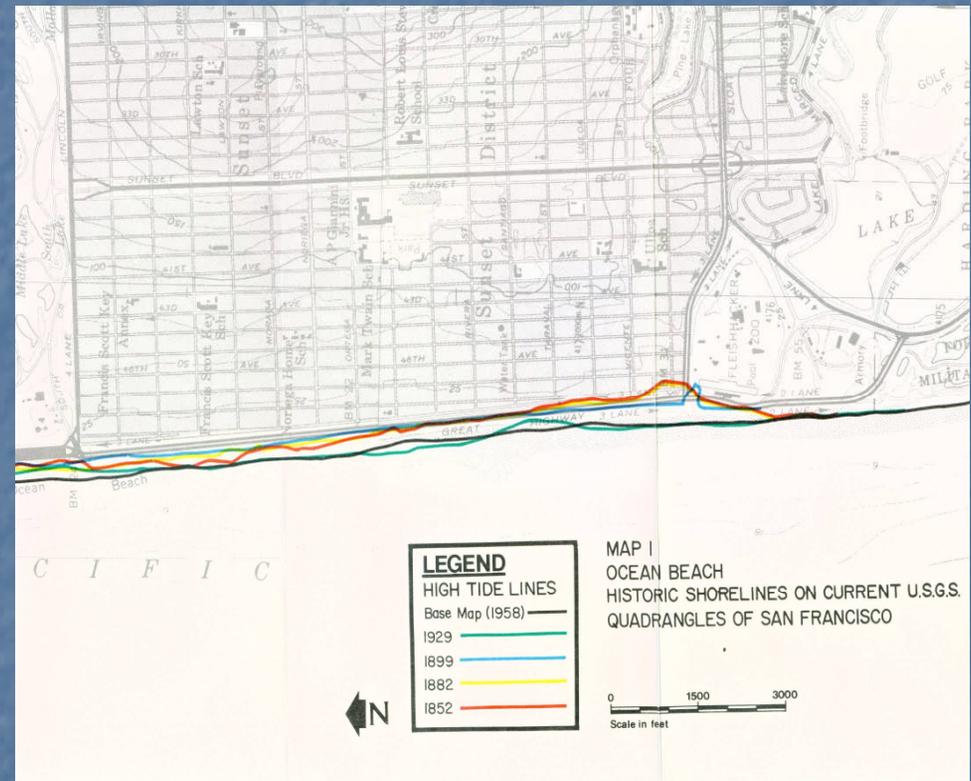


San Francisco Ocean Beach-Great Highway Erosion Control Project



Historic Shoreline

- Historically, the Ocean Beach shoreline was situated several hundred feet landward of its current location.
- Development in the 1800s and early 1900s moved the shoreline seaward.
- Winter storms have eroded significant portions of the shoreline.
- From the Cliff House south, there are a number of seawalls and natural landforms that limit storm-generated impacts to public facilities.
- The approximately 3,000-foot section of Ocean Beach that stretches from Sloat Boulevard to Fort Funston is vulnerable to erosion.



The Problem Area

- **Artificial bluff material form the 1940-1960's (concrete debris, bricks, soil and sand), formed a wide enough barrier between the Great Highway and the ocean that erosion was not a perceived problem**
- **Since 1995, however, winter storms have eroded large areas of the man-made bluffs, which consist mostly of fill material from historic development, resulting in the loss of parking spaces within GGNRA, as well as threats to the Great Highway**



The Problem Area



The Problem Area



The Partnership

The City and County of San Francisco (CCSF), through the Department of Public Works (DPW), is partnering with :

- **U. S. Army Corps of Engineers (USACE)**
- **Golden Gate National Recreation Area (GGNRA, a unit of the National Park Service)**
- **California Department of Boating and Waterways**
- **United State Geological Survey (USGS)**

Long Term Goal

Develop long-term solutions to beach and bluff erosion problems on park and city property along the Great Highway. Solutions evaluated need to be consistent with federal and state regulations that support the enhancement of natural processes.

Study Area

Fact Sheet

Photo



VICINITY MAP

GENERAL INVESTIGATIONS - SURVEYS
SHORELINE PROTECTION

OCEAN BEACH CALIFORNIA

SAN FRANCISCO DISTRICT
SOUTH PACIFIC DIVISION

1 JANUARY 2004

U. S. ARMY ENGINEER DISTRICT

CORPS OF ENGINEERS

Timeline of Actions

- From 1997 to 2000 CCSF has funded several temporary/emergency projects including a 600 foot rock revetment to protect City infrastructure.
- In response to concerns that "hard structure" alternatives are detrimental, the City spent \$1,300,000 for sand placement and monitoring reports.
- In 2001 an emergency detour lane was constructed to carry traffic in the event of damage to the Great Highway.
- In 2000, the Mayor's Office created the Ocean Beach Task Force to bring the public and the many governmental stakeholders together
- DPW received grant funding from the California Department of Boating and Waterways and technical assistance from USACE to continue seeking a long-term solution to Ocean Beach issues that is compatible with National Park Service and other agency mandates (cont)

Timeline of Actions

- **In 2002, the San Francisco Commission on the Environment passed a resolution encouraging DPW and the other cooperating agencies to continue monitoring the beach and bluffs south of Sloat Blvd. The Commission also encouraged continued public involvement through the alternatives evaluation process**
- **In 2004 DPW began transporting between 10,000 and 15,000 cubic yards of sand from the Noriega Seawall to the most several erosion area South of Sloat Blvd.**
- **In 2005 An Ocean Beach Great Highway Storm Damage Protection report was completed. This report outlined a project that focuses on the beneficial reuse of Dredged materials from the San Francisco Ship channel**
- **2005 to 2007 The Army Corps dredged and disposed of over 300,000 Cubic Yards of sand from the San Francisco Ship Channel and placed near shore**

Public Agencies Involved in Ocean Beach Project Planning

- **Golden Gate National Recreation Area (GGNRA)** - a unit of the National Park System owns and manages Ocean Beach since it was transferred by the San Francisco Recreation and Parks Department in the 1970s.
- **California Coastal Commission (CCC)** - state agency with primary regulatory jurisdiction along the California coastline within 100 feet of the high tide line.
- **U. S. Army Corps of Engineers (USACE)** - federal agency with Congressionally-mandated authority to cost-share in economically justified projects that comply with existing Federal laws, policies and regulations in its primary mission areas, which are commercial navigation, flood damage reduction, shoreline protection and ecosystem restoration.

Public Agencies Involved in Ocean Beach Project Planning

- **San Francisco Recreation and Parks Department - owner of the Great Highway,**
- **San Francisco Public Utilities Commission (SFPUC) - operates the wastewater treatment facilities that are under the Great Highway and the easements through the Highway and the Beach to outfall facilities.**
- **San Francisco Department of Public Works (DPW) - department that has implemented emergency actions to control bluff erosion, To date the DPW has requested and received permit approvals from the California Coastal Commission and or the GGNRA for the placement of the quarry stone revetment, the sand barrier and beach/bluff top markers placed on federal Property.**
- **San Francisco Department of the Environment (DOE) - co-chaired the Ocean Beach Task Force and provides support for ongoing Ocean Beach planning and community involvement efforts.**

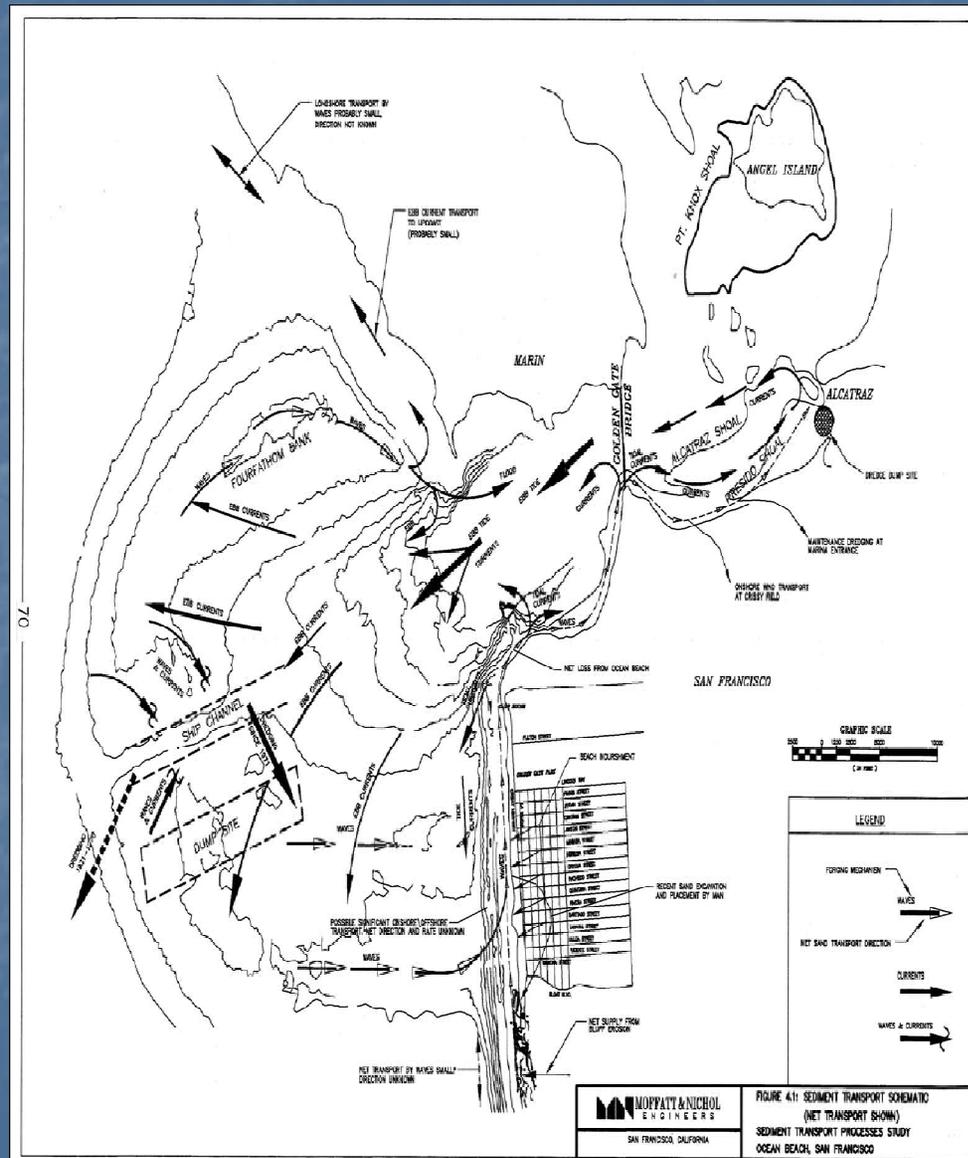
Technical Effort

- **Since 1996 monitoring reports have been prepared on measuring bluff retreat and seasonal variable beach elevation**
- **The USGS has performed extensive current and sea floor mapping to determine the sediment transport with in the San Francisco Bay cell**
- **The Army Corps of Engineers have initiated a beneficial reuse of dredge material study under Section 933 of the Water Resources Development Act**
- **DPW has initiated a technical study on and suitable material for Beach restoration dune designs**

The Potential Solutions



Sand Transport Model



Potential Solutions

- Investigate the beneficial reuse of dredged material (beach quality sand)
- Evaluate Beach Nourishment project that will use dredged material from the existing Bar Channel Navigation Project
- Identify areas of excess sand at ocean beach that can be safely transported to the erosion area

The Goal



BEFORE



AFTER

