NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT VA1601-CM-T

Gilmerton Bridge, Elizabeth River, Virginia

Introduction

Coastal Mapping Program (CMP) Project VA1601-CM-T provides highly accurate digital shoreline data for the Gilmerton Bridge and areas of change nearby within the Southern Branch of the Elizabeth River, Virginia. 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 VA1601-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 completion of the project consisted of two orthorectified satellite images from DigitalGlobe, Inc. with a spatial resolution of 0.5 meters, including one panchromatic WorldView-1 image and one pan-sharpened natural color WorldView-2 image.

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 conducted by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) in November 2015 using Esri's ArcGIS® (v10.2.2) desktop GIS software. Within ArcGIS, the Georeferencing tool was used, and all imagery was 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 previously compiled feature data for CMP Project VA0203. The RMS of the residuals for measured check points was used to compute horizontal accuracies at the 95% confidence level (CE95) of between 1.2 and 1.5 meters for both 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 November 2015. Digital feature data was compiled in shapefile format from the satellite imagery using ArcGIS (v10.2.2). 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 Project VA1601-CM-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have horizontal accuracies at the 95% confidence level of 2.8 meters (WorldView-2) and 3.4 meters (WorldView-1). 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 further information on the imagery used to complete this project:

Sensor	Source File (Tile) ID	Acquisition Date/Time	Tide Level*
WorldView-2	2015Oct22_1548_WV2_ORI_R1C1.tif	2015-10-22 / 15:48 GMT	0.1 m
WorldView-1	2015Aug13_1727_WV1_ORI_R1C1.tif	2015-08-13 / 17:27 GMT	0.4 m

* Tide levels, given in meters above MLLW, are based on actual observations at the time of image acquisition by the NOS gauge at Money Point, VA. The elevation of MHW in the project area is 0.9 meters above MLLW.

Quality Control / Final Review

The final QC review was completed in November 2015 by a senior member of the CMP. 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:

   - 12253 Norfolk Harbor and Elizabeth River, 1:20,000 scale, 47th Ed., Apr /12

End Products and Deliverables

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

Remote Sensing Division Electronic Data Library
   - GC11182 in shapefile format
   - Digital copy of the PCR in Adobe PDF format
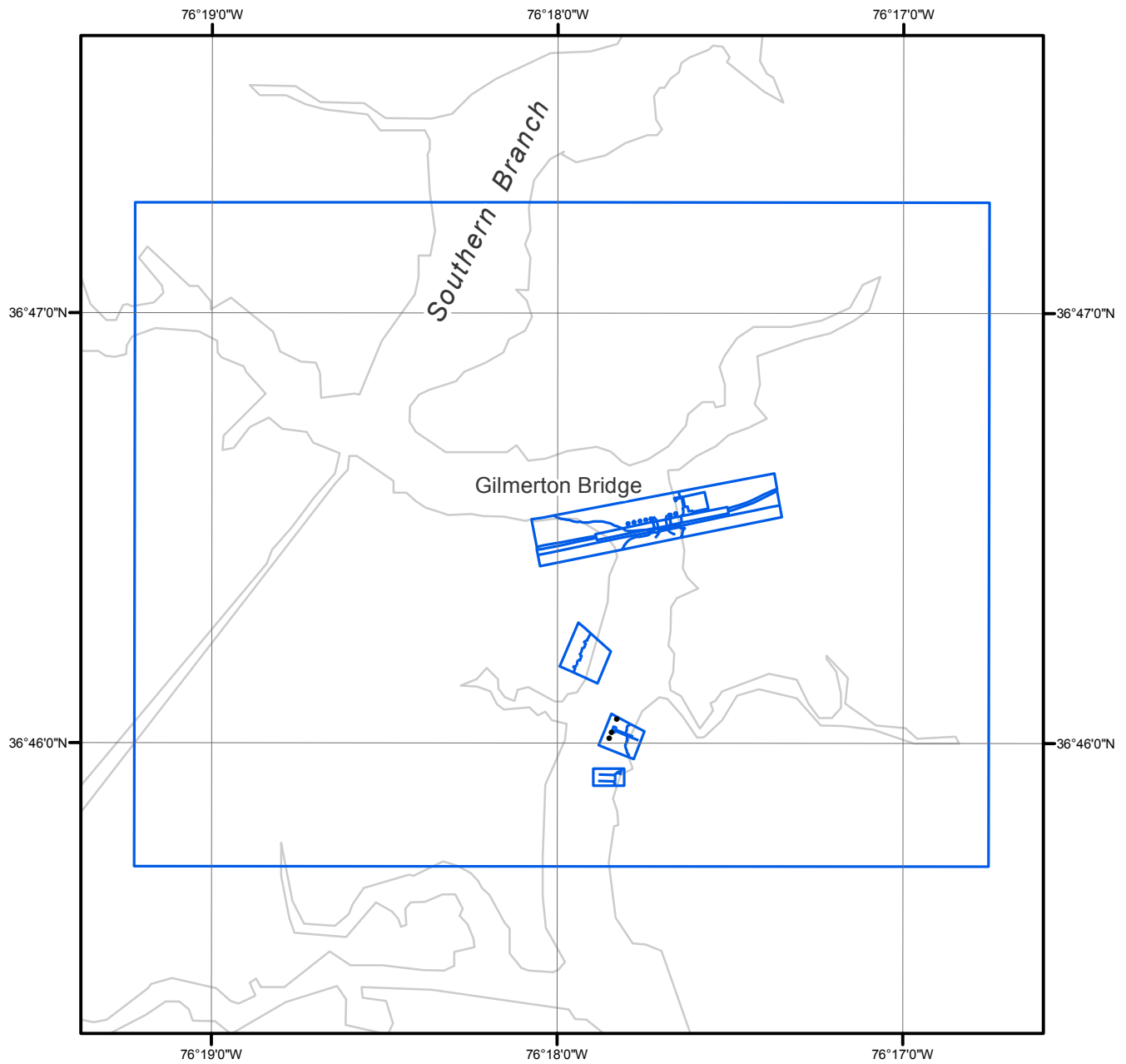   - CEF in shapefile format

NOAA Shoreline Data Explorer
- GC11182 in shapefile format
- Metadata file for GC11182
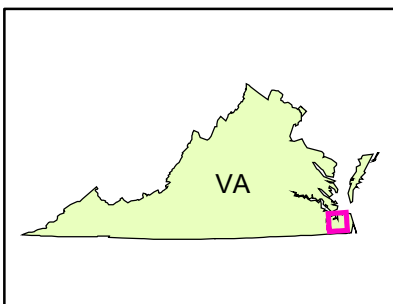- Digital copy of the PCR in Adobe PDF format

End of Report

GILMERTON BRIDGE, ELIZABETH RIVER

VIRGINIA

76°19'0"W   76°18'0"W   76°17'0"W

Southern Branch

36°47'0"N

Gilmerton Bridge

36°46'0"N

76°19'0"W   76°18'0"W   76°17'0"W

Overview

VA

VA1601-CM-T

GC11182