NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT OH2002-CS-T

Port of Ashtabula, Ohio

Introduction

Coastal Mapping Program (CMP) Project OH2002-CS-T provides highly accurate digital shoreline data for key areas of change within the port of Ashtabula, Ohio. 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 OH2002-CS-T was accomplished by the Requirements Branch (RB) 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 OH2002-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 source data. Existing sources of horizontal control were used for the georeferencing process.

Georeferencing

Georeferencing tasks were initiated by a member of the Applications Branch (AB) of the RSD in September 2020. One orthorectified panchromatic WorldView-1 image from DigitalGlobe, Inc. was adjusted to features from previous CMP project OH0906D using Esri's ArcGIS (ver. 10.8.1) desktop GIS software. Within ArcGIS, the Georeferencing tool was used, and the imagery was re-sampled using a 1st Order Polynomial (Affine) transformation method. Check points from OH0906D were used to assess the accuracy of the resampled imagery, and the RMS of the residuals for each measured check point was used to compute a predicted horizontal circular error (CE) of 1.0 meter based on a 95% confidence level. This CE value was doubled and added to the accuracy of the source from which check points were extracted 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 September 2020. Digital feature data was compiled in shapefile format from the satellite imagery using Esri's ArcGIS software. 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 Project OH2002-CS-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy of 2.3 meters at the 95% confidence level based on a comparison of at least 20 measured points with checkpoints of higher accuracy. The following table provides information on the satellite image used in the project completion:

Image Source	Source File (Tile) ID	GSD	Acquisition Date/Time	Water Level*
WorldView-1	20191207_WV01_ORI_R1C1.jp2	0.5 m	2019-12-7 / 19:21:55 GMT	174.7 m

* Lake water levels are given in meters above IGLD 1985 and are based on verified observations at the Fairport station in Ohio. The Low Water Datum (LWD) value for Lake Erie is 173.5 m.

Quality Control / Final Review

Quality control tasks were conducted subsequent to project completion, in November 2020, by senior CMP personnel. The review process included analysis of the georeferencing 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. 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
- GC11676 in shapefile format
- Project Completion Report (PCR)
- CEF in shapefile format

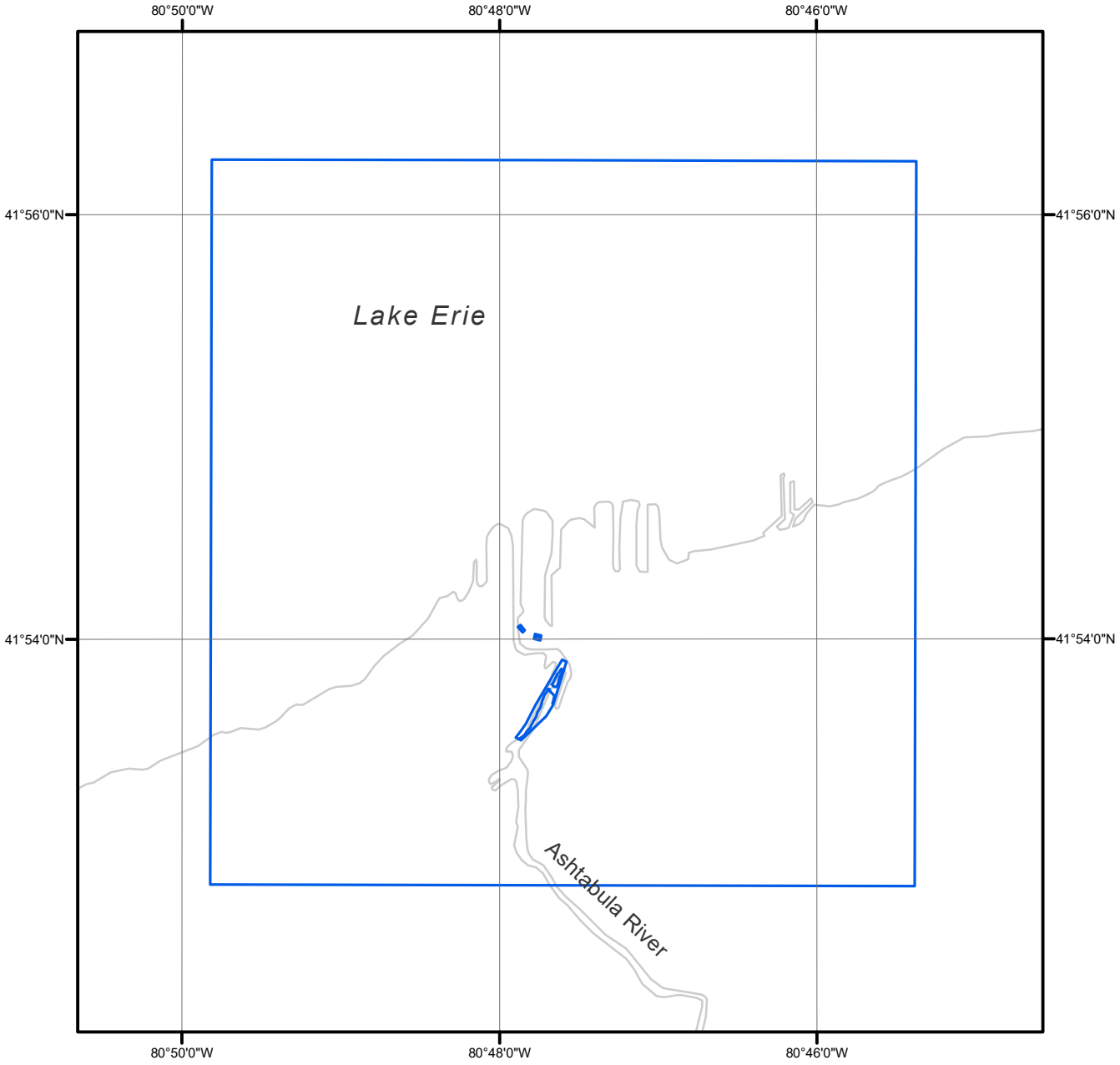
NOAA Shoreline Data Explorer

- GC11676 in shapefile format
- Metadata file for GC11676
- PCR in Adobe PDF format

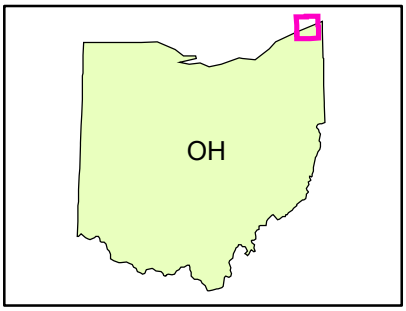
End of Report

PORT OF ASHTABULA

OHIO



Overview



OH2002-CS-T

GC11676