

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT RI1001

Port of Providence, Rhode Island

Introduction

Coastal Mapping Program (CMP) Project RI1001 provides highly accurate digital shoreline data for key areas of change within the port of Providence. 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 original design of Project RI1001 was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the general need for updates to NOAA's Electronic Navigational Chart (ENC) series. A standard change analysis was conducted within the Coast and Shoreline Change Analysis Program (CSCAP), in which NOAA nautical chart products are compared to contemporary high resolution imagery to ascertain the need for more current shoreline data. Imagery used for this analysis consisted of two non-orthorectified panchromatic WorldView-1 satellite images from DigitalGlobe, with a spatial resolution of 0.5 meters, obtained through the National Geospatial-Intelligence Agency (NGA). A Chart Evaluation File (CEF) was forwarded from RB to the Applications Branch (AB) of RSD upon completion of the CSCAP analysis. Refer to the RB CSCAP memorandum of January 20, 2010, for more 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

It was determined that only one of the two WorldView images was needed for feature compilation. That image was georeferenced by a member of AB using ESRI ArcGIS desktop GIS software (ver. 9.3.1). Control/check points were measured from previously compiled feature data from GC10585 (RI0301). Within ArcGIS, the Georeferencing tool was used, and the 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 0.95 meters for the satellite image. 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

Data compilation was performed by AB personnel in December 2013. Digital feature data was compiled in shapefile format from the WorldView imagery using ESRI ArcGIS 9.3.1. 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 RI1001 were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy of 2.9 meters at the 95% confidence level by comparing a minimum of twenty (20) check points to an independent source of higher accuracy. The table below provides detailed information on the imagery used for feature compilation.

Image Source	Source ID	Acquisition Date/Time	Tide Level
WorldView-1	09JUL10155024-P1BS-052122044010_06_P003.tif	7/10/2009 15:50 GMT	n/a

Quality Control / Final Review

Quality control tasks were conducted by a senior member of RSD in January 2014. Image georeferencing was verified and the identification and attribution of digital feature data within the GC was evaluated 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. All project products were 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 GC11045 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum
- Hardcopies of other information and communication related to project completion

Remote Sensing Division Electronic Data Library

- GC11045 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

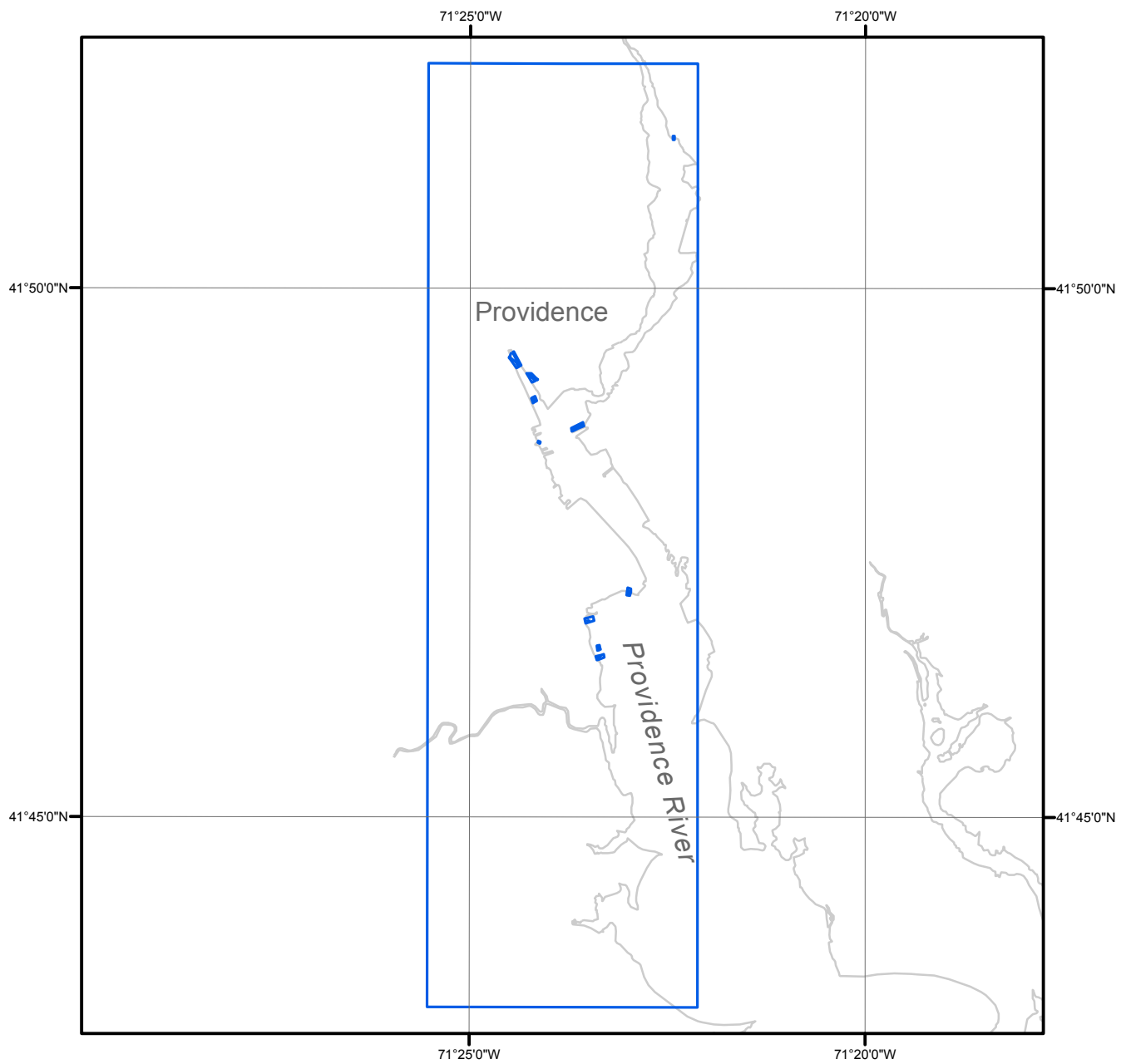
NOAA Shoreline Data Explorer

- GC11045 in shapefile format
- Metadata file for GC11045
- Digital copy of the PCR in Adobe PDF format

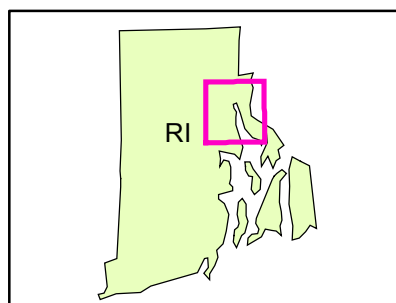
End of Report

PORT OF PROVIDENCE

RHODE ISLAND



Overview



RI1001

GC11045