

# **NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT**

## **PROJECT LA0201E**

### **PORT FOURCHON, LOUISIANA From Belle Pass to Leeville**

#### **Introduction**

Coastal Mapping Program (CMP) Project LA0201E provides a highly accurate database of new digital shoreline data of the southern end of Bayou Lafourche near Port Fourchon, from its mouth on the Gulf at Belle Pass to Leeville. This project is a subset of a larger project, LA0201, consisting of four side waterways of the Gulf Intracoastal Waterway system: Barataria Waterway, Bayou Lafourche, Lower Grand River, and Freshwater Bayou. The overall project, LA0201, was contracted out to 3001, Inc. This sub-project was extracted from the shoreline data submitted by the contractor in order to support the timely release of a new chart (11346) for the southern end of Bayou Lafourche.

Completion of this project resulted in a densification of the National Spatial Reference System (NSRS), a set of controlled metric quality aerial photographs and a digital cartographic feature file (DCFF) of the coastal zone which compliments the Nautical Charting Program (NCP) and other geographic information systems.

The project database consists of information measured and extracted from aerial photographs and metadata related to photogrammetric compilation. Base mapping was conducted in a digital environment using stereo softcopy photogrammetry and associated cartographic practices. Project survey data is referenced to the North American Datum of 1983 (NAD 83).

#### **Project Design**

The Requirements Branch (RB) of the Remote Sensing Division (RSD) issued Project Instructions in accordance with guidelines in the Scope of Work Shoreline Mapping (version 12). The instructions discussed the project's purpose, geographic area of coverage, scope and priority; photographic requirements; flight line priority; Global Positioning System (GPS) data collection procedures and guidelines for both kinematic and static surveys; data recording and handling instructions; and contact and communication information.

The contractor designed and planned the project operations to conform with the guidelines and requirements in the Project Instructions.

## **Field Operations**

The field operations consisted of the surveying of ground control points, collection of airborne GPS data, and the acquisition of aerial photographs. The photographic mission operations were conducted by the contractor on November 7, 2002. Refer to the Field Operations and GPS Data Reduction sections of the Project Completion Report (PCR) for LA0201C - Bayou Lafourche for details.

## **Aerotriangulation**

Softcopy aerotriangulation methods were applied to establish the network of precise airborne and ground control for mapping, and to provide model parameters and orientation elements required for digital compilation. The aerial photos covering the Bayou Lafourche Waterway, from which this sub-project was compiled, were adjusted together as a photogrammetric block separate from the other three waterways. Based on aerotriangulation statistics, the predicted horizontal circular error for this block is 0.15 meters at the 95% confidence level.

The project database consists of overall project parameters, camera calibration data, interior orientation parameters, airborne GPS antenna position and IMU orientation data, adjusted exterior orientation parameters, and a positional listing of all measured points. Positional data is based on the North American Datum 1983, and is referenced to the Louisiana State Plane coordinate system, zone 1702 (LA South), in units of U.S. Survey Feet.

Refer to the Aerotriangulation section of the PCR for LA0201C for details on the hardware, software, and methods used in the completion of this phase of the project.

## **Compilation**

The data compilation phase of the project is described in the Project Completion Report for LA0201C - Bayou Lafourche. The shoreline data compiled at the southern end of LA0201C, from Belle Pass to Leeville, was separated from the rest of the Bayou Lafourche waterway in order to create the sub-project LA0201E. The contractor's data was reviewed and edited, and in some areas additional compilation was added, by RSD Applications Branch personnel in January and February 2004. The review and editing was performed using a Digital Photogrammetric Workstation (DPW) in conjunction with the SocetSet Feature Extraction module. Feature identification and the assignment of cartographic codes were based on image analysis of 1:12,000 scale natural color photographs and information extracted from the appropriate NOAA Nautical Charts, US Coast Guard Light List and US Coast Pilot. Cartographic feature attribution was assigned in compliance with the NGS Coastal Cartographic Object Attribute Source Table (C-COAST). Nomenclature was assigned to selected cartographic features to refine general classification.

Cartographic features were compiled to meet a horizontal accuracy of 0.3 meters at the 95% confidence level. This predicted accuracy of compiled, well defined points is derived by doubling the circular error derived from aerotriangulation statistics.

The following table provides information on the aerial photographs used in the project completion process:

| <b>Date</b> | <b>Time<br/>(UTC)</b> | <b>Roll<br/>Number</b> | <b>Photo<br/>Numbers</b> | <b>Scale<br/>(nominal)</b> | <b>Tide Level<br/>(MLLW)</b> |
|-------------|-----------------------|------------------------|--------------------------|----------------------------|------------------------------|
| 11-7-02     | 1700-1703             | 02CN51                 | 0386-0395                | 1:12,000                   | non-tidal                    |
| 11-7-02     | 1706-1708             | 02CN51                 | 0396-0402                | 1:12,000                   | non-tidal                    |
| 11-7-02     | 1712-1714             | 02CN51                 | 0403-0410                | 1:12,000                   | -0.15 m                      |

### **Final Review**

The final review was initiated by RSD in February 2004. The digital cartographic feature file (DCFF) was evaluated for completeness and accuracy. Online data review consisted of reviewing stereo models on a DPW for cartographic feature codes selection, positional accuracies of features, and nomenclature. The cartographic feature attribution was judged to conform to NGS's C-COAST specification. An offline evaluation compared hard copy plots of the project data with the largest scale nautical charts available and the natural color photographs. A copy of NOAA nautical chart 11365 Barataria and Bayou Lafourche Waterways, Louisiana, 1:50,000, 17<sup>th</sup> edition (Oct./02) was used for the chart comparison process.

### **Project Final Data and Products**

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

#### **RSD Applications Branch Project Archive**

- Page size graphic plot of DCFF contents
- Hard copy of the Project Completion Report

#### **RSD Electronic Data Library:**

- Project Database
- DCFF: GC10561
- Digital copy of DCFF in ESRI Shapefile format
- Digital Copy of Project Completion Report (PCR)

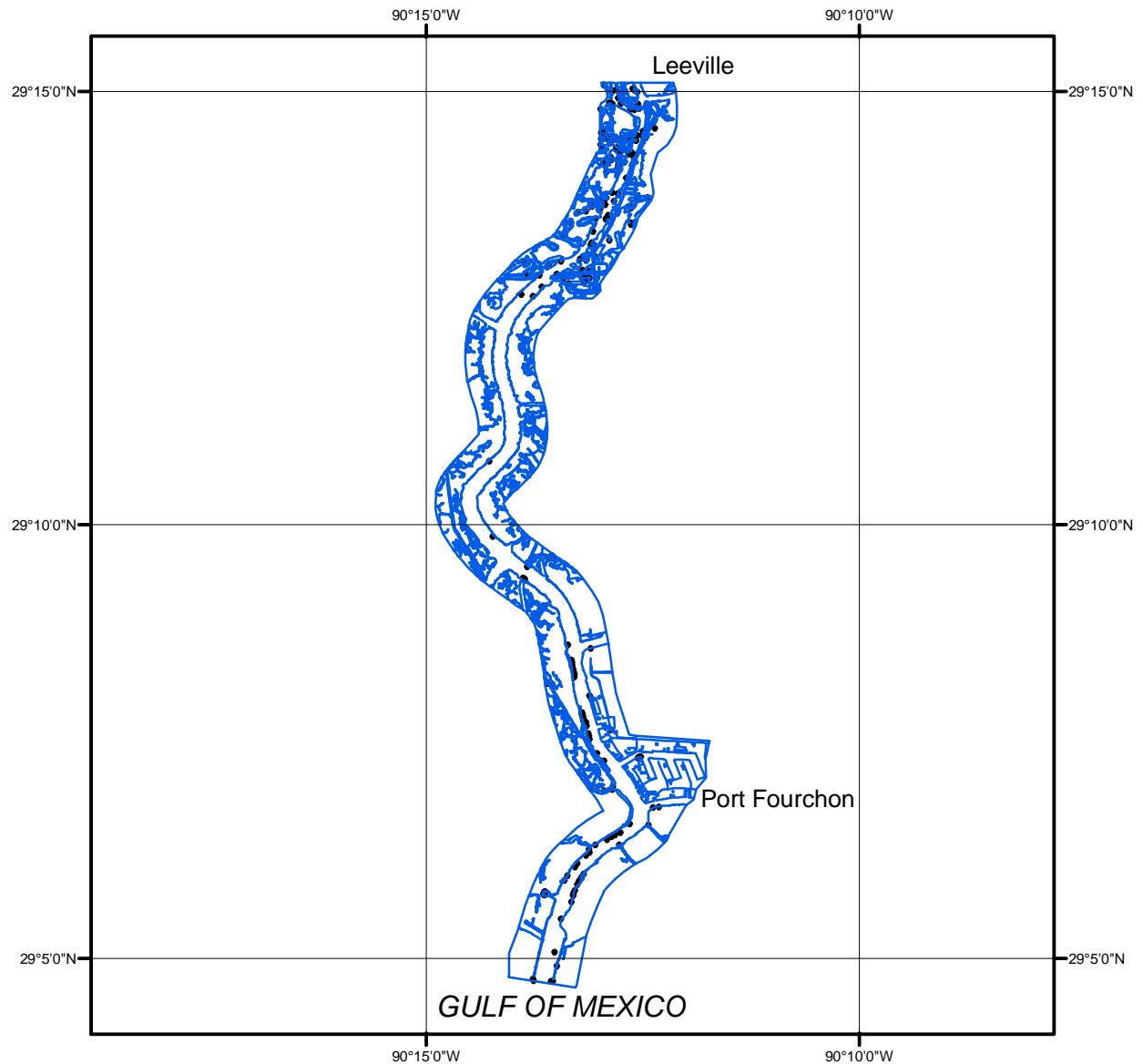
#### **NOAA Shoreline Data Explorer**

- Feature Database for GC10561 in ESRI Shapefile format
- Metadata file for GC10561
- Digital copy of the PCR in Adobe Acrobat PDF format

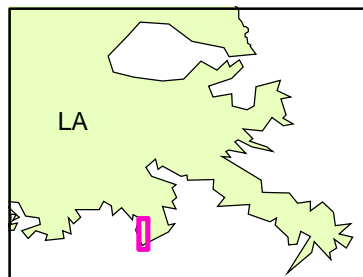
End of Report

# BELLE PASS TO LEEVILLE

## BAYOU LAFOURCHE, LOUISIANA



### Overview



LA0201E

GC10561