

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT PA1502

Port of Erie, Pennsylvania

Introduction

Coastal Mapping Program (CMP) Project PA1502 provides highly accurate digital shoreline data for key areas of change within the port of Erie, Pennsylvania and vicinity. 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 PA1502 was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD). A standard change analysis was conducted within the Coast and Shoreline Change Analysis Program (CSCAP), in which NOAA nautical chart products are compared to contemporary high resolution imagery to ascertain the need for more current shoreline data. An orthorectified image mosaic from the US Department of Agriculture's National Agriculture Imagery Program (NAIP) was used for this analysis. A Chart Evaluation File (CEF) was forwarded from RB to the Applications Branch (AB) of RSD upon completion of the CSCAP analysis. Refer to the RB CSCAP memorandum of October 17, 2014, for details of 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.

Georeferencing

In addition to the orthomosaic utilized for the CSCAP analysis, commercial satellite imagery was obtained to further analyze for reported shoaling near the port entrance. Two orthorectified, pan-sharpened natural color WorldView-2 satellite images from DigitalGlobe, Inc., with a spatial resolution of 0.5 meters, acquired April 21, 2014 and August 20, 2011, were obtained for this purpose. The WorldView imagery was then georeferenced for feature compilation. This task was accomplished by a member of AB using Esri's ArcGIS desktop GIS software (ver. 10.1). Control/check points were measured from previously compiled feature data from GC10702 (NY0501A). Within ArcGIS, the Georeferencing tool was used with a 1st order polynomial model. The RMS of the residuals for measured check points was used to compute horizontal accuracies at the 95% confidence level (CE95) of 1.7 meters for image #1 and 2.6 meters for image #2. These values were added to the CE95 of the source from which check points were obtained in order to conservatively predict the accuracy of well-defined points measured during the compilation process. Positional data for this project is referenced to the North American Datum of 1983 (NAD 83).

Compilation

Data compilation was accomplished by AB personnel in November 2014. Digital feature data was compiled in shapefile format from the WorldView imagery using ArcGIS 10.1. The NAIP imagery used for the CSCAP analysis was not used for feature compilation. 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 PA1502 were determined according to standard Federal Geographic Data Committee (FGDC) practices. For features compiled within the port of Erie (image #1), cartographic features were tested to have a horizontal accuracy of 4.4 meters at the 95% confidence level. Features compiled from image #2 were compiled to meet a horizontal accuracy of 5.3 meters at the 95% confidence level. The table below provides detailed information on the imagery used for feature compilation.

Image #	Image Source	Source ID (Tiles)	Acquisition Date/Time	Lake Level
1	WorldView-2	20140421_164556_WV2_R1C1.tif 20140421_164556_WV2_R1C2.tif 20140421_164556_WV2_R1C3.tif 20140421_164556_WV2_R2C1.tif 20140421_164556_WV2_R2C2.tif 20140421_164556_WV2_R2C3.tif	4/21/2014 16:45 GMT	174.2 m
2	WorldView-2	20110820_WV2_ORI_R1C1.tif	8/20/2011 16:48 GMT	174.4 m

* Lake levels are given in meters above IGLD 1985 and based on actual observations recorded at the NOS water level station in Erie, PA (Id # 9063038) at the time of image acquisition.

Quality Control / Final Review

Quality control tasks were conducted by a senior member of RSD in November 2014. Image georeferencing was verified and the identification and attribution of digital feature data within the GC was evaluated 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 10.1. All project products were 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 GC11115 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum
- Hardcopies of other information and communication related to project completion

Remote Sensing Division Electronic Data Library

- GC11115 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

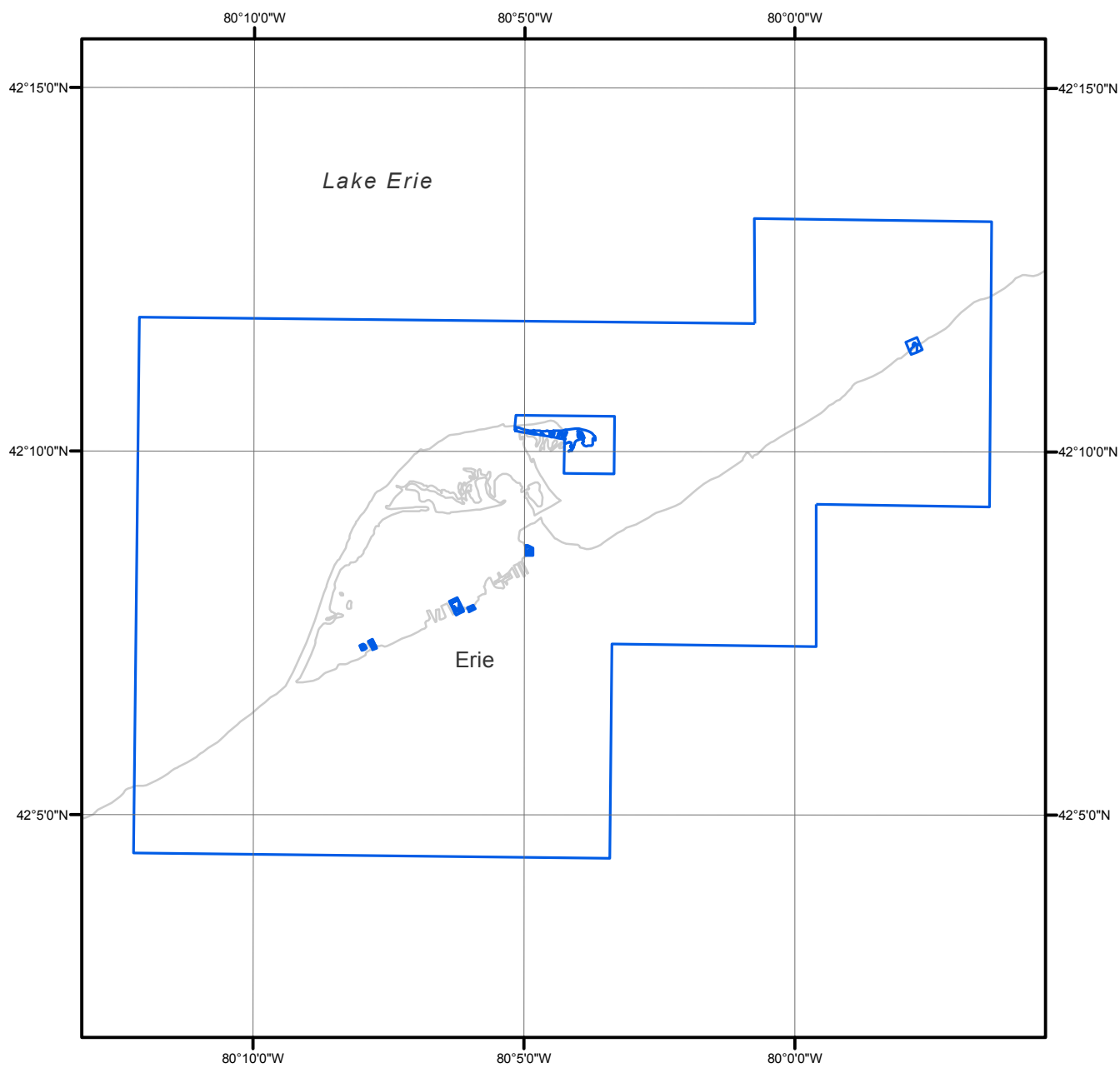
NOAA Shoreline Data Explorer

- GC11115 in shapefile format
- Metadata file for GC11115
- Digital copy of the PCR in Adobe PDF format

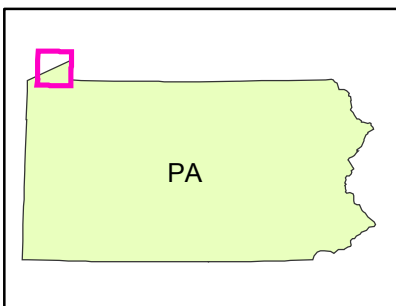
End of Report

PORT OF ERIE

PENNSYLVANIA



Overview



PA1502

GC11115