

# **NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT**

## ***PROJECT CA1001***

### ***Ports of Los Angeles and Long Beach, California***

#### **Introduction**

Coastal Mapping Program (CMP) Project CA1001 provides highly accurate digital shoreline data for key areas of change within the ports of Los Angeles and Long Beach, CA. The geographic cell (GC) may be used in support of the NOAA Nautical Charting Program (NCP) as well as geographic information systems (GIS) for coastal zone management applications.

#### **Project Design**

The design of Project CA1001 was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for targeted updates to NOAA's Electronic Navigational Chart series. Project requirements were formulated as a result of analysis conducted within the Coast and Shoreline Change Analysis Program (CSCAP), in which NOAA nautical chart products are compared to contemporary high resolution satellite imagery in order to ascertain the need for more current shoreline data. Refer to the CA1001 CSCAP Analysis Memorandum for details regarding the chart comparison process.

#### **Field Operations**

Routine CMP field operations did not apply for this project based on the origin of the project source data. Existing sources of horizontal control were used for the georeferencing process.

#### **Georeferencing**

Georeferencing tasks were initiated in March 2012 by personnel of the Applications Branch (AB) of RSD. One Quickbird panchromatic image with a spatial resolution of 0.60 meters, obtained through the National Geospatial-Intelligence Agency (NGA), was georeferenced using Erdas IMAGINE 10 software on a Windows platform. Ground control points (GCPs), photogrammetrically measured from previously aerotriangulated aerial photographs from CMP Project CA0102, were imported into IMAGINE and used to georeference the satellite imagery. Within IMAGINE the Raster Geometric Correction tool was used with a 1<sup>st</sup> order polynomial model. The imagery was re-sampled using the Nearest Neighbor sampling method. The RMS of the residuals for each measured check point was used to compute a circular error at the 95% confidence level (CE95) of 1.1 meters for the satellite image. This CE value was doubled and added to the CE95 of the source imagery from which the check points were extracted to yield a conservative predictor of the accuracy of well-defined points measured during the compilation process. Positional data is referenced to the North American Datum of 1983 (NAD 83).

#### **Compilation**

The compilation of cartographic feature data for this project was accomplished by a member of AB in March 2012. Digital feature data was compiled in ESRI shapefile format from imagery

using ESRI's ArcGIS® version 10 desktop GIS software. Feature attributes were established using the Coastal Cartographic Object Attribute Source Table (C-COAST), which provides the definition and attribution scheme for the full range of cartographic features pertinent to the CMP. Selected cartographic features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project CA1001 were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 2.7 meters at the 95% confidence level. This predicted accuracy of compiled well-defined points is a deductive estimate based on georeferencing statistics. The following table provides information on the satellite image used in the project completion:

Image Source	Source File Name	Acquisition Date/Time	Tide Level*
QuickBird	09AUG16184046-P1BS-052218262010_01_P005_RPC_GEIODHT_TIF.tif	2009-08-16 / 18:40 GMT	0.9 m

\* Tide levels are given in meters above MLLW and are based on actual observations recorded by the NOS gauge at Los Angeles, CA. The elevation of MHW at Los Angeles, CA is 1.45 meters above MLLW.

## Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a senior member of AB. The final review was completed in July 2012. The review process included analysis of the georeferencing results and assessment of the identification and attribution of digital feature data according to image analysis and criteria defined in C-COAST. The quality control process concluded with an inspection of topological connectivity within the GC using ArcGIS 9.3.1. The entire suite of project products was evaluated for compliance to CMP requirements.

## End Products and Deliverables

The following specifies the location and identification of end products generated during the completion of this project:

### RSD Applications Branch Archive

- Hardcopy of the Georeferencing Report
- Hardcopy of the Project Completion Report (PCR)
- Page size graphic plot of GC10933 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

### Remote Sensing Division Electronic Data Library

- GC10933 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- Chart Evaluation File in shapefile format

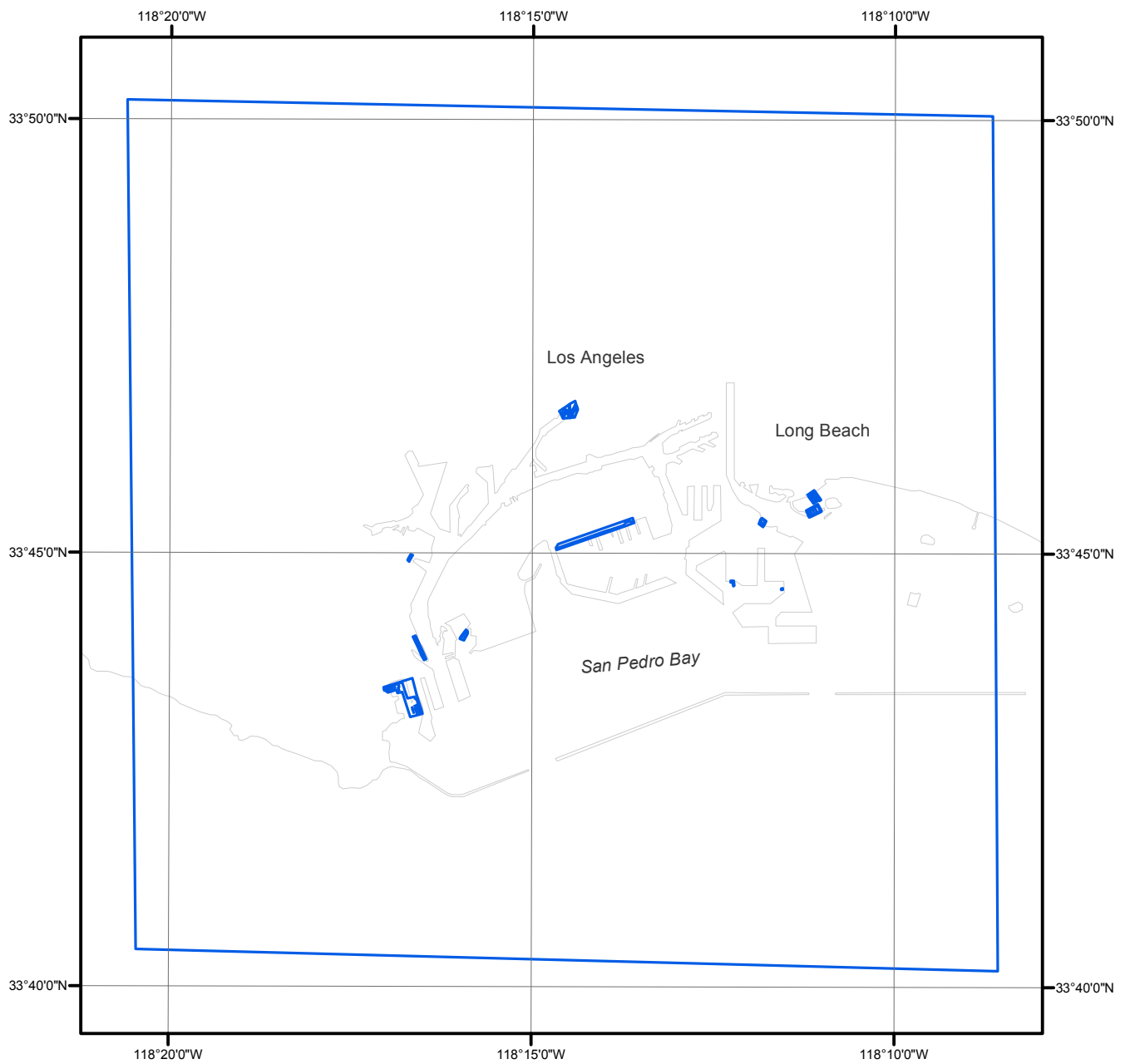
### NOAA Shoreline Data Explorer

- GC10933 in shapefile format
- Metadata file for GC10933
- Digital copy of the PCR in Adobe PDF format

## End of Report

# PORTS OF LOS ANGELES AND LONG BEACH

## CALIFORNIA



Overview



CA1001

GC10933