NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT HI1504-CM-T

Pearl Harbor Entrance, Hawaii

Introduction

Coastal Mapping Program (CMP) Project HI1504-CM-T provides highly accurate digital shoreline data for several areas of shoreline change at the entrance of Pearl Harbor, Hawaii. 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 HI1504-CM-T was accomplished in response to a request for 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 two orthorectified satellite image tiles from DigitalGlobe, Inc., a pan-sharpened natural color WorldView-2 image and a panchromatic WorldView-1 image, both with a spatial resolution of 0.5 meters.

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

Image georeferencing tasks were accomplished by a member of the Remote Sensing Division (RSD) Applications Branch (AB) using Esri's ArcGIS® (ver. 10.2.2) desktop GIS software. Both WorldView images were assessed, and it was determined that only the panchromatic image required spatial adjustment. This image was then adjusted to precisely match the positioning of the color image. Check points used to assess the positioning of both images were measured from previously georeferenced imagery used in the compilation of CMP Project HI1301 (GC11064). Within ArcGIS, the Georeferencing tool was used, and imagery was re-sampled using the Nearest Neighbor method with a 1st order polynomial model. The RMS of the residuals for measured check points was used to compute a horizontal accuracy at the 95% confidence level (CE95) of 1.2 meters. This value was 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

The data compilation phase of this project was accomplished by a member of AB in March 2015. Digital feature data was compiled in ESRI shapefile format from imagery using ArcGIS (ver. 10.2.2) 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. Selected features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project HI1504-CM-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features extracted from both images were tested to have a horizontal accuracy of 3.7 meters at the 95% confidence level. This predicted accuracy of compiled well-defined points is based on comparison to an independent source of higher accuracy using at least twenty check points.

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

Image Source	Source File (Tile) Name	Acquisition Date/Time	Tide Level*
WorldView - 2	20141227_212615_WV02_R1C1.tif (pan-sharpened natural color)	2014-12-27 / 21:26 GMT	0.4 m
WorldView - 1	20150207_221057_WV01_R1C1.tif (panchromatic)	2015-02-07 / 22:11 GMT	0.1 m

* Tide levels are given in meters above MLLW and are based on actual observations recorded by the NOS gauge at Honolulu, Hawaii at the times of image acquisition. The elevation of the MHW tidal datum is equal to 0.44 meters above MLLW.

Quality Control / Final Review

The final QC review was completed in March 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.

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 Accuracy Assessment
- Hardcopy of the Project Completion Report (PCR)
- Page size graphic plot of GC11145 file contents, attached to PCR

Remote Sensing Division Electronic Data Library

- GC11145 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

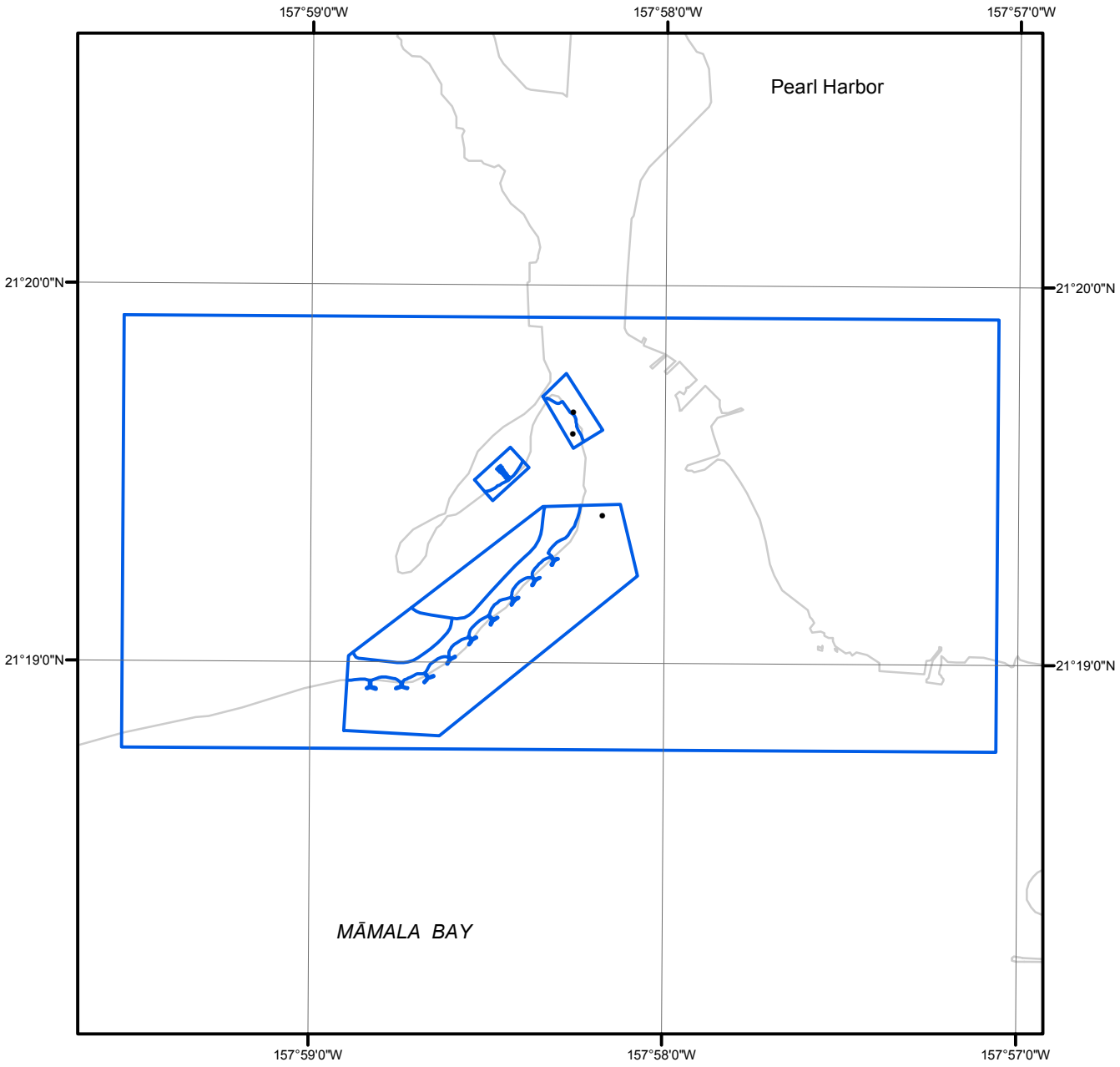
NOAA Shoreline Data Explorer

- GC11145 in shapefile format
- Metadata file for GC11145
- Digital copy of the PCR in Adobe PDF format

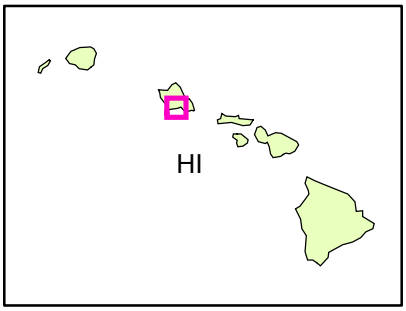
End of Report

PEARL HARBOR ENTRANCE

HAWAII



Overview



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