NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT NY1006

Hudson River, Castle Point to 63rd Street

Introduction

Coastal Mapping Program (CMP) Project NY1006 provides highly accurate digital shoreline data for key areas of change within the Hudson River, from Castle Point in New Jersey, to 63rd Street in New York. The Geographic Cell (GC) 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

Project NY1006 was designed per a request from the Hydrographic Surveys Division (HSD) of the Office of Coast Survey, NOAA, for GIS data in support of HSD operations. Based on an analysis of project requirements and results of a source data search, it was determined that CMP procedures for multiple source projects would apply for this project. Available source data deemed adequate for successful completion of this project included one color orthomosaic image from USGS, dating from April 2008, and one panchromatic WorldView-1 satellite image from DigitalGlobe, acquired in March 2010. Both raw source images had a spatial resolution of approximately 60 cm. While the WorldView imagery was of a more recent date, it was decided that the color mosaic would be more suitable for use in the compilation of feature data, due to the increased interpretability of the color image.

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

The color orthomosaic image was georeferenced by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) using ERDAS Imagine software version 9.0, with aerotriangulated aerial imagery from a previously completed RSD project, NY9904B, as control. Control points used in the georeferencing process were selected in a well-distributed pattern from the NY9904B aerial photography. The horizontal accuracy at the 95% confidence level for the control imagery is 0.9 meters. See the NY9904B Aerotriangulation Report for more information on the imagery used for control in this project.

An accuracy assessment was then performed by a member of AB. Independent check points were measured between the control imagery and the orthomosaic imagery for the accuracy assessment. The RMS of the residuals for each check point was used to compute a predicted horizontal circular error (CE) at the 95% confidence level for the imagery equal to 1.3 meters. This CE for the image was then tripled and added to the 95% CE of the reference source data to yield a conservative predictor of the accuracy of well defined points measured during compilation. Please refer to the NY1006 Georeferencing Report for more details. All positional data is referenced to the North American Datum of 1983.

Compilation

The compilation of cartographic feature data for this project was accomplished by a member of the AB in March 2010. Using ESRI's ArcGIS 9.3 desktop GIS software, digital feature data was compiled in ESRI

shapefile format from the color orthomosaic imagery, and verified using the WorldView-1 imagery where possible. Feature attributes were established using the C-COAST specification file, which provides the definition and attribution scheme for the full range of cartographic features pertinent to the CMP.

Cartographic features were compiled to meet a horizontal accuracy of 4.9 meters at the 95% confidence level. This predicted accuracy of well-defined points is based on a comparison using twenty (20) check points measured from an independent source of higher accuracy.

Image #	Image Source	Image File Name	Acquisition Date/Time	Tide Stage*
1	WorldView-1	10MAR01155415-P1BS-052303053010_01_P001.sub.tif	2010-03-01 / 15:54	n/a
2	USGS mosaic	ny1006_o_41471341_georef.tif	2008-04 **	n/a

* Tide levels were not determined for this project.
** Image acquisition day/time unknown.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a senior member of the Applications Branch of RSD. The final QC review was completed in March 2010. The review process included analysis of the georeferencing results and assessment of the identification and attribution of cartographic features 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 9.3. The entire suite of project products was evaluated for compliance to CMP requirements.

Comparisons of the largest scale NOAA nautical charts with satellite imagery and compiled project data resulted in creation of the Chart Evaluation File (CEF). The following nautical chart was used in the comparison process:

12335 Hudson and East Rivers 1:10,000 43rd Ed. Apr /09

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 GC10809 file contents, attached to PCR

Remote Sensing Division Electronic Data Library

- GC10809 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- Chart Evaluation File in shapefile format

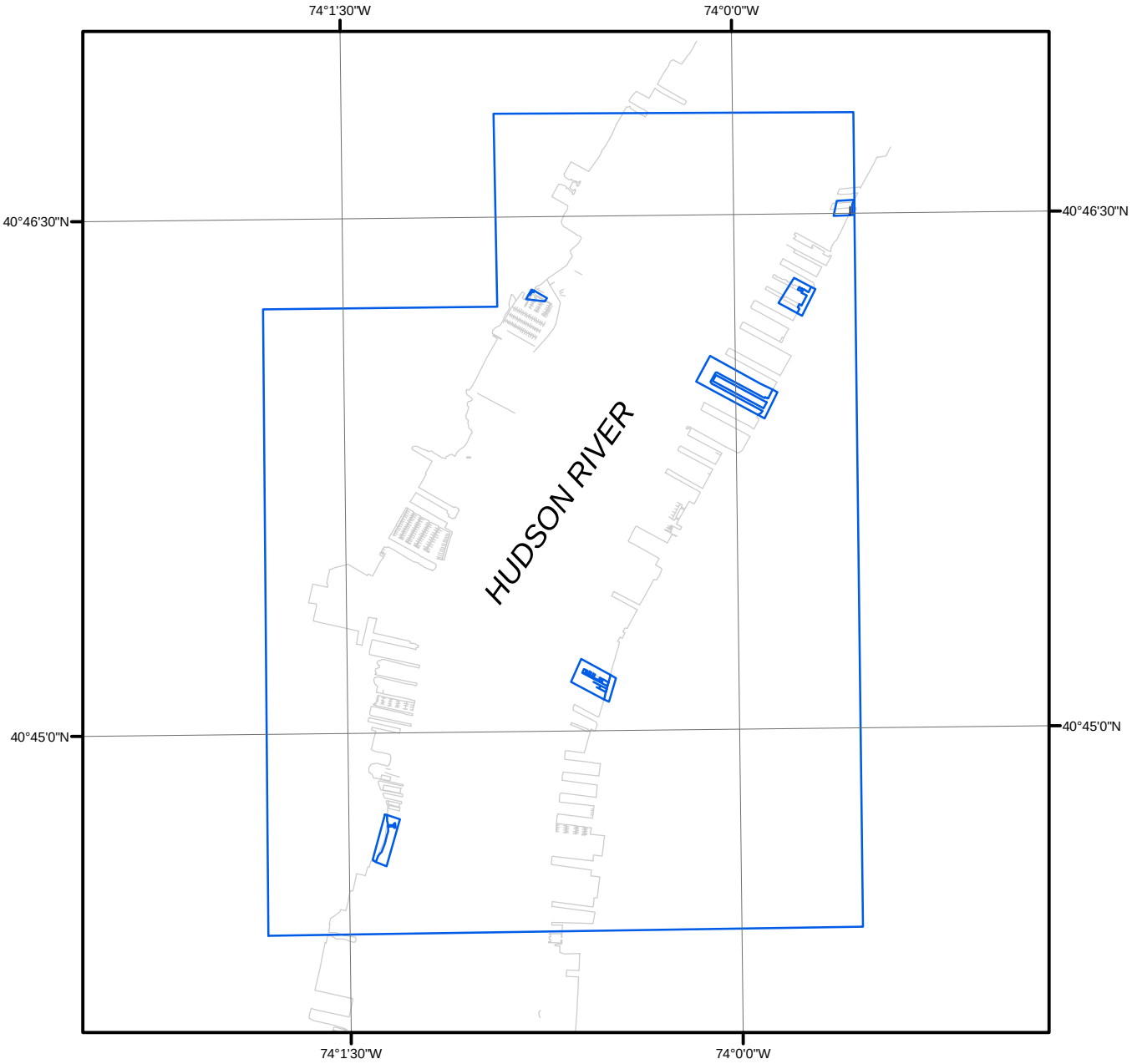
NOAA Shoreline Data Explorer

- GC10809 in shapefile format
- Metadata file for GC10809
- Digital copy of the PCR in Adobe PDF format

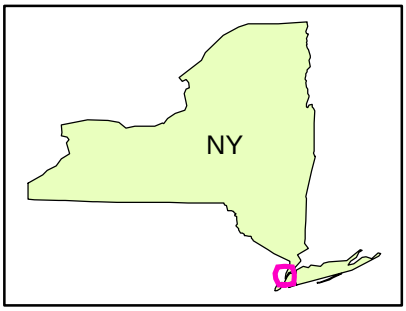
End of Report

HUDSON RIVER, CASTLE POINT TO 63RD STREET

NEW YORK



Overview



NY1006

GC10809