

HYDRAULIC MODELING AND FLOOD-INUNDATION MAPPING IN DOUGHERTY, FULTON, COBB, AND GWINNETT COUNTIES, GEORGIA

Jonathan W. Musser

AUTHOR: Hydrologist, U.S. Geological Survey, Georgia Water Science Center, Peachtree Business Center, Suite 130, 3039 Amwiler Road, Atlanta, GA 30360.

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Abstract. The U.S. Geological Survey (USGS) Georgia Water Science Center (GaWSC) has been modeling and mapping flood inundation since 1994. Flood-inundation maps from Musser and Dyar (2007) are posted on the National Weather Service (NWS) Advanced Hydrologic Prediction Service (AHPS) Web site (http://water.weather.gov/ahps2/inundation/inundation.php?g_datatype=depth&wfo=tae&gage=abng1) as shown in Figure 1. The posting of these maps on the NWS AHPS Web page was the result of a coordinated effort by NWS, USGS, and Albany–Dougherty County personnel to have access to an interactive Web-based map showing the extent and depth of floodwater inundation based on conditions at the USGS streamgage on the Flint River at Albany, GA (02352500). These maps enable management officials and the public to see where potential flooding can occur.

The inundation maps provide water-surface altitudes in relation to North American Vertical Datum of 1988 (NAVD 88). At the Flint River at Albany, GA streamgaging site, altitudes range from 179.5 feet (ft) above NAVD 88, at a flow rate of 52,500 cubic feet per second (ft³/s), to 192.5 ft above NAVD 88, at a flow rate of 123,000 ft³/s. These values correspond to water-surface altitudes beginning 1 ft below moderate flood stage (as established by the NWS) to the peak flow value from Tropical Storm Alberto in 1994. The site-image background can be toggled between a base map that includes local features, such as roads, streams, and railroads, and an aerial photograph of the site. To allow for easier viewing of the inundated areas, the transparency of the inundation layer can be adjusted, and the map can be zoomed. Other flood-related information also can be found on this Web site.

The USGS GaWSC currently is working on a flood-inundation model of Peachtree Creek, based on streamflow at the Peachtree Creek at Atlanta, GA, streamgage (02336300). The model will be based on streamflow ranging from 5,000 to 21,000 ft³/s. The 5,000 ft³/s flow corresponds to a water-surface altitude of 779 ft above NAVD 88 without backwater effects from the Chattahoochee River, and is the first major effect of flooding listed on the AHPS Web page. The 21,000 ft³/s streamflow is the maximum recorded streamflow, which occurred in 1919 and has a corresponding water-surface altitude of 788 ft above NAVD 88 without backwater effects. Inundation maps during periods of backwater effects from the Chattahoochee River are produced using a matrix of modeling results based on the water-surface altitude at a Chattahoochee River streamgage and selected streamflows along Peachtree Creek.

The USGS GaWSC has begun work on similar projects in Gwinnett and Cobb Counties. As projects are completed, the results will be placed on the NWS AHPS Web site.

REFERENCES

- Musser, J.W., and Dyar, T.R., 2007, Two-dimensional flood-inundation model of the Flint River at Albany, Georgia: U.S. Geological Survey Scientific Investigations Report 2007–5107, 49 p., available online only at <http://pubs.usgs.gov/sir/2007/5107>.

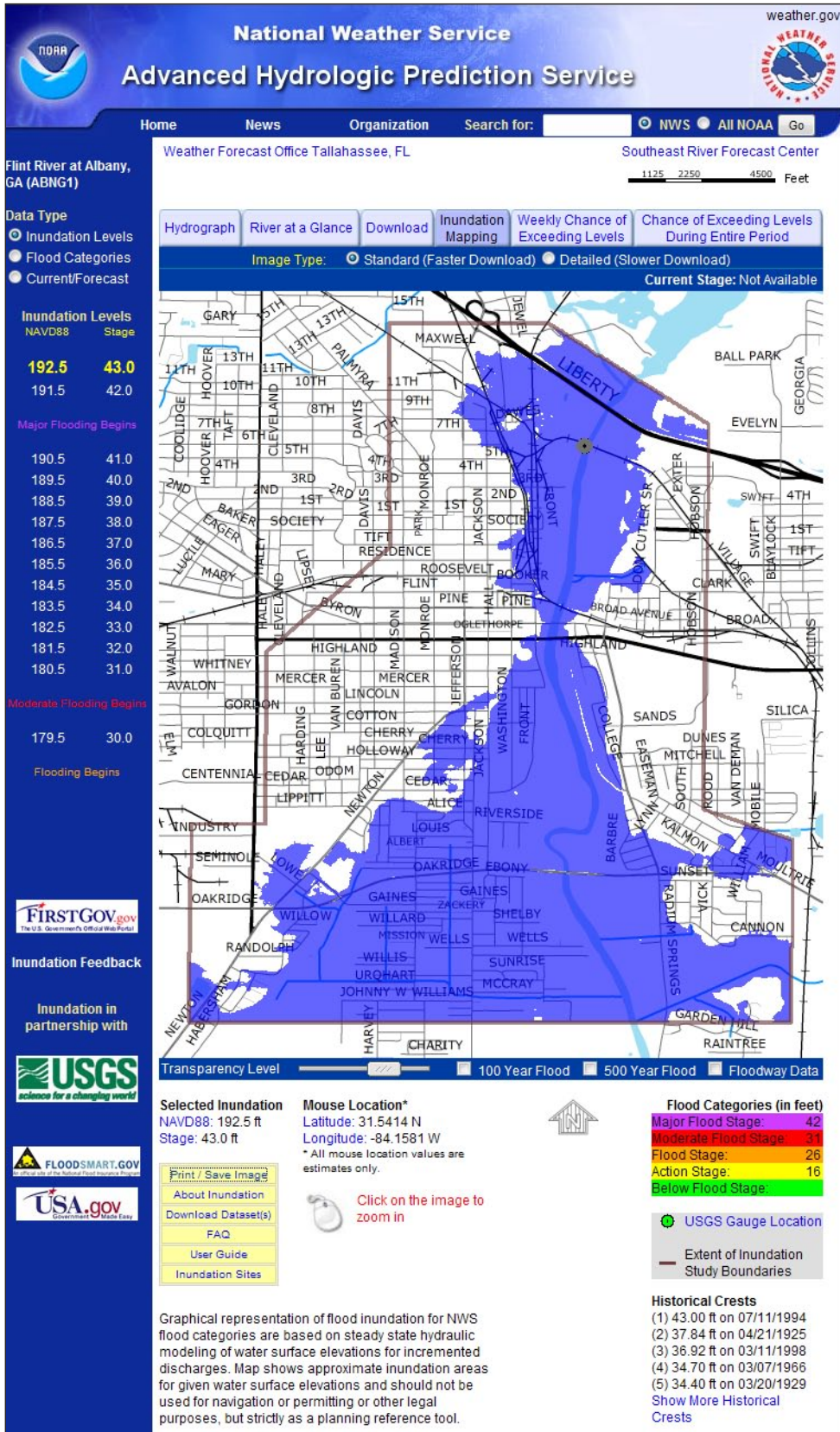


Figure 1. The Advanced Hydrologic Prediction Service inundation mapping Web site for Flint River at Albany, Georgia (02352500).