

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

## ***PROJECT CA1501-CM-T***

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

#### **Introduction**

Coastal Mapping Program (CMP) Project CA1501-CM-T provides highly accurate digital shoreline updates for several key areas of change within the ports of Los Angeles and Long Beach, California. The Geographic Cell (GC) may be used in support of the NOAA Nautical Charting Program (NCP) as well as geographic information systems (GIS) for a variety of coastal zone management applications.

#### **Project Design**

Project CA1501-CM-T was designed in response to a request for updated shoreline data from the Marine Chart Division (MCD) of the Office of Coast Survey, NOAA. Based on analysis of project requirements and results of a source data search, it was determined that CMP procedures for multiple source projects would apply for this project. Available source data deemed adequate for successful completion of this project included three orthorectified, pan-sharpened natural color satellite images from DigitalGlobe, Inc. with a spatial resolution of 0.5 meters, including one GeoEye image and two WorldView images. Refer to the table in the Compilation section below for further information on the images used for project completion.

#### **Field Operations**

Routine CMP field operations did not apply for this project based on the origin of the project imagery, which was obtained from external sources.

#### **Georeferencing**

Georeferencing tasks were initiated by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) in March 2015 using Esri's ArcGIS® (ver. 10.2.2) desktop GIS software. Within ArcGIS, the Georeferencing tool was used, and all three images were resampled using the Nearest Neighbor method with a 1st order polynomial model. Check points used to assess the accuracy of the satellite imagery were measured from aerial imagery acquired for CMP Project CA1303. The RMS of the residuals for measured check points was used to compute horizontal accuracies at the 95% confidence level (CE95) of between 1.65 and 1.70 meters for all the satellite images. These values were doubled and added to the CE95 of the source from which check points were obtained in order to conservatively predict the accuracy of well-defined points measured during the compilation process. Positional data for this project is referenced to the North American Datum of 1983 (NAD 83).

#### **Compilation**

Data compilation was accomplished by AB personnel in April 2015. Digital feature data was compiled in shapefile format from the satellite imagery using ArcGIS (ver. 10.2.2). Feature

attribution was assigned in compliance with 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.

Spatial data accuracies for CA1501-CM-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy at the 95% confidence level of 3.8 meters for the GeoEye-1 and WorldView-2 images and 3.9 meters for the WorldView-3 image. These predicted accuracies of well-defined points are based on comparisons of a minimum twenty (20) check points to an independent source of higher accuracy. The following table provides information on imagery used to complete this project:

Sensor	Source File (Tile) ID	Acquisition Date/Time	Tide Level*
GeoEye-1	20150117_184442_GE01_R1C1.tif	2015-01-17 / 18:44 GMT	0.5 m
WorldView-3	20141231_184852_WV03.tif	2014-12-31 / 18:48 GMT	0.4 m
WorldView-2	20140713_190820_WV02.tif	2014-07-13 / 19:08 GMT	1.5 m

\* Tide levels are given in meters above MLLW and are based on actual observations recorded by NOS gauge #9410660 at Los Angeles, CA at the time of photography. The elevation of the MHW tidal datum at the NOS gauge is equal to 1.45 meters above MLLW.

## Quality Control / Final Review

The final QC review was completed in April 2015. The review process included analysis of image georeferencing and assessment of the identification and attribution of digital feature data within the GC 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 10.2.2. The entire suite of project products was evaluated for compliance to CMP requirements. A Chart Evaluation File (CEF) resulted from comparison of the project imagery with the largest scale NOAA nautical chart covering the project:

- 18751 Los Angeles and Long Beach Harbors, 1:12,000 Scale, 46<sup>th</sup> Ed., Aug. 2009

## 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 Image Accuracy Assessment
- Hardcopy of the Project Completion Report (PCR)
- Page size graphic plot of GC11147 file contents, attached to PCR

### Remote Sensing Division Electronic Data Library

- Project database
- GC11147 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

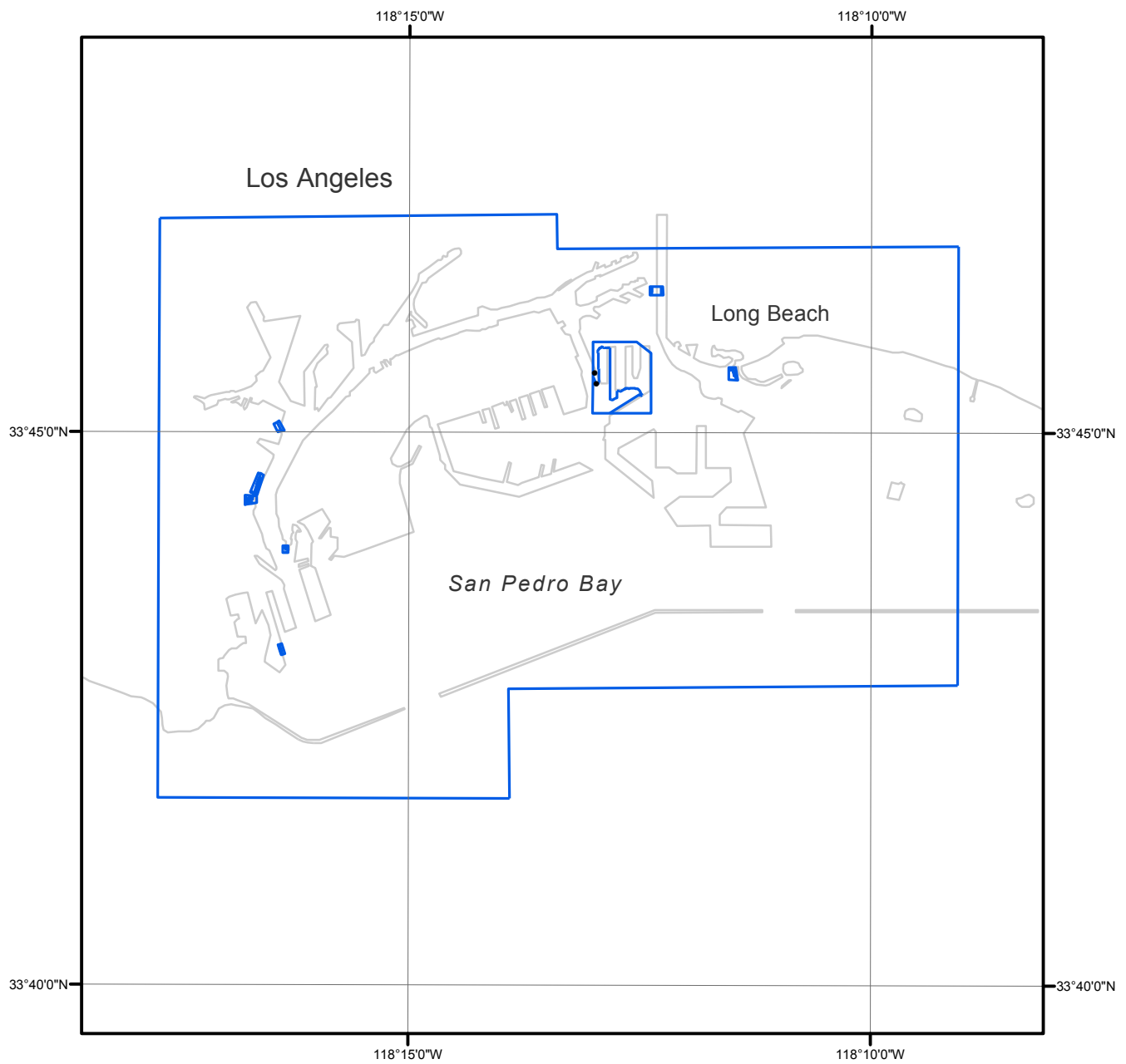
### **NOAA Shoreline Data Explorer**

- GC11147 in shapefile format
- Metadata file for GC11147
- Digital copy of the PCR in Adobe PDF format

**End of Report**

# PORTS OF LOS ANGELES AND LONG BEACH

## CALIFORNIA



Overview



CA1501-CM-T

GC11147