NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT TX2009-CS-T

Freeport, Texas

Introduction

Coastal Mapping Program (CMP) Project TX2009-CS-T provides accurate digital shoreline data for key areas of change within Freeport, Texas. 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

The design of Project TX2009-CS-T was accomplished by the Systems & Quality Assurance Branch (SQAB) of the Remote Sensing Division (RSD) in response to the need for expedited updates to the NOAA chart suite in key ports. 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 imagery in order to ascertain the need for more current shoreline data. Commercial satellite imagery was utilized for the CSCAP analysis. A Chart Evaluation File (CEF) was created once the change analysis was complete. Refer to the CSCAP memorandum for Project TX2009-CS-T for details regarding the chart comparison process.

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

Georeferencing tasks were completed by a member of the Applications Branch (AB) of RSD in July 2021. One orthorectified panchromatic WorldView image with a spatial resolution of 0.5 meters was georeferenced using features from previous CMP project TX1803E-TB-C with Esri's ArcGIS (ver. 10.8.1) desktop GIS software. Within ArcGIS, the Georeferencing tool was used, and the imagery was re-sampled using the Nearest Neighbor sampling method with a 1st order polynomial model. Check points from TX1803E-TB-C were used to assess the accuracy of the resampled imagery. The RMS of the residuals for each measured check point was used to compute a predicted horizontal circular error (CE) of 1.17 meters based on a 95% confidence level. This CE value was doubled and added to the accuracy of the source dataset from which check points were extracted in order to conservatively predict the accuracy of well-defined points measured during compilation. Positional data is referenced to the North American Datum of 1983 (NAD 83).

Compilation

Data compilation was accomplished by a member of AB in July 2021. Digital feature data was

compiled in shapefile format from the satellite imagery using ArcGIS. 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.

Spatial data accuracies for TX2009-CS-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy of 2.8 meters at the 95% confidence level by comparing at least 20 check points to an independent source of higher accuracy. The table below provides detailed information on the imagery used for feature compilation.

Sensor	Source File (tile) ID	Acquisition Date/Time	Tide Level*
WorldView-1	20200614_WV01_ORI_MOS_NAD83.jp2	2020-06-14 / 20:03 GMT	0.6 m

* Tide level is given in meters (m) above MLLW and based on actual observations at NOS tide station #8772471, Freeport, TX. The elevation of the MHW tidal datum in the project area is 0.467 m above MLLW.

Quality Control / Final Review

Final review tasks were completed in March 2022. The review process included analysis of image georeferencing 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. 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:

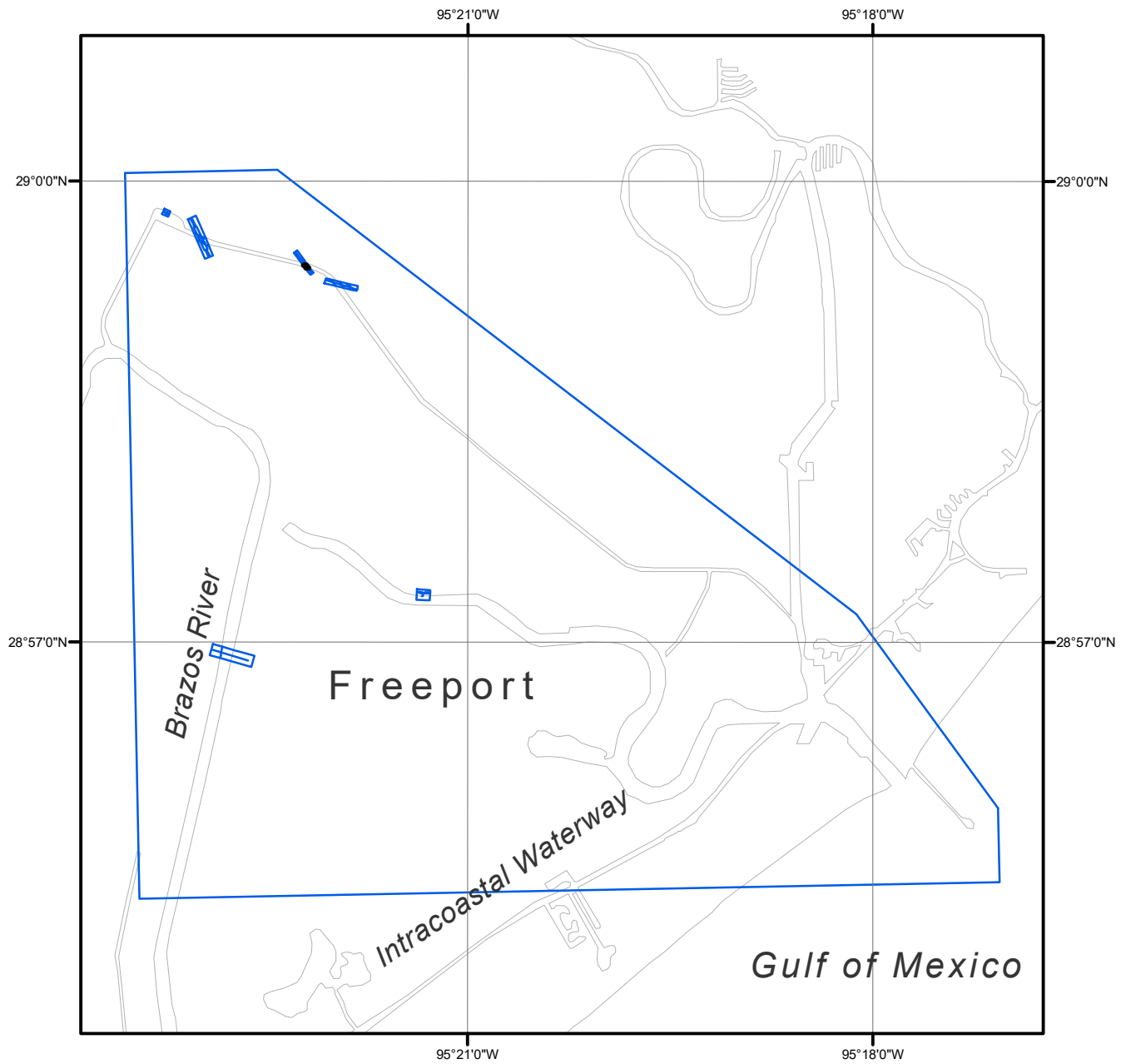**Remote Sensing Division Electronic Data Library**
- CSCAP evaluation memorandum
- Project database
- GC11732 in shapefile format
- Project Completion Report (PCR)
- CEF in shapefile format
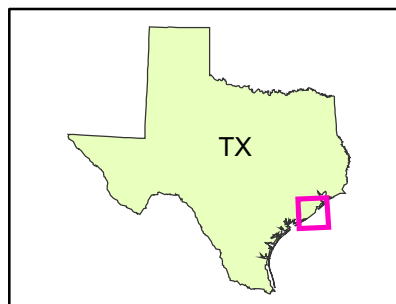
NOAA Shoreline Data Explorer
- GC11732 in shapefile format
- Metadata file for GC11732
- PCR in Adobe PDF format

End of Report

FREEPORT

TEXAS

95°21'0"W 95°18'0"W

29°0'0"N 29°0'0"N

Brazos River

28°57'0"N 28°57'0"N

Freeport

Intracoastal Waterway

Gulf of Mexico

95°21'0"W 95°18'0"W

Overview

TX

TX2009-CS-T

GC11732