

Preliminary summary of storm-surge flooding on August 28, 2011 in coastal areas of Long Island and New York City

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High winds associated with the passage of Irene across New York City and western Long Island as a strong tropical storm caused moderate to major coastal flooding in these areas on August 28, 2011. Of 11 tide gages operated by the U.S. Geological Survey (USGS) in coastal areas of Long Island and New York City, nine measured record peaks during this event.

The locations of tide gages operated by the USGS in the southeastern New York region are shown at http://ny.water.usgs.gov/projects/tidal/live_coast.html.

Prior to the storm's arrival, crews from the USGS installed 36 temporary storm-surge and barometric-pressure sensors and 2 rapid-deployment gages across the region. These temporary instruments supplemented an existing USGS network of 11 coastal monitoring stations on Long Island. The instruments were installed to monitor the potential impacts from Hurricane Irene as it moved up the coast. This New York deployment was part of a broader, regional effort by the USGS that installed over 250 temporary sensors from North Carolina to Maine. Crews from the USGS New York Water Science Center are currently recovering these sensors and beginning to process the collected data.



Figure 1.—U.S. Geological Survey hydrographer installing temporary storm-surge sensor on a jetty at Fire Island National Seashore, Suffolk County, New York. (Photograph taken by C.E. Schubert, U.S. Geological Survey.)

The location and availability of data from these sensors can be obtained from the following USGS webpage: http://water.usgs.gov/osw/floods/2011_HIrene/index.html.

The south shore of western Long Island saw the bulk of the record water elevations, as this area was to the immediate right of the storm's center of circulation as it made landfall in New York.

Widespread major coastal flooding occurred in the western bays along southern Nassau County and in western Great South Bay along southern Suffolk County. The peak water levels recorded at all stations in the western bays (excluding Jamaica Bay) also exceeded the Federal Emergency Management Agency (FEMA) 100-year stillwater elevation for these sites. In some cases, the peaks from Irene have surpassed anything documented previously at these sites, including the Oct. 31, 1991, and Dec. 11, 1992 storm tides.



Figure 2.—Community flooded and telephone poles damaged at Fire Island National Seashore, Suffolk County, New York. (Photograph taken by C.E. Schubert, U.S. Geological Survey.)

Coastal flooding between moderate and major levels occurred in western Long Island Sound along the north shore of Nassau and Suffolk Counties. Peak water levels in this area approached or exceeded the FEMA 10-year stillwater elevation for these sites.

The USGS also operates several tidally affected streamgages in the region that may have been inundated by Tropical Storm Irene. Peak water elevations from these sites will be posted to our web page (<http://ny.water.usgs.gov>) as soon as the data become available.

The USGS studies the impacts of hurricanes and tropical storms to better understand potential impacts on coastal communities and habitats. Storm surges are increases in ocean water levels typically generated at sea by strong storms and can have devastating coastal effects. The data that the sensors

produce will help define the depth and duration of overland storm surge, as well as the time of its arrival and retreat. This information will help public officials assess storm damage, discern between wind and flood damage, develop better land use and building codes, provide critical data for more accurate modeling and prediction, and help increase public safety.

A preliminary [table](#) of peak storm-tide elevations produced by Irene and historical peak water-level elevations, dates of occurrence, and periods of record at 11 USGS estuary stations in southeastern New York are available.