



California Coastal Sediment Master Plan

Mission

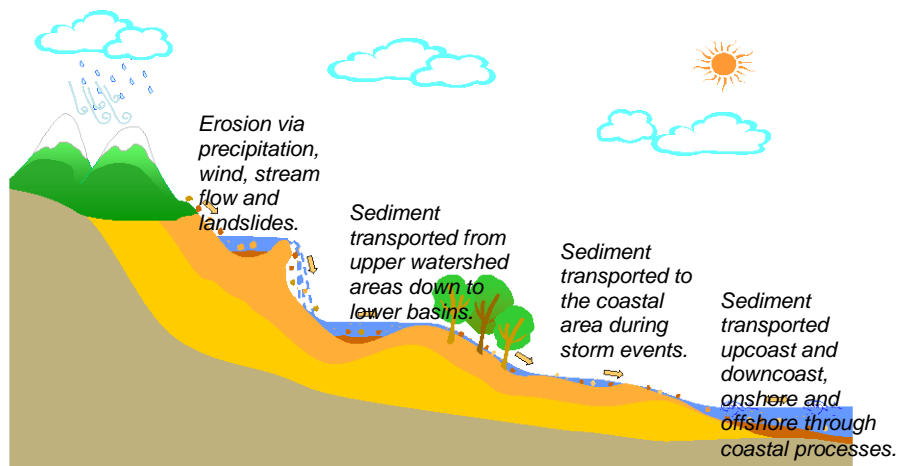
Develop a comprehensive master plan for the conservation, restoration, and preservation of the valuable sediment resources along the coast of California, in order to reduce shoreline erosion and coastal storm damages, provide for environmental restoration and protection, increase natural sediment supply to the coast, restore and preserve beaches, maintain or improve coastal access, improve water quality along coastal beaches, and optimize the beneficial use of material dredged or excavated from ports, harbors, wetlands, 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, wetlands and lagoons, and partially 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

Natural erosion due to precipitation, wind, stream flow, and landslides makes sediment (i.e., gravel, sand, silt, and clay) from the upper watershed available for transport by streams and creeks down to lower basins. A majority of this sediment is then 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 wind transport the sediment upcoast and downcoast as well as onshore and offshore, contributing to the dynamic nature of coastal beaches. Beaches represent temporary storage areas for coastal sediment and require an ongoing source of sand to maintain their width.



Beneficial Uses of Coastal Sediment



Recreation



Shoreline Protection



Infrastructure Development



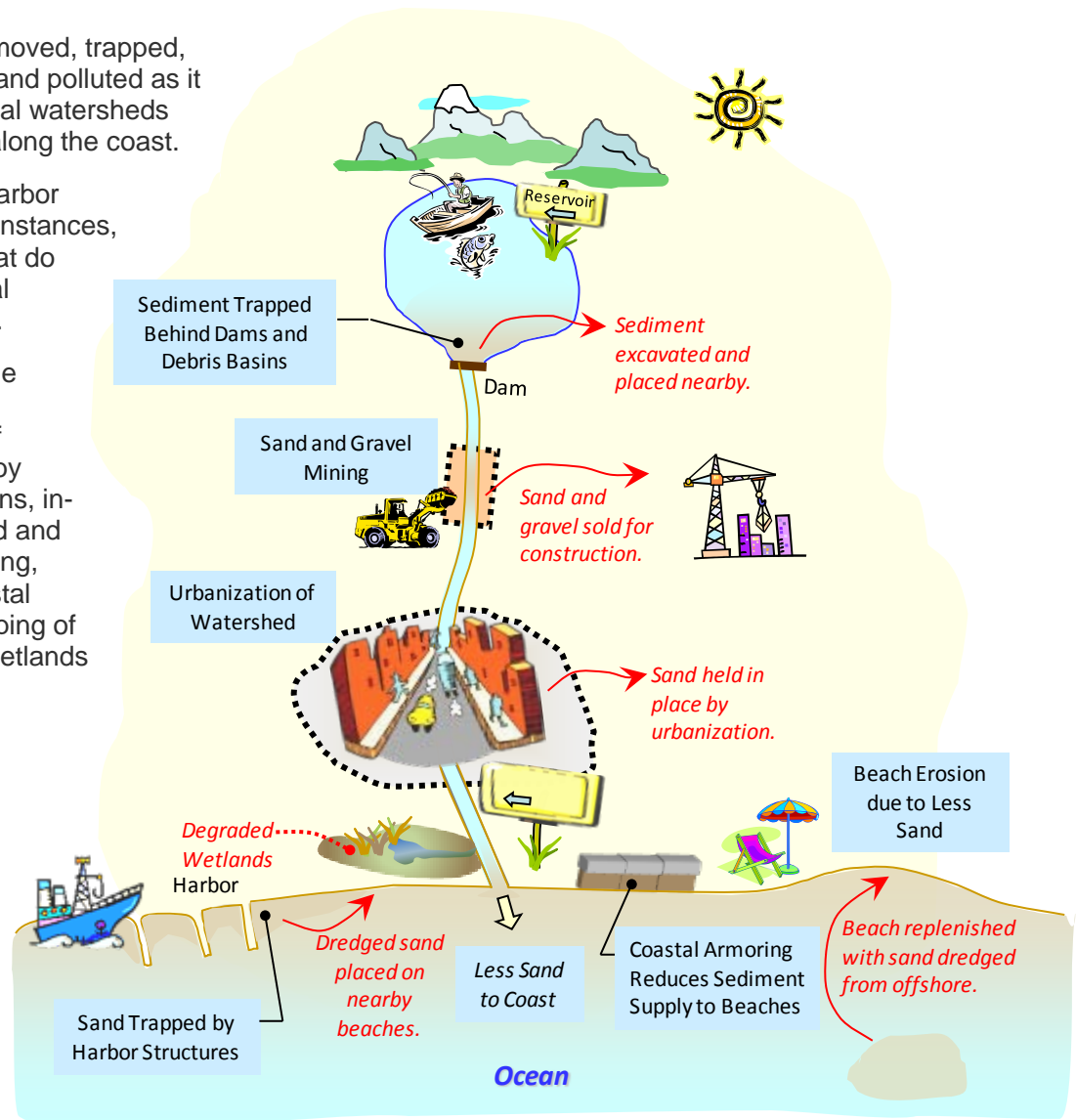
Wildlife Habitat

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, lateral beach access, and shoreline protection. Additionally, silt and clay from river substrates supply needed nutrients for nearshore habitats. Sand and gravel, extracted from in-stream, back-beach 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.

The Problem – Human Modifications Have Altered Processes and Impacted Uses

Humans have substantially altered natural sediment transport processes within California's coastal watersheds, reducing storm protection, habitat and recreation along the coast. Dams, built to control floods and store water, trap sediment in reservoirs and reduce peak flows that move most of the coarse sediment to the coast. Sand and gravel are mined from stream systems for use in construction, removing materials that would eventually replenish coastal habitats. Timbering, grading, and earth moving strip off vegetation and expose the watersheds to excessive erosion. Conversely, construction of concrete-lined channels, roads, and buildings hardens the watershed, reducing bank erosion and associated amounts of coarse sediment available for delivery to the coast via streams. Some coastal structures such as harbors, jetties, groins, and breakwaters alter movement of sediment along the shoreline, while other coastal structures such as riprap and seawalls decrease the amount of sediment supplied directly to the shoreline, caused by the reduction of bluff and cliff erosion. Human modifications to the coastal watersheds and shorelines of California have resulted in the following sediment-related problems:

- Beaches are undergoing accelerated erosion, reducing recreational opportunities and coastal access, contributing to loss of habitat, and increasing the probability of storm damage along the coast.
- Coastal stream water quality has become impaired.
- Many coastal wetlands and lagoons are experiencing either accelerated erosion or excessive sedimentation.
- Sediment is being removed, trapped, redirected, modified, and polluted as it moves from the coastal watersheds to the shoreline and along the coast.
- Sand dredged from harbor channels is, in many instances, placed in locations that do not optimize beneficial reuse of that material.
- Sediment supply to the coast continues to be reduced as a result of interruptions caused by dams and debris basins, in-stream mining of sand and gravel, coastal armoring, hardening of the coastal watersheds, and trapping of sediment in coastal wetlands and lagoons.



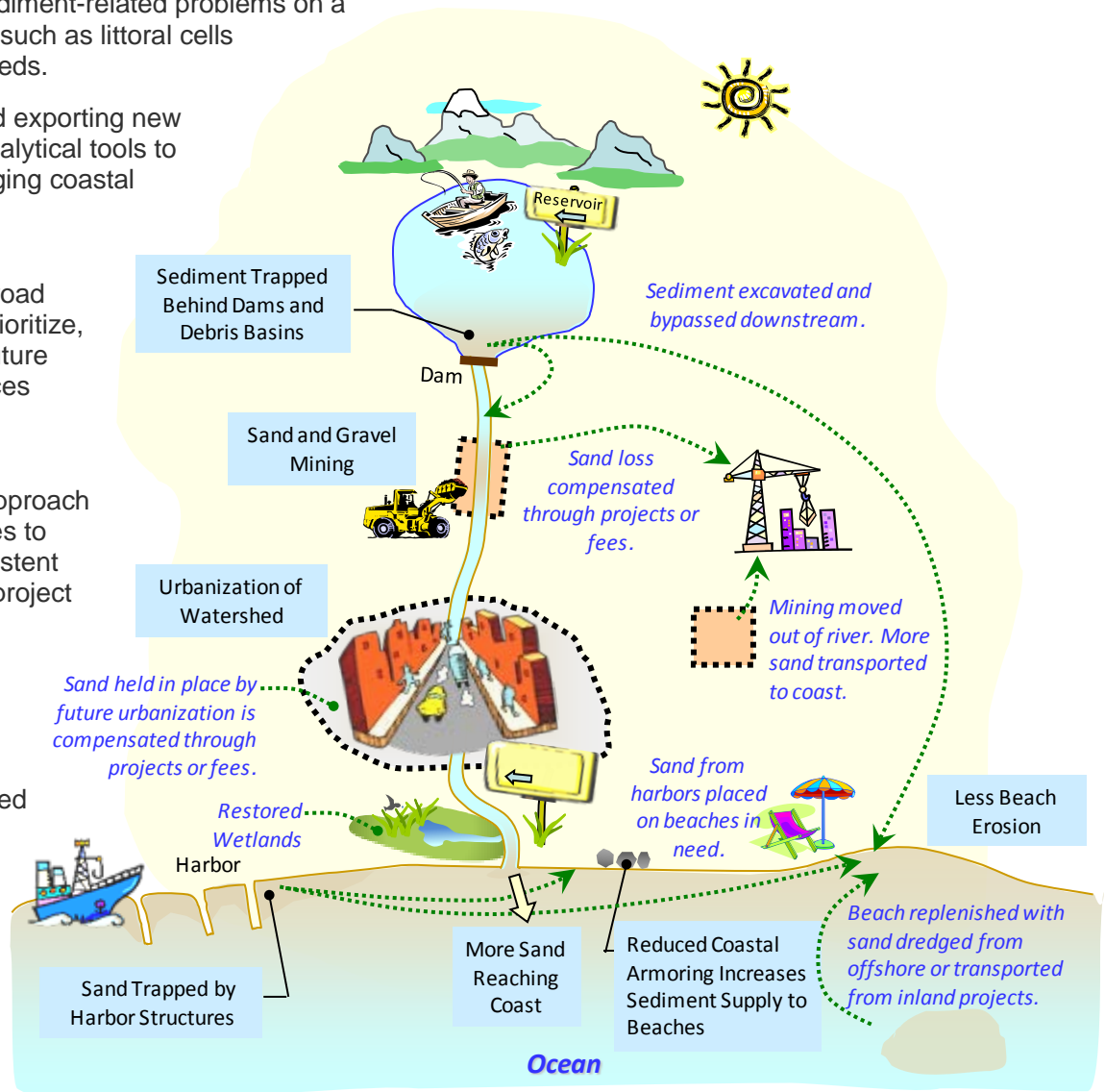
Existing Sediment (Sand) Management

The Road to Solutions – The California Coastal Sediment Master Plan

Many watershed and shoreline problems caused by human modifications can be solved or minimized through the development of a new approach known as Regional Sediment Management (RSM). The California Coastal Sediment Management Workgroup (CSMW), a partnership of several federal and state agencies and non-governmental organizations, is developing and implementing the California Coastal Sediment Master Plan (SMP) to foster a regional sediment management approach for the entire state. Through this effort, region-specific issues and solutions are coordinated with local/regional partners through a series of Coastal RSM plans designed around littoral cell management. Although development of the SMP is ongoing, the SMP already provides a framework for finding solutions through RSM by:

- Identifying sediment-related problems along the California coast, such as beach erosion, wetland erosion/sedimentation, habitat loss, and water quality impairment.
- Defining the causes of sediment-related problems such as dams, debris basins, dredging, sand and gravel in-stream or back-beach mining, coastal structures, lack of project coordination, and inconsistent policies, procedures, and regulations.
- Providing a solid scientific framework and database regarding technical issues within the coastal environment to help visualize and support sediment management decisions.
- Providing a framework, through collaboration with federal, state, regional, and local governments, to address the sediment-related problems on a regional scale, such as littoral cells and/or watersheds.

- Developing and exporting new and existing analytical tools to assist in managing coastal resources.
- Providing a programmatic road map to plan, prioritize, and program future coastal resources projects.
- Fostering a collaborative approach among agencies to provide a consistent framework for project proponents.
- Establishing a streamlined process for coastal resources related project approvals.



Regional Sediment (Sand) Management

What Will The Sediment Master Plan Do?

Implementation of the Sediment Master Plan is expected to:

- Improve beach conditions and reduced erosion attributed to human causes.
- Improve wetland and beach habitat quality through smaller changes in localized sedimentation and erosion.
- Improve water quality through better sediment management.
- Improve use of federal and state agency resources through leveraging of funds and technical resources, improved staff coordination, and the formulation of regional solutions.
- Optimize project execution by programmatically assessing environmental impacts of regional coastal projects, streamlining the permitting process, and holistically integrating discrete solutions into comprehensive regional solutions.



The California Coastal Sediment Management Workgroup (CSMW)

The California Coastal Sediment Management Workgroup (CSMW) was established by the U.S. Army Corps of Engineers and the California Natural Resources Agency in 1999 to develop regional approaches to protecting, enhancing and restoring California's coastal beaches and watersheds through federal, state and local cooperative efforts. The CSMW is the first state and federal partnership developed in California for on-going, multi-agency interaction on statewide coastal sediment management issues.



Federal Participation

U.S. Army Corps of Engineers, South Pacific Division
U.S. Army Corps of Engineers, Los Angeles District
U.S. Army Corps of Engineers, San Francisco District
U.S. Geological Survey
National Oceanic Atmospheric Administration
U.S. Environmental Protection Agency
U.S. Bureau of Ocean Energy Management, Regulation and Enforcement
National Ocean Service

State Participation

California Natural Resources Agency
Department of Boating and Waterways
California Coastal Commission
Department of Parks and Recreation
California Geological Survey
San Francisco Bay Conservation and Development Commission
State Water Resources Control Board
Department of Fish and Game
State Coastal Conservancy
State Lands Commission
Ocean Protection Council

Non-governmental Participation

California Coastal Coalition
California Marine Affairs and Navigation Conference

For More Information

To learn more about the Sediment Master Plan, visit: <http://dbw.ca.gov/csmw/default.aspx>.

