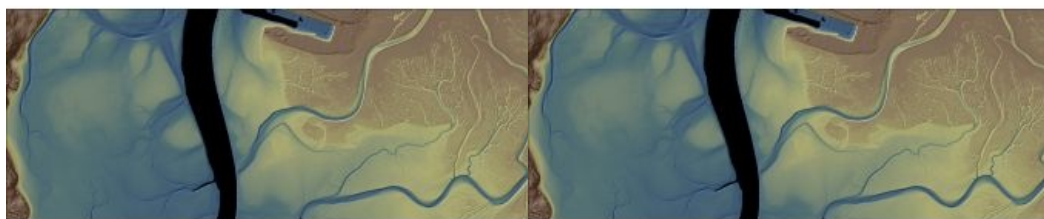


Addressing Change in Coastal Environments with Lidar and Sonar



Key stakeholders including the NOAA Office for Coastal Management and NV5 Geospatial created a topobathymetric elevation model of Morro Bay in California as input for environmental conservation.

Morro Bay, a shallow coastal estuary located near San Luis Obispo, California, supports an abundance of wildlife and is home to a vibrant outdoor community. But

changes – such as sedimentation and a substantial loss of eelgrass – have had an impact on the landscape. To better understand how the environment is changing and to gain insights into mitigation strategies, key stakeholders – including the Morro Bay National Estuary Program (NEP), the National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management (OCM) and NV5 Geospatial – have joined forces to create a comprehensive topobathymetric elevation model of the bay and coastline.

The partners needed to understand tidal patterns and water clarity to determine the best time for data acquisition. After observing six-foot tide swings, they opted for low-tide data acquisition via an airplane equipped with a RIEGL 880-G2 Lidar sensor system for mapping shallow water bathymetry. The system, with a green wavelength laser that penetrates the water column, enabled them to map areas with water at depths of as much as 2.5 metres along the coasts and in marshy areas.

While the Lidar survey covered much of the coastline and shallow areas, there was still an area in the middle of the bay that was too deep for laser detection and was therefore left unmapped. To complete the picture, interferometric sidescan sonar technology was used over an area of more than 352 acres (1.4km²).

Despite challenges posed by naturally moving sand, maintenance dredging activities and areas of thick healthy eelgrass that were hard to penetrate with Lidar and sonar, the project showcased the strength of these complementary technologies. The combination of Lidar and sonar enabled the partners to create a high-resolution seamless elevation model for the whole bay, depicting both land and sea.

[Read the full story at Hydro International](#)



Topobathymetric Lidar coverage for Morro Bay – black area indicates where sonar data is necessary to complete the bathymetric elevation model.