

# Recent Floods

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## Impacts and Flood Control Options



Charles McElwee, Executive Director Broome SWCD

**Chenango River, Binghamton, 10 am Wed June 28<sup>th</sup> 2006**





## Chenango River, Binghamton Thursday September 7<sup>th</sup> 2011





# Local Floods of Record

- July 1935 Chenango Basin, summer thunderstorms
- March 1936 Susquehanna Basin, rain/snowmelt
- June 1972 T.S. Agnes, primarily west of area
- September 1975 T.S. Eloise, firemen drown in Binghamton
- January 1996 Susquehanna Basin, rain/snow melt
- September 2004 T.S. Ivan Susquehanna
- April 2005 Chenango, rain snowmelt
- June 2006 Susquehanna + Chenango
- September 2011 Susquehanna + Chenango





## WHAT ARE THE REASONS FOR THE SEVERITY OF RECENT FLOODS?





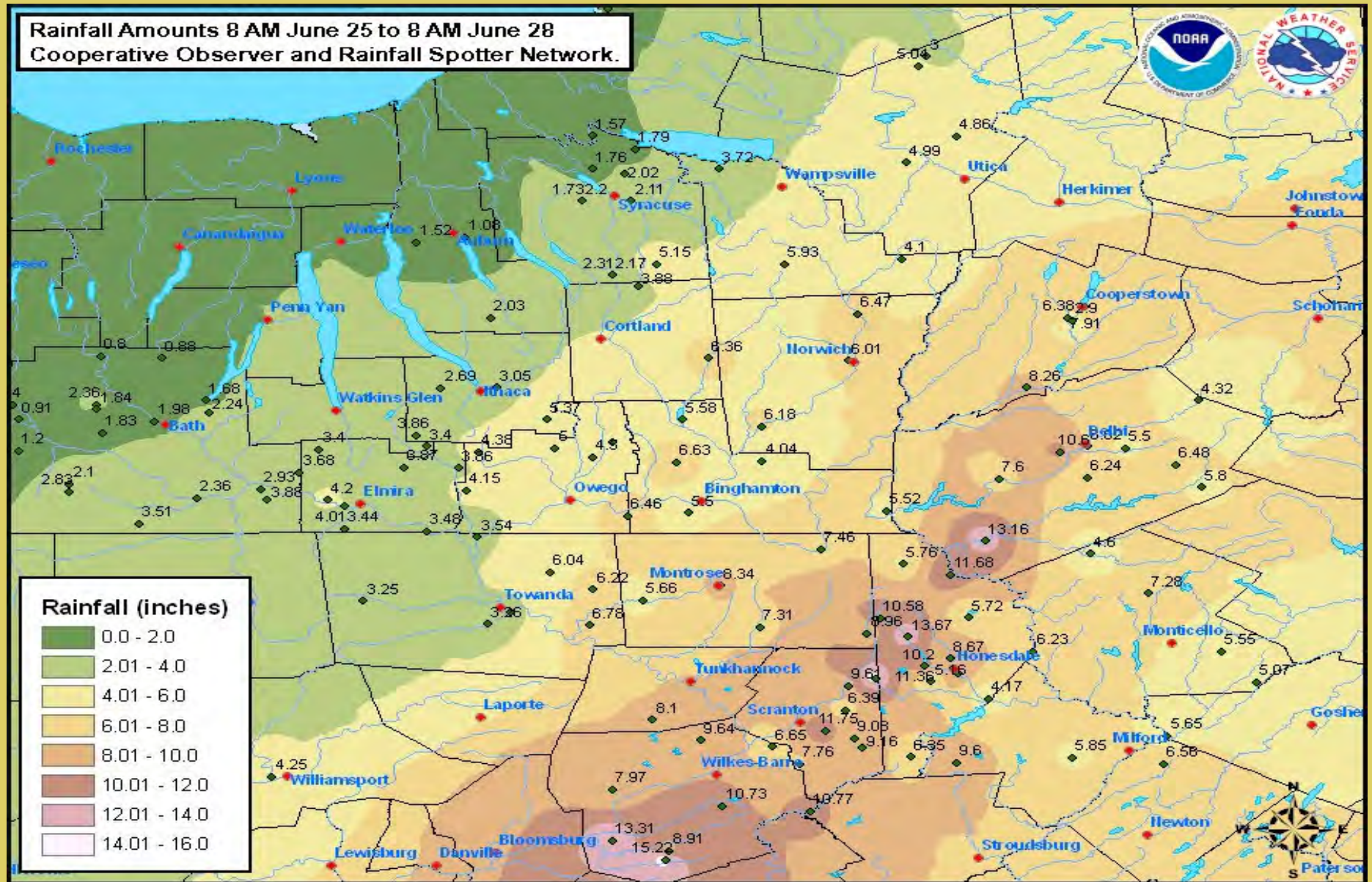


# **WHAT DO YOU THINK?**

- The lack of flood control
- Land use changes (development)
- The lack of land use controls
- Encroachment on the flood plain
- Amount and intensity of rainfall
- Climate Change
- The nature of our watersheds
- All of the above?

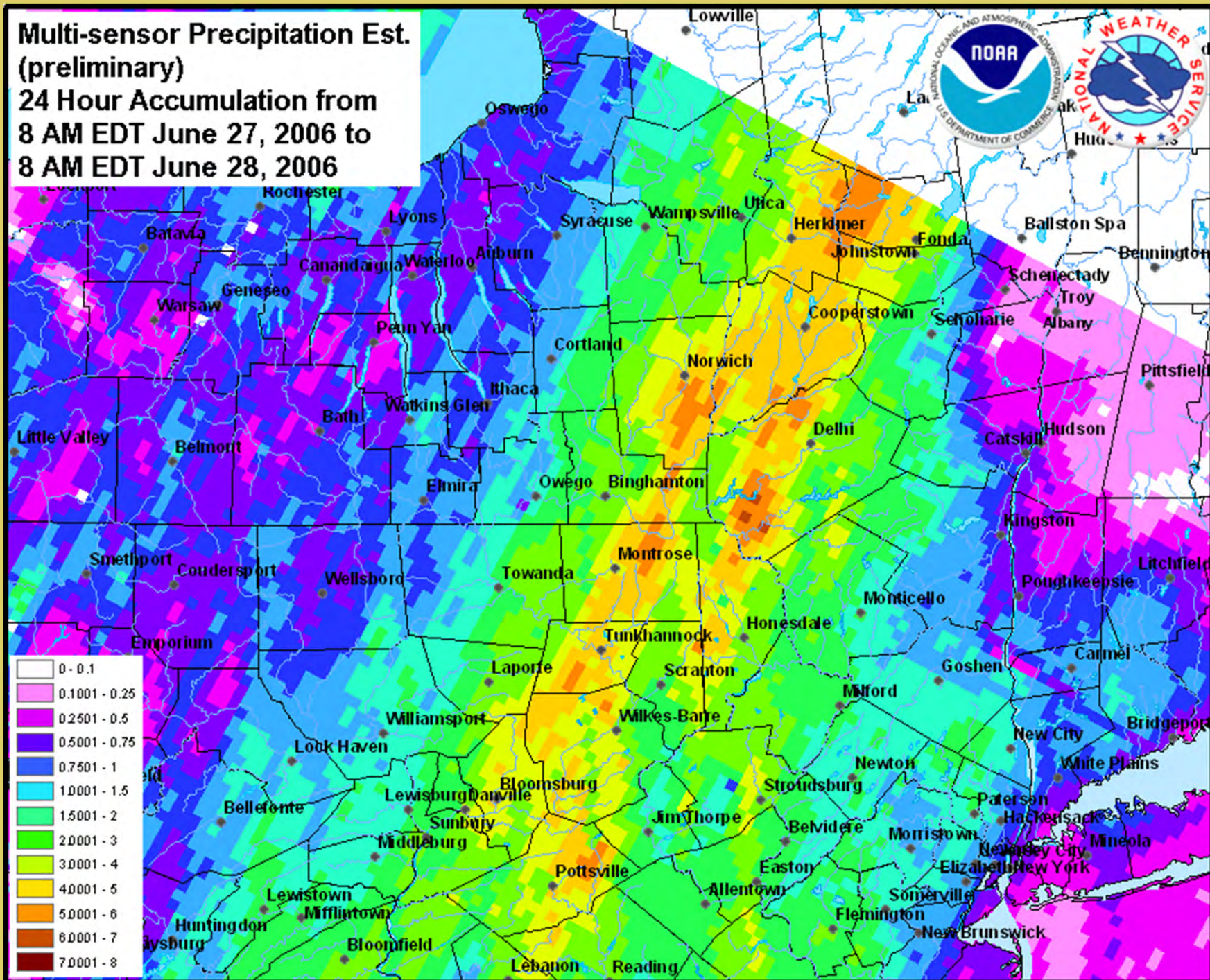


# FLOOD METEOROLOGY



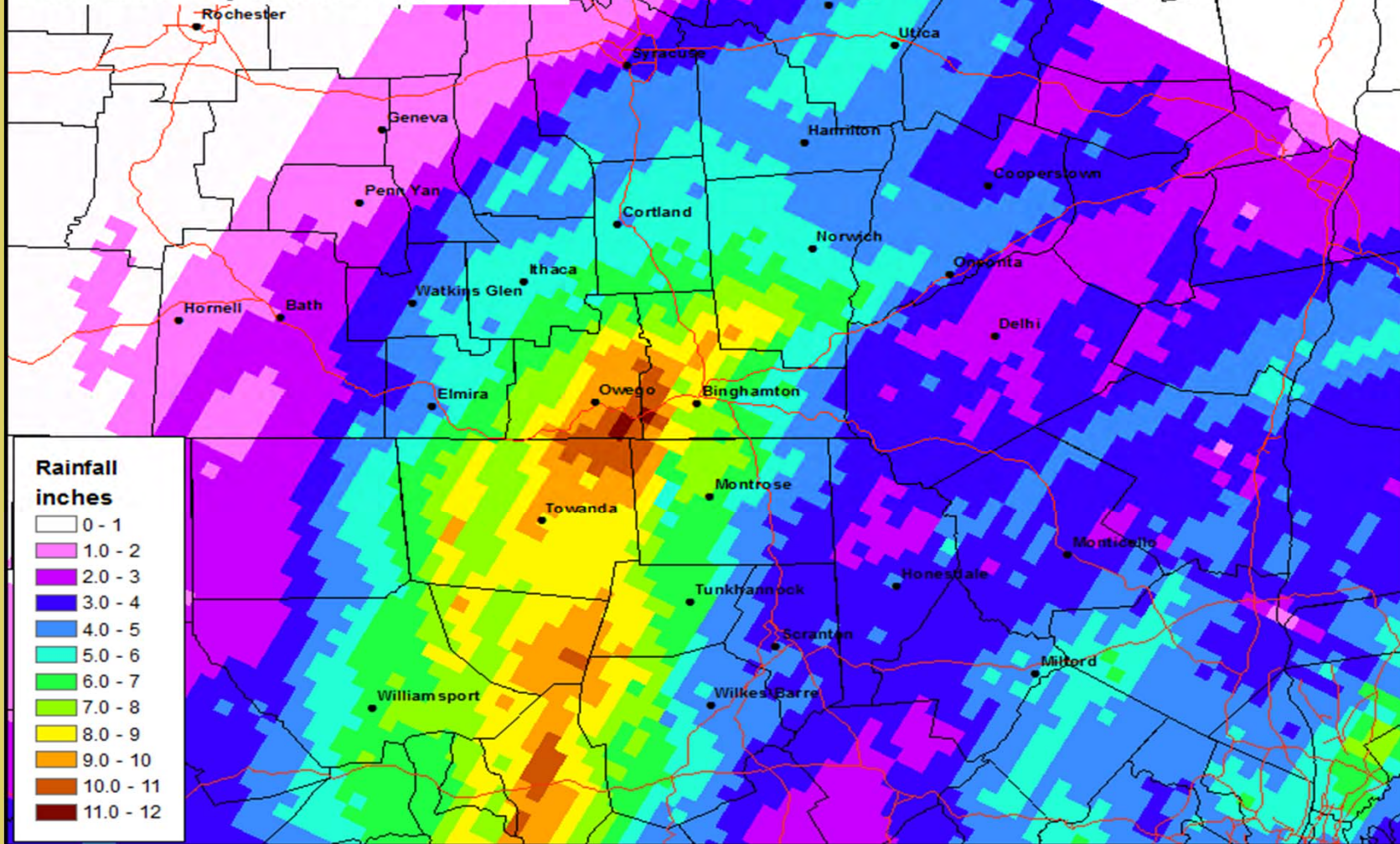


**Multi-sensor Precipitation Est.  
(preliminary)  
24 Hour Accumulation from  
8 AM EDT June 27, 2006 to  
8 AM EDT June 28, 2006**

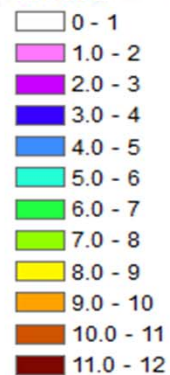




**Muti-sensor Precipitation Est.  
(preliminary)  
48 Hour Accumulation from  
8 AM EDT September 06, 2011 to  
8 AM EDT September 08, 2011**



**Rainfall  
inches**





**WITH RAINFALL OF THAT INTENSITY ROAD DITCHES BECOME STREAMS**





## **SMALL STREAMS CAN BECOME RAGING TORRENTS**





## AND LARGE STREAMS CAN CREATE SIGNIFICANT DAMAGE





# FLOOD HYDROLOGY

100 YEAR STORM, 250 YEAR STORM, 500 YEAR STORM?





## Confluence of the Susquehanna and Chenango Rivers Thursday September 8



Courtesy of Bill Walsh



**THE HYDROLOGY OF THE EVENT CAN BE GREATER THAN THE  
DESIGN OF MEASURES TO PREVENT FLOODING  
CONFLUENCE PARK, BINGHAMTON (3PM JUNE 28<sup>TH</sup> 2006)**



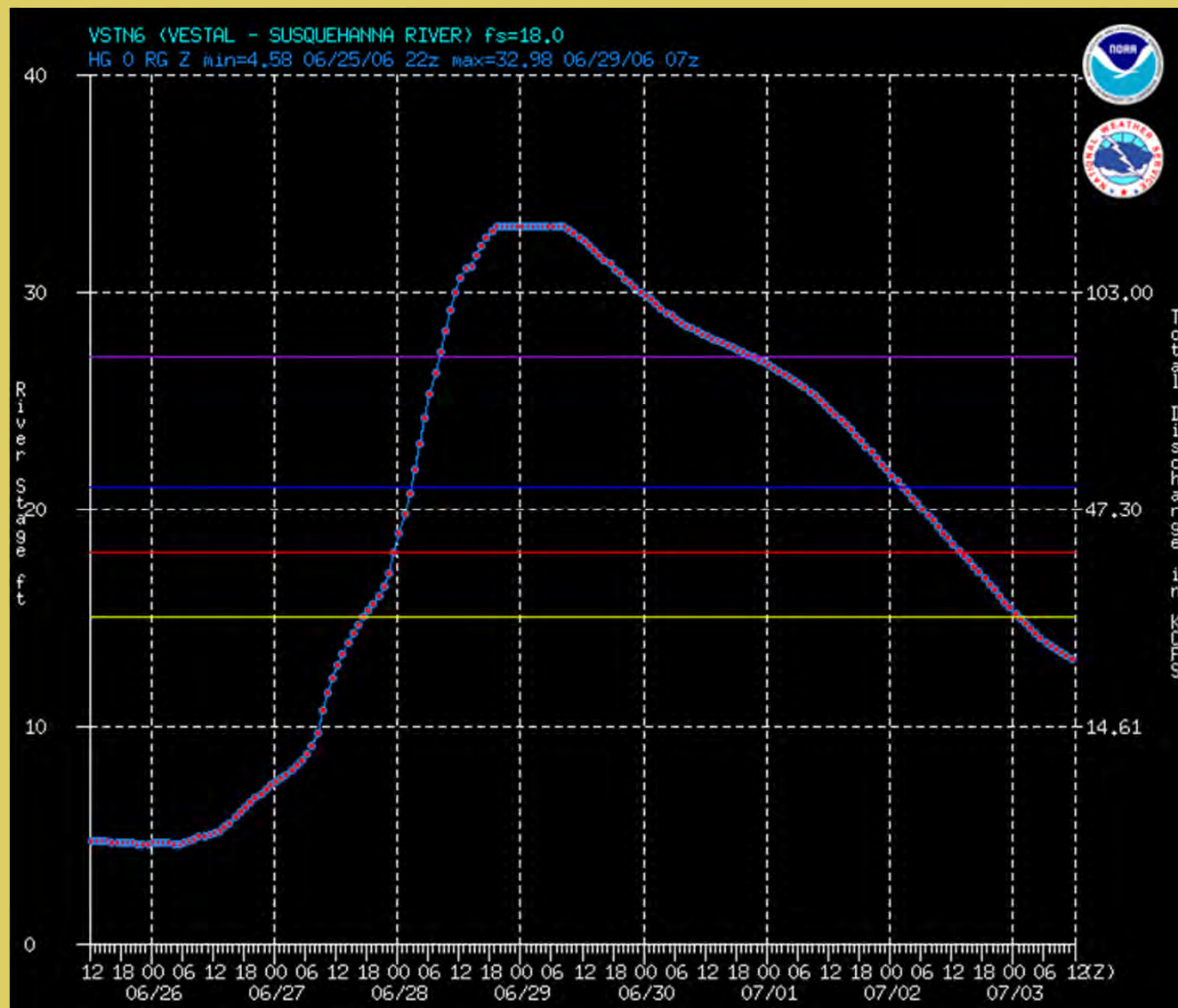


# VESTAL NY HYDROGRAPH READING FROM JUNE 2006 FLOOD

**Estimated high  
water level 33.66'**

## Historical Crests

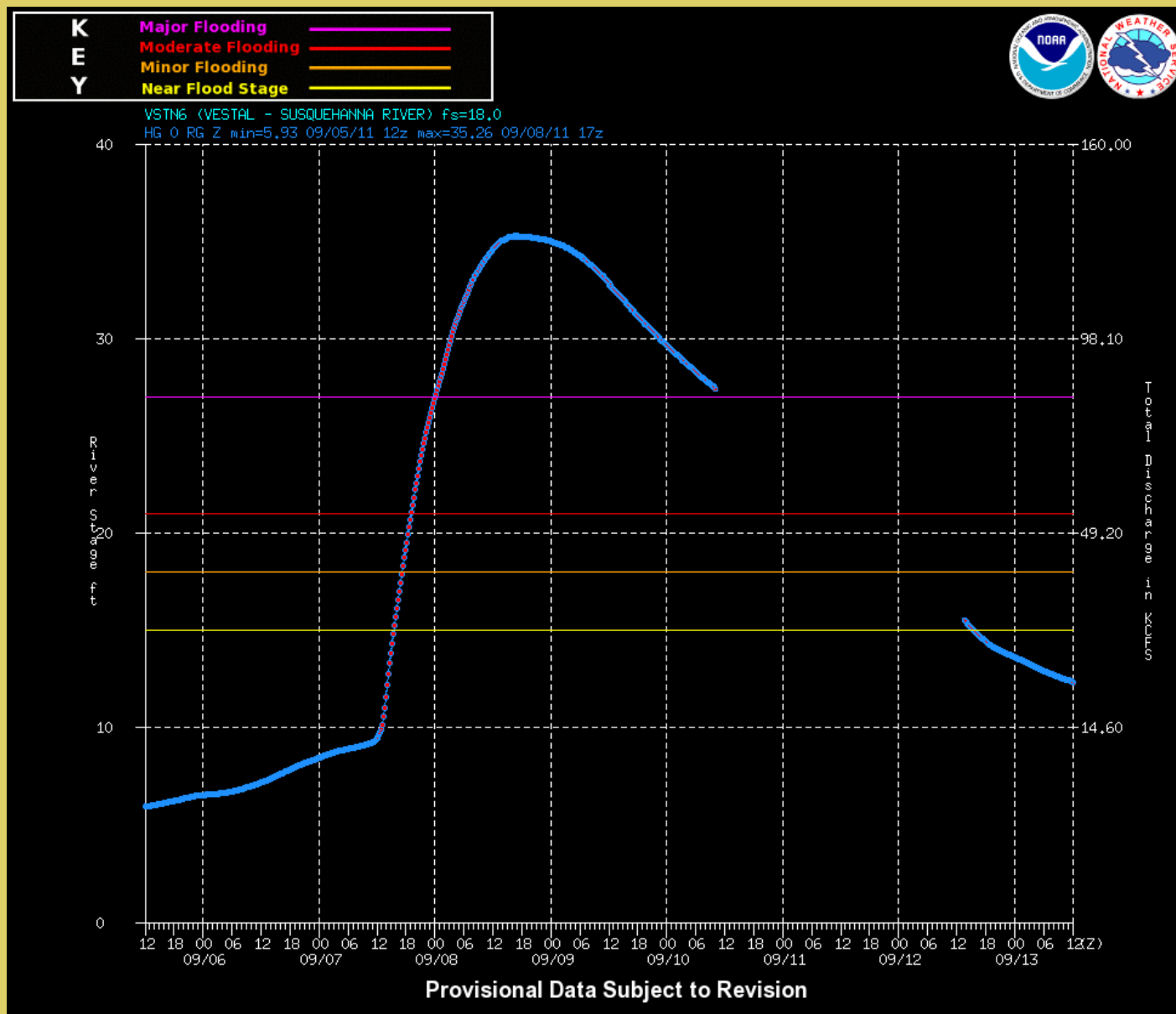
- (1) 30.50 ft on 1936/03/18
- (2) 28.87 ft on 2005/04/3
- (3) 27.86 ft on 1996/01/20
- (4) 27.73 ft on 1948/03/22
- (5) 27.41 ft on 1942/12/31





# VESTAL NY HYDROGRAPH READING FROM SEPT. 2011 FLOOD

Measured high  
water level 35.26'





# FLOODS CAN THEY BE PREVENTED?



Courtesy of Bill Walsh



## VIEW OF THE SUSQUEHANNA AT THE SOUTH WASHINGTON ST BRIDGE 2006





# Possible Options

- Flood walls/levees
- Flood control dams
- Property buy-outs/floodplain management
- Urban Storm Water control
- Land use controls
- Stream channel restructuring
- Reconnecting the floodplain
- Wetland creation
- Education and flood proofing
- Others





# Lourdes Hospital - September 2011





## LEAKS IN THE FLOOD WALL AT THE SOUTH WASHINGTON STREET BRIDGE 2006





## **WATER OVER FLOODS WALLS AT THE SAME LOCATION SEPT. 8 2011**





## SOIL AND WATER DISTRICT FLOOD CONTROL PROJECT – OLD STATE ROAD





## SOIL AND WATER DISTRICT FLOOD CONTROL PROJECT – FINCH HOLLOW





## RESIDENTIAL FLOODING AVON ROAD, BINGHAMTON 2006





## Urban Stormwater Flooding





## STRAIGHTING STREAM CHANNEL BELDON BROOK HARPURSVILLE





# Natural Stream Design



## Instream Structures



## Flood Plain Modifications





## CONSTRUCTED WETLAND IN CASTLE CREEK PROVIDING MULTIPLE BENEFITS





Park Creek Flooding  
Broome Co. NY Jan 25, 2010

## OUTREACH: FLOOD CONTROL





# OUTREACH: STREAM PROCESS



CHEMUNG COUNTY SOIL & WATER CONSERVATION DISTRICT

## **Stream Processes**

A Guide to Living  
In Harmony with Streams



## *Streambank Erosion*





# STREAM FLOODING AND DAMAGE

(OSBORNE CREEK, PORT CRANE)





## Result of flooding from Page Brook in the Town of Fenton 2011





## WILEY BROOK – COLESVILLE (NINEVEH) 2006





## TRACY CREEK (ROSS CORNERS) VESTAL 2011





## PENNY HOLLOW ROAD, COLESVILLE 2006





