NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT TX0502B

Port of Matagorda, Texas

Introduction

Coastal Mapping Program (CMP) Project TX0502B provides highly accurate digital shoreline data for key areas of change within Matagorda, Texas. The analysis and the digital cartographic feature file (DCFF) may be used in support of the NOAA Nautical Charting Program (NCP) as well as geographic information systems (GIS) for coastal zone management applications.

Project Design

The design of Project TX0502B was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for timely updates to NOAA Electronic Navigational Chart (ENC) series. Project requirements were formulated as a result of analysis conducted within the Coast and Shoreline Change Analysis Program (CSCAP), in which NOAA nautical chart products are compared to contemporary high resolution satellite imagery in order to ascertain the need for more current shoreline data. Refer to the RB Memorandum, "Results of CSCAP Change Analysis for port of Matagorda, Texas (TX0502B)," November 18, 2005, for details regarding the chart comparison process.

Field Operations

Field operations consisted of the collection of static GPS data as a means of enhancing the geopositioning of commercial satellite imagery. The GPS data was collected by Navigation Response Team 4 of the Navigational Services Division, Office of Coast Survey. A series of well-distributed ground control points were surveyed throughout the project area based on information provided by the Applications Branch (AB) of RSD. Please refer to the port of Matagorda, Texas Ground Control Point Positioning Report for details regarding equipment, data collection and data processing.

Georeferencing

Two IKONOS non-orthorectified color images with a spatial resolution of 1 meter, acquired from Space Imaging, Inc., were georeferenced using Erdas IMAGINE 9.0 software on a Windows platform. Within IMAGINE, the Raster Geometric Correction tool was used with a 1st order polynomial model. Once control points were measured in IMAGINE, the satellite imagery was resampled using the Nearest Neighbor sampling method. The RMS of the residuals for measured check points were used to compute a predicted horizontal circular error at the 95% confidence level (CE95) of 1.7 meters. This CE value was tripled, and then added to the accuracy of the control points, to yield a conservative predictor of the accuracy of well defined points measured during the

compilation process. Positional data is referenced to the North American Datum of 1983 (NAD 83).

Compilation

The compilation of cartographic feature data for this project was accomplished by a member of AB in June 2006. Digital feature data was compiled in ESRI shapefile format from imagery using ESRI's ArcGIS 9.0 desktop GIS software. Feature attributes were established according to 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 cartographic features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project TX0502B were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have 5.4 meters horizontal accuracy at the 95% confidence level. This predicted accuracy of well-defined points is based on a minimum of twenty (20) check points that were compared to an independent source of higher accuracy.

The following table provides information on satellite images used in the project completion:

Image #	Image Source	Source ID	Source File Name	Acquisition Date/Time	Tide Level*
1	IKONOS	2005102517224470000011620797	po_178621_rgb_0000000.tif	2005-10-25 17:22 GMT	n/a
2	IKONOS	2005102517224470000011620797	po_178621_rgb_0000001.tif	2005-10-25 17:22 GMT	n/a

*Note: Tide range in Matagorda Bay is less than 0.3 feet.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a senior member of AB. The final QC review was completed in July 2006. The review process included analysis of the georeferencing results and assessment of the identification and attribution of cartographic features according to image analysis and the criteria defined in C-COAST. The quality control process concluded with an inspection of topological connectivity within the DCFF using ArcGIS 9.0. The entire suite of project products was 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 GC10615 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

Remote Sensing Division Electronic Data Library

- Digital copy of DCFF GC10615 in ESRI shapefile format
- Digital copy of the PCR in Adobe PDF format
- Chart Evaluation File (CEF) in shapefile format

NOAA Shoreline Data Explorer

- DCFF for GC10615
- Metadata file for GC10615
- Digital copy of the PCR in Adobe PDF format

End of Report

PORT OF MATAGORDA

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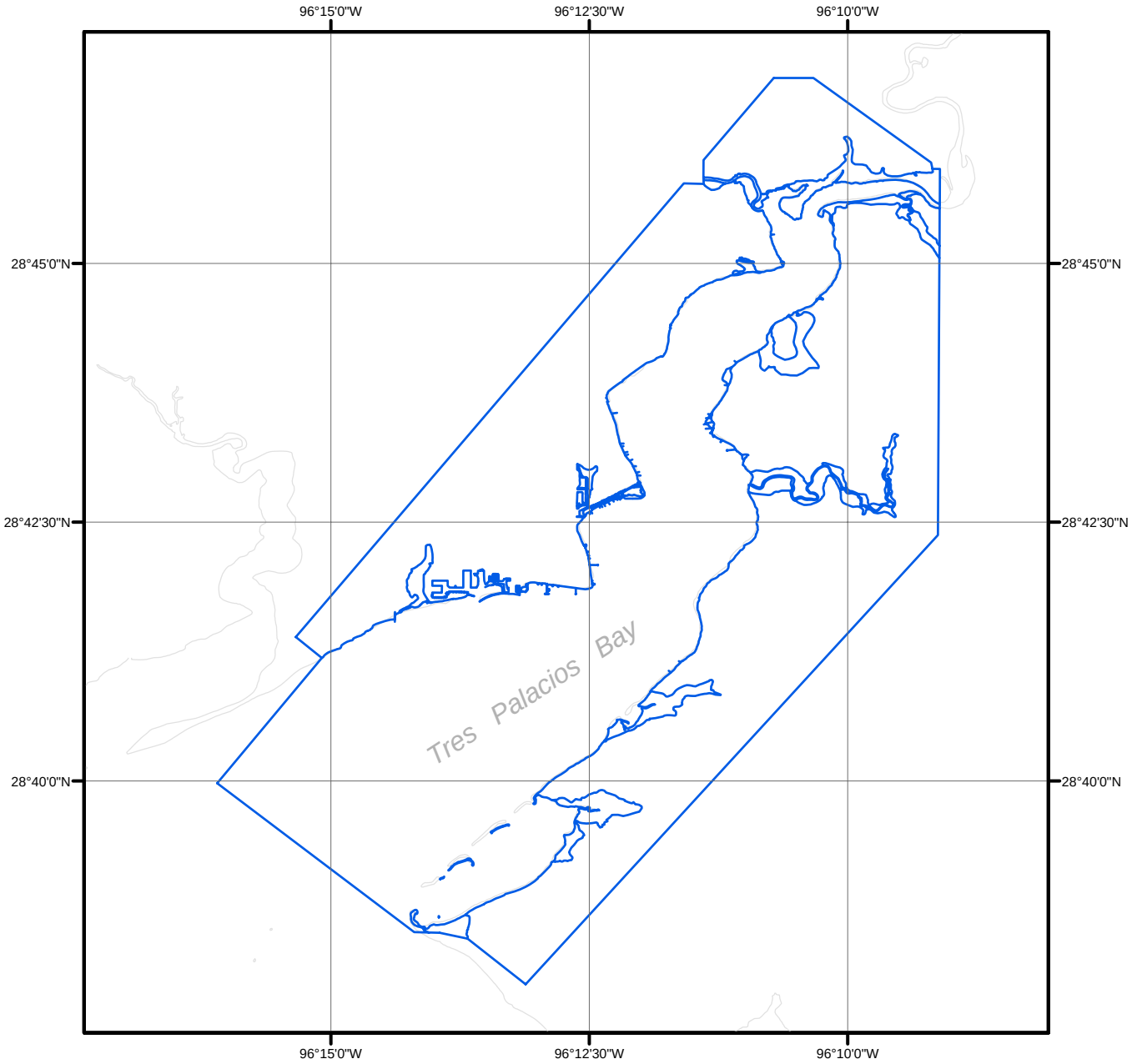
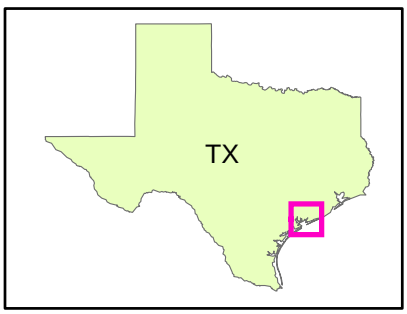


Overview



TX0502B

GC10615