state-federal agency with mandate to implement RSM activities
- No dedicated revenue source to fund RSM program

Hard for locals to match state/fed match requirements

- Governance- Can be difficult to find entity with jurisdiction, political will and funding to take on implementation





**CSMW Website:**  
[www.dbw.ca.gov/csmw/default.aspx](http://www.dbw.ca.gov/csmw/default.aspx)

[Clif.Davenport@conservation.ca.gov](mailto:Clif.Davenport@conservation.ca.gov)





# COASTAL SEDIMENT MASTER PLAN

## “Deliverables”

- **Informational Reports**, data and materials
- Outreach (Statewide and Regional)
- 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>

- [Mission](#)
- [CSMW Meeting Minutes](#)
- [Ocean Protection Council Strategic Plan](#)
- [New Contact Form](#)
- [Public Outreach](#)
- [Contact CSMW](#)



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 and excess sedimentation on coastal habitats, is working towards implementation of [Regional Sediment Management](#) (RSM) in order to augment or restore natural processes. Our urbanizing society has significantly changed natural sediment supply and transport patterns (e.g., dams, channelized rivers, seawalls, etc.), with the result that some coastal areas (e.g., beaches) are narrowing due to reduced sediment supply, while others (e.g., wetlands, ports & harbors) are being impacted with excess sediment. Facilitating beneficial use of clean sediment from inundated locations at areas experiencing severe erosion is the essence 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 use of sediment resources within a regional context augments natural processes while simultaneously addressing sediment imbalances.

CSMW is developing a coastal "[Sediment Master Plan](#)" (SMP) to help guide political, regulatory, environmental, educational and process-related efforts anticipated when implementing RSM. Coastal sediment imbalance problems and CSMWs "road to solutions" are discussed in our brochure "[Why a SMP is needed](#)". The [SMP Baseline Report 2006](#) describes the initial SMP development process and CSMW priorities, while the [SMP Status Report 2009](#) and [SMP Status Report 2012](#) documents provide cumulative progress reporting of CSMW and SMP activities to date. The SMP consists of three types of products produced during Plan development- informational reports, computer-based tools, and RSM strategies/Plans. Outreach and agency coordination provide the fourth and overarching Plan focus.

Currently, CSMWs main thrust for SMP development is regionally-based RSM strategy plans. We are working with regional entities towards implementation of RSM within their jurisdictional area through Coastal RSM Plans or CRSMPs. These Plans identify how governance, outreach and technical approaches can support beneficial use of sediment resources within that region without causing environmental degradation or public nuisance. CSMW is hosting a series of 'Implementation Workshops' in regions where a CRSMP has been completed in order to gain insight from stakeholders on implementation strategies across coastal California. Informational documents, computer-based tools (including web browser and associated spatial database) and RSM strategies and Plans are linked to within the column to your right and 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.

## CSMWs [Current Activities](#)

### What's New

- [Public Review Draft, San Francisco Littoral Cell CRSMP](#)
- [SMP Implementation Workshops](#)

### RSM Related Reports

- [Why a SMP is needed](#)
- [Coastal Regional Sediment Management Plans](#)
- [Sediment Master Plan Status Reports](#)

### Computer Based Tools

- [CSMW WebMapper](#)
- [Spatial Data Database](#)
- [Coastal Sediment References Searchable Database](#)

### Outreach

- [Public Outreach Contact List](#)

### [Informational Documents](#)

### RSM Partners

- [Monterey Bay National Marine Sanctuary](#)



# CSMW



## A collaborative taskforce:

- Formed in response to concerns raised in 1999 meeting between USACE and CNRA
- shore protection needs in California
- 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 USACE (South Pacific Division) & State Natural Resources Agency:

- Leverage State & Federal Funds- Collaboration on coastal sediments activities
- 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.

## 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 (Website, Geospatial browser)

# DECREASED SEDIMENT SUPPLY

## Dams, Debris basins



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

## Channelized rivers



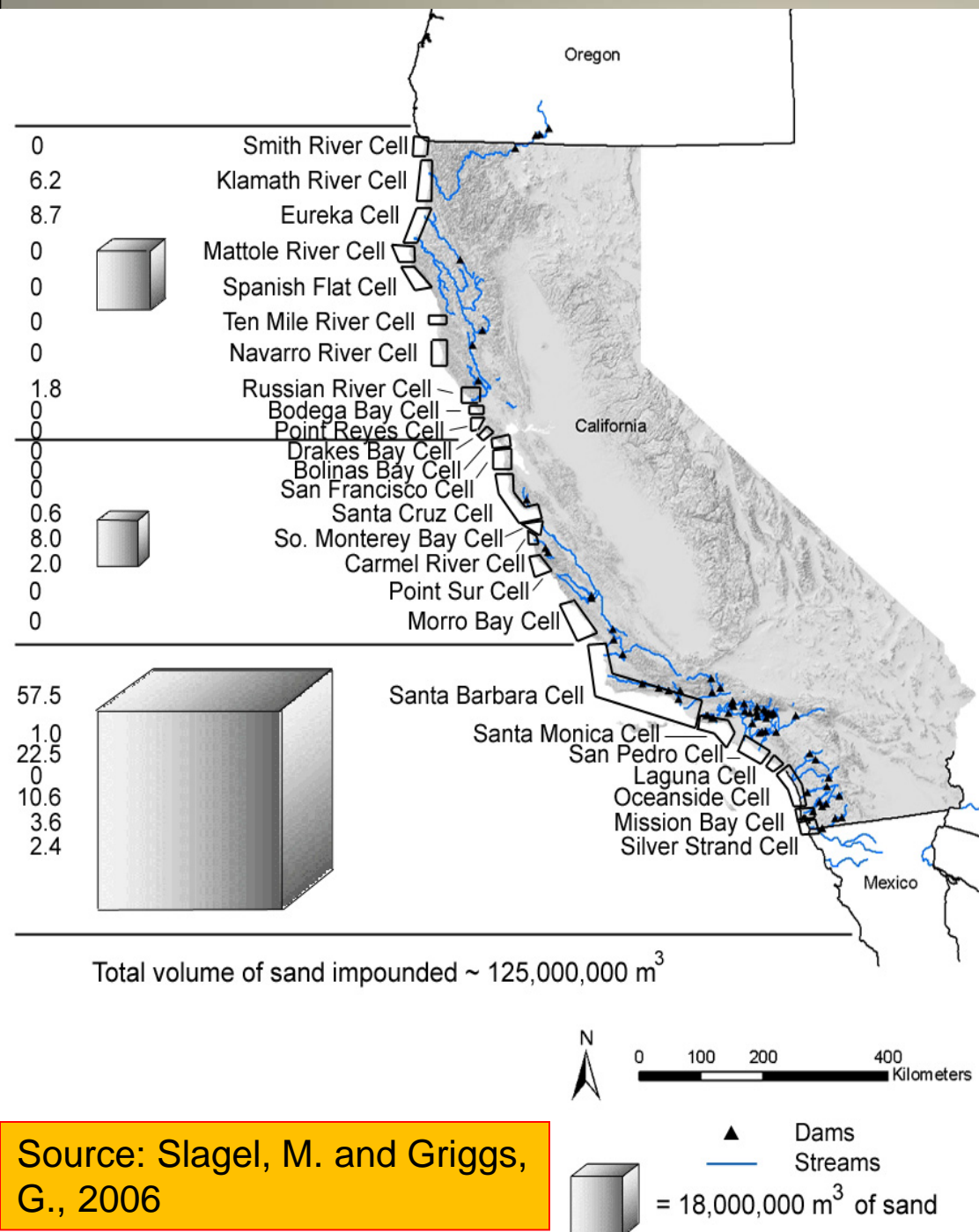
## Wetlands, harbors



## Sand & Gravel Mining

## Coastal Armoring










**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

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





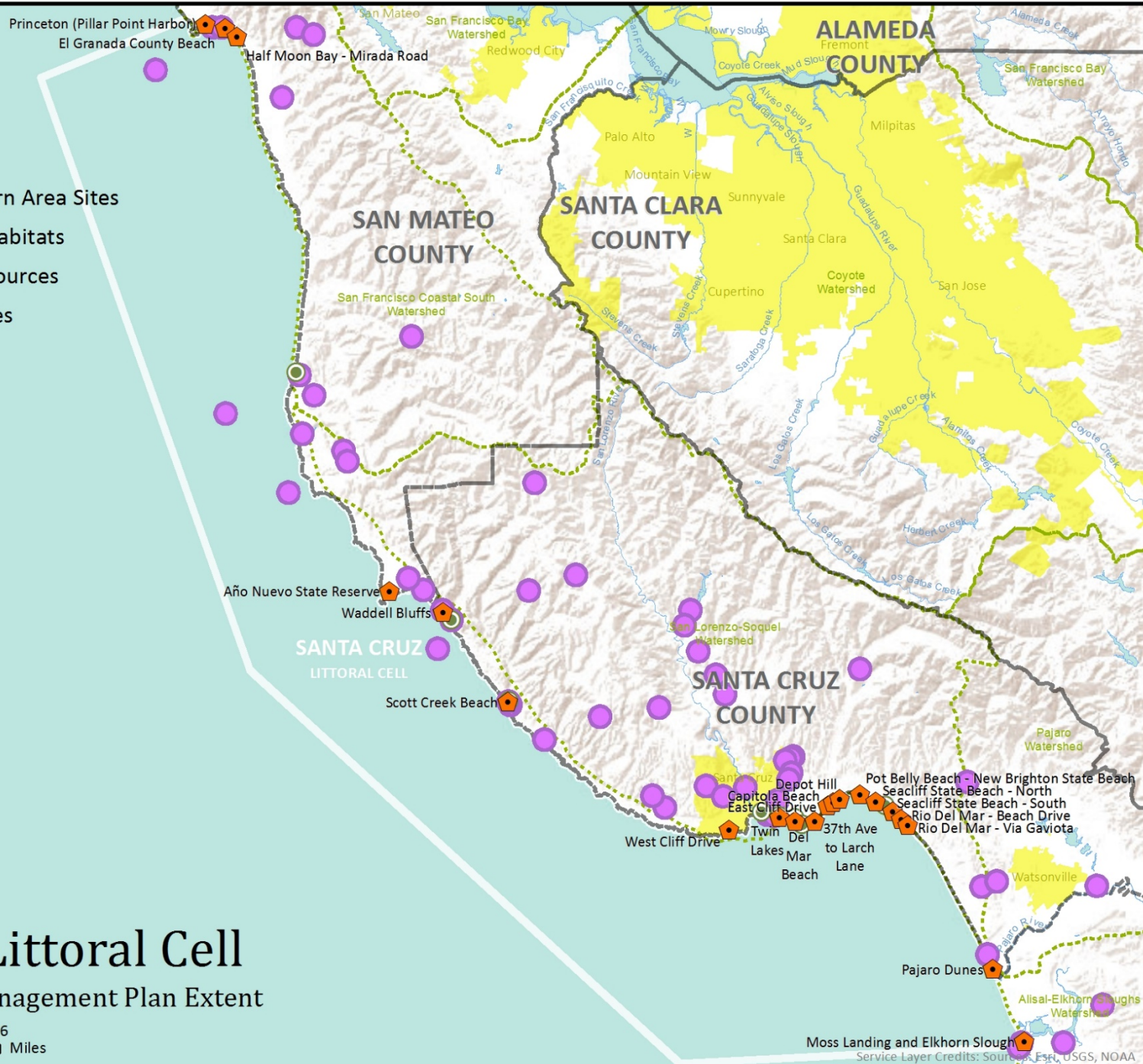
## Legend

-  Beach Erosion Concern Area Sites
-  Sediment Impaired Habitats
-  Potential Sediment Sources
-  Watershed Boundaries
-  Cities



# Santa Cruz Littoral Cell





## Regional Sediment Management Plan Extent



Service Layer Credits: Source: Esri, USGS, NOAA



## Legend

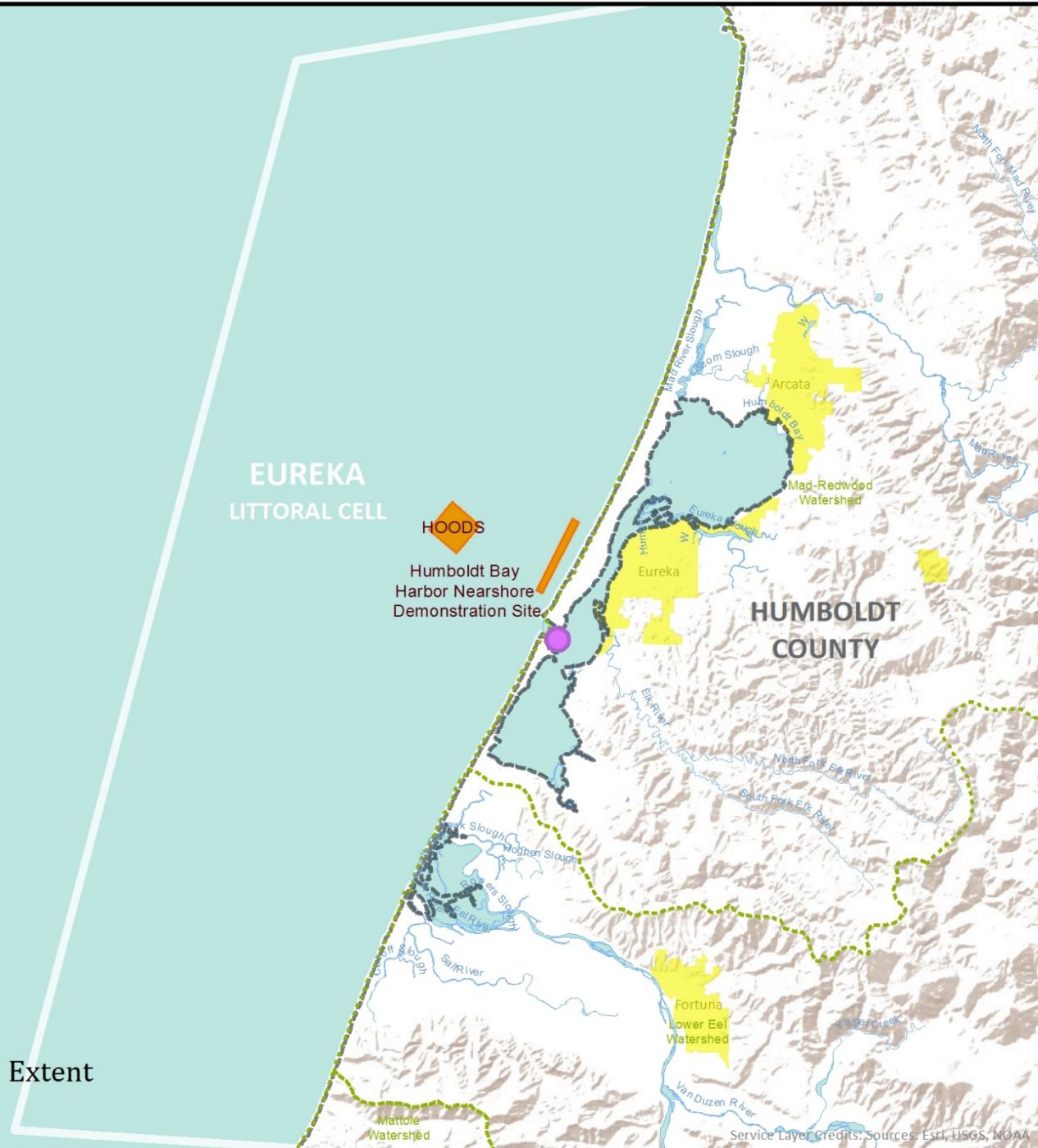
-  Potential Sediment Sources
-  PlacementArea
-  Watershed Boundaries
-  Cities



# Eureka Littoral Cell

Regional Sediment Management Plan Extent

0 3 6 9 12  
Miles





# 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