

## CALIFORNIA MARINE SAND RESOURCE ASSESSMENT STUDY SYNOPSIS

**Background:** There are many areas along the 1,100 mile coastline of California where serious erosion problems are occurring due to a combination of El Nino storm conditions, sea level rise, and human intervention, such as the construction of dams and seawalls, which have significantly reduced and altered sediment movements along the coast. The California Coastal Sediment Working Group (CSMW), a collaborative taskforce of State, Federal and local agencies chaired by the U.S. Army Corps of Engineers and the California Natural Resources Agency (CNRA), has been overseeing and guiding the development of regional coastal sediment management plans to identify actions that can be taken to address coastal erosion problems. BOEM Pacific Region staff are members of CSMW and in December 2015 invited Marine Minerals Program staff from headquarters to provide a briefing to the CSMW on the extensive beach nourishment projects being conducted by BOEM along the Atlantic coast. This prompted further discussions between CNRA, BOEM, and USGS and the establishment of interagency agreements among these parties to jointly fund a study to assess marine sand resources having the potential for use in beach nourishment projects.

**Study Title:** “Assessment of Significant Sand Resources in Federal and State Waters in the San Francisco, Oceanside, and Silver Strand Littoral Cells”

The BOEM Pacific OCS Region Office has entered into an interagency agreement with the USGS (Santa Cruz) to conduct an assessment of marine sand resources for potential use in beach nourishment projects at critical erosion hotspots along the California coast. The CNRA is also providing funding to USGS to support the study through a separate interagency agreement.

**Duration:** Four years (FY 2017 – FY 2020)

**Funding Level:**

- BOEM	\$499,000
- CNRA	\$256,000
- USGS	\$465,000 (in-kind resources, vessel, staff, etc.)
Total	\$1,220,000

**Purpose:** The purpose of this study is to conduct an assessment and inventory of sand and gravel resources in Federal and State waters for potential use in future beach nourishment projects along stretches of the coast where critical erosion hotspots occur. These hotspots are identified in Regional Coastal Sediment Management Plans that have been prepared by county and local government agencies in coordination with the CSMW.

**Study Areas:** Three study areas were selected for investigation: (1) San Francisco Littoral Cell, (2) Oceanside Littoral Cell, and (3) Silver Strand Littoral Cell (see Figures 1 - 4). The study areas were selected in coordination with CSMW and approved by consensus of CSMW member

agencies. Sand resource assessment activities within the study areas will be restricted to the following areas:

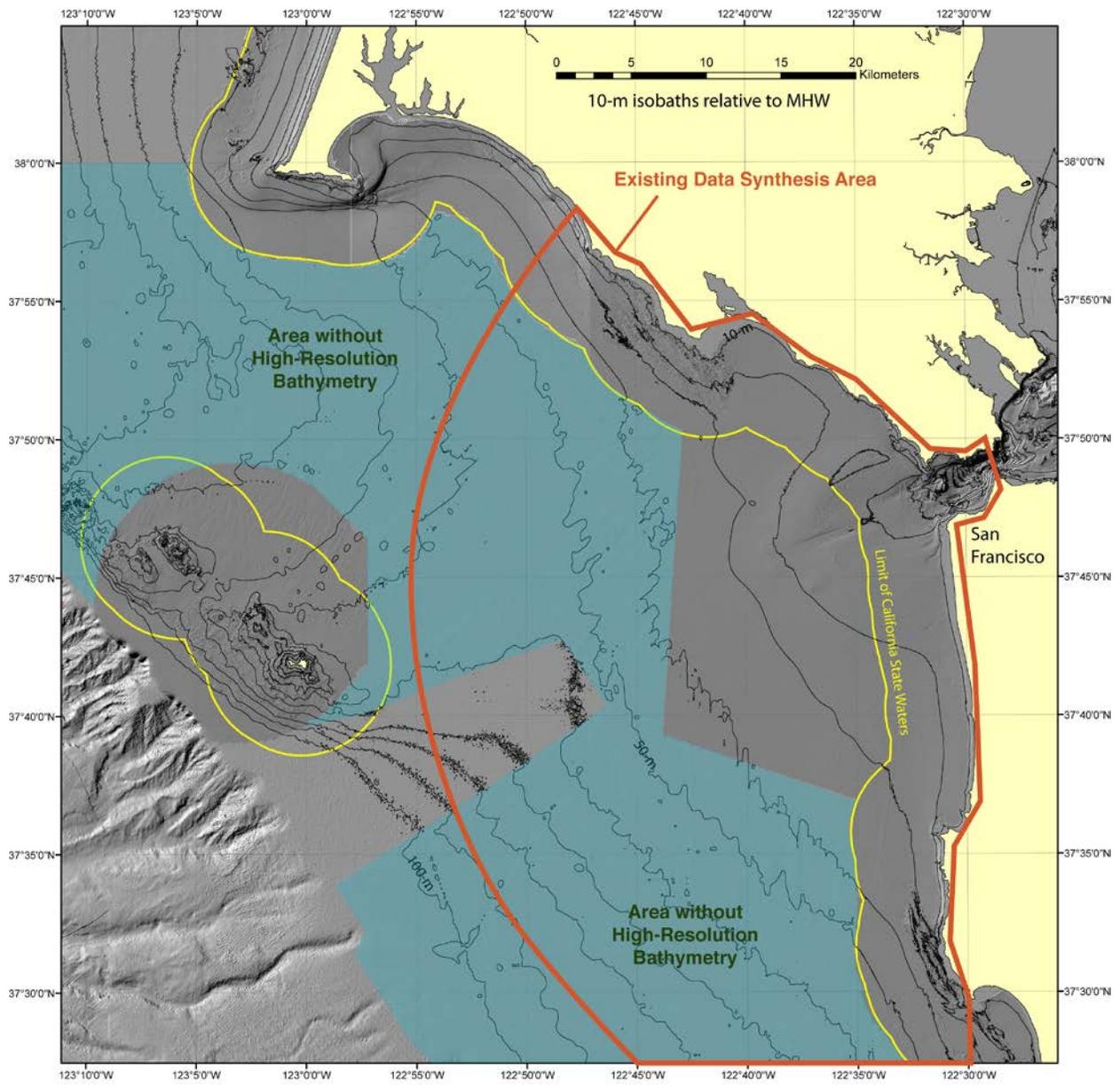
- (1) Areas having water depths of 200 feet or less (within the limits of current or reasonably foreseeable dredging technology).
- (2) Areas outside the depth of closure (+30 foot water depths); dredging in water depths of less than 30 feet could adversely affect the coastline).
- (3) Areas within 30 miles of critical erosion hotspots (transporting sand greater than 30 miles would likely be cost prohibitive).

### **Scope of Work and Map Products:**

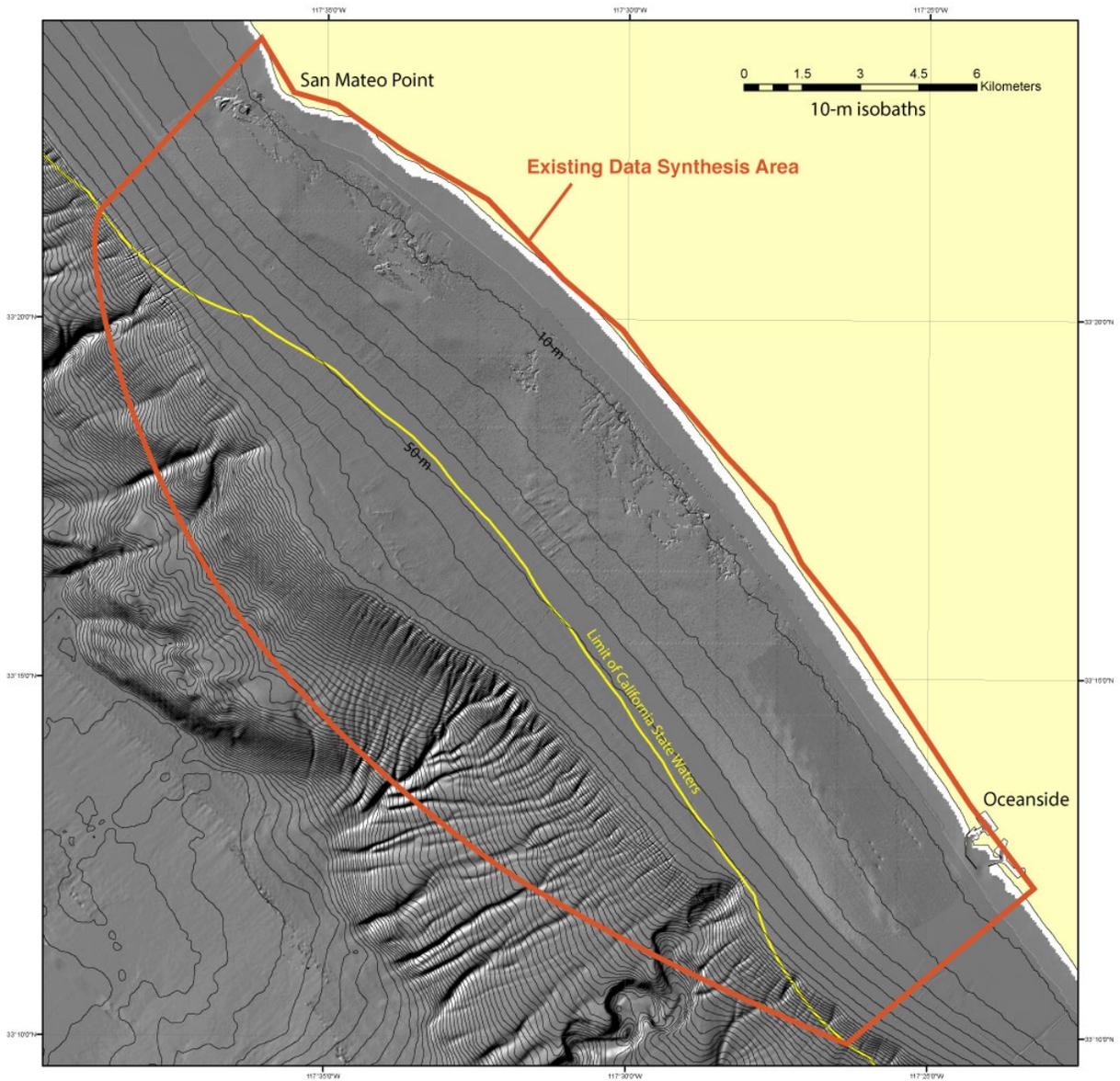
- Figure 6 provides a timeline showing the activities and scope of work.
- USGS will review and synthesize existing geological data and conduct bathymetric and geophysical surveys, magnetometer surveys, and sampling (coring and grab samples) to map sand and gravel resources in the three study areas.
- Sediment grain-size analyses will be run at the USGS Sediment Lab in Santa Cruz, California using the standard USGS techniques.
- USGS will produce maps showing the locations, thicknesses, and sediment grain-size information of sand and gravel deposits using new and existing information.
- Data will be compiled and synthesized in a geographical information system (GIS) that will be used to generate synthesis maps and descriptions for each site.
- USGS map and data products (with BOEM co-authorship) highlighting the results of the sand resources assessment in each study site will be developed and submitted for USGS online publication by the end of the period of performance.



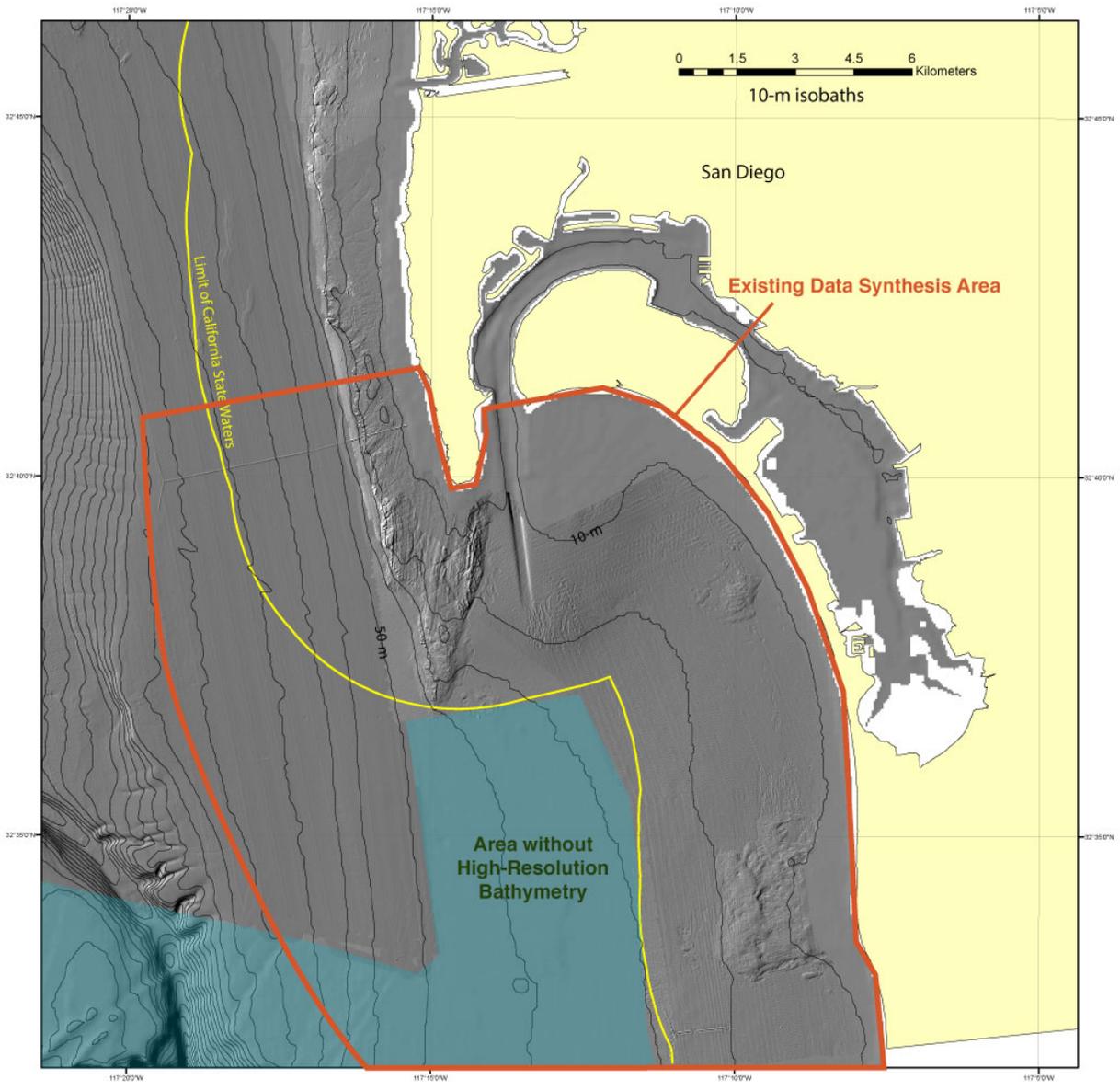
**Figure 1.** Map of the three study area sites along the continental shelf of California.



**Figure 2.** Map of the San Francisco Littoral Cell study site.



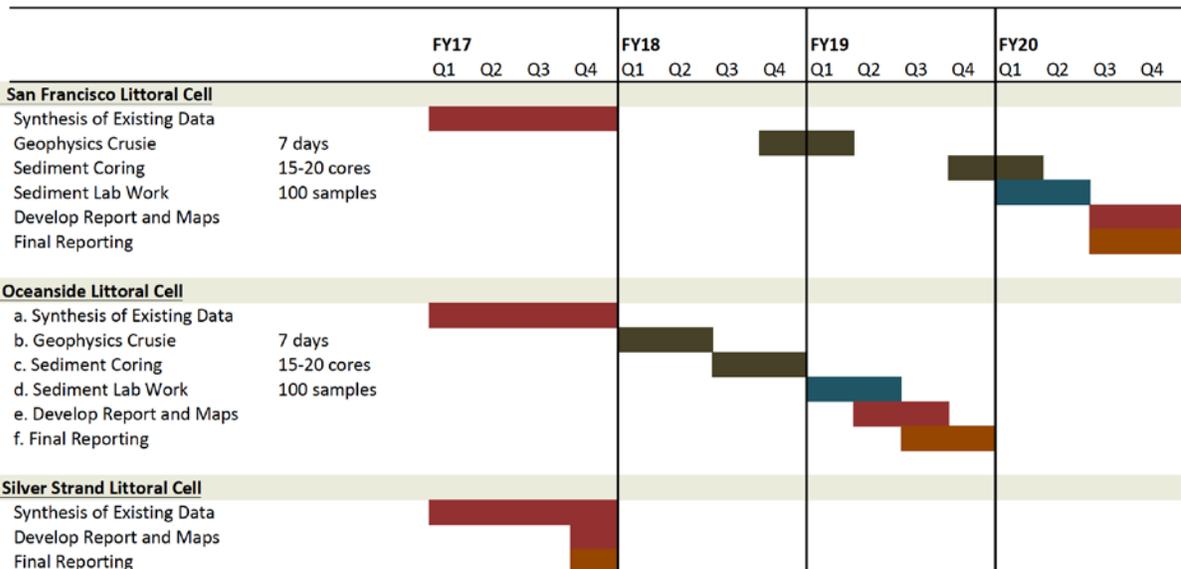
**Figure 3.** Map of the Oceanside Littoral Cell study site.



**Figure 4.** Map of the Silver Strand Littoral Cell study site.



**Figure 5.** The USGS Research Vessel *Parke Snavelly*.



**Figure 6.** Timeline of the Sand Resources Assessment project.

