NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT TX1106B-CM-N

Texaco Island, Port Arthur, Texas

Introduction

Coastal Mapping Program (CMP) Project TX1106B-CM-N provides highly accurate digital shoreline data for a small area around the Intracoastal Waterway in West Port Arthur, Texas, from Taylor Bayou Outfall Canal to Sabine-Neches Canal. Project TX1106B-CM-N is a subproject of a larger project, TX1106, Gulf Coast Intracoastal Waterway from Port Isabel to Port Arthur. 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 TX1106B-CM-N was designed in response to a request from the Marine Chart Division (MCD) of the Office of Coast Survey, NOAA. Photographic mission instructions for TX1106 were formulated by the Requirements Branch (RB) of the Remote Sensing Division (RSD) following the guidelines of RSD's Photo Mission Standard Operating Procedures. The instructions discussed the project's purpose, geographic area of coverage, scope and priority, image requirements, Global Positioning System (GPS) data collection procedures and guidelines, instructions for data recording and handling, and mission communication protocols. RB created a Project Layout Diagram, flight maps and input files for the aircraft flight management system.

Field Operations

Field operations for TX1106 consisted of the collection of static and kinematic GPS data and Inertial Measurement Unit (IMU) data, and the acquisition of digital aerial imagery. Aerial survey operations were conducted March 2-11, 2011 with the NOAA King Air aircraft (N68RF). Imagery was acquired with an Applanix DSS 439 dual head digital camera system (two 60 mm lenses). Twenty-nine (29) flight lines of natural color imagery were acquired for TX1106, although only ten individual color images (part of strip 50-028) were used in the completion of subproject TX1106B-CM-N. All imagery was acquired at a nominal altitude of 10,000 feet, resulting in an approximate ground sample distance (GSD) of 0.35 meters. Imagery acquisition was not strictly coordinated with a particular tide stage, but the imagery was required to be collected when the water level was below Mean High Water (BMHW).

Aerotriangulation

Aerotriangulation for this project was performed by a member of the Applications Branch (AB) of RSD using a softcopy stereo photogrammetric workstation to establish the network of control required for the compilation phase. BAE Systems SOCET SET v. 5.6 softcopy photogrammetry suite was used for both project setup and for aerotriangulation using the

Multi-Sensor Triangulation (MST) module. The the standard deviations for each aerotriangulated ground point was calculated using the MST module and an overall RMS was then produced from these figures. These values were used to compute a predicted horizontal circular error of 1.0 meters, which is based on a 95% confidence level. For further information refer to the Aerotriangulation Report on file for this project. Positional data is referenced to the North American Datum of 1983 (NAD83).

Compilation

The data compilation phase of this project was accomplished by AB personnel in June 2016. Digital mapping was performed using the Feature Extraction software module within SOCET SET ver. 5.6. Feature identification and attribution within the GC were based on image analysis of the aerial imagery and information extracted from the largest scale NOAA nautical charts and other ancillary sources. 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 TX1106B-CM-N were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 2.0 meters at the 95% confidence level. The predicted accuracy of compiled, well defined points is derived by doubling the circular error calculated from the aerotriangulation statistics. The table below provides information on the images used to complete this project:

Date	Time (UTC)	Roll #	Photo #s	Tide Level*
3/10/2011	18:08 – 18:09	11NC05	1660 – 1669	-0.1 m

* Tide levels are given in meters referenced to MLLW and are based on preliminary observations recorded by the TCOON gauge at Port Arthur (Station ID 8770475). The elevation of the MHW tidal datum in the project area is 0.30 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a member of RSD. The final review was completed in July 2016. The review process included analysis of the aerotriangulation results 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 software. All project data was evaluated for compliance to CMP requirements.

A Chart Evaluation File (CEF) resulted from the comparison of source imagery and compiled project data with the largest scale NOAA nautical charts covering the project area:

- 11331, Ellender to Galveston Bay, 1:40,000, 22nd Ed., Feb 2014
- 11342, Sabine Pass and Lake, 1:40,000, 55th Ed., Oct 2012

End Products and Deliverables

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

Remote Sensing Division Electronic Data Library

- Project database
- Airborne Positioning and Orientation Report (APOR)
- Aerotriangulation Report
- Project Completion Report (PCR)
- GC11195 in shapefile format
- CEF in shapefile format

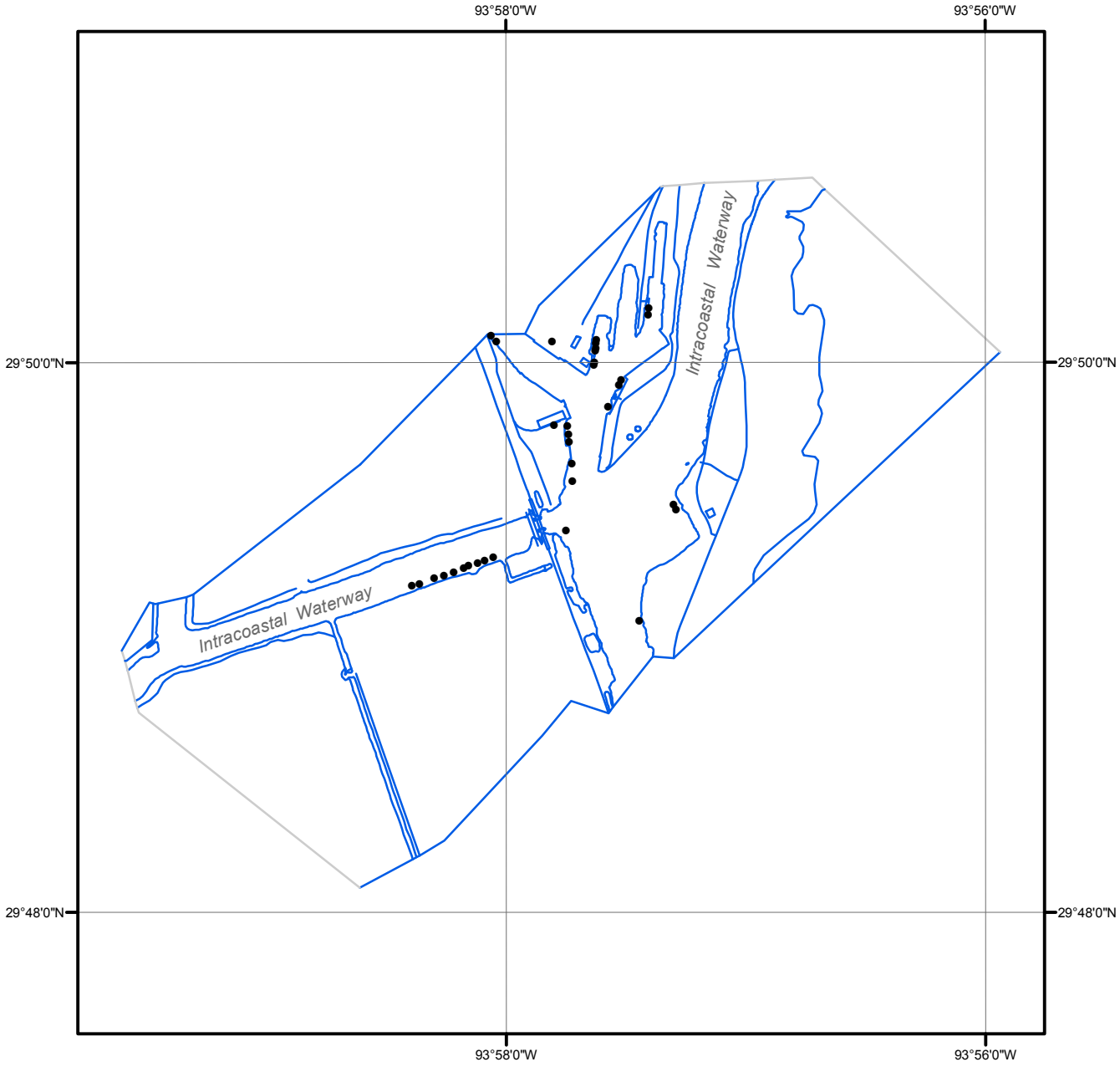
NOAA Shoreline Data Explorer

- GC11195 in shapefile format
- Metadata file for GC11195
- Digital copy of the PCR in Adobe PDF format

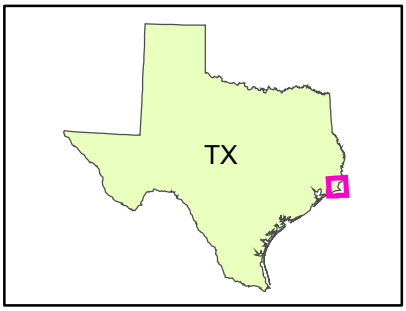
End of Report

TEXACO ISLAND, PORT ARTHUR

TEXAS



Overview



TX1106B-CM-N

GC11195