

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT PR0301

Bahia de San Juan: Isla de Cabras to Laguna del Condado San Juan, Puerto Rico

Introduction

Coastal Mapping Program (CMP) Project PR0301 provides coastal zone mapping data for San Juan Bay. Project PR0301 consist of one Digital Cartographic Feature File (DCFF) GC10554 that provides mapping data of Bahia de San Juan from Isla de Cabras to Laguna del Condado. The DCFF may be utilized in support of the NOAA Nautical Charting Program (NCP) and coastal zone management activities.

Project Design

This project was designed as a result of the Coast and Shoreline Change Analysis Program (CSCAP) within the Remote Sensing Division (RSD). CSCAP analyzes shoreline changes by comparing recent high resolution satellite imagery or high altitude reconnaissance aerial photography with existing NOAA raster and vector nautical charts. CSCAP change analysis enables RSD to focus its shoreline compilation efforts where they are most needed. The project goal is to provide contemporary digital cartographic data in support of a variety of applications within the aforementioned program. Based on an analysis of project requirements and results of a source data search, RSD determined that CMP procedures for multiple source projects would apply for this project. A 0.6 meter ground sample distance QUICKBIRD panchromatic satellite image acquired May 2003 (Source Image ID: 03MAY11145025-P2AS-000000043117_01_P001) was deemed appropriate to meet project requirements. This was supplemented with aerial photographs of San Juan Bay acquired December 1999. The acquisition of the QUICKBIRD image occurred near low water at a predicted tidal stage of 0.48 feet above MLLW, and the aerial photographs were taken near mean high water at 1.1 ft at the San Juan, La Puntilla, San Juan Bay, Puerto Rico water gauge (Station# 9755371). See Table 1 below.

Field Operations

There were no field operations conducted for this project.

Georeferencing

The satellite image was georeferenced using ArcMap version 8.2 using common image points taken from the stereomodels of project PR9901A.

Compilation

ArcMap 8.2 was also used during the compilation phase of project completion. Monoscopic methods were used to compile shoreline and shoreline features. Many charted discrete point features (such as aids to navigation, piles, dolphins) could not be clearly distinguished, confidently identified, or positioned accurately, and therefore were not compiled. The DCFF attribution conforms to the Coastal Cartographic Object Attribute Source Table (C-COAST), the NOAA National Geodetic Survey's attribution schema for coastal data.

Digital mapping of San Juan included using softcopy photogrammetry to assist in the interpretation of the coastline and its features. The stereo models of project PR9901A were used as a secondary source for compilation for features verified in the QUICKBIRD image.

Cartographic features were compiled from the satellite image to meet a horizontal accuracy of 3.76 meters at the 95% confidence level. The features compiled from project PR9901A and verified from the satellite imagery maintained the predicted accuracy of 2.46 meters. This predicted accuracy of compiled, well-defined points is a deductive estimate based on the georeferencing statistics.

The following provides information on satellite imagery used in the compilation phase:

Table 1: Source Data for Compilation

Date	Time (UTC)	Roll#	Image#	Scale	Water Level Above MLLW
05/11/03	14:50	N/a	03MAY11145025-P2AS -000000043117_01_ P001	N/a	0.48 ft

*Mean High Water is at 1.3 ft at the La Puntilla, San Juan Bay, PR water level station..

Final Review

Final office review operations were conducted after completion of the compilation phase. The process included review of the identification and attribution of cartographic features based on image analysis and criteria defined in C-COAST. Visual inspection indicated that the charted and newly compiled shorelines matched in some areas. However, there were many areas where the differences were significant enough to indicate that the new compilation provides a better representation of the shoreline than is depicted on the chart.

The following NOAA nautical chart was used for chart comparison:

25670, 42nd Edition; Bahia de San Juan

The last step in the quality control process was the evaluation of the DCFF contents focusing on topology integrity.

Project Products

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

RSD Applications Branch Archive

- Hard copy of the Project Completion Report (PCR)
- Hard copy graphic plot of GC10554 file contents

RSD Electronic Data Library

- DCFF for GC10554 in ESRI Shapefile format
- Digital copy of the PCR in Adobe Acrobat PDF format

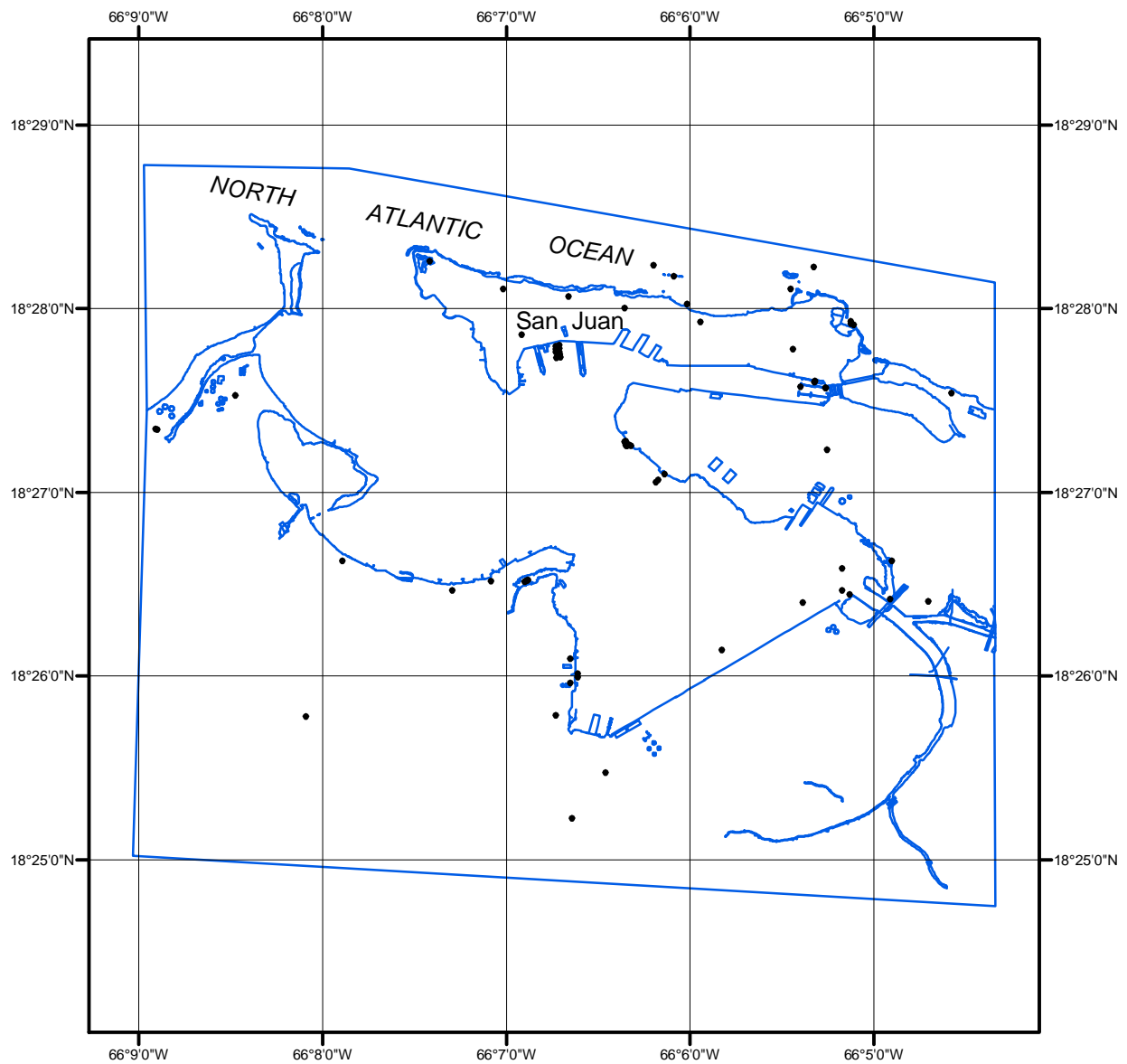
NOAA Shoreline Data Explorer

- DCFF for GC10554 in ESRI Shapefile format
- Metadata file for GC10554
- Digital copy of the PCR in Adobe Acrobat PDF format

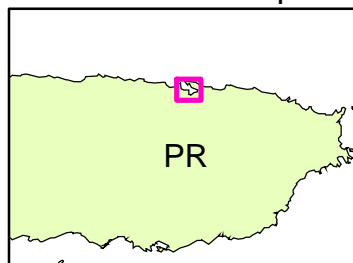
End of Report

Bahia de San Juan: Isla de Cabras to Laguna del Condado

San Juan, Puerto Rico



Overview Map



PR0301

GC10554