NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT FL2303-CM-T

Marco Island at Big Marco Pass, Florida

Introduction

Coastal Mapping Program (CMP) Project FL2303-CM-T provides accurate digital shoreline data for a small portion of the northwestern end of Marco Island at Big Marco Pass, in Florida. 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 FL2303-CM-T was designed in response to a request from the Marine Chart Division (MCD) of the Office of Coast Survey, NOAA. Based on an 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 one 4-band orthomosaic of Leica ADS-100 imagery obtained through the National Agriculture Imagery Program (NAIP), and one orthorectified pan-sharpened natural color satellite image (downloaded in tiled format) from DigitalGlobe, Inc. Metadata associated with both images is on file with other project data within the RSD Electronic Data Library.

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

Metadata which accompanied the NAIP imagery fully describes the photogrammetric processing and orthorectification of the imagery. Further georeferencing of this imagery was unnecessary since it compared well with sources used to assess spatial accuracy and was accompanied by an acceptable accuracy assessment from the image provider. NAIP metadata, on file in the RSD Electronic Data Library, contains information on collection and processing of the orthoimagery, including horizontal accuracy. The satellite image was used for reference purposes only, not for feature extraction, and therefore did not require any additional georeferencing tasks. All positional data for this project is referenced to the North American Datum of 1983 (NAD 83).

Compilation

Data compilation was accomplished by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) in November 2022. Using Esri's ArcGIS desktop GIS software (ver. 10.8.1), digital feature data was compiled in shapefile format from the NAIP orthoimagery. For compilation purposes the original 4-band NAIP image was split into separate color (RGB) and near-infrared (NIR) images covering a smaller portion of the original image extent. 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 FL2303-CM-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features extracted from NAIP imagery were compiled to meet a horizontal accuracy of 4.0 meters at a 95% confidence level, a figure representing the level of accuracy claimed by the image provider. The table below provides information on imagery used in the completion of this project.

Image Source	Source File Name	GSD	Acquisition Date / Time	Tide Level*
NAIP orthomosaic (ADS100)	20211223_NAIP_RGB_ORI.jp2 20211223_NAIP_IR_ORI.jp2	0.6 m	2021-12-23 / 12:47 – 13:04	0.1 – 0.0 m
WorldView-2	20220930_WV02_ORI_R1C1.jp2	0.48 m	2022-09-30 / 16:12	n/a

* Tide level is given in meters above MLLW and is based on verified observations recorded at the time of image acquisition by the NOS gauge at Naples, FL (#8725110) with offsets applied to the Marco, Big Marco River gauge (#8724991), the closest gauge to the project area. The elevation of MHW at Marco, Big Marco River is 0.779 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted upon project completion by senior CMP personnel in November 2022. The review process included an assessment of image georeferencing and 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 (ver. 10.8.1). The entire suite of project products was evaluated for compliance to CMP requirements.

Comparison of the largest scale NOAA nautical chart with project imagery and compiled feature data resulted in creation of the Chart Evaluation File (CEF). The following nautical chart product was used for comparison:

- ENC US4FL1JT, 5th Ed., Mar. 2022, Scale 1:40,000

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

- Project database
- GC11893 in shapefile format
- Project Completion Report (PCR)
- CEF in shapefile format

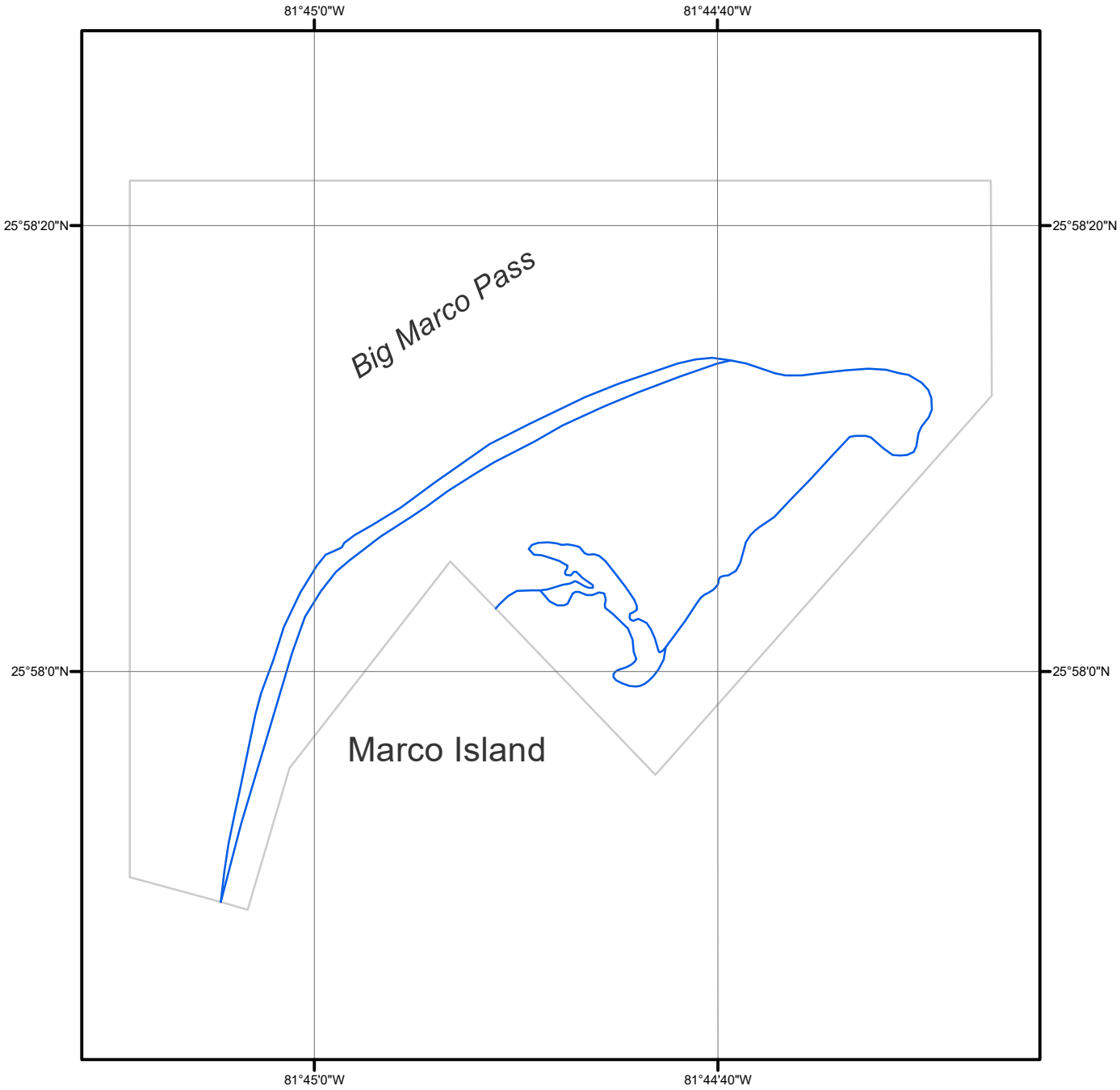
NOAA Shoreline Data Explorer

- GC11893 in shapefile format
- Metadata file for GC11893
- PCR in Adobe PDF format

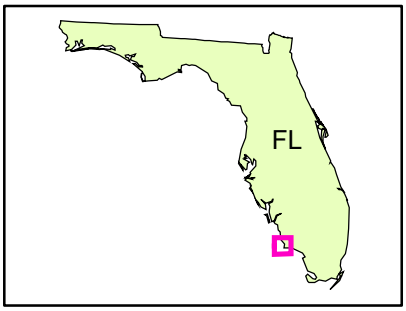
End of Report

MARCO ISLAND AT BIG MARCO PASS

FLORIDA



Overview



FL2303-CM-T

GC11893