

Sidney High School's Flood Prediction Monitoring, and Research Project



A Service-Learning Project originally sponsored by State Farm Insurance

History

In January 2007, Sidney High School was awarded a grant through the State Farm Insurance Youth Advisory Board in the "Disaster Preparedness" category.

We have developed a flood monitoring network over the upper reaches of the Susquehanna River that includes eight satellite reporting stations.

Using information from these stations, other stations, and computer model weather forecast data, **we provide daily forecasts and updates of network data through our website. We also provide detailed forecasts to local officials during times of potential flooding.**

One of our goals is to provide all people living and working in the village of Sidney extra hours of preparation in the event of future flooding.

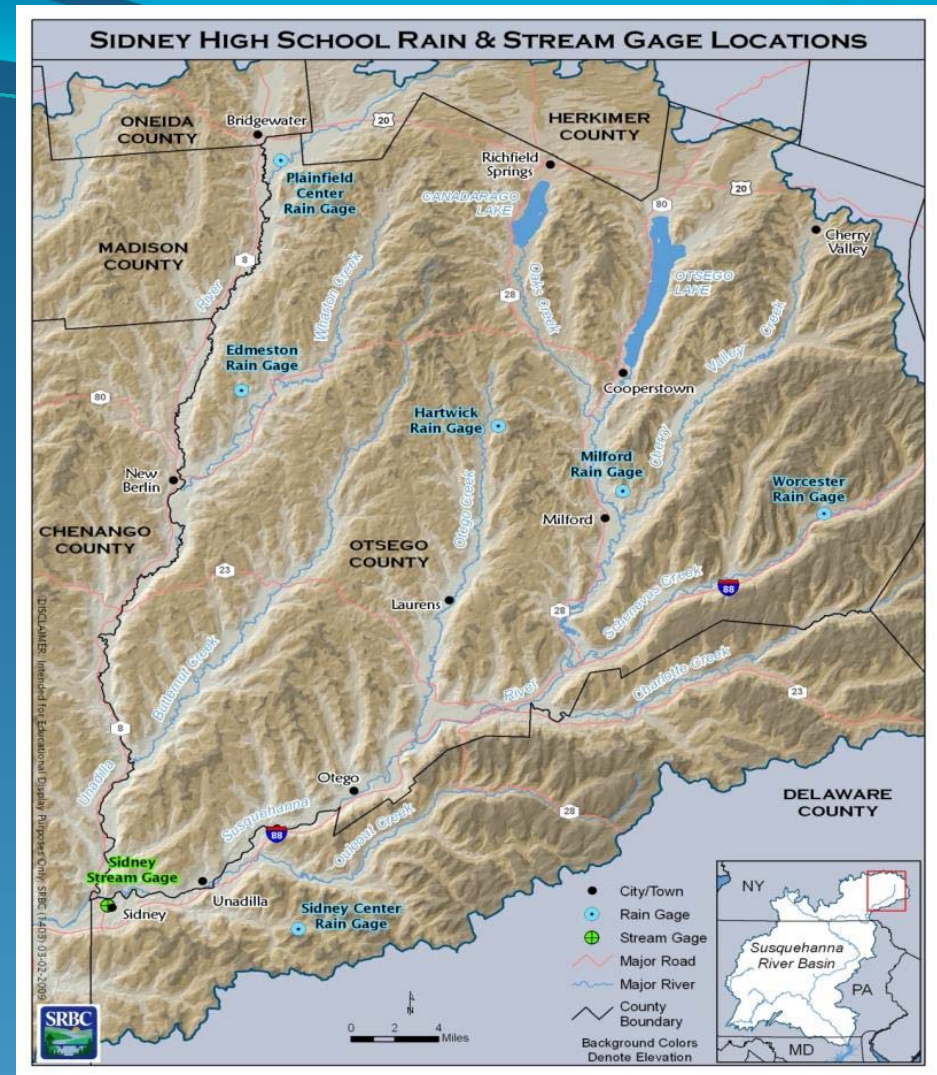


Our Network Locations

Our students have installed and currently maintain eight satellite reporting stations.

Five stations record rainfall only. (Edmeston, Hartwick, Milford, Worcester, and Sidney Center)

One station (Plainfield) is a full-function weather station, reporting air pressure, air temperature, dewpoint, relative humidity, wind speed and direction, insolation, and well as rainfall.



Our Anchor station (Sidney) is a full-function weather station, and also provides water temperature, conductivity, dissolved oxygen and pH. This station also has a constant flow bubbler gage to measure height of the water on the river.

In 2011, we added another stream gauge on Carrs Creek, upstream and one mile east of the hamlet of Sidney Center.

All stations report to the GOES-East satellite once every hour.

We receive this information from our stations and other governmental stations in our network through a dedicated computer.

We use the data from the stations for our forecasts and for research.



The Plainfield Station

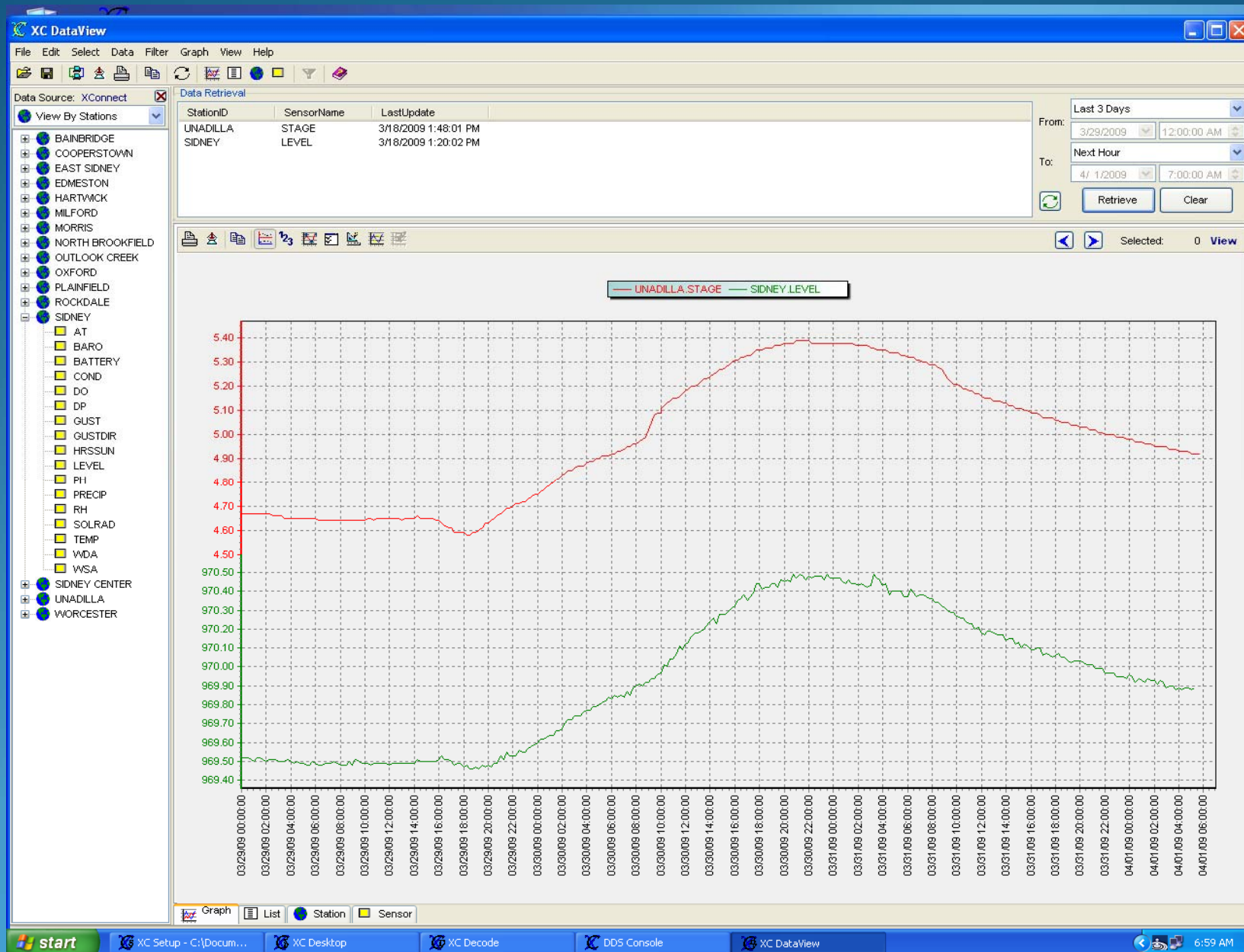
We also receive information about the health of our stations on an hourly basis.

We work with technicians at SUTRON Corporation for maintenance and repair issues.

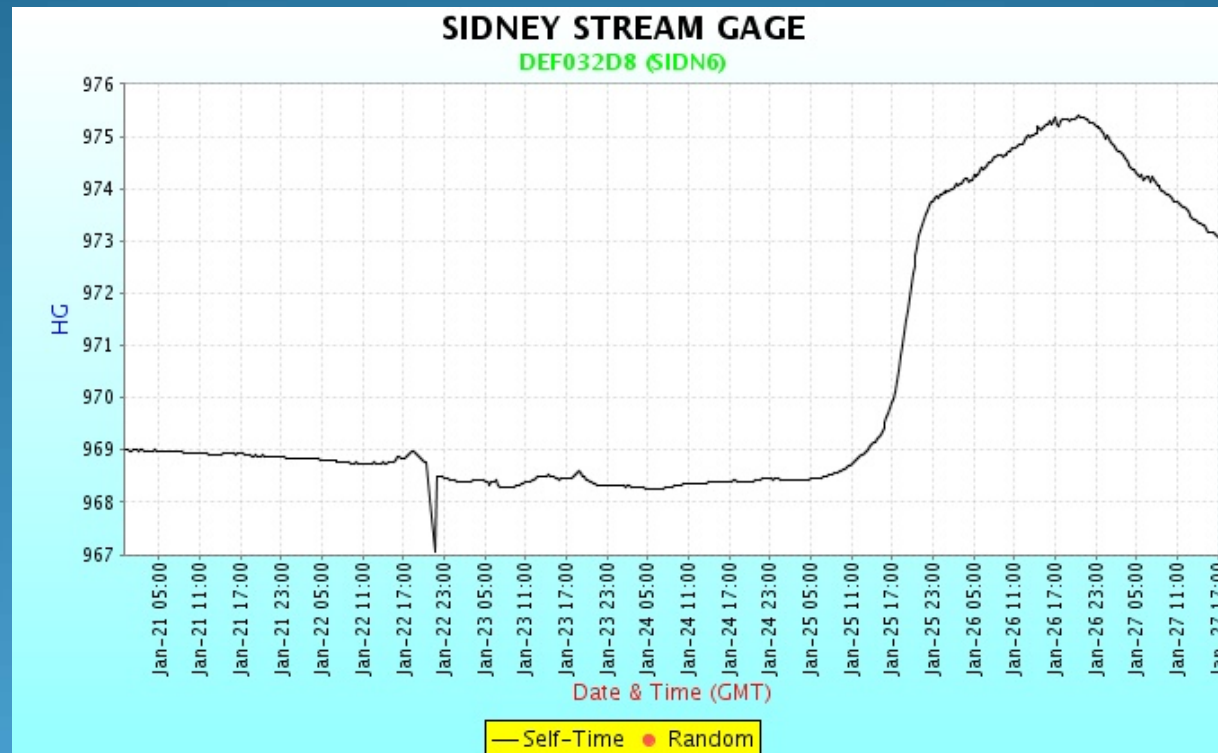


Plainfield Station Hardware

Our Data- Displayed Using XConnect Software



Data Displayed On Our Website- We currently update our weather forecast once per day. We now provide links to our station data through the National Weather Service's Hydrometeorological Automated Data system. Visitors can retrieve hourly information from all of our stations through these links. **Our Sidney stream gauge has also been added to The National Weather Service Advanced Hydrologic Prediction Service Website (AHPS).**



www.sidneycsd.org

Click on “Flood Monitoring”

Flood Stages for Upper Susquehanna River Gauges

Location	Action (ft)	Minor (ft)	Moderate (ft)	Major (ft)
Unadilla	9.0	11.0	13.0	14.5
Rockdale	8.0	11.0	12.0	13.0
Bainbridge	11.0	13.0	20.0	22.0
Sidney (above sea level)	975.5	979.5	981.5	983.7

Our Present and Future Plans

The Present-

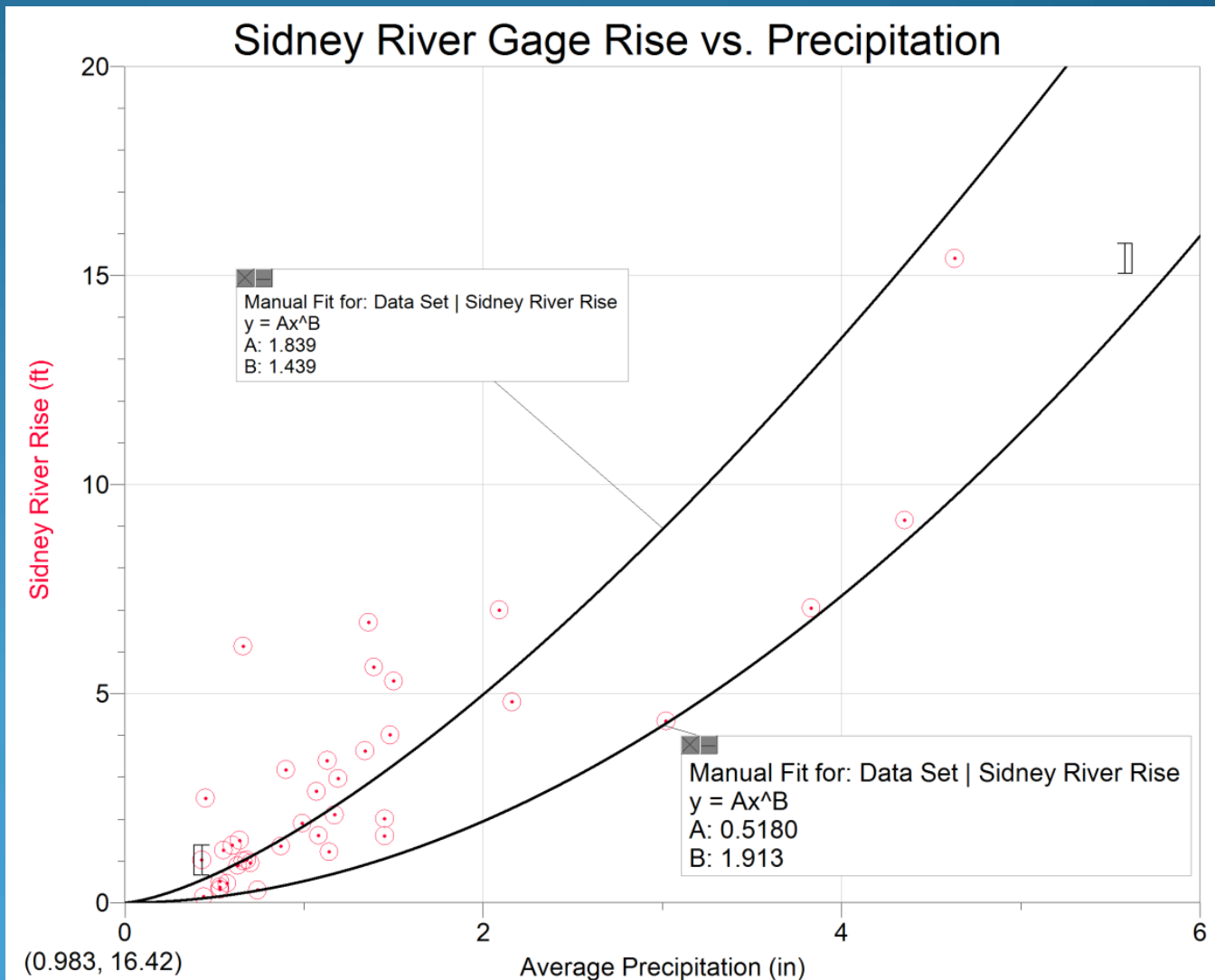
- To maintain our existing network and improve our website services.
- To pursue additional funding for repairs/replacements as the network ages. (Funding sources to date- State Farm Insurance, MeadWestvaco, Sidney Center Improvement Group, Sidney Rotary)
- Continue and expand our research opportunities.

The Future-

- Make repairs/replacements within the network as needed.
- Pursue funding for, and install river gages at Rockdale and Unadilla if current funding for existing USGS gauges is cut.

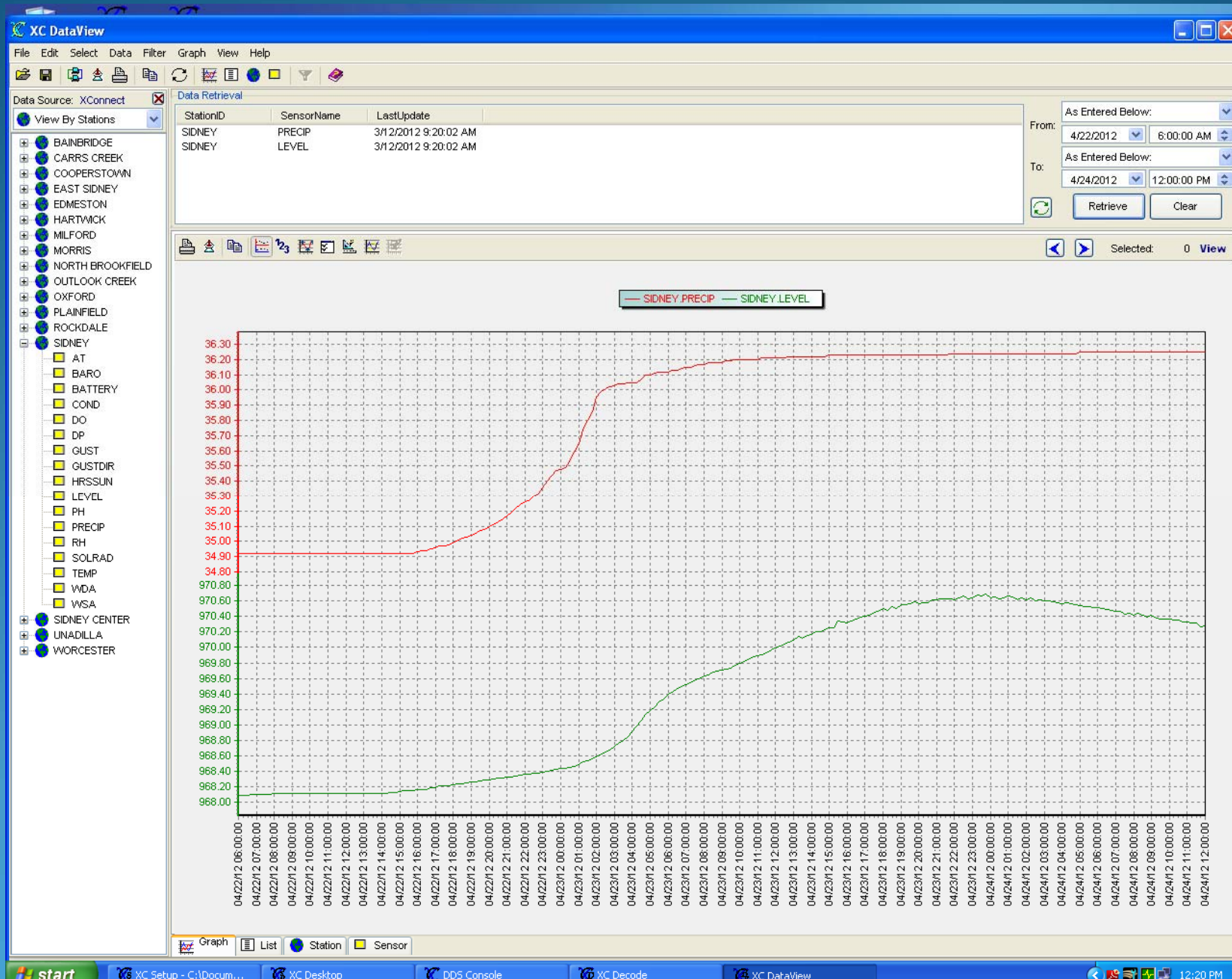
Our Research

Data from the network is analyzed and graphed, then used to make future forecasts of river height changes.



We are also researching lag time between precipitation end time and the time of river crest.

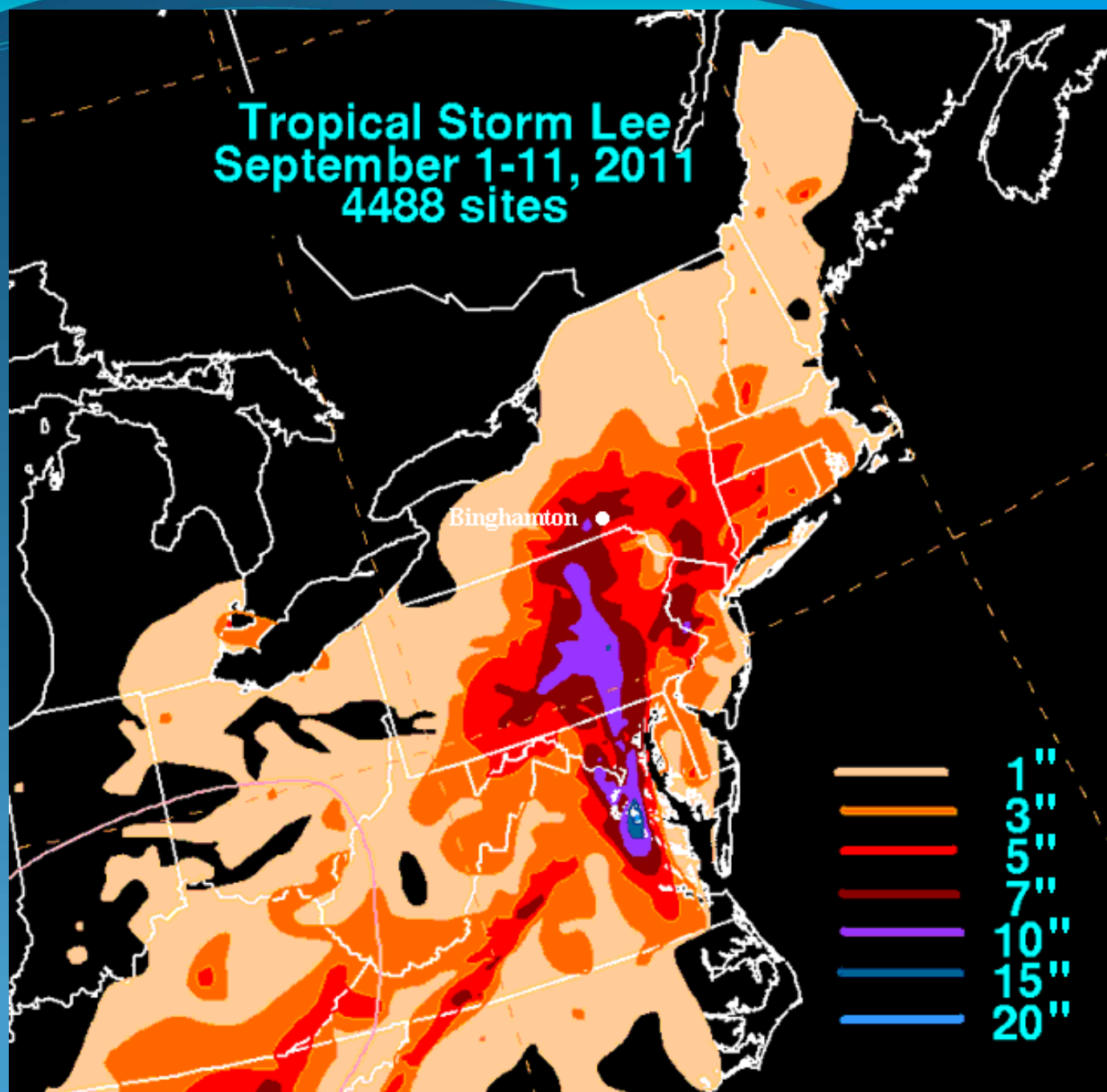
This data helps us provide local officials with important information regarding evacuations and recovery efforts.



Tropical Storm Lee



Tropical Storm Lee
September 1-11, 2011
4488 sites

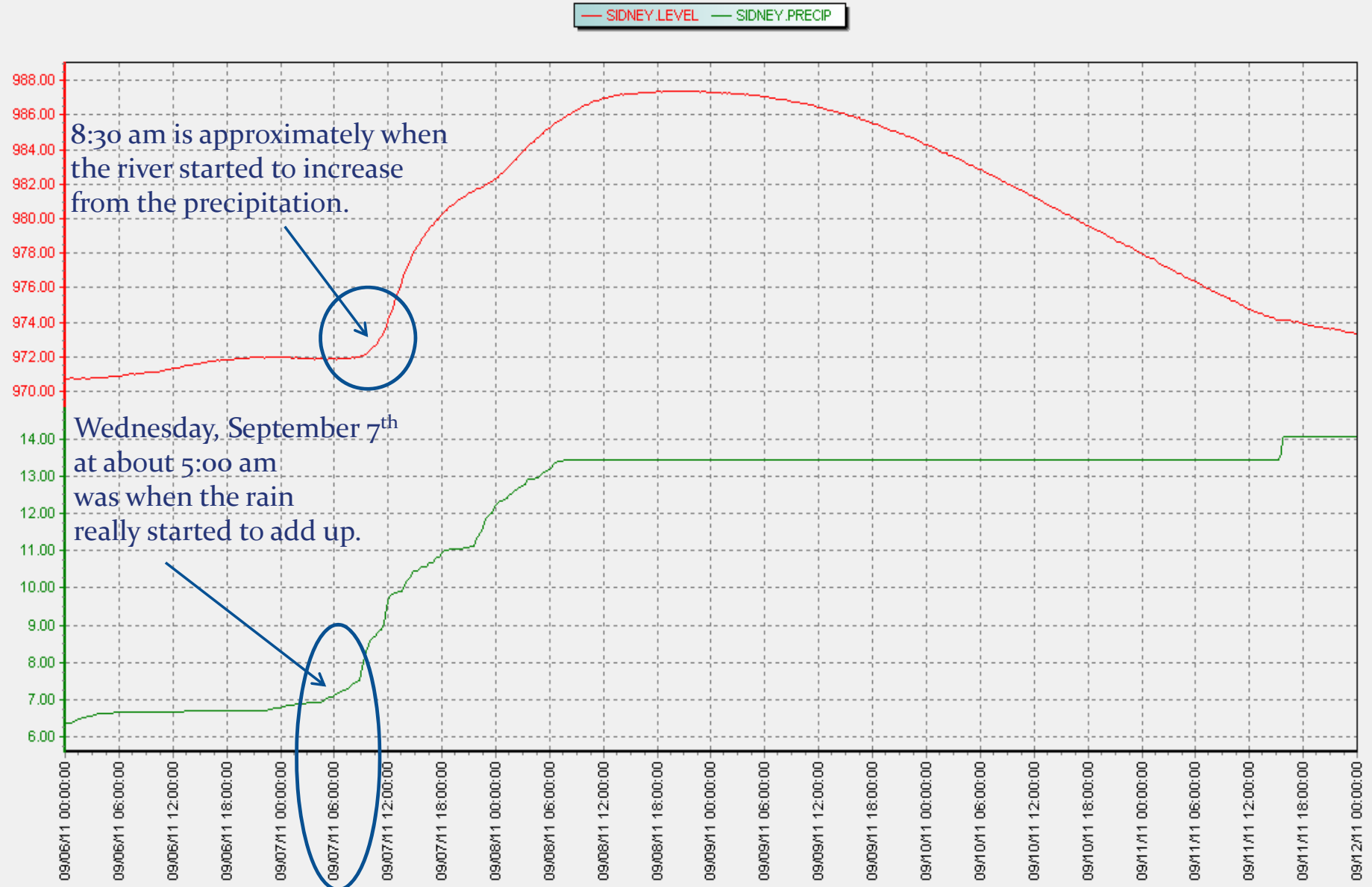


Overall Amounts of Rain

Local Stations- both
our stations and NWS
stations

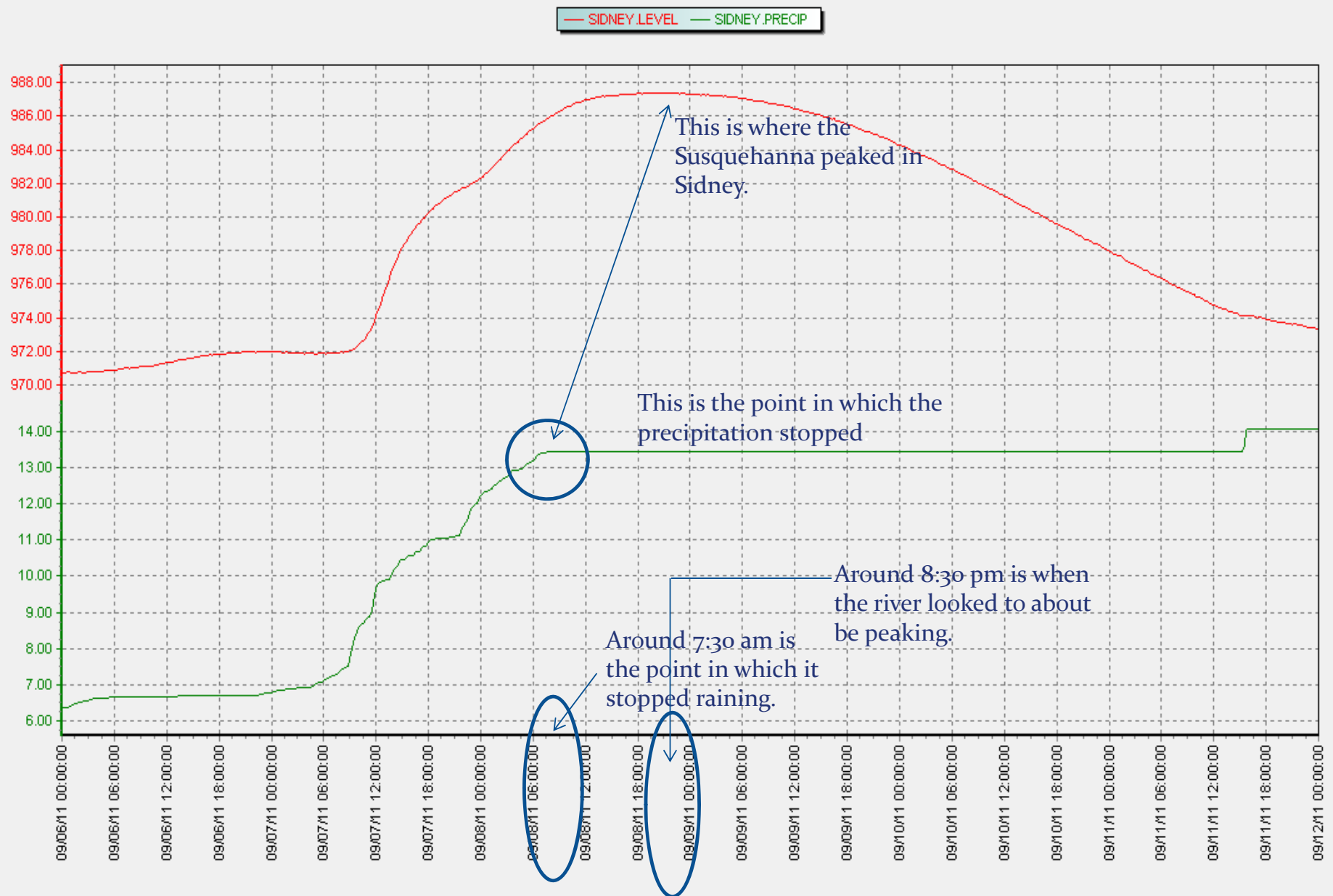
Station	Amount of precip (in)
Worcester	4.37
Sidney Center	N/A
Sidney	7.37
Plainfield	3.99
Milford	5.58
Hartwick	4.67
Edmeston	5.65
Cooperstown	3.85
Morris	6.19
Bainbridge	N/A
Average	4.63 inches

- What this graph shows is when Lee came into Sidney. The top, red line shows the Sidney river level and the bottom, green line shows the amount of rain received in Sidney.

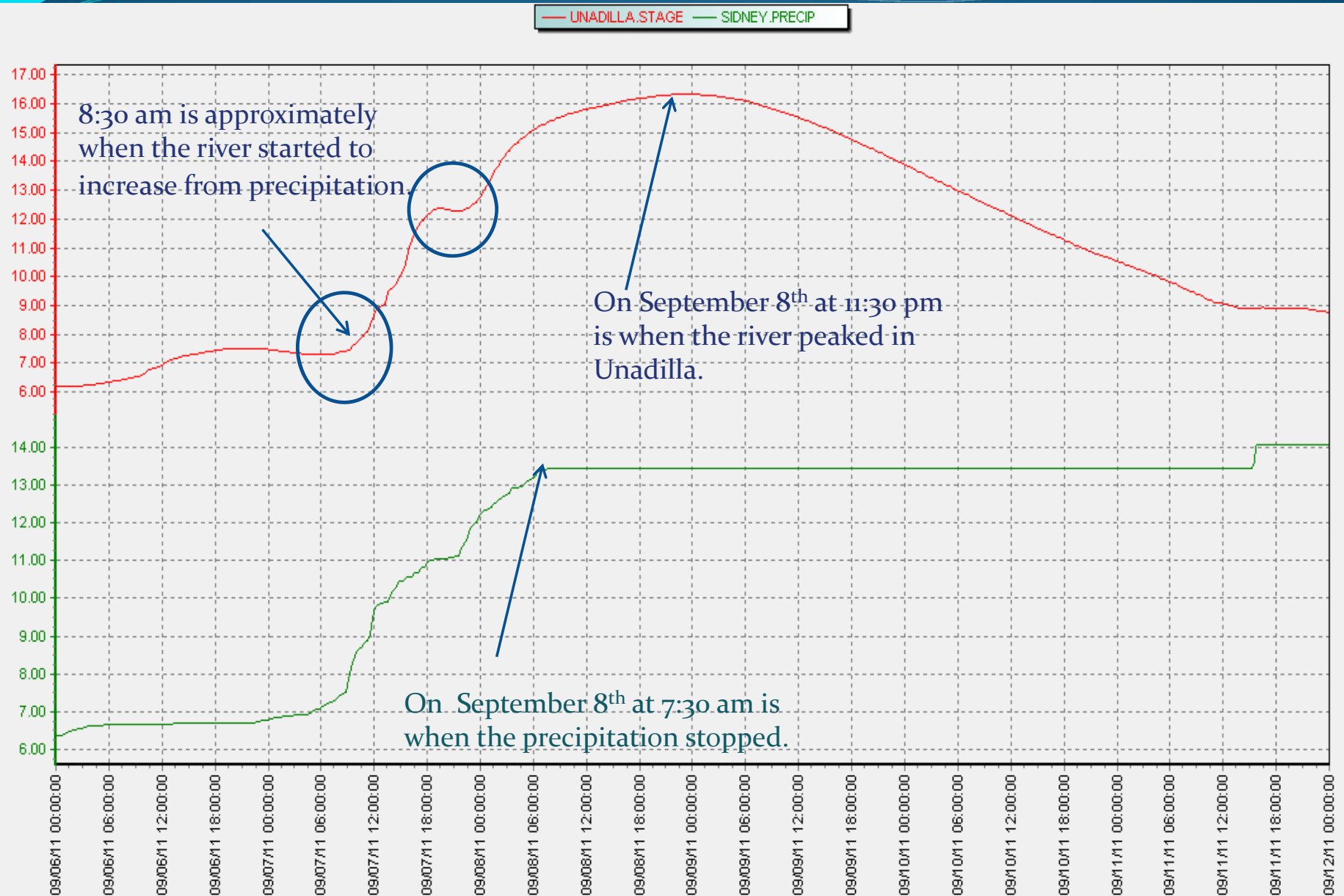


Sidney

What We Found with Sidney



Unadilla



Overall Data and Conclusions

Place	Date and Time Precip Ended	Date and Time of River Crest	River Height Change	Average Precipitation	Lag Time
Sidney	9/8 @ 7:30 am	9/8 @ 8:30pm	15.50 ft	4.63 in	13 hrs
Unadilla	9/8 @ 7:30 am	9/8 @ 11:30pm	8.75 ft	4.63 in	16 hrs

