

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

## ***PROJECT WA0601E***

### ***Portland, Oregon***

#### **Introduction**

Coastal Mapping Program (CMP) Project WA0601E provides highly accurate digital shoreline data for key areas of change within the port of Portland, Oregon. The project covers a portion of the Willamette River, extending from the East Island, Hardtack Island to Multnomah Channel and entrance in the Columbia River. 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**

The design of Project WA0601E was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for timely updates to NOAA Electronic Navigational Chart 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. Refer to the RB Memorandum, "Results of CSCAP Change Analysis for Portland, Oregon (WA0601E)," July 18, 2006, 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**

One QuickBird non-orthorectified color image with a spatial resolution of 0.6 meters, acquired from DigitalGlobe, Inc., was georeferenced using Erdas IMAGINE 9.0 software on a Windows platform. Ground control points (GCPs) which were photogrammetrically measured from metric quality aerial photography were imported into IMAGINE and used to georeference the satellite imagery. Within IMAGINE, the Raster Geometric Correction tool was used with a 1st order polynomial model. Imagery was resampled using the Nearest Neighbor sampling method. The RMS of the residuals for measured check points were used to compute a predicted horizontal circular error at the 95% confidence interval (CE95) of 1.6 meters for the satellite image. This CE value was tripled and then added to the CE95 of the source imagery from which ground control points were measured to yield a conservative predictor of the accuracy of well defined points measured during the compilation process. Georeferencing Report was written and it is on the file with other project data within the RSD Project Archive. Positional data is

based on the UTM Coordinate System (zone10), and referenced to the North American Datum of 1983 (NAD 83).

## **Compilation**

The compilation of cartographic feature data for this project was accomplished by a member of the Applications Branch (AB) of RSD in September 2006. Digital feature data was compiled in ESRI shapefile format from imagery using ESRI's ArcGIS 9.1 desktop GIS software. Feature attributes were established according to 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 cartographic features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project WA0601E were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have 5.2 meters horizontal accuracy at the 95% confidence level. This predicted accuracy of well-defined points is based on a minimum of twenty (20) check points that were compared to an independent source of higher accuracy.

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

<b>Image Source</b>	<b>Source File Name</b>	<b>Acquisition Date/Time</b>	<b>Tide Level*</b>
QUICKBIRD	06MAY09193210-S2AS-005556306010_01_P001	2006-05-09 19:32:15 GMT	2.0 m

\* Tide levels are given in meters above MLLW and are based on actual observations recorded by the NOS gauge in Vancouver, WA at the time of photography. The elevation of the MHW tidal datum at the Vancouver tide gauge is equal to 0.8 meters above MLLW. Image acquisition coincided with the spring freshet, resulting in water levels in excess of 1 meter above MHW.

## **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 August 2007. 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 9.1. 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 the products generated during the completion of this project:

### **RSD Applications Branch Archive**

- Hardcopy of the Project Completion Report (PCR)
- Page-size graphic plot of GC10628 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

**Remote Sensing Division Electronic Data Library**

- GC10628 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- Chart Evaluation File (CEF) in shapefile format

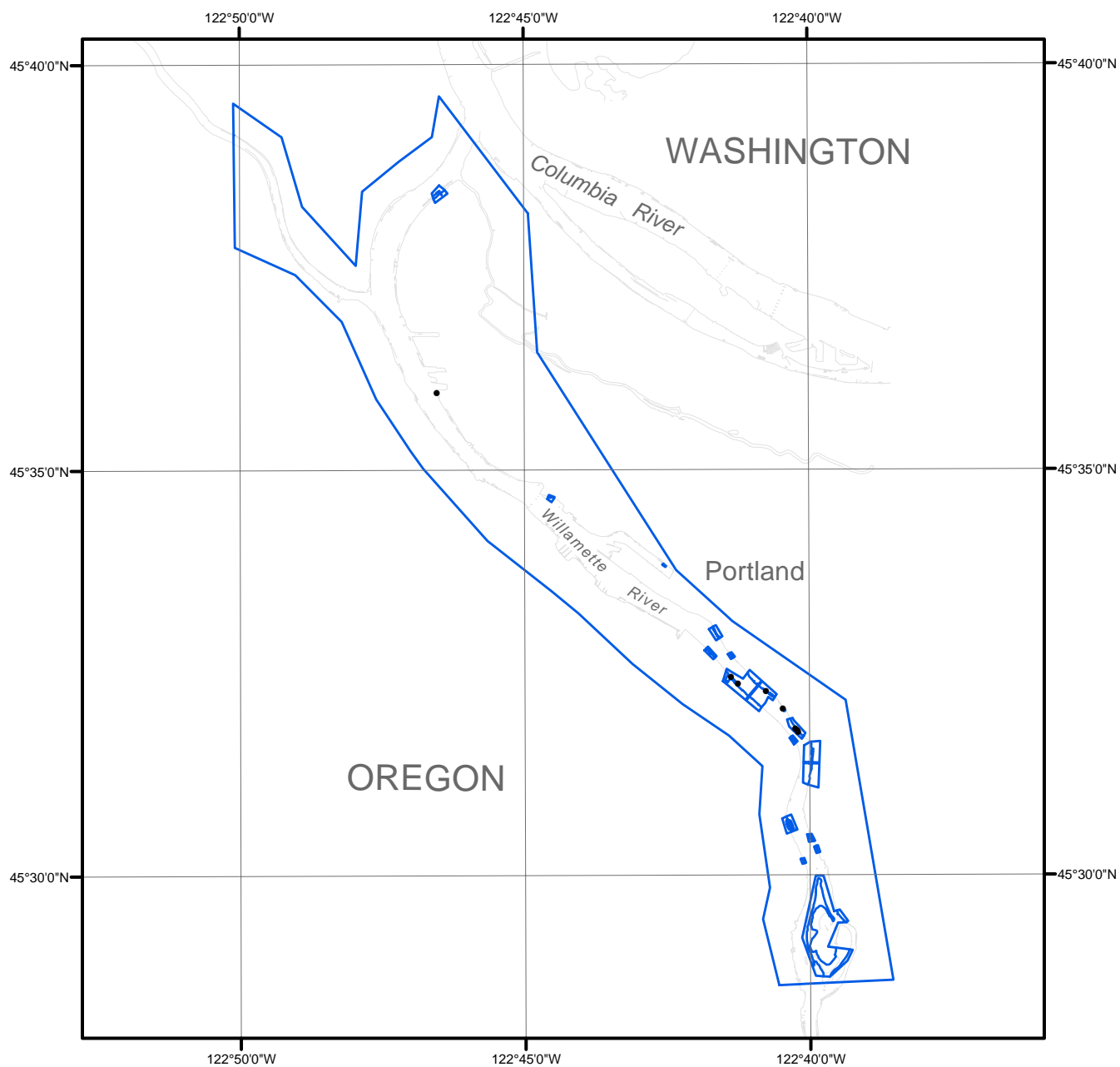
**NOAA Shoreline Data Explorer**

- GC10628 in shapefile format
- Metadata file for GC10628
- Digital copy of the PCR in Adobe PDF format

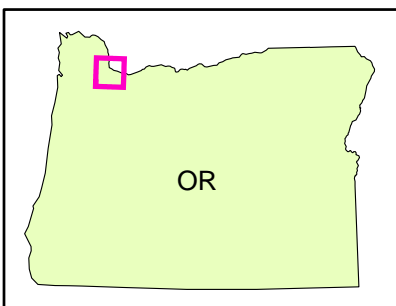
**End of Report**

# PORTLAND

## OREGON



Overview



WA0601E

GC10628