

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

## ***PROJECT DC2101-CS-T***

### ***Port of Washington, D.C.***

#### **Introduction**

Coastal Mapping Program (CMP) Project DC2101-CS-T provides highly accurate digital shoreline data for key areas of change within the port of Washington, DC. 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 DC2101-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. One WorldView-2 pan-sharpened commercial satellite image from DigitalGlobe, Inc. 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 DC2101-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 conducted using Esri's ArcGIS desktop GIS software (ver. 10.8.1) by a member of the Applications Branch (AB) of the RSD in October 2020. Aerotriangulated aerial imagery from previously completed CMP project MD0701D was used as control for the satellite imagery. Within ArcGIS, the Georeferencing tool was used, and the imagery was re-sampled using the Nearest Neighbor method with a 1<sup>st</sup> order polynomial model. Check points from project MD0701D 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 meters 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 October 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 DC2101-CS-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy of 3.0 meters at the 95% confidence level by comparing at least 20 check points to an independent source of higher accuracy. The following table provides information on the satellite image used in the project completion:

Image Source	Source File ID	GSD	Acquisition Date/Time	Tide Level
WorldView-2	20200906_WV02_ORI_MOS_NAD83_UTM18_georef.tif	0.5 m	2020-09-06 15:47 GMT	1.2 m

\* Tide level is given in meters above MLLW and based on verified observations at the NOS tide station in Washington, D.C. The elevation of the MHW tidal datum in the project area is equal to 0.90 m above MLLW.

## Quality Control / Final Review

Quality control tasks were conducted subsequent to project completion, in October 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
- GC11678 in shapefile format
- Project Completion Report (PCR)
- CEF in shapefile format

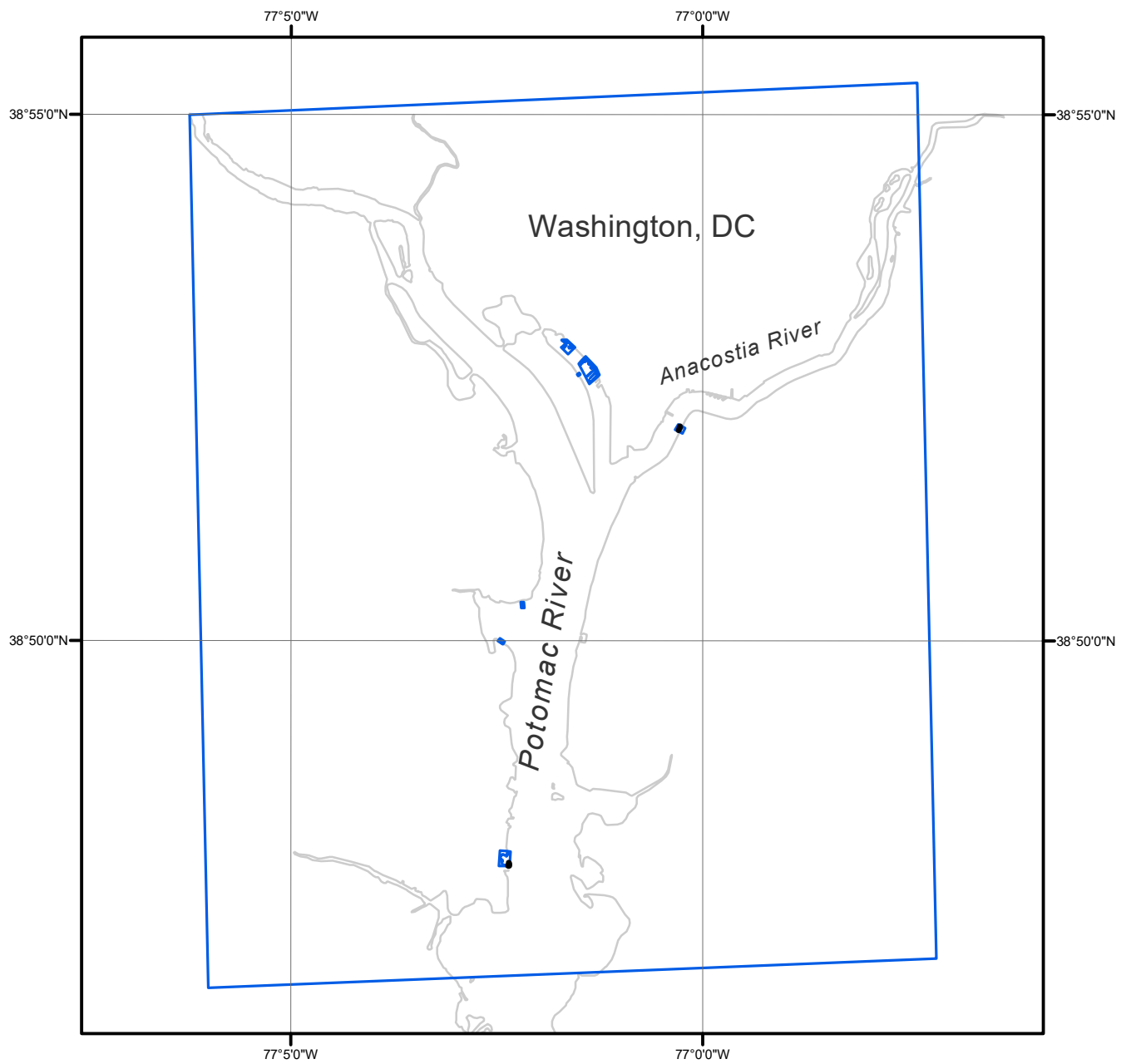
### NOAA Shoreline Data Explorer

- GC11678 in shapefile format
- Metadata file for GC11678
- PCR in Adobe PDF format

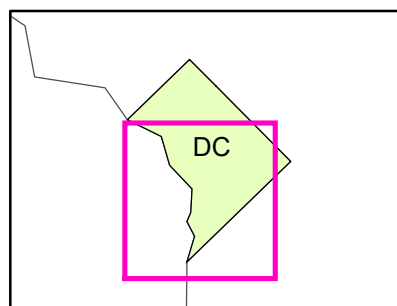
## End of Report

# PORT OF WASHINGTON

## DISTRICT OF COLUMBIA



Overview



DC2101-CS-T

GC11678