

Preliminary summary of flood of August 28-29, 2011 in eastern New York

Update: Sept. 2, 2011

By: Thomas P. Suro

US Geological Survey, New York WSC

Hurricane Irene weakened to a tropical storm as the center of circulation moved over New York City on August 28, 2011. Heavy rains associated with this tropical storm caused major flooding and damage throughout many parts of eastern New York. The National Weather Service (NWS) reported preliminary rainfall totals for parts of eastern New York that ranged from about 4.2 inches in Albany to over 6 inches at many locations in Columbia, Delaware, Dutchess, Schenectady, Schoharie, Ulster and Washington counties. Over 11 inches of rain was reported at Slide Mountain, and 12.2 and 13.3 inches of rainfall were reported at East Durham, and East Jewett, NY respectively.

About 50 US Geological Survey (USGS) streamgages in eastern New York recorded new record maximums during this event. In the St Lawrence River basin the Ausable River (04275500) and the East Branch Ausable River (04275000) near Au Sable Forks streamgages have both been in operation for more than 90 years and each recorded a new period-of-record maximum during this event. The preliminary peak discharge for these two streamgages is estimated at 33,500 and 48,500 ft³/sec, respectively. The Schoharie Creek at Lexington (01349705), in operation since 1999, recorded a new period-of-record maximum of 34,100 ft³/sec on August 28, 2011 (fig.1). The Schoharie Creek at Prattsville (0135000) streamgage, in operation since 1902, also recorded a new period-of-record maximum but sustained major damage during the flood and therefore an estimate of the peak streamflow has not yet been determined. The Schoharie Creek at Gilboa (01350101) streamgage was also severely damaged during this flood, but a peak discharge of about 108,000 ft³/sec is estimated for August 28, 2011.

In the upper Delaware River basin the East Branch Delaware River at Margaretville (01413500) streamgage, in operation since 1937, recorded a new period-of-record maximum discharge of 33,400 ft³/sec which exceeds the previous peak recorded during January 1996 by 7600 ft³/sec. The USGS streamgages East Branch Neversink River northeast of Denning (0143400680) and the East Branch Neversink River near Claryville (01434017), West Branch Neversink River at Winnisook Lake near Frost Valley (01434021), and West Branch Neversink River at Claryville (01434498) all recorded new period-of-record maximums during this event.

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Figure 1.—Bridge over Schoharie Creek near Lexington, N.Y., Aug. 28, 2011. Photo taken by Travis L. Smith (USGS Troy NYWSC).

Flood frequency analysis of annual flood-peak discharges recorded at streamgages provides a means of estimating the probability of occurrence of a given discharge. Flood frequency is commonly expressed in terms of recurrence interval or the probability of being exceeded (one is the reciprocal of the other). What has been traditionally referred to as the 100-year flood, for example, has a probability of 0.01 (1-percent chance) of being equaled or exceeded in any given year and is now being termed the 1 percent annual chance flood.

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Preliminary estimates of the recurrence intervals (or exceedance probabilities) for peak discharges recorded during this flood at ten streamgages in the Hudson, Delaware and St. Lawrence River basins exceed 100-years. The initial estimates of peak discharges at the USGS streamgages on the East Branch Ausable River (04275000) and the Ausable River (04275500) near Au Sable Forks indicate recurrence intervals of greater than 500 years. The estimated peak discharge that occurred on August 28 at the USGS streamgages Schoharie Creek at Gilboa (01350101) and Schoharie Creek at North Blenheim (01350180) also have a preliminary recurrence interval of 500 years. The peak discharge at the USGS streamgage East Branch Delaware River at Margaretville, in operation since 1937, indicated a recurrence interval of greater than 100 years but less than 500 years (fig. 2) and was among the many USGS streamgages that recorded new period-of-record maximums during this flood.

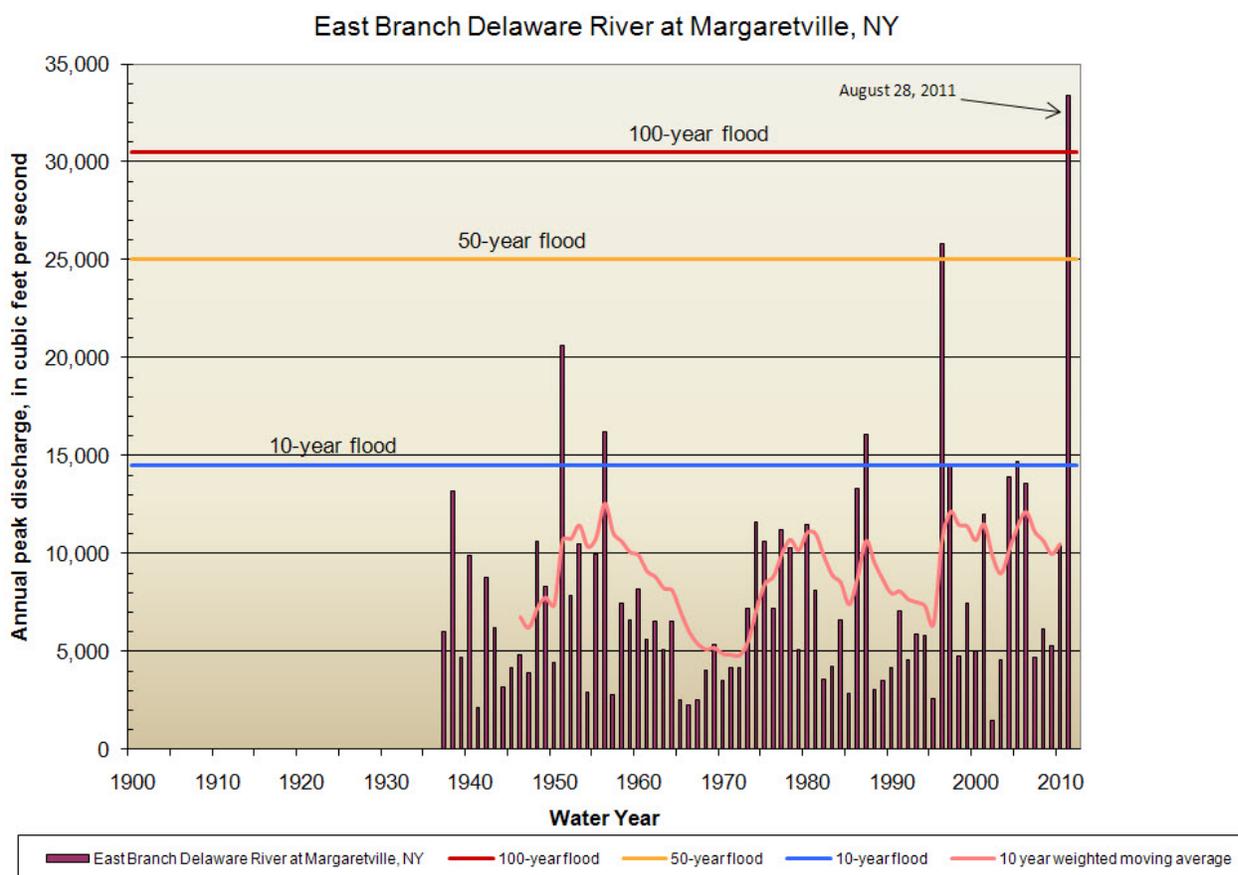


Figure 2. - Annual peak discharges through 2010, provisional peak of August 28, 2011 and discharges of the 10-, 50-, and 100-year recurrence intervals for selected stations in the Delaware River basin.

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Many communities in eastern NY have experienced major flood damage as a result of rains from the remnants of Hurricane Irene. Many road, bridges and homes have been damaged or completely destroyed. The New York State Department of Transportation (NYSDOT) closed all of the bridges over the Schoharie Creek from the Gilboa Dam to the Mohawk River, major parts of the New York State Thruway as well as dozens of other major roads and bridges throughout eastern New York during this storm (fig. 3). Several of the bridges over the Schoharie Creek and many roads and bridges in eastern New York still remain closed due to flood damage.



Figure 3.-- Road and homes damaged along the Schoharie Creek near Prattsville, NY, Aug. 29, 2011. Photo taken by K.D. Reisig (USGS Troy NYWSC).

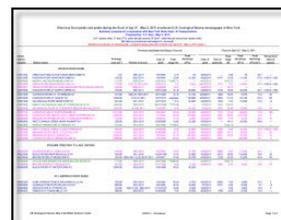
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The USGS New York Water Science Center has had all of its field crews out collecting streamflow data, documenting flood peaks, assessing damage and making emergency repairs to get equipment operational. At least 35 USGS streamgages recorded new period-of-record maximums during this event. Part of the mission of the Water Resources Division of the USGS is to provide reliable, timely and impartial streamflow information to minimize the loss of life and property as a result of water-related natural hazards such as flooding. USGS water data is used by the NWS for flood forecasting and flood warnings, while flood frequencies computed by the USGS are widely used for road and bridge design as well as for flood insurance studies. A preliminary table of flood peaks from the August 28-29, 2011, storm at selected USGS streamgages and estimated flood frequencies are available [below](#).

A thumbnail image of a data table. The table has multiple columns and rows, with some cells highlighted in pink. The text is small and difficult to read, but it appears to be a summary of flood data for various streamgages.

(Click to view table)