

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT MP1401

Saipan Harbor, Northern Mariana Islands

Introduction

Coastal Mapping Program (CMP) Project MP1401 provides highly accurate digital shoreline data for key areas of change within Saipan Harbor, in the Commonwealth of the Northern Mariana Islands (CNMI). 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

The design of Project MP1401 was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for timely updates to the NOAA Electronic Navigational Chart (ENC) 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. A Chart Evaluation File (CEF) was forwarded to the Applications Branch (AB) of RSD once the change analysis was complete. Refer to the CSCAP analysis memorandum of November 26, 2013 for details of 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.

Georeferencing

Six basic-level pan-sharpened WorldView-2 satellite images from DigitalGlobe, Inc. with a spatial resolution of 0.5 meters were obtained through the National Geospatial-Intelligence Agency (NGA). Rigorous refinement of the georeferencing of the WorldView images used for compilation was not necessary since the images compared favorably spatially with all of the data sources used to check its geolocation, and since DigitalGlobe provided an acceptable accuracy assessment for their imagery. The accuracy of the WorldView images reported by the vendor is 5.0 m at the 90% confidence level (CE90). The published positions of two U.S. Coast Guard maintained navigational aids were compared with their positions as measured in the satellite imagery as a means of verifying this accuracy. The reported accuracy is exclusive of viewing geometry and terrain distortions.

Compilation

Data compilation was performed by RSD personnel in March 2014. Digital feature data was compiled in shapefile format from the WorldView imagery using Esri's ArcGIS 9.3.1 desktop

GIS software. 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 MP1401 were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 5.7 meters, based on the vendor reported CE90 accuracy converted to the 95% confidence level (CE95).

The following table provides information on satellite imagery used in the project completion:

Image Source	Image Source File Name	Acquisition Date/Time	Tide Level
WorldView-2	13MAR05012633-S3DM_R1C1-053107750010_01_P001.TIF	2013-03-05 01:26 GMT	0.6 m
WorldView-2	13MAR05012633-S3DM_R1C2-053107750010_01_P001.TIF	2013-03-05 01:26 GMT	0.6 m
WorldView-2	13MAR05012633-S3DM_R2C1-053107750010_01_P001.TIF	2013-03-05 01:26 GMT	0.6 m
WorldView-2	13MAR05012633-S3DM_R2C2-053107750010_01_P001.TIF	2013-03-05 01:26 GMT	0.6 m
WorldView-2	13MAR05012633-S3DM_R3C1-053107750010_01_P001.TIF	2013-03-05 01:26 GMT	0.6 m
WorldView-2	13MAR05012633-S3DM_R3C2-053107750010_01_P001.TIF	2013-03-05 01:26 GMT	0.6 m

* Tide levels are given in meters above MLLW and are based on verified water levels recorded by the NOS gauge at Guam with corrections applied to the Saipan Harbor tidal substation at the time of photography. The elevation of the MHW tidal datum at Saipan Harbor is approximately 0.54 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted by a senior member of RSD. The final QC review was completed in March 2014. The review process included analysis of the georeferencing results 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 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 Project Completion Report (PCR)
- Page size graphic plot of GC11061 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

Remote Sensing Division Electronic Data Library

- GC11061 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

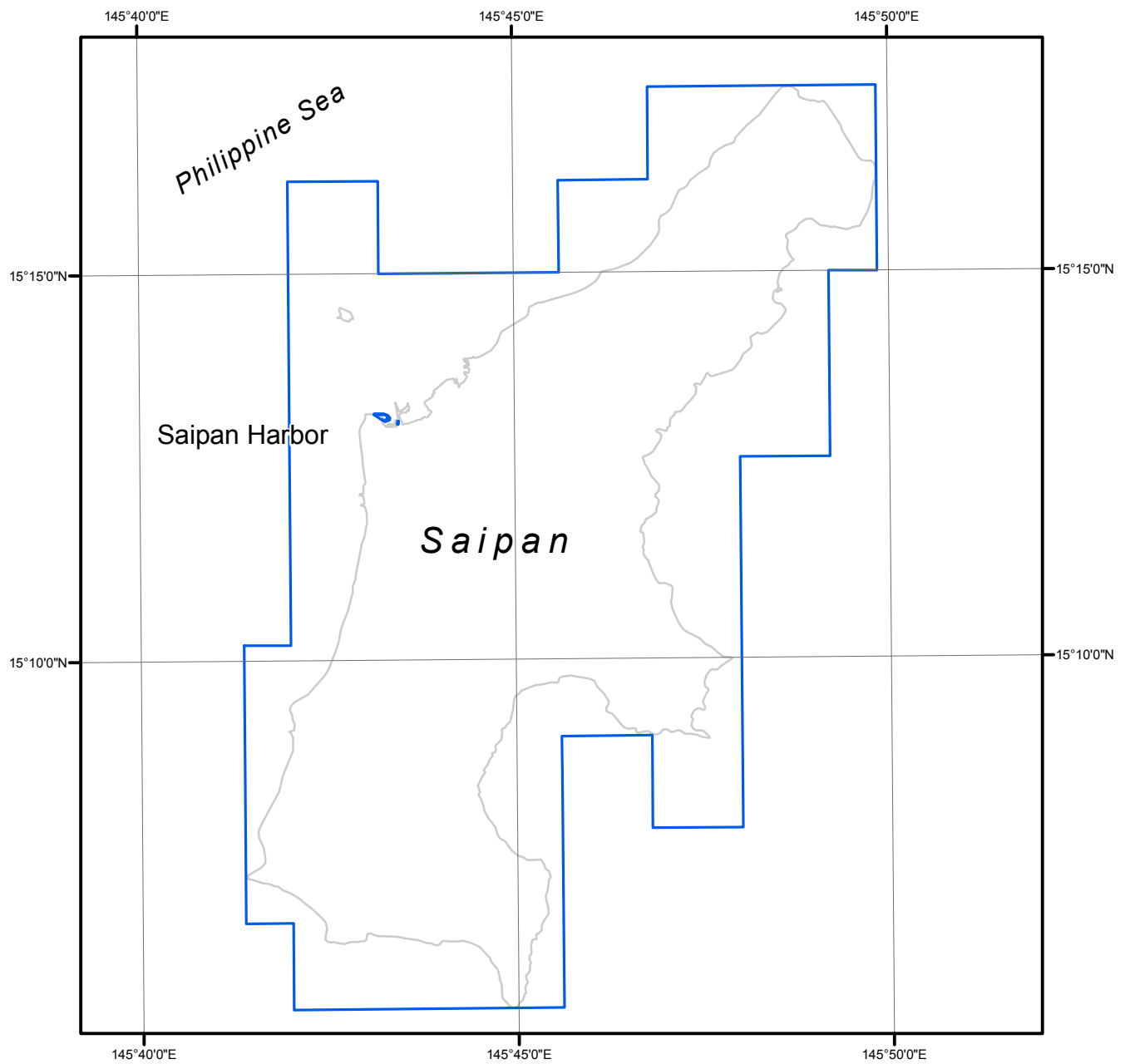
NOAA Shoreline Data Explorer

- GC11061 in shapefile format
- Metadata file for GC11061
- Digital copy of the PCR in Adobe PDF format

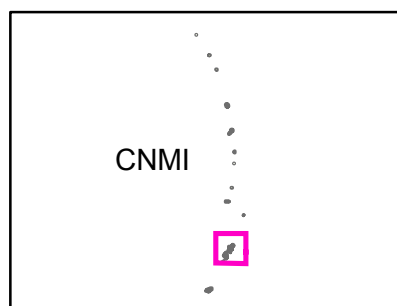
End of Report

SAIPAN HARBOR

NORTHERN MARIANA ISLANDS



Overview



MP1401

GC11061