

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

## ***PROJECT MA1003***

### ***Fall River Harbor, Massachusetts***

#### **Introduction**

Coastal Mapping Program (CMP) Project MA1003 provides highly accurate digital shoreline data for key areas of change within Fall River Harbor, Massachusetts. 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 MA1003 was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for updates to NOAA's Electronic Navigational Chart (ENC) series. 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 satellite imagery in order to ascertain the need for more current shoreline data. A Chart Evaluation File (CEF) was forwarded to the Applications Branch (AB) of RSD once the change analysis was complete. Refer to the RB Memorandum of June 7, 2010, "Results of CSCAP Change Analysis for Fall River, Massachusetts," 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**

IKONOS non-orthorectified panchromatic imagery with a spatial resolution of 1 meter, obtained through the National Geospatial-Intelligence Agency's Web-Based Access and Retrieval Portal (WARP), was georeferenced using Erdas IMAGINE 2011 (v. 11) software on a Windows platform. Ground control points (GCP) were extracted from previously completed CMP project RI0301 (GC10585) for use in the georeferencing phase. Within IMAGINE, the Raster Geometric Correction tool was used with a 1<sup>st</sup> order polynomial model. Once the GCPs were measured, the imagery was resampled using the Nearest Neighbor sampling method. The RMS of the standard deviations of the residuals for each measured check point were used to compute a predicted horizontal circular error (CE) of 1.9 meters based on a 95% confidence level. This CE value was tripled to yield a conservative predictor of the accuracy of well defined points measured during compilation. A Georeferencing Report was written and is on file with other project data

within the AB Project Archive. Positional data is referenced to the World Geodetic System of 1984 (WGS 84).

## Compilation

The data compilation phase of this project was accomplished by a member of AB in July 2012. Digital feature data was compiled in ESRI shapefile format from imagery using ESRI's ArcGIS 9.3.1 desktop GIS 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. Selected features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project MA1003 were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 6.6 meters at the 95% confidence level. This predicted accuracy of compiled well-defined points is a deductive estimate based on georeferencing statistics.

The following table provides information on satellite imagery used in the project completion:

Image Source	Raw Image	Georeferenced Image	Acquisition Date/Time	Tide Level
IKONOS-2	16MAR10IK0101000po_405628_pan_0000000.tif	16mar10ik0101000po_405628_pan_00000001georef_wgs84utmz19_nn.tif	2010-03-16 15:31 GMT	n/a

## Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a senior member of AB. The final QC review was completed in July 2012. 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 9.3.1. 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:

**RSD Applications Branch Archive**

- Hardcopy of the Georeferencing Report
- Hardcopy of the Project Completion Report (PCR)
- Page size graphic plot of GC10944 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

**Remote Sensing Division Electronic Data Library**

- GC10944 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

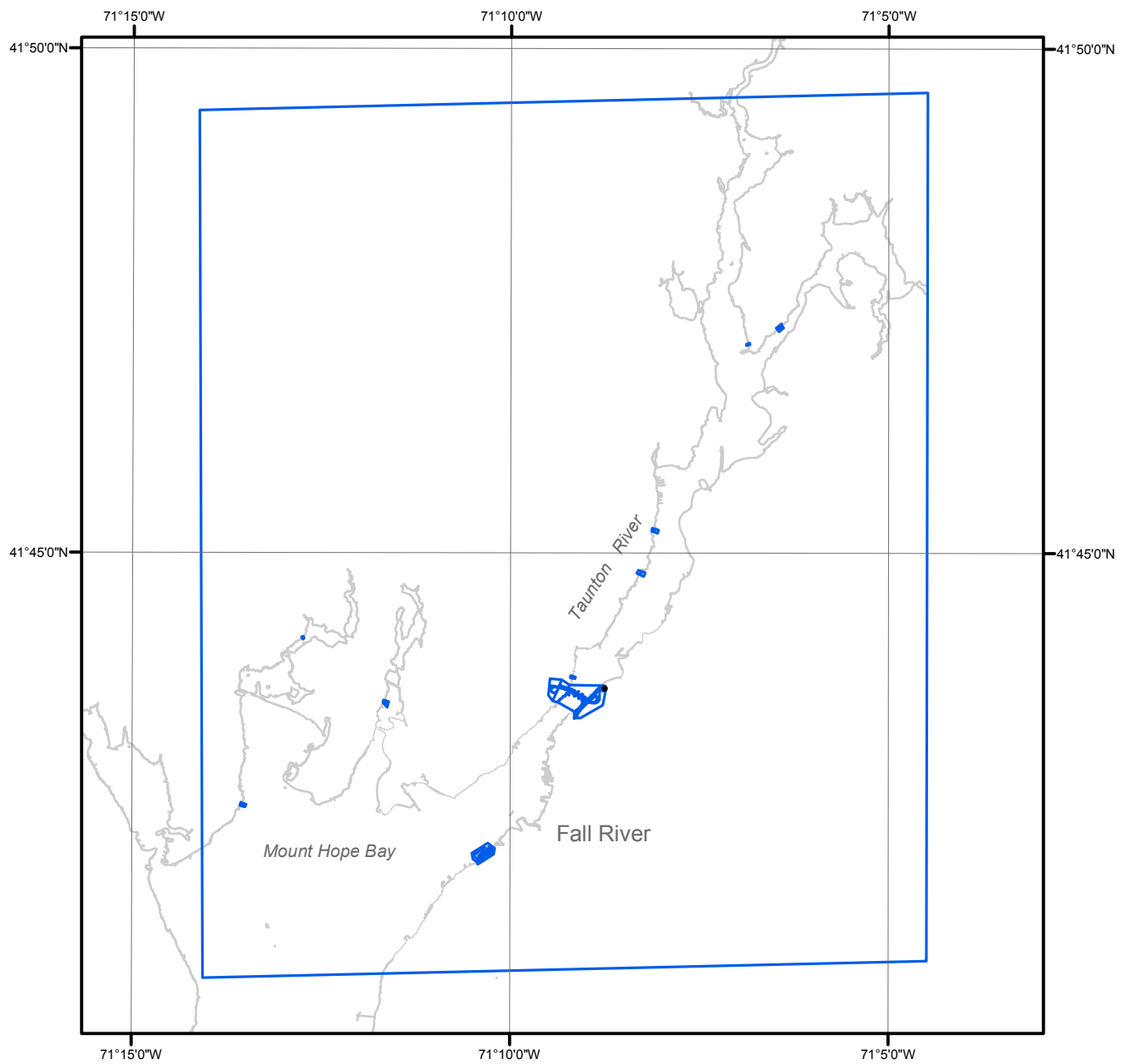
**NOAA Shoreline Data Explorer**

- GC10944 in shapefile format
- Metadata file for GC10944
- Digital copy of the PCR in Adobe PDF format

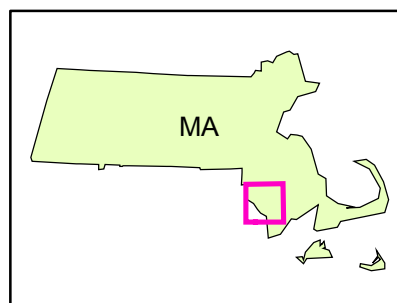
**End of Report**

# FALL RIVER HARBOR

## MASSACHUSETTS



Overview



MA1003

GC10944