

## *Genesis and Evolution of NOAA's Flood Inundation Mapping Services*

**Association of State Floodplain Managers  
32<sup>nd</sup> Annual Conference**

**Reno-Sparks, NV  
May 18-23, 2008**



# National Weather Service

***Victor Hom***

***National Flood Inundation Mapping Service  
Leader***

**National Oceanic and Atmospheric  
Administration**

**National Weather Service Headquarters  
Silver Spring, MD**

***ASFPM 32<sup>nd</sup> Annual Conference  
Reno-Sparks, Nevada  
May 22, 2008***





# National Weather Service

## Presentation Overview

- **National Oceanic Atmospheric Administration's (NOAA) Goals**
- **National Weather Service (NWS) Activities**
  - *Advanced Hydrologic Prediction Service (AHPS)*
  - *Water Resource Program*
  - *Flood Inundation Mapping*

**Copy of Presentation:** <http://www.weather.gov/os/water>





# NOAA's Strategic Goals

*"We should integrate NOAA's collaborative research, data, and operations to generate products and services to help water resource managers"*

Vice Admiral Conrad C. Lautenbacher, Jr., NOAA Administrator's Guidance (2003)

- Protect, Restore, and Manage Resources through an Ecosystem Approach to Management
- Understand Climate Variability and Change
- **Serve Society's Needs for Weather and Water Information**
- Support the Nation's Commerce with Information for Environmentally Sound Transportation





# Water Resources Across NOAA

## Satellite and Environmental Data

- Water surface conditions
- Land cover/land use

## Oceans

- Biological monitoring
- Estuarine models

## Research

- Earth system models
- Environmental observing systems

## Fisheries

- Socio-economic assessments
- Protecting living marine resources

## Weather

- Weather, water, and climate monitoring and prediction



## Forecasting Infrastructure and Service Centers:

*Rivers & Streams; Reservoirs & Lakes*

*The Great Lakes*

*Wetlands; Estuaries; Coasts*





# NWS Office of Hydrologic Development

## Active Focus Areas

- **Advanced Hydrologic Prediction Service (AHPS)**
- **Planning, Programming, and Coordination (PPC)**
- **Hydrology Laboratory (HL)**
- **RFC Development Management (RDM)**
- **Hydrology XML Consortium (HydroXC)**
- **Community Hydrologic Prediction System (CHPS)**

**Reference:** <http://www.weather.gov/ohd>





# Current NWS Hydrologic Research and Transition to Operations

## *Hydrology*

- Physically-based soil moisture modeling
- Distributed modeling: DMIP-1 and DMIP-2
- Flash Flood modeling
- Drought

## *Hydrometeorology*

- Enhanced Multisensor Precipitation Estimator (EMPE)
- Raingage Quality Control

## *Ensemble Modeling*

- Short-term precipitation and temperature ensemble generation
- Data Assimilation

## *Hydraulics*

- Evaluation of Hydraulic models

## *Hydrometeorological Design Studies Center*

- Precipitation Frequency Maps

## *Other Hydrologic Development*

- Debris Flows
- Water Quality

**Reference:** <http://www.weather.gov/ohd>



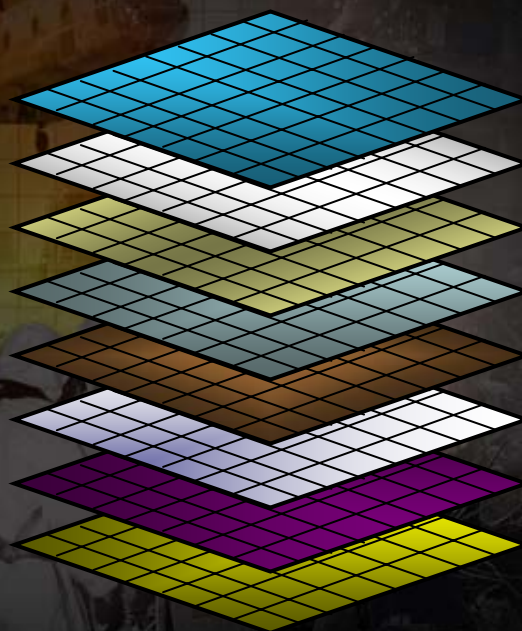


# NOAA's Water Resources - Integrated Products & Services

## High-resolution Gridded Water Resources Product Suite

### Partners

- NOAA
- Federal Agencies
- Tribal Agencies
- State Agencies
- Local Agencies
- Academia
- Private Sector



- Precipitation
- Snowpack Properties
- Soil Moisture
- Evaporation
- Groundwater
- River Flow
- Surface Storage
- Runoff
- Water Quality

*\*Seamless transition from inland to coast*

### Applications

- Drought Mitigation
- Flood Potential
- Flood Management
- Water Allocation
- Transportation
- Emergency Management
- Agriculture
- Debris Flows
- Ecosystems Management
- Research







# NWS Mission and Goals

## NOAA NWS Mission



Storm near Elko, Nevada. NOAA



Spring snowmelt, Sonora Pass, California, USA  
Photograph by Cagan Hakki Sekercioglu,  
naturalphotos.com



- Issue weather, water, and climate forecasts and warnings for the protection of life and property and the enhancement of the national economy.





# Water in the News

## Rescue work continues in flood-ravaged Washington

By Jack Broom

Seattle Times staff reporter

Efforts resumed today to rescue people from flood-stricken homes in Southwest Washington after

## Flooding forces thousands in Kansas, Oklahoma and Texas

The Associated Press

Published: July 1 2007

## Officials shut salmon fishing in seven coastal areas of California, Oregon

By Matt Weiser - mweiser@sacbee.com

Thursday, March 13, 2008

Wildlife officials moved Wednesday for early closure of seven coastal salmon

## Scotts Valley wants to sell surplus irrigation water

San Jose Mercury News, USA - March 11, 2008

SCOTTS VALLEY, Calif.—A Santa Cruz County town has to market water

## Current Major Flooding in U.S. a Sign of Things to Come

NOAA Urges Communities to Prepare During Flood Safety Awareness Week (March 20, 2008)

## National Weather Service tweaks Red River flood outlook

(Doug Barrett, KNOX, Grand Forks)

GRAND FORKS, N.D. (AP) The

National Weather Service

the spring flood outlook

River Valley. March

## Global Warming May Put U.S. in Hot Water

By SETH BORENSTEIN

AP Science Writer

WASHINGTON (AP) -- As the world warms, water - either too little or too much of it - is going to be the major problem for the United States, a scientist said

n, with shortages and a

## Australia's epic drought: The situation is grim

By Kathy Marks in Sydney

Friday, 20 April 2007

Australia has warned that it will have to switch off the water supply to the continent's food bowl unless heavy rains break an epic drought - heralding what could be the first climate change-driven disaster to strike a developed nation.

## West Looking Again at Building New Dams

By NICHOLAS K. GERANIOS - Mar 2, 2008

SPOKANE, Wash. (AP) — The Western states' era of massive dam construction — which tamed rivers, swallowed towns, and created irrigated agriculture, cheap hydropower and

## Relentless N. Carolina drought could be devastating in '08

RALEIGH, N.C. (AP) — The record-setting drought that has forced the

## Lake Mead could run dry by 2021, study warns

Arizona Republic, AZ - Feb 12, 2008  
Climate changes and an unquenched demand for water on the Colorado

Published: Feb 12, 2008





# Floods Across United States

- On average, over the past 20 years, flooding has claimed over 90 lives and caused damages in excess of \$7 billion annually.
- Flooding is responsible for more fatalities than any other severe weather related phenomenon.
- More than half of all flood-related deaths result from motorists being swept away in their vehicles.



# NOAA's NWS Water Forecasts

## The Task:

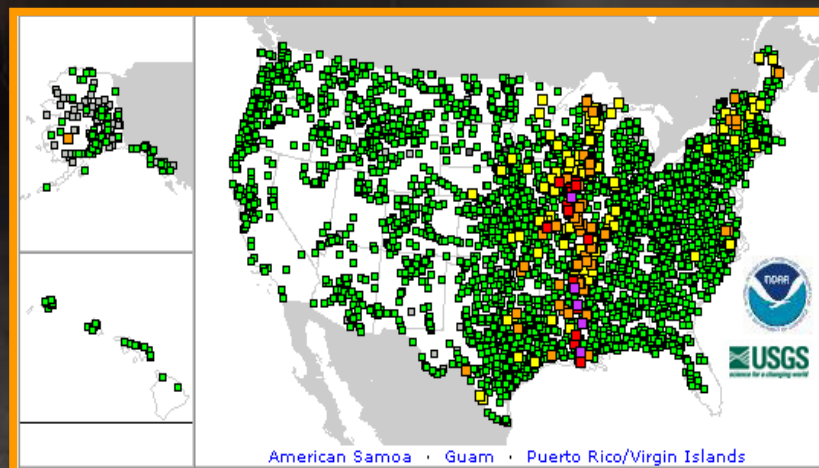
- **Forecasts of stream flow provided at 4000 point locations on rivers**

## Required Input:

- **Forecasts of several water resource elements provided at all locations (grid), at scale of event (high resolution)**

- **Snow water equivalent**
- **Snow depth & cover**
- **Precipitation**

- **Soil moisture**
- **Runoff**
- **Evaporation**





# Advanced Hydrologic Prediction Service (AHPS)

- Provide enhanced water availability and flood warning information by leveraging NOAA's infrastructure and expertise
- Modernize services through infusion of new science and technology
  - *Flash-flood to seasonal freshwater forecasts*
  - *Quantification of forecast certainty*
  - *More accurate and timely forecasts and warnings*
  - *Partnered flood inundation mapping*
  - *Visually-oriented products*
- Provide consistent access to standardized graphics via web interface



**Reference:** <http://www.weather.gov/ahps>





# Cost and Benefits of AHPS

- \$60 million/10 year program (completion year of 2014)
- \$766 million estimated annual recurring benefit (National Hydrologic Warning Council study)

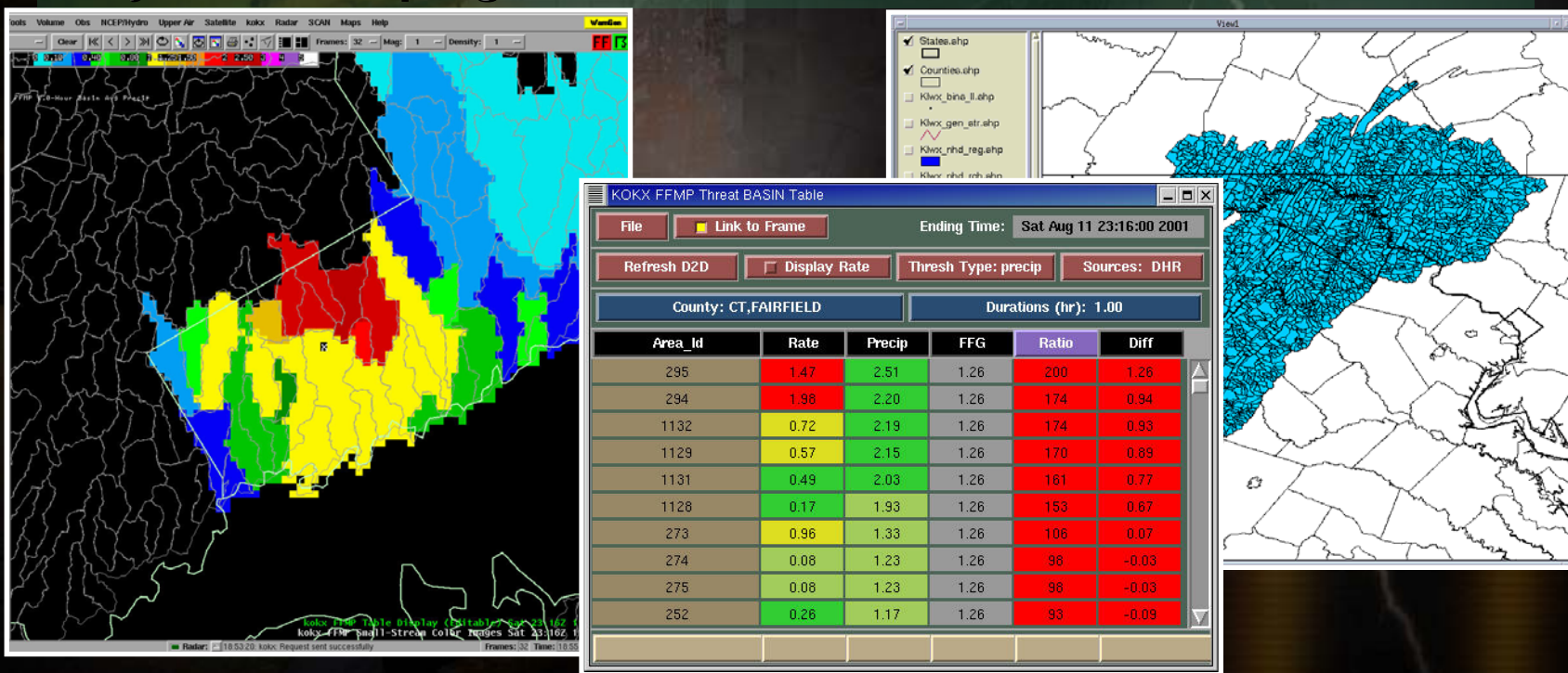




# AHPS Flash Flood Decision Assistance

## Flash Flood Monitoring and Prediction (FFMP)

- Continuous monitoring of rainfall and comparison to flash flood guidance for high resolution stream basins
- Alerts forecasters when a dangerous flash flood situation may be developing

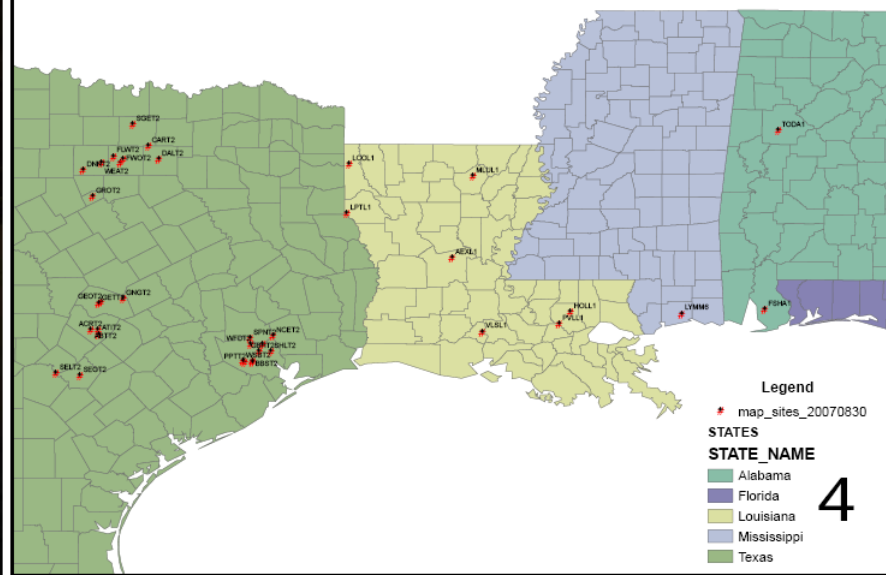




# Enhancing the Communication of Flood Risk

- Hurricane Floyd Supplemental Funding helped with the deployment of 16 North Carolina Flood Inundation Map Libraries on October 22, 2007.
- Hurricane Katrina Supplemental Funds are being used to create an additional 25-35 libraries in 4 Gulf Coast States over the next two years.

Forecast Points with Sufficient Data for Inundation Mapping



Reference: <http://www.weather.gov/ahps/inundation.php>







# NOAA-FEMA Partnership

- **Both agencies convey flood risk**
  - FEMA for regulatory/legal insurance purposes to reduce damage costs
  - NOAA/NWS for protection of life and property
- **Opportunity for enhanced relationship between NFIP flood zones and NWS flood categories/libraries**
- **Decision-makers need additional/integrated inundation maps/information to most effectively mitigate the impacts of floods**
- **Integrate NOAA/NWS inundation library guidelines with FEMA/FIS guidelines**

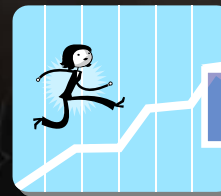




# Partnering to Reduce Costs and Improve Efficiency



Costs go down



Efficiency goes up

- Additional cost to complete one inundation map library as part of the FIS: **5 – 10 K (~3% cost increase)**
- Cost doubles and time increases if inundation map library is created after FIS is completed: **10 – 20 K**
- Developing inundation libraries in conjunction with FIS yields significant user benefit for small incremental cost.





# Enhancing Communication of Flood Risk

- **For NWS river forecast locations.....**
  - Enhance the communication of flood risk by a developing a library of inundation maps and linking them with observed/forecast river stages
  - Each library includes NWS flood severity categories and regulatory FEMA flood frequency events





# National Weather Service

## Advanced Hydrologic Prediction Service (AHPS)

The screenshot shows the National Weather Service website. The main navigation bar includes links for Warnings & Forecasts, Graphical Forecasts, National Maps, Radar, Water, Air Quality, Satellite, and Climate. The 'Water' link is highlighted with an orange circle. Below this, there are links for River Observations, River Forecasts, Precipitation, River Download, and Other Information. A search bar and a 'Go' button are also visible. The main content area displays a map of the United States with various colored markers indicating flood risk. A legend below the map provides details on the number of gauges and locations in flood, categorized by flood severity (Major, Moderate, Minor) and service status (Observations older than 24 hours, Out of Service). The page also includes sections for Hydrologic Resources and Additional Resources, along with contact information and a footer with the USA.gov logo.

This image is a close-up of the navigation menu from the screenshot. The 'Water' link is circled in orange. Below the main navigation bar, there are links for River Observations, River Forecasts, Precipitation, River Download, and Other Information. A search bar with the text 'All Locations' and a 'Go' button are also visible. A blue button labeled 'Click The Map To Zoom In.' is located at the bottom right of the menu.

Water Predictions  
for  
Life Decisions

Reference: <http://www.weather.gov/ahps>

"America's NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life"



# National Weather Service

## Advanced Hydrologic Prediction Service

National Oceanic and Atmospheric Administration's  
**National Weather Service**

Home > Water

National Hydrologic Assessment is Now Available: Above Average Flood Risk in Nation's Midsection, Northeast and Parts of the West

3810 Total Gauges  
79 Locations in Flood

- 13 Gauges: Major Flooding
- 20 Gauges: Moderate Flooding
- 46 Gauges: Minor Flooding
- 71 Gauges: Near Flood Stage
- 3312 Gauges: No Flooding

Hydrologic Resources

- Text Products
- River Forecast Centers
- About AHPS
- Partners
- AHPS Feedback
- AHPS RSS
- Inundation Mapping Locations

Additional Resources

- National Significant River Flood Outlook
- U.S. Geological Survey Streamflow Information
- Snow Information

... numerous flooding

Water Predictions  
for  
Life Decisions

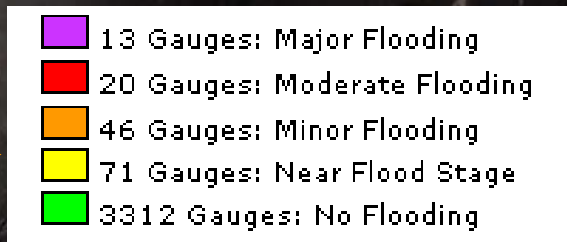
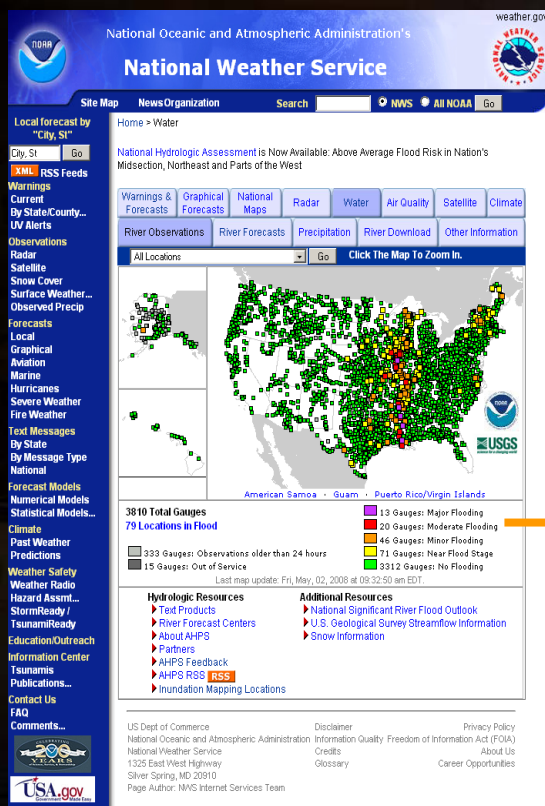
Reference: <http://www.weather.gov/ahps>

"America's NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life"



# National Weather Service

## Advanced Hydrologic Prediction Service



**... flooding at nearly 150 forecast locations**

**Reference:** <http://www.weather.gov/ahps>

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 ▶ AHPS Feedback  
 ▶ AHPS RSS  
 ▶ Inundation Mapping Locations

Additional Resources  
 ▶ National Significant River Flood Outlook  
 ▶ U.S. Geological Survey Streamflow Information  
 ▶ Snow Information

Warnings & Forecasts   Graphical Forecasts   National Maps   Radar   **Water**   Air Quality   Satellite   Climate

River Observations   River Forecasts   Precipitation   River Download   Other Information

All Locations   Go   Click The Map To Zoom In.

*... to the forecast area*

Water Predictions  
for  
Life Decisions

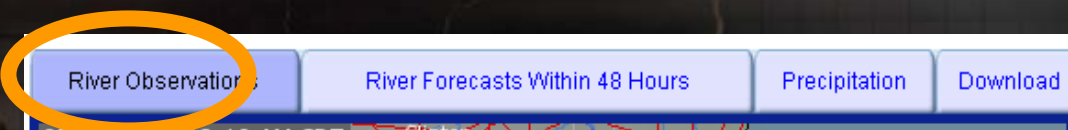
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# National Weather Service

“Water Predictions for Life Decisions”



*Review of the different sections.*

Water Predictions  
for  
Life Decisions

Reference: <http://www.crh.noaa.gov/ahps2/index.php?wfo=lot>

“America’s NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life”





# National Weather Service

## “Water Predictions for Life Decisions”

**National Weather Service**  
Advanced Hydrologic Prediction Service

Home News Organization Search for: NOAA AHPS

Local weather forecast for "City, ST"

Adjacent Areas: [Map]

National Conditions: Rivers, Satellite, Climate, Observed Precip

Local Conditions: Warnings, Weather Forecast, Radar

What is AHPS? Facts, Our Partners

Feedback/Comments: Provide Feedback, Ask Questions

USA.gov

**46 Total Gauges** **7 Locations in Flood**

River Menu: Illinois River, Des Plaines River, Kankakee River, Tiquois River, Wolf River, Vermilion River, Fox River

Resources:
 

- Hydrologic Resources: Tied Products, Past Precipitation, Forecast Precipitation, River Forecast Centers, Northern U.S. 24 hr Precipitation last 24 hrs, Precipitation Frequency Information, Floodplain Mapping Locations
- Additional Resources: Area Hydrographs, U.S. Drought Monitor, Snow Information, Flood Safety

Collaborative Agencies: The National Weather Service prepares its forecasts and other services in collaboration with agencies like the U.S. Geological Survey, U.S. Bureau of Reclamation, U.S. Army Corps of Engineers, National Resource Conservation Service, National Park Service, ALBERT Users Group, Bureau of Indian Affairs, and many state and local emergency managers across the country. For details, please click here.

NWS Information: National Weather Service, Chicago Weather Forecast Office, 5220 University CA, Riverdale, IL 60440, 616-264-2000, Air Quality and Hazards, River level website: 8/26/2007 7:22 PM

River Observations | River Forecasts Within 48 Hours | Precipitation | Download

Topo  Gauges  Counties  States  Major Rivers  Other Rivers  Highways  Cities  
 HSA  Names  Names  Names

46 Total Gauges 7 Locations in Flood RSS

Water Predictions  
for  
Life Decisions

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# National Weather Service

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“America’s NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life”



# National Weather Service

“Water Predictions for Life Decisions”

River Observations | **River Forecasts Within 48 Hours** | Precipitation | Download

Topo  Gauges  Counties  States  Major Rivers  Other Rivers  Highways  Cities  
 HSA  Names  Names  Names

46 Total Gauges 7 Locations in Flood RSS

River Menus		
Illinois River	Little Calumet River	Kishwaukee River
Des Plaines River	Thorn Creek	Vermilion River
Kankakee River	Pecatonica River	Fox River
Iroquois River	Rock River	

Major Flooding  
 Moderate Flooding  
 Minor Flooding  
 Near Flood Stage  
 No Flooding

Water Predictions  
for  
Life Decisions

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# National Weather Service

“Water Predictions for Life Decisions”

**River Observations** | **River Forecasts Within 48 Hours** | **Precipitation** | **Download**

Topo
  Gauges
  Counties
  States
  Major Rivers
  Other Rivers
  Highways
  Cities

HSA
  Names

46 Total Gauges | 7 Locations in Flood

**River Menus**

Illinois River	Little Calumet River	Kishwaukee River
Des Plaines River	Thorn Creek	Vermilion River
Kankakee River	Pecatonica River	Fox River
Iroquois River	Rock River	

**Legend:**

- Major Flooding
- Moderate Flooding
- Minor Flooding
- Near Flood Stage
- No Flooding

**Resources**

**Hydrologic Resources**

- Text Products
- Past Precipitation
- Forecast Precipitation
- River Forecast Centers
- Northern IL/ NW IN Precipitation last 24 hrs.
- Precipitation Frequency Information
- Inundation Mapping Locations

**Additional Resources**

- Area Hydrographs
- U.S. Drought Monitor
- Snow Information
- Flood Safety

Water Predictions  
for  
Life Decisions

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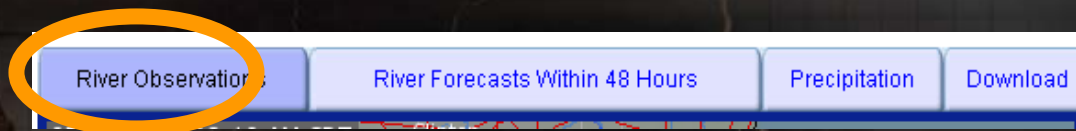
“America’s NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life”



# National Weather Service

## AHPS River Observations/Forecasts

The screenshot shows the National Weather Service Advanced Hydrologic Prediction Service (AHPS) interface. A red arrow points to a specific river gauge location on a map of the Chicago area. The interface includes navigation tabs for 'River Observations', 'River Forecasts Within 48 Hours', 'Precipitation', and 'Download'. Below the map is a 'River Menu' with dropdown lists for various rivers like the Illinois River, Des Plaines River, and Kankakee River. There are also sections for 'Resources' and 'Collaborative Agencies'.



**... three ways to the forecast**

Water Predictions  
for  
Life Decisions

Reference: <http://www.crh.noaa.gov/ahps2/index.php?wfo=lot>

"America's NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life"



# National Weather Service

## AHPS River Observations/Forecasts

National Weather Service  
Advanced Hydrologic Prediction Service

Home News Organization Search for: NOAA AHPS

Alerts: A Flood Warning and Flood Advisory are in effect for portions of the area. View all alerts at [alerts.nws.gov](#) or choose a specific point or river to get the details for that location.

Weather Forecast Office Chicago, IL

River Observations River Forecasts Within 48 Hours Precipitation Download

05/03/2008 08:19 AM CDT

Map Legend  
 Hydrograph Available  
 Precipitation Available  
 Map Legend Available

River Menu

Illinois River	Little Calumet River	Kishwaukee River
Des Plaines River	Thorn Creek	Vermilion River
Kankakee River	Pecatonica River	Fox River
Iroquois River	Rock River	

Resources

Hydrologic Resources

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- Northern IL 48 hr Precipitation last 24 hrs
- Precipitation Frequency Information
- Floodplain Mapping Locations

Additional Resources

- Area Hydrographs
- U.S. Drought Monitor
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- Flood Safety

Collaborative Agencies

The National Weather Service prepares its forecasts and other services in collaboration with agencies like the U.S. Geological Survey, US Bureau of Reclamation, US Army Corps of Engineers, Natural Resource Conservation Service, National Park Service, ALBERT Users Group, Bureau of Indian Affairs, and many state and local emergency managers across the country. For details, please click here.

NWS Information

National Weather Service  
Chicago Weather Forecast Office  
5230E University Ave  
Chicago, IL 60640  
616-264-6000  
http://www.nws.gov/ohc/2007-7-23-PM

River Observations River Forecasts Within 48 Hours Precipitation Download

River Menu

Illinois River	Little Calumet River	Kishwaukee River
Des Plaines River	Thorn Creek	Vermilion River
Kankakee River	Pecatonica River	Fox River
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**... three ways to the forecast**

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# National Weather Service

## AHPS River Observations/Forecasts

River Observations    River Forecasts Within 48 Hours    Precipitation    Download

River Menu

Illinois River	Little Calumet River	Kishwaukee River
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Resources

Hydrologic Resources	Additional Resources
<ul style="list-style-type: none"> <li>▶ Text Products</li> <li>▶ Past Precipitation</li> <li>▶ Forecast Precipitation</li> <li>▶ River Forecast Centers</li> <li>▶ Northern U.S. IN Precipitation last 24 hrs.</li> <li>▶ Precipitation Frequency Information</li> <li>▶ Inundation Mapping Locations</li> </ul>	<ul style="list-style-type: none"> <li>▶ Area Hydrographs</li> <li>▶ U.S. Drought Monitor</li> <li>▶ Snow Information</li> <li>▶ Flood Safety</li> </ul>

**... three ways to the forecast**

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Water Predictions  
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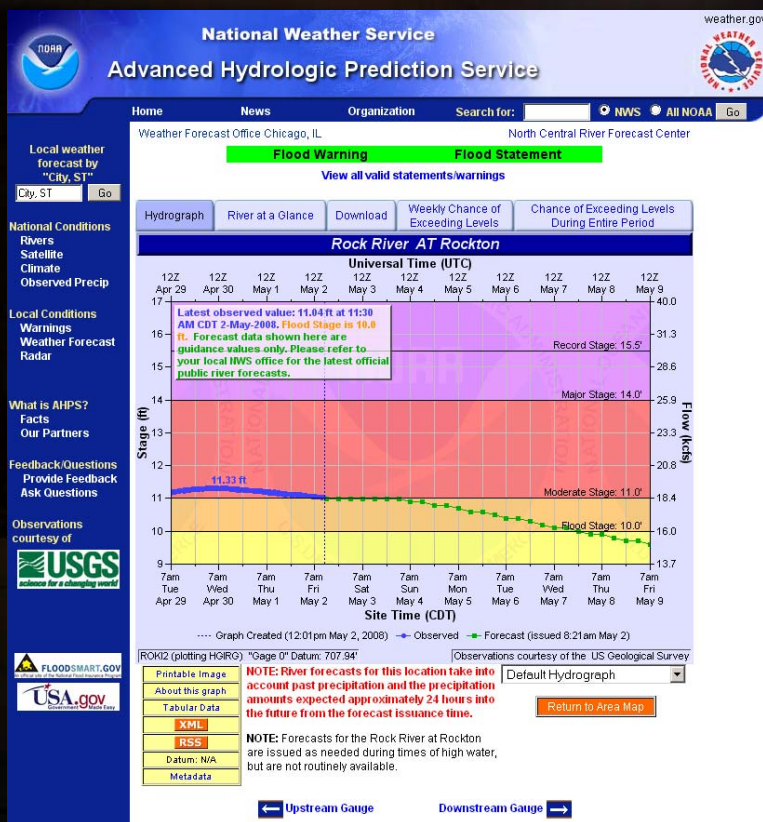






# National Weather Service

## AHPS Forecast Page



- Forecast Hydrograph
- Flood Categories
- Probabilistic Forecasts
- Data Downloads in XML, RSS
- Pertinent Information

Water Predictions  
for  
Life Decisions

Reference:

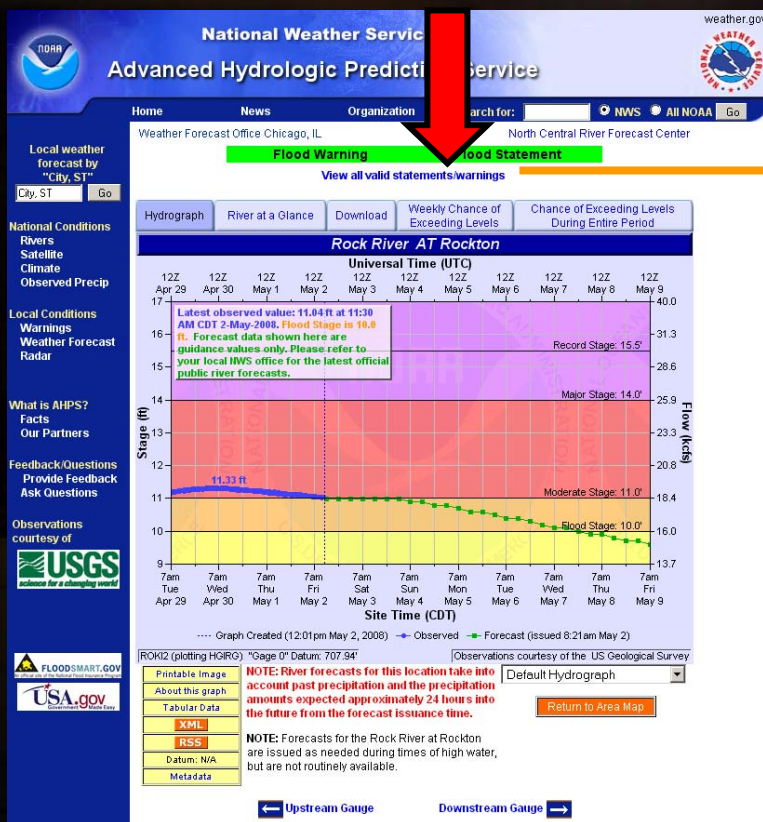
<http://www.crh.noaa.gov/ahps2/hydrograph.php?wfo=lot&gage=roki2>

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# National Weather Service

## AHPS Link to Flood Statement



### Flood Statement

WGUS83 KLOT 021450  
FLSLOT  
FLOOD STATEMENT  
NATIONAL WEATHER SERVICE CHICAGO/ROMEDEVILLE IL  
950 AM CDT FRI MAY 02 2008

THE FLOOD WARNING CONTINUES FOR THE FOLLOWING RIVERS IN ILLINOIS...

ROCK RIVER AT ROCKTON AFFECTING WINNEBAGO COUNTY  
ROCK RIVER AT LATHAM PARK AFFECTING WINNEBAGO COUNTY  
PECATONICA RIVER NEAR SHIRLAND AFFECTING WINNEBAGO COUNTY

.SHOWERS AND THUNDERSTORMS MOVING ACROSS SOUTHERN WISCONSIN AND NORTHERN ILLINOIS TODAY MAY CAUSE MINOR ADDITIONAL RISES ON AREA RIVERS THROUGH THE WEEKEND.

SAFETY MESSAGE...IF YOU ENCOUNTER A FLOODED ROADWAY...TURN AROUND AND FIND AN ALTERNATE ROUTE.

ILC201-030250-  
/O.EXT.KLOT.FL.W.0055.000000T0000Z-080508T0600Z/  
/ROKI2.2.RS.080328T0125Z.080415T2030Z.080508T0000Z.NO/  
950 AM CDT FRI MAY 02 2008

THE FLOOD WARNING CONTINUES FOR THE ROCK RIVER AT ROCKTON.

- \* UNTIL LATE WEDNESDAY NIGHT...OR UNTIL THE WARNING IS CANCELLED.
- \* AT 830 AM FRIDAY THE STAGE WAS 11.0 FEET.
- \* MODERATE FLOODING IS OCCURRING AND MODERATE FLOODING IS FORECAST.
- \* FLOOD STAGE IS 10.0 FEET.
- \* FORECAST...THE RIVER WILL REMAIN NEARLY STEADY THE NEXT COUPLE OF DAYS BEFORE IT BEGINS TO SLOWLY FALL AND GO BELOW FLOOD STAGE BY WEDNESDAY EVENING.
- \* IMPACT...AT 10.5 FEET...WATER BEGINS TO FLOW OVER PORTIONS OF EDGEMERE TERRACE NEAR ROSCOE.

\$\$



# Accessing AHPS Information

*“click on” tabs for probabilistic forecasts*

National Weather Service  
Advanced Hydrologic Prediction Service

Home News Organization Search for:  NWS All NOAA Go

Weather Forecast Office Quad Cities, IA North Central River Forecast Center

This probabilistic forecast is issued by the North Central River Forecast Center.

Hydrograph River at a Glance Download **Weekly Chance of Exceeding Levels** Chance of Exceeding Levels During Entire Period

1 Week Chances of Exceeding River Levels on the MISSISSIPPI R at QUAD CITIES  
Latitude: 41.3 Longitude: -90.4  
Forecast for the period 4/28/2008 - 7/21/2008  
This is a conditional simulation based on the current conditions as of 4/21/2008

River Level (Feet)

Exceedance Probability

- 10 - 50%
- 50 - 90%
- >= 90%

Flood Level 15.0 (Feet)

NOTE: River forecasts for this location take into account past precipitation and the precipitation amounts expected approximately 24 hours into the future from the forecast issuance time.

Forecasts for the Mississippi River at Rock Island are issued routinely

Home News Organization Search for:  NWS All NOAA Go

Weather Forecast Office Quad Cities, IA North Central River Forecast Center

This probabilistic forecast is issued by the North Central River Forecast Center.

Hydrograph River at a Glance Download **Weekly Chance of Exceeding Levels** **Chance of Exceeding Levels During Entire Period**

Chances of Exceeding River Levels on the MISSISSIPPI R at QUAD CITIES  
Latitude: 41.3 Longitude: -90.4  
Forecast for the period 4/28/2008 - 7/21/2008  
This is a conditional simulation based on the current conditions as of 4/21/2008

Stage (FT)

Exceedance Probability

Flood Level 15.0 (Feet)

NOTE: River forecasts for this location take into account past precipitation and the precipitation amounts expected approximately 24 hours into the future from the forecast issuance time.

Currently demonstrating short-range ESP capability at 4 River Forecast Centers and plan to begin national implementation in FY12



# National Weather Service

## AHPS Forecast Page

**#1**

National Weather Service  
Advanced Hydrologic Prediction Service

Home News Organization Search for: All NOAA Go

Weather Forecast Office Chicago, IL North Central River Forecast Center

**Flood Warning** **Flood Statement**

View all valid statements/warnings

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**Rock River AT Rockton**

Universal Time (UTC)

12Z	12Z	12Z	12Z	12Z	12Z	12Z	12Z	12Z	12Z	12Z	12Z	12Z
Apr 29	Apr 30	May 1	May 2	May 3	May 4	May 5	May 6	May 7	May 8	May 9	May 10	May 11
17.0	16.5	16.0	15.5	15.0	14.5	14.0	13.5	13.0	12.5	12.0	11.5	11.0

Stage (ft)

Latest observed value: 11.04 ft at 11:30 AM CDT 2-May-2008. Flood Stage is 10.9 ft. Forecast data shown here are guidance values only. Please refer to your local NWS office for the latest official public river forecasts.

Record Stage: 15.5  
Major Stage: 14.0  
Moderate Stage: 11.0  
Flood Stage: 10.0

Site Time (CDT)

Graph Created (12:01pm May 2, 2008) - Observed - Forecast (issued 8:21am May 2, 2008)

ROK12 (plotting) "Gage 0" Datum: 707.94'

NOTE: River forecasts for this location take into account past precipitation and the precipitation forecast for the next 24 hours.

Printable Image About this graph Tabular Data XML RSS Datum: N/A Metadata

**Forecast**

**#2**

**History**

**#3**

**Map**

**#4**

**Impacts**

**Flood Categories (in feet)**

Major Flood Stage	14
Moderate Flood Stage	11
Flood Stage	10
Alert Stage	7

**Historical Crests**

(1)	15.54 ft on 03/25/1975
(2)	14.08 ft on 03/22/1904
(3)	14.08 ft on 04/01/1959
(4)	14.06 ft on 03/30/1916
(5)	13.82 ft on 03/20/1945

**Flood Impacts & Photos**

- 14.0 Prairie Hill Road 3 miles north is inundated.
- 13.5 Old River Road west of Roscoe Bridge is inundated.
- 12.0 Water begins to flow over low lying roads along the river in Roscoe.
- 10.5 Water begins to flow over portions of Edgemere Terrace near Roscoe.
- 10.0 Water overflows into low lying areas near the river in Rockton.
- 8.5 Flooding begins to some backyards of homes near the river in Machesney Park.
- 7.0 flooding in Riverside Park near Roscoe

**Photos**

- Looking upstream from right bank. Stage 2.80 ft.
- Looking downstream from right bank. Stage 2.80 ft.

**Resources**

**Hydrologic Resources**

- Text Products
- Past Precipitation
- Forecast Precipitation
- River Forecast Centers
- Northern IL/NW IN Precipitation last 24 hrs.
- Precipitation Frequency Information
- Inundation Mapping Locations

**Additional Resources**

- Area Hydrographs
- U.S. Drought Monitor
- Snow Information
- Flood Safety

**Collaborative Agencies**

**NWS Information**

National Weather Service  
Chicago Weather Forecast Office  
333 W. University Dr.  
Roseville, IL 60445  
(815) 834-1435  
Ask Questions/Webmaster  
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Reference:

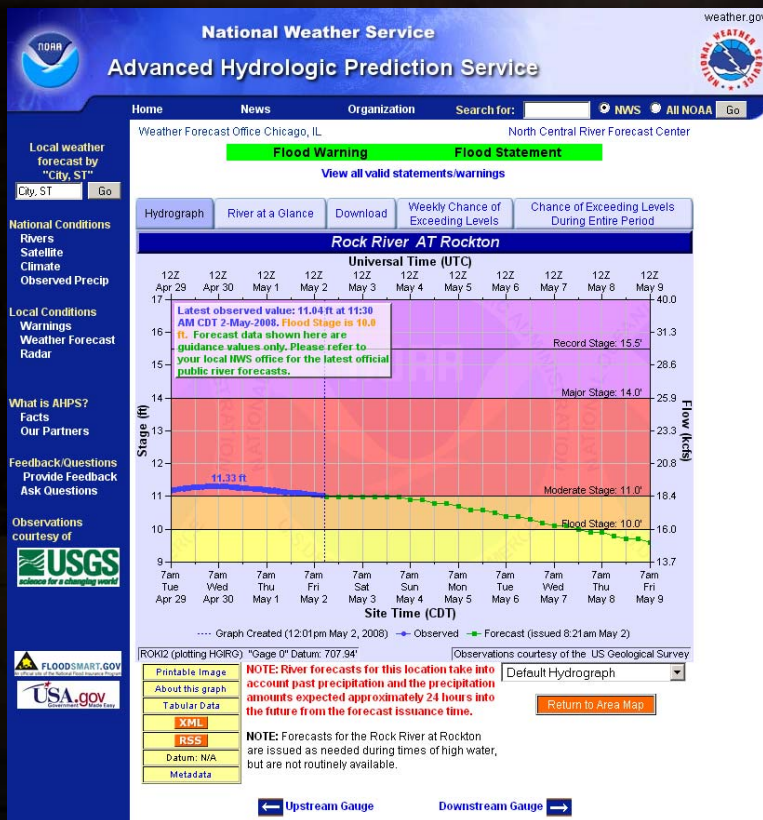
<http://www.crh.noaa.gov/ahps2/hydrograph.php?wfo=lot&gage=roki2>

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# National Weather Service

## Am I in harm's way?



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Reference:

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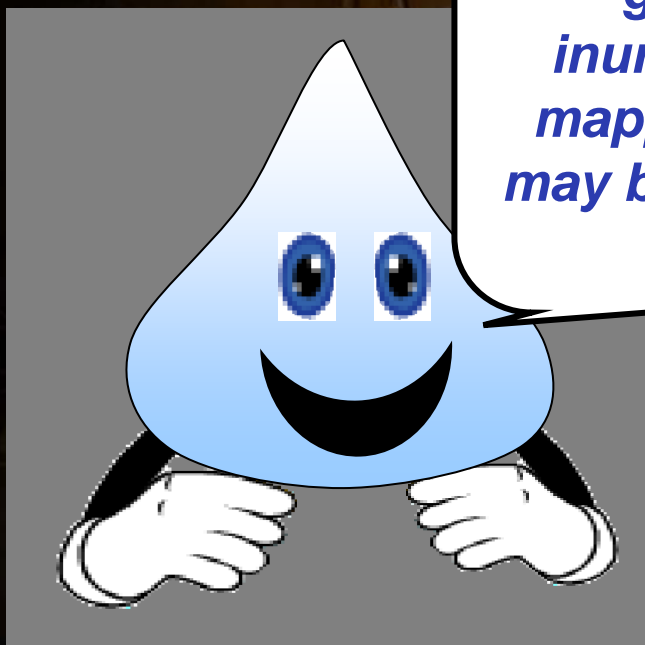
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# National Weather Service

**That's Great! I live near a NWS forecast point?**

*If you have good inundation mapping we may be able to tell.*



**Flood Categories (in feet)**

- Major Flood Stage: 14
- Minor Flood Stage: 13
- Flood Stage: 10
- At Risk Stage: 7

**Historical Crests**

- (1) 15.54 ft on 03/25/1975
- (2) 14.08 ft on 03/22/1904
- (3) 14.08 ft on 04/01/1959
- (4) 14.06 ft on 03/30/1916
- (5) 13.92 ft on 03/20/1948

**Flood Impact**

- 14.0 Prairie Hills near Roscoe.
- 13.5 Old River near Roscoe.
- 12.0 Water near Roscoe.
- 10.5 Water near Roscoe.
- 10.0 Water near the river in Rockton.
- 8.5 Flood near the river in Machesney Park.
- 7.0 Flood near the river in Machesney Park.

**Additional Information**

- How low could the river get?
- Resources
- Hydrologic Resources
  - Tax Products
  - Past Precipitation
  - Forecast Precipitation
  - River Forecast Centers
  - Northern IL/NW IN Precipitation last 24 hrs.
  - Precipitation Frequency Information
  - Inundation Mapping Locations
- Additional Resources
  - Area Hydrographs
  - U.S. Drought Monitor
  - Snow Information
  - Flood Safety

**Collaborative Agencies**

The National Weather Service prepares its forecasts and other services in collaboration with agencies like the US Geological Survey, US Bureau of Reclamation, US Army Corps of Engineers, Natural Resource Conservation Service, National Park Service, ALERT Users Group, Bureau of Indian Affairs, and many state and local emergency managers across the country. For details, please click here.

**NWS Information**

National Weather Service  
Chicago Weather Forecast Office  
333 W. University Dr.  
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(815) 834-1435  
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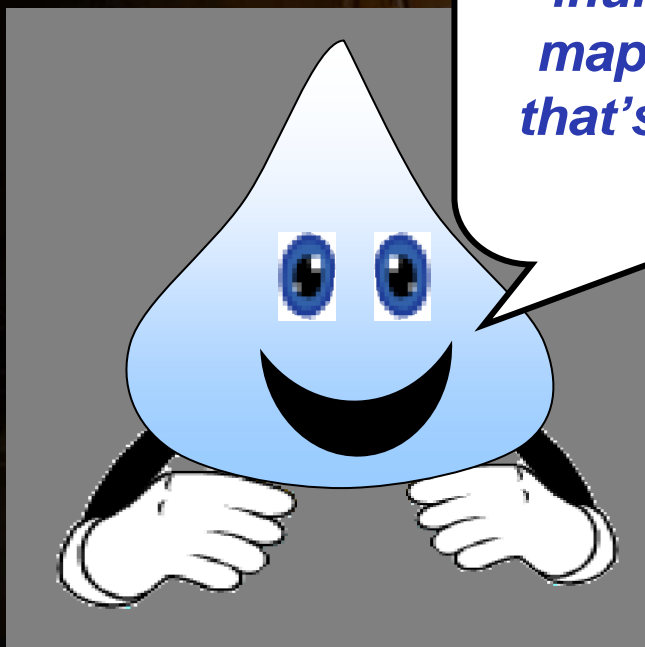
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# National Weather Service

*Is that the Inundation Mapping folder tab?*

*If NOAA has an inundation map library, that's easy to do!*



**Flood Categories (in feet)**

- Major Flood Stage: 14
- Moderate Flood Stage: 13
- Flood Stage: 10
- At Risk Stage: 7

**Historical Crests**

- (1) 15.54 ft on 03/25/1975
- (2) 14.08 ft on 03/22/1904
- (3) 14.08 ft on 04/01/1959
- (4) 14.06 ft on 03/30/1916
- (5) 13.92 ft on 03/20/1948

**Flood Impact**

- 14.0 Prairie Inundation 3 mi
- 13.5 Old River Inundation
- 12.0 Water Inundation near Roscoe.
- 10.5 Water Inundation near Roscoe.
- 10.0 Water Inundation near the river in
- 8.5 Flood Inundation of houses
- 7.0 Flood Inundation of houses

**Photos**

- (1) Looking upstream from
- (2) Looking downstream from

**Other Data Sources:**

- Corps of Engineers (COE) Info for Rockton
- U.S. Geological Survey (USGS) Data and Site Info for Rockton

**Additional Information**

How low could the river get?

**Resources**

**Hydrologic Resources**

- Tide Products
- Past Precipitation
- Forecast Precipitation
- River Forecast Centers
- Northern IL/NW IN Precipitation last 24 hrs.
- Precipitation Frequency Information
- Inundation Mapping Locations

**Additional Resources**

- Area Hydrographs
- U.S. Drought Monitor
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- Flood Safety

**Collaborative Agencies**

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# National Weather Service

## Available Inundation Map Library

**DEMO**

Hydrograph | River at a Glance | **Download** | **Inundation Mapping** | Weekly Chance of Exceeding Levels | Chance of Exceeding Levels During Entire Period




Water Predictions  
for  
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

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# National Weather Service

## Inundation Map Interface – Inundation Level

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Advanced Hydrologic Prediction Service

Home News Organization Search for: NWS All NOAA Go  
Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, click here.

**Data Type**

- Inundation Levels
- Flood Categories
- Current/Forecast

**Inundation Levels**

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24
Major Flooding Begins	
66	23
65	22
64	21
63	20
Moderate Flooding Begins	
62	19
61	18
Flooding Begins	
60	17
59	16
58	15
57	14
56	13

**Inundation Feedback**

Inundation in partnership with

**Selected Inundation**  
NAVD88: 60 ft  
Stage: 17.0 ft

**Flood Categories (in feet)**

Major Flood Stage	24
Exceeding Flood Stage	24
Flood Stage	18
Action Stage	18
Minor Flood Stage	18

**Historical Crests**

- (1) 28.85 ft on 09/20/1999
- (2) 27.30 ft on 10/05/1929
- (3) 26.70 ft on 09/29/1945
- (4) 26.21 ft on 09/21/1995
- (5) 26.10 ft on 10/09/1964

Show More Historical Crests

Return to Area Map

**Data Type**

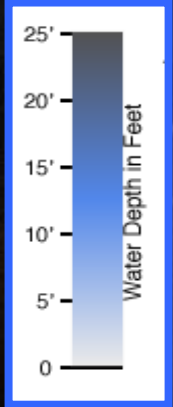
- Inundation Levels
- Flood Categories
- Current/Forecast

**Inundation Levels**

NAVD88	Stage
60	17

**Selected Inundation**

NAVD88: 60 ft  
Stage: 17.0 ft



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for  
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



# National Weather Service

## Inundation Map Interface – Current Stage

**National Weather Service**  
Advanced Hydrologic Prediction Service

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Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Image Type: Standard (Faster Download) **Full Resolution Download**

Mouse Location: Water Depth: Off water Depth Function: Off **Current Stage: 6.65 ft at 12:15 UTC 05/06**

**Inundation Levels**

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

**Major Flooding Begins**

66	23
65	22
64	21
63	20

**Moderate Flooding Begins**

62	19
61	18

**Flooding Begins**

<b>60</b>	<b>17</b>
59	16
58	15
57	14
56	13

**Inundation Feedback**

Inundation in partnership with

**Selected Inundation**  
NAVD88: 60 ft  
Stage: 17.0 ft

**Mouse Location\***  
Water Depth: Off  
Latitude: 35.2657 N  
Longitude: -77.9528 W  
\* All mouse location values are estimates only.

Print / Save Image  
About Inundation  
Download Data (KML)  
FAQ  
User Guide  
Inundation Sites

Click on the image to zoom in

**Flood Categories (in feet)**

Major Flood Stage	24
Substantial Flood Stage	20
Flood Stage	18
Action Stage	18
Minor Flood Stage	15

USGS Gauge Location  
Extent of Inundation Study Boundaries

**Historical Crests**

- (1) 28.85 ft on 09/20/1999
- (2) 27.30 ft on 10/05/1929
- (3) 26.70 ft on 09/23/1945
- (4) 26.21 ft on 09/12/1995
- (5) 26.10 ft on 10/09/1964

Show More Historical Crests

Return to Area Map

**Current Stage: 6.65 ft at 12:15 UTC 05/06**

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# National Weather Service

## Inundation Map Interface – Current Stage

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Mouse Location: Water Depth: Off water Depth Function: Off **Current Stage: 6.65 ft at 12:15 UTC 05/06**

**Inundation Levels**

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

**Major Flooding Begins**

66	23
65	22
64	21
63	20

**Moderate Flooding Begins**

62	19
61	18

**Flooding Begins**

60	17
59	16
58	15
57	14
56	13

**Inundation Feedback**

Inundation in partnership with

Selected Inundation  
NAVD88: 60 ft  
Stage: 17.0 ft

**Mouse Location\***  
Water Depth: Off  
Latitude: 35.2657 N  
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\* All mouse location values are estimates only.

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Download Data (K)z  
FAQ  
User Guide  
Inundation Sites

Click on the image to zoom in

**Flood Categories (in feet)**

Major Flood Stage	24
Minor Flood Stage	20
Flood Stage	18
Action Stage	18
Subsidence Stage	18

USGS Gauge Location  
Extent of Inundation Study Boundaries

**Historical Crests**

- (1) 28.85 ft on 09/20/1999
- (2) 27.30 ft on 10/05/1929
- (3) 26.70 ft on 09/23/1945
- (4) 26.21 ft on 09/12/1996
- (5) 26.10 ft on 10/09/1964

Show More Historical Crests

Return to Area Map

**Current Stage: 6.65 ft at 12:15 UTC 05/06**

*There's no troubles, until stage rises above 17.0 feet as depicted on map.*



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**Reference:**

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

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# National Weather Service

## Inundation Map Interface – Current Stage

**Selected Inundation**  
 NAVD83: 60 ft  
 Stage: 17.0 ft

**Flood Categories (in feet)**

Major Flood Stage	24
Exceeding Flood Stage	24
Flood Stage	18
Action Stage	18
Subsiding Flood Stage	18

**Historical Crests**  
 (1) 28.85 ft on 09/20/1999  
 (2) 27.30 ft on 10/05/1929  
 (3) 26.70 ft on 09/23/1945  
 (4) 26.21 ft on 09/12/1996  
 (5) 26.10 ft on 10/09/1964  
 Show More Historical Crests

**Current Stage: 6.65 ft at 12:15 UTC 05/06**

*Next slide will show what a stage of 17 feet means to you.*



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## Inundation Map Interface – Zoom Features

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Image Type:  Standard (Faster Download)  Detailed (Slower Download)

Mouse Location Water Depth: Off water Depth Function: Off Current Stage: 6.65 ft at 12:15 UTC 05/06

**Click Here**

Transparency Level  100 Year Flood 500 Year Flood Floodway Data

**Selected Inundation**  
NAVD88: 60 ft  
Stage: 17.0 ft

**Mouse Location\***  
Water Depth: Off  
Latitude: 35.2657 N  
Longitude: -77.9528 W  
\* All mouse location values are estimates only.

**Flood Categories (in feet)**  
Major Flood Stage: 24  
Minor Flood Stage: 20  
Flood Stage: 18  
Action Stage: 18  
Subsidence Stage: 15

**Historical Crests**  
(1) 28.85 ft on 09/20/1999  
(2) 27.30 ft on 10/05/1929  
(3) 26.70 ft on 09/23/1945  
(4) 26.21 ft on 09/12/1996  
(5) 26.10 ft on 10/09/1964  
Show More Historical Crests

[Return to Area Map](#)

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Inundation Levels	NAVD88	Stage
	71	28
	70	27
	69	26
	68	25
	67	24

Major Flooding Begins

	66	23
	65	22
	64	21
	63	20

Moderate Flooding Begins

	62	19
	61	18

Flooding Begins

	<b>60</b>	<b>17</b>
	59	16
	58	15
	57	14
	56	13

Inundation Feedback

Inundation in partnership with

Transparency Level  100 Year Flood  500 Year Flood  Floodway Data

**Selected Inundation**  
NAVD88: 60 ft  
Stage: 17.0 ft

**Mouse Location\***  
Water Depth: Off  
Latitude: 35.2657 N  
Longitude: -77.9528 W  
\* All mouse location values are estimates only.

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Click on the image to zoom in

**Flood Categories (in feet)**  
Major Flood Stage: 24  
Moderate Flood Stage: 23  
Flood Stage: 18  
Action Stage: 18  
Below Flood Stage: 13

USGS Gauge Location  
Extent of Inundation Study Boundaries

**Historical Crests**  
(1) 28.85 ft on 09/20/1999  
(2) 27.30 ft on 10/05/1929  
(3) 26.70 ft on 09/23/1945  
(4) 26.21 ft on 09/12/1996  
(5) 26.10 ft on 10/09/1964  
Show More Historical Crests

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Mouse Location Water Depth: Off Water Depth Function: Off **Current Stage: 6.63 ft at 13:31 UTC 05/06**

Inundation Levels	NAVD88	Stage
	71	28
	70	27
	69	26
	68	25
	67	24

Major Flooding Begins

	66	23
	65	22
	64	21
	63	20

Moderate Flooding Begins

	62	19
	61	18

Flooding Begins

	<b>60</b>	<b>17</b>
	59	16
	58	15
	57	14
	56	13

Inundation Feedback

Inundation in partnership with

Transparency Level  100 Year Flood  500 Year Flood  Floodway Data

**Selected Inundation**  
NAVD88: 60 ft  
Stage: 17.0 ft

**Mouse Location\***  
Water Depth: Off  
Latitude: 35.339 N  
Longitude: -77.9812 W  
\* All mouse location values are estimates only.

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User Guide  
Inundation Sites

Click on the image to zoom in

**Flood Categories (in feet)**  
Major Flood Stage: 24  
Moderate Flood Stage: 23  
Flood Stage: 18  
Action Stage: 18  
Below Flood Stage: 13

USGS Gauge Location  
Extent of Inundation Study Boundaries

**Historical Crests**  
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(2) 27.30 ft on 10/05/1929  
(3) 26.70 ft on 09/23/1945  
(4) 26.21 ft on 09/12/1996  
(5) 26.10 ft on 10/09/1964  
Show More Historical Crests

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# National Weather Service

## Inundation Map Interface – Zoom Features

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Image Type:  Standard (Faster Download)  Detailed (Slower Download)

Mouse Location Water Depth:  Water Depth Function:  Current Stage: 8.63 ft at 13:31 UTC 05/08

Zoom In Zoom Out

Transparency Level  100 Year Flood 500 Year Flood Floodway Data

**Selected Inundation**  
NAVD83: 80 ft  
Stage: 17.0 ft

**Mouse Location\***  
Water Depth: Off  
Latitude: 35.339 N  
Longitude: -77.9812 W  
\* All mouse location values are estimates only.

**Flood Categories (in Feet)**  
Major Flood Stage: 24  
Moderate Flood Stage: 20  
Flood Stage: 18  
Action Stage: 16  
Base Flood Stage: 13

USGS Gauge Location  
Extent of Inundation  
Study Boundaries

**Historical Crests**  
(1) 28.85 ft on 09/20/1999  
(2) 27.30 ft on 10/05/1929  
(3) 26.70 ft on 09/23/1945  
(4) 26.21 ft on 09/12/1996  
(5) 26.10 ft on 10/09/1964  
[Show More Historical Crests](#)

Graphical representation of flood inundation for NWS flood categories are based on steady state hydraulic modeling of water surface elevations for incrementated discharges. Map shows approximate inundation areas for given water surface elevations and should not be used for navigation or permitting or other legal purposes, but strictly as a planning reference tool.

**Inundation Feedback**

Inundation in partnership with

EMERGENCY MANAGEMENT  
FLOODSMART.GOV  
USA.GOV

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Image Type: Standard (Faster Download) Detailed (Slower Download)

Mouse Location Water Depth: Off Water Depth Function: Off Current Stage: 8.63 ft at 13:31 UTC 05/08

Zoom Out

Transparency Level 10 Year Flood 500 Year Flood Floodway Data

**Selected Inundation**  
NAVD83: 60 ft  
Stage: 17.0 ft

**Mouse Location\***  
Water Depth: Off  
Latitude: 35.339 N  
Longitude: -77.9812 W  
\* All mouse location values are estimates only.

**Flood Categories (in Feet)**  
Major Flood Stage: 24  
Moderate Flood Stage: 20  
Flood Stage: 18  
Action Stage: 18  
Breach Flood Stage: 15

**Historical Crests**  
(1) 28.85 ft on 09/20/1999  
(2) 27.30 ft on 10/05/1929  
(3) 26.70 ft on 09/23/1945  
(4) 26.21 ft on 09/12/1996  
(5) 26.10 ft on 10/09/1964  
[Show More Historical Crests](#)

Graphical representation of flood inundation for NWS flood categories are based on steady state hydraulic modeling of water surface elevations for incrementated discharges. Map shows approximate inundation areas for given water surface elevations and should not be used for navigation or permitting or other legal purposes, but strictly as a planning reference tool.

**Mouse Location\***  
Water Depth: Off  
Latitude: 35.3407 N  
Longitude: -77.9919 W  
\* All mouse location values are estimates only.

Water Predictions  
for  
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

"America's NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life"





# National Weather Service

## Inundation Map Interface – Zoom Features

**National Weather Service**  
Advanced Hydrologic Prediction Service

Home News Organization Search for:  NWS All NOAA Go

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

Transparency Level  100 Year Flood  500 Year Flood  Floodway Data

**Selected Inundation**  
NAVD83: 60 ft  
Stage: 17.0 ft

**Mouse Location\***  
Water Depth: Off  
Latitude: 35.339 N  
Longitude: -77.9812 W  
\* All mouse location values are estimates only.

**Flood Categories (in Feet)**

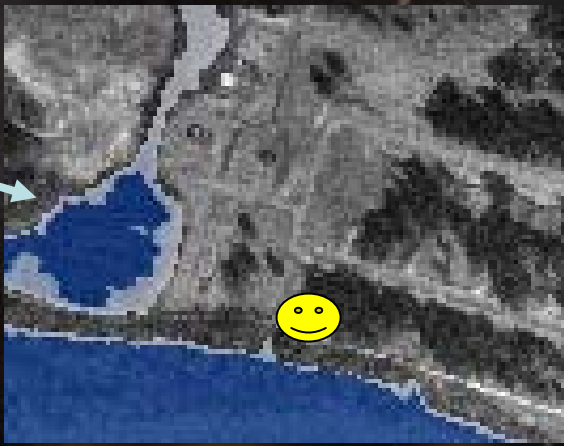
Major Flood Stage	24
Moderate Flood Stage	26
Flood Stage	18
Action Stage	18
Basin Flood Stage	18

**Historical Crests**

- (1) 28.85 ft on 09/20/1999
- (2) 27.30 ft on 10/05/1929
- (3) 26.70 ft on 09/23/1945
- (4) 26.21 ft on 09/12/1996
- (5) 26.10 ft on 10/09/1964

Show More Historical Crests

**Mouse Location\***  
Water Depth: Off  
Latitude: 35.3407 N  
Longitude: -77.9919 W  
\* All mouse location values are estimates only.



Water Predictions  
for  
Life Decisions

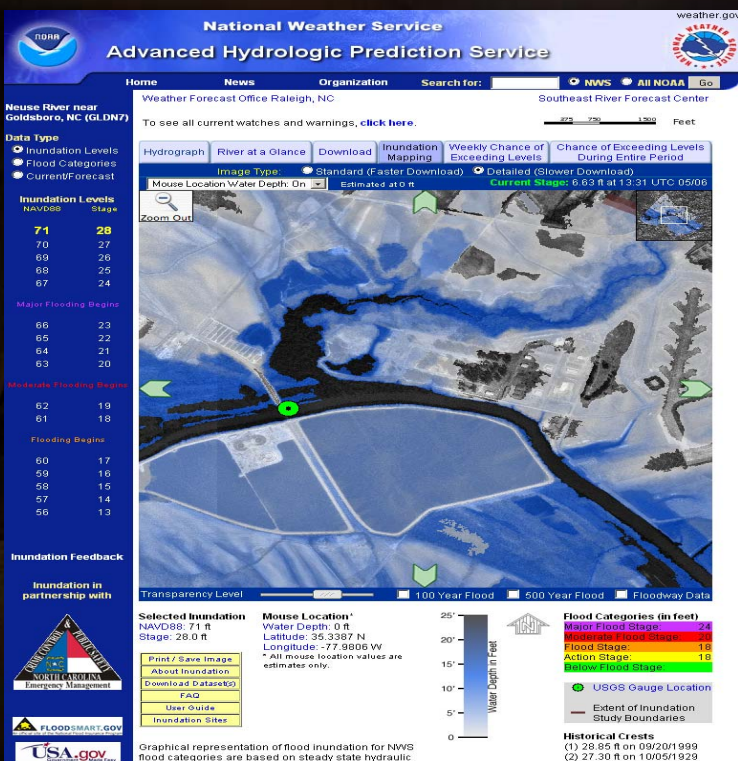
Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



# National Weather Service

## Inundation Map Interface – Zoom with Water Depths



**Historical Crests**

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 09/23/1945

**Selected Inundation**

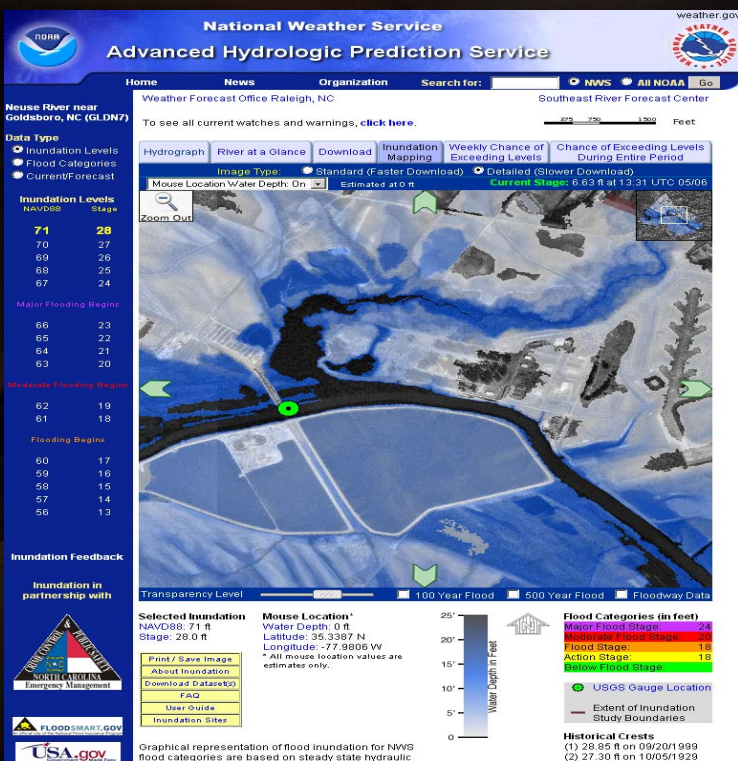
NAVD88: 71 ft  
Stage: 28.0 ft





# National Weather Service

## Inundation Map Interface – Zoom with Water Depths

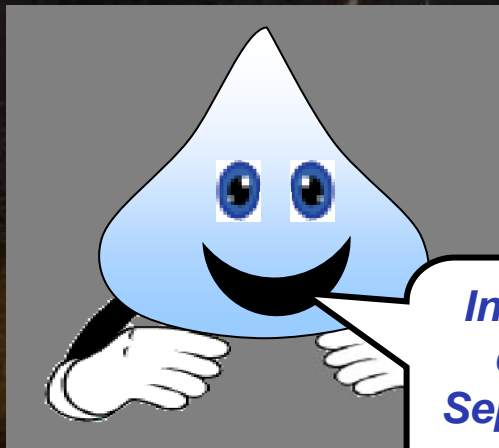


**Historical Crests**

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 09/23/1945
- 26.24 ft on 09/24/1999

**Selected Inundation**

NAVD88: 71 ft  
Stage: 28.0 ft



*In fact, it did in September 1999.*

Water Predictions  
for  
Life Decisions

**Reference:**

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

*"America's NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life"*



# National Weather Service

## Inundation Map Interface – Zoom with Water Depths

**National Weather Service**  
Advanced Hydrologic Prediction Service

Home | News | Organization | Search for: NWS | All NOAA | Go

Mouse River near Goldsboro, NC (GLDN7) | Southeast River Forecast Center

**Click Here**

Hydrograph | River at a Glance | **Download** | Inundation Mapping | Weekly Chance of Exceeding Levels | Chance of Exceeding Levels During Entire Period

Image Type: **Water Depth** (Faster Download) | Detailed (Slower Download) | Estimated at 0 ft | **Current Stage**: 6.63 ft at 13:31 UTC 05/06

Mouse Location Water Depth: On | Estimated at 0 ft

Zoom Out

Transparency Level | 100 Year Flood | 500 Year Flood | Floodway Data

**Selected Inundation**  
NAVD88: 71 ft  
Stage: 28.0 ft

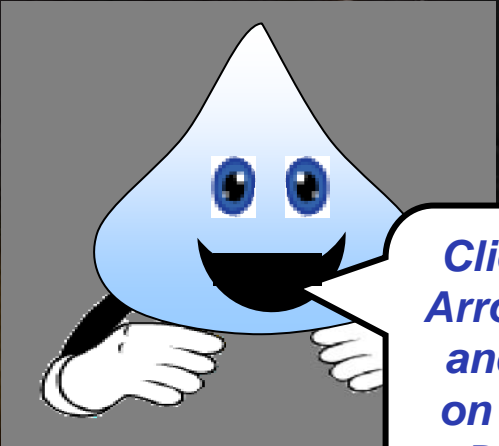
**Mouse Location\***  
Water Depth: 0 ft  
Latitude: 35.3367 N  
Longitude: -77.9895 W  
\* All mouse location values are estimates only.

**Flood Categories (in feet)**  
Major Flood Stage: 24  
Moderate Flood Stage: 18  
Flood Stage: 15  
Action Stage: 10  
Minor Flood Stage: 0

**Historical Crests**  
(1) 28.85 ft on 09/20/1999  
(2) 27.30 ft on 10/05/1929  
(3) 26.70 ft on 09/23/1945

**Selected Inundation**  
NAVD88: 71 ft  
Stage: 28.0 ft

**Historical Crests**  
(1) 28.85 ft on 09/20/1999  
(2) 27.30 ft on 10/05/1929  
(3) 26.70 ft on 09/23/1945



**Click the Arrow Key and turn on Water Depth.**

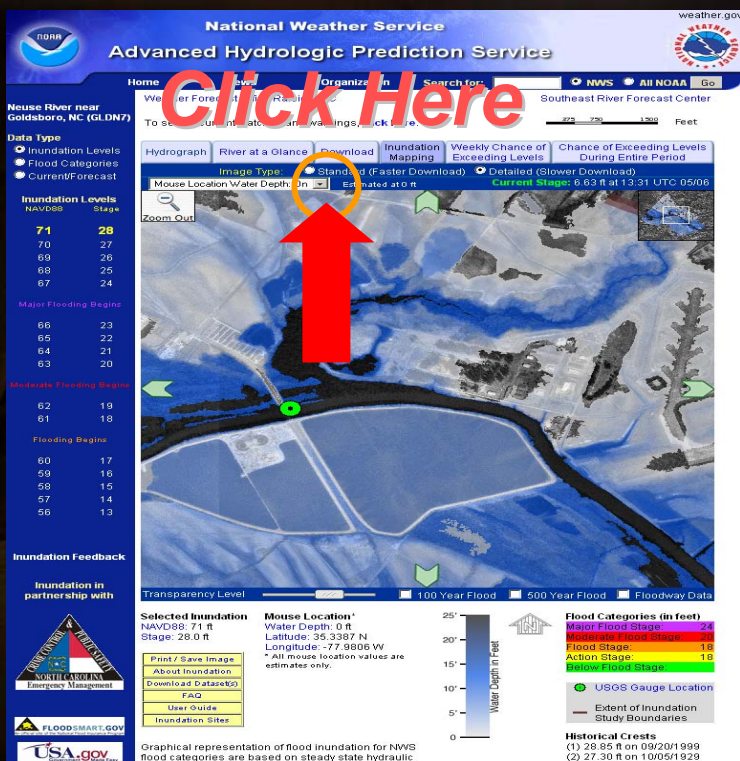
Water Predictions  
for  
Life Decisions

**Reference:**  
<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



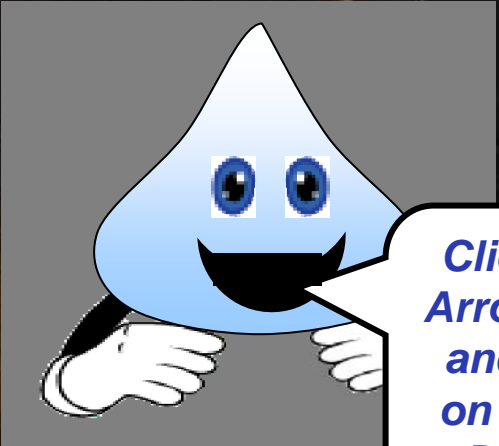
# National Weather Service

## Inundation Map Interface – Zoom with Water Depths



**Selected Inundation**  
 NAVD88: 71 ft  
 Stage: 28.0 ft

**Historical Crests**  
 (1) 28.85 ft on 09/20/1999  
 (2) 27.30 ft on 10/05/1929  
 (3) 26.70 ft on 09/23/1945



**Click the Arrow Key and turn on Water Depth.**

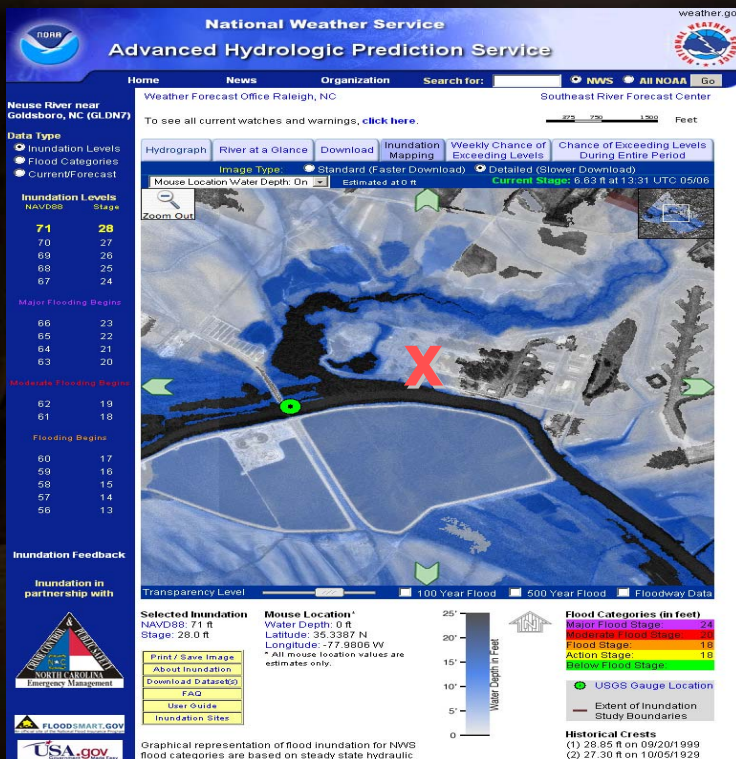
Water Predictions  
 for  
 Life Decisions

**Reference:**  
<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



# National Weather Service

## Inundation Map Interface – Zoom with Water Depths

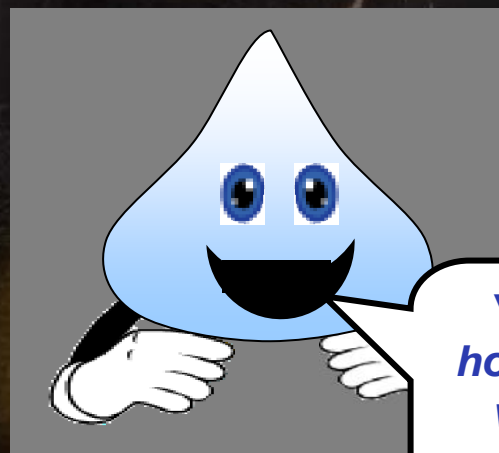


**Historical Crests**

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 09/23/1945
- 26.24 ft on 09/23/1945

**Selected Inundation**

NAVD88: 71 ft  
Stage: 28.0 ft



You'll see how high the water got onto your roads.

Water Predictions  
for  
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



# National Weather Service

## Inundation Map Interface – Zoom with Water Depths

**National Weather Service**  
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

**Data Type**  
 Inundation Levels  
 Flood Categories  
 Current/Forecast

**Inundation Levels**  
 NAVD88 Stage  
 71 28  
 70 27  
 69 26  
 68 25  
 67 24

**Major Flooding Begins**  
 66 23  
 65 22  
 64 21  
 63 20

**Moderate Flooding Begins**  
 62 19  
 61 18

**Flooding Begins**  
 60 17  
 59 16  
 58 15  
 57 14  
 56 13

**Inundation Feedback**  
 Inundation in partnership with  
 NORTH CAROLINA Emergency Management  
 FLOODSMART.GOV  
 USA.GOV

**Selected Inundation**  
 NAVD88: 71 ft  
 Stage: 28.0 ft

**Mouse Location\***  
 Water Depth: 0 ft  
 Latitude: 35.3387 N  
 Longitude: -77.9895 W  
 \* All mouse location values are estimates only.

**Flood Categories (in feet)**  
 Major Flood Stage: 24  
 Moderate Flood Stage: 22  
 Flood Stage: 18  
 Action Stage: 16  
 Minor Flood Stage: 14

**Historical Crests**  
 (1) 28.95 ft on 09/20/1999  
 (2) 27.30 ft on 10/05/1929

**Selected Inundation**  
 NAVD88: 71 ft  
 Stage: 28.0 ft

**Historical Crests**  
 (1) 28.95 ft on 09/20/1999  
 (2) 27.30 ft on 10/05/1929  
 (3) 26.70 ft on 09/23/1945

**Mouse Location**  
 Water Depth: 2.50 - 4.50 ft  
 Latitude: 35.3389 N  
 Longitude: -77.9915 W  
 \* All mouse location values are estimates only.

Water Predictions  
 for  
 Life Decisions

Reference:

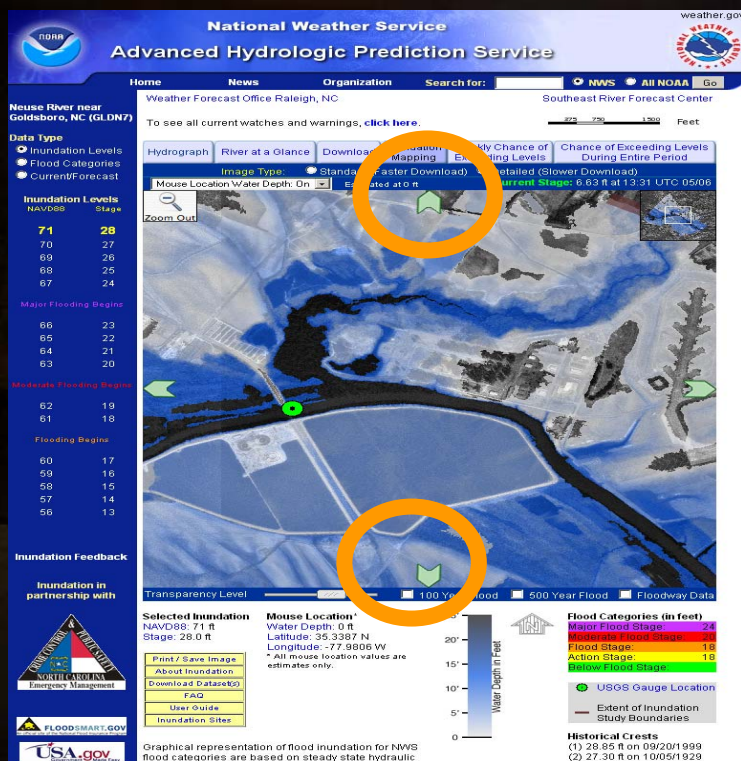
<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

"America's NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life"



# National Weather Service

## Inundation Map Interface – Navigation Features



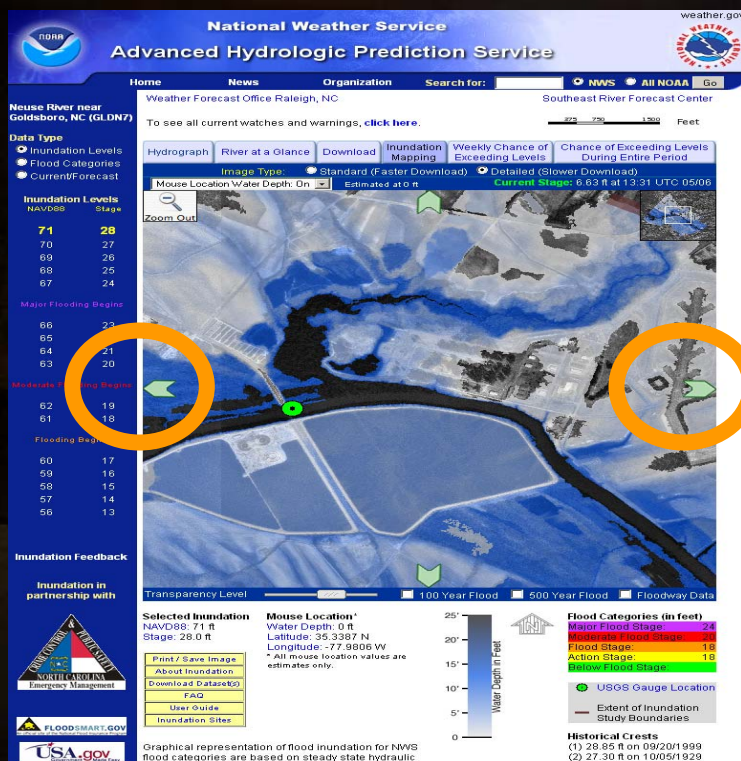
Up and Down  
to other panels





# National Weather Service

## Inundation Map Interface – Navigation Features



Left and Right  
to other panels

Water Predictions  
for  
Life Decisions

Reference:

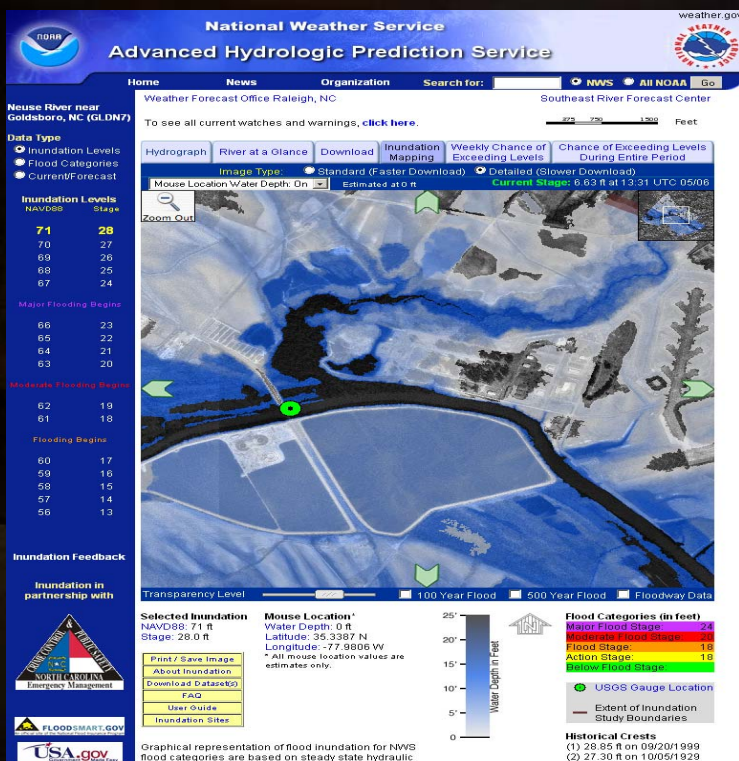
<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

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# National Weather Service

## Inundation Map Interface – Navigation Features



Let's Check  
How Your  
Friend  
Fared or  
Feared.

Water Predictions  
for  
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

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# National Weather Service

## Inundation Map Interface – Navigation Features

**National Weather Service**  
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Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

Home News Organization Search for: [ ] NWS All NOAA Go

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Image Type: Standard (Faster Download) Detailed (Slower Download) Current Stage: 6.63 ft at 13:31 UTC 05/06

Mouse Location Water Depth: On Estimated at 0 ft

Zoom Out

**Click Here**

**Inundation Levels**  
NAVD88 Stage

71	28
70	27
69	26
68	25
67	24
66	23
65	22
64	21
63	20

Moderate Flooding Stage

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

**Inundation Feedback**

Inundation in partnership with

Transparency Level 100 Year Flood 500 Year Flood Floodway Data

**Selected Inundation**  
NAVD88: 71 ft  
Stage: 28.0 ft

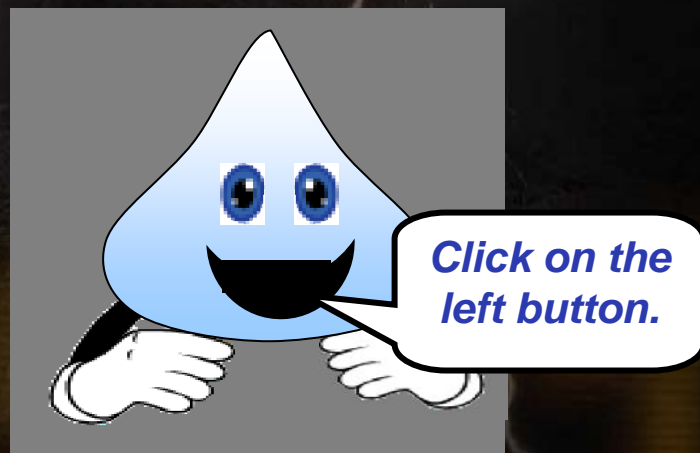
**Mouse Location\***  
Water Depth: 0 ft  
Latitude: 35.3387 N  
Longitude: -77.9895 W  
\* All mouse location values are estimates only.

**Flood Categories (in feet)**

Major Flood Stage	24
Moderate Flood Stage	18
Flood Stage	15
Action Stage	13
Minor Flood Stage	10

USGS Gauge Location  
Extent of Inundation Study Boundaries

**Historical Crests**  
(1) 28.95 ft on 09/20/1999  
(2) 27.30 ft on 10/05/1929



Water Predictions  
for  
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

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# National Weather Service

## Inundation Map Interface – Navigation Features

**National Weather Service**  
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC  
Southeast River Forecast Center

To see all current watches and warnings, [click here.](#)

Home News Organization Search for: [ ] NWS All NOAA Go

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Image Type: Standard (Faster Download) Detailed (Slower Download)

Mouse Location Water Depth: On Estimated at 0 ft Current Stage: 6.63 ft at 13:31 UTC 05/06

**Inundation Levels**  
NAVD88 Stage

71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

66	23
65	22
64	21
63	20

Moderate Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

**Inundation Feedback**

Inundation in partnership with

Transparency Level 100 Year Flood 500 Year Flood Floodway Data

**Selected Inundation**  
NAVD88: 71 ft  
Stage: 28.0 ft

**Mouse Location\***  
Water Depth: 0 ft  
Latitude: 35.3387 N  
Longitude: -77.9806 W  
\* All mouse location values are estimates only.

**Flood Categories (in feet)**  
Major Flood Stage: 24  
Moderate Flood Stage: 18  
Flood Stage: 18  
Action Stage: 18  
Below Flood Stage: 18

USGS Gauge Location  
Extent of Inundation Study Boundaries

**Historical Crests**  
(1) 28.95 ft on 09/20/1999  
(2) 27.30 ft on 10/05/1929

**National Weather Service**  
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC  
Southeast River Forecast Center

To see all current watches and warnings, [click here.](#)

Home News Organization Search for: [ ] NWS All NOAA Go

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Image Type: Standard (Faster Download) Detailed (Slower Download)

Mouse Location Water Depth: On Estimated at 9.00 - 10.00 ft Current Stage: 6.6 ft at 15:15 UTC 05/06

**Inundation Levels**  
NAVD88 Stage

71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

66	23
65	22
64	21
63	20

Moderate Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

**Inundation Feedback**

Inundation in partnership with

Transparency Level 100 Year Flood 500 Year Flood Floodway Data

**Selected Inundation**  
NAVD88: 71 ft  
Stage: 28.0 ft

**Mouse Location\***  
Water Depth: 8.00 - 10.00 ft  
Latitude: 35.3381 N  
Longitude: -78.0125 W  
\* All mouse location values are estimates only.

**Flood Categories (in feet)**  
Major Flood Stage: 24  
Moderate Flood Stage: 18  
Flood Stage: 18  
Action Stage: 18  
Below Flood Stage: 18

USGS Gauge Location  
Extent of Inundation Study Boundaries

**Historical Crests**  
(1) 28.95 ft on 09/20/1999  
(2) 27.30 ft on 10/05/1929

Water Predictions  
for  
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

"America's NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life"



# National Weather Service

## Inundation Map Interface – Navigation and Zoom

**National Weather Service**  
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC | Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

**Data Type**

- Inundation Levels
- Flood Categories
- Current/Forecast

**Inundation Levels**

NAVD88	Stages
71	28
70	27
69	26
68	25
67	24

**Major Flooding Begins**

66	23
65	22
64	21
63	20

**Moderate Flooding Begins**

62	19
61	18

**Flooding Begins**

60	17
59	16
58	15
57	14
56	13

**Inundation Feedback**

Inundation in partnership with

**Selected Inundation**  
NAVD88: 71 ft  
Stage: 28.0 ft

**Mouse Location\***  
Water Depth: 8.00 - 10.00 ft  
Latitude: 35.3391 N  
Longitude: -78.0125 W  
\* All mouse location values are estimates only.

**Flood Categories (in feet)**

Major Flood Stage	24
Moderate Flood Stage	20
Flood Stage	18
Action Stage	16
Exceed Flood Stage	14

**Historical Crests**

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929

**Mouse Location\***  
Water Depth: 6.00 - 8.00 ft  
Latitude: 35.3347 N  
Longitude: -78.0207 W  
\* All mouse location values are estimates only.

Water Predictions  
for  
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

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# National Weather Service

## Inundation Map Interface – Print Image

**National Weather Service**  
Advanced Hydrologic Prediction Service

Home News Organization Search for: NWS All NOAA Go

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels During Entire Period

Image Type: Standard (Faster Download) Detailed (Slower Download)

Mouse Location Water Depth Off water Depth Function Off Current Stage: 6.65 ft at 12:15 UTC 05/06

**Inundation Levels**

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

**Major Flooding Begins**

66	23
65	22
64	21
63	20

**Moderate Flooding Begins**

62	19
61	18

**Flooding Begins**

60	17
59	16
58	15
57	14
56	13

**Inundation Feedback**

Inundation in partnership with

Transparency Level 100 Year Flood 500 Year Flood Floodway Data

**Selected Inundation**

Mouse Location  
Water Depth Off  
Latitude: 35.2657 N  
Longitude: -77.9528 W  
Note: mouse location values are approximate only.

**Flood Categories (in feet)**

Major Flood Stage	24
Exceeding Flood Stage	24
Blue Stage	18
Action Stage	18
Yellow Flood Stage	18

**Historical Crests**

- (1) 28.85 ft on 09/20/1999
- (2) 27.30 ft on 10/05/1929
- (3) 26.70 ft on 09/23/1945
- (4) 26.21 ft on 09/12/1999
- (5) 26.10 ft on 10/09/1964

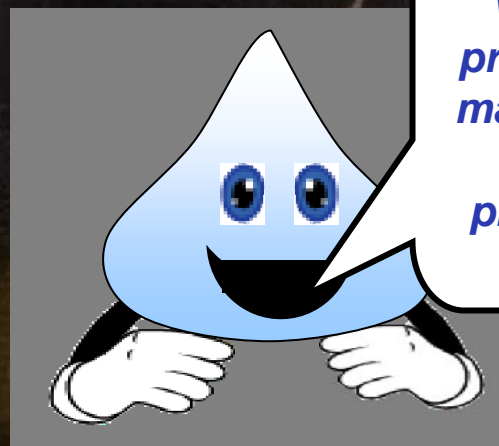
Click on the image to zoom in

Print / Save Image  
About Inundation  
Download Dataset(s)  
FAQ  
User Guide  
Inundation Sites

Return to Area Map

Print / Save Image  
About Inundation  
Download Dataset(s)  
FAQ  
User Guide  
Inundation Sites

**Click Here**



**You may want to print some maps to be better prepared!**

**Water Predictions for Life Decisions**

**Reference:**

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

*"America's NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life"*



# National Weather Service

## Inundation Map Interface – Download Data Sets

**National Weather Service**  
Advanced Hydrologic Prediction Service

Home News Organization Search for:  NWS All NOAA Go

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Image Type:  Standard (Faster Download)  Detailed (Slower Download)

Mouse Location Water Depth Off water Depth Function Off Current Stage: 6.65 ft at 12:15 UTC 05/06

**Inundation Levels**

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

**Major Flooding Begins**

66	23
65	22
64	21
63	20

**Moderate Flooding Begins**

62	19
61	18

**Flooding Begins**

60	17
59	16
58	15
57	14
56	13

**Inundation Feedback**

Inundation in partnership with

Transparency Level  100 Year Flood  500 Year Flood  Floodway Data

**Selected Inundation**

Mouse Location  
Water Depth Off  
Latitude: 35.2657 N  
Longitude: -77.9528 W  
Note: mouse location values are approximate only.

**Flood Categories (in feet)**

Major Flood Stage	24
Minor Flood Stage	20
Flood Stage	18
Action Stage	18
Minor Flood Stage	18

**Historical Crests**

- (1) 28.85 ft on 09/20/1999
- (2) 27.30 ft on 10/05/1929
- (3) 26.70 ft on 09/23/1945
- (4) 26.21 ft on 08/12/1995
- (5) 26.10 ft on 10/09/1964

Show More Historical Crests

[Return to Area Map](#)

Print / Save Image

About Inundation

Download Dataset(s)

FAQ

User Guide

Inundation Sites

**Click Here**



*If you like to import it to your mapping software or get warnings.*

Water Predictions for Life Decisions

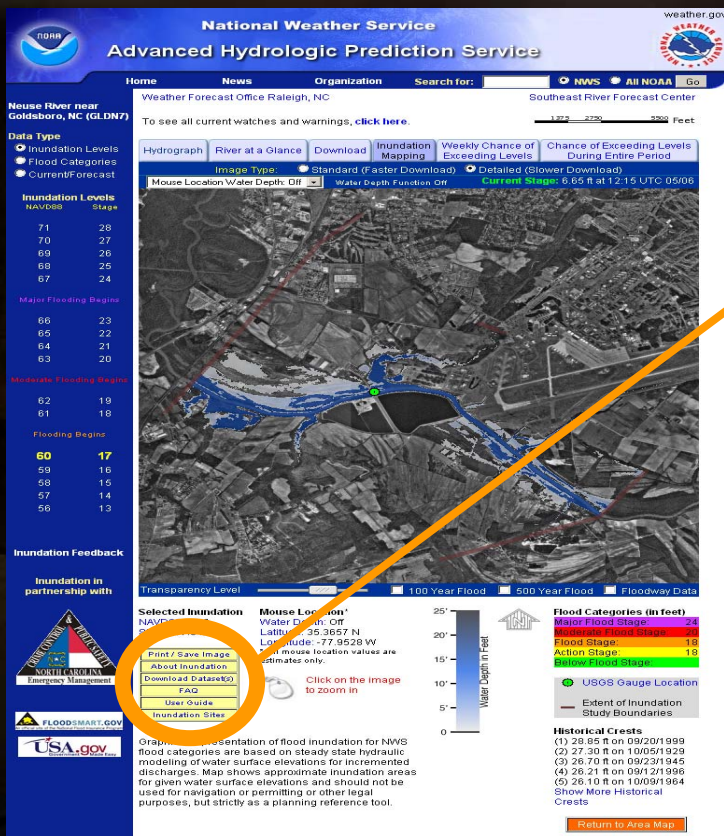
Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



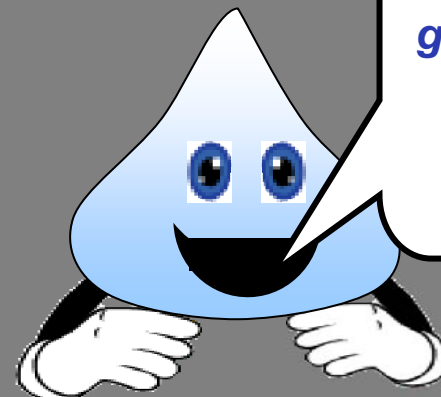
# National Weather Service

## Inundation Map Interface – More Info



- Print / Save Image
- About Inundation
- Download Dataset(s)
- FAQ
- User Guide
- Inundation Sites

More info can be gotten from clicking these boxes



Water Predictions  
for  
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

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# National Weather Service

## Inundation Mapping

### Quick Standard Map

**National Weather Service**  
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC  
Southeast River Forecast Center

**Neuse River near Goldsboro, NC (GLDN7)**

To see all current watches and warnings, [click here](#).

**Data Type**

- Inundation Levels
- Flood Categories
- Current Forecast

**Inundation Levels**

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

**Major Flooding Begins**

66	23
65	22
64	21
63	20

**Moderate Flooding Begins**

62	19
61	18

**Flooding Begins**

60	17
59	16
58	15
57	14
56	13

**Inundation Feedback**

Inundation in partnership with

**Selected Inundation**  
NAVD88: 60 ft  
Stage: 17.0 ft

**Mouse Location\***  
Latitude: 35.3408 N  
Longitude: -77.9663 W  
\*All mouse location values are estimates only.

**Print / Save Image**

- About Inundation
- Download Data (KML)
- FAQ
- User Guide
- Inundation Sites

Graphical representation of flood inundation for NWS flood categories are based on steady state hydraulic modeling of water surface elevations for incremented discharges. Map shows approximate inundation areas for given water surface elevations and should not be used for navigation or permitting or other legal purposes, but strictly as a planning reference tool.

### Detailed Map

**National Weather Service**  
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC  
Southeast River Forecast Center

**Neuse River near Goldsboro, NC (GLDN7)**

To see all current watches and warnings, [click here](#).

**Data Type**

- Inundation Levels
- Flood Categories
- Current Forecast

**Flood Stage Categories**

- Major Flood
- Moderate Flood
- Minor Flood
- Near Flood
- Below Flood

**Inundation Feedback**

Inundation in partnership with

**Mouse Location\***  
Latitude: 35.3657 N  
Longitude: -77.9628 W  
\*All mouse location values are estimates only.

**Flood Categories (in feet)**

- Major Flood Stage: 24
- Moderate Flood Stage: 20
- Flood Stage: 18
- Action Stage: 18
- Below Flood Stage: 18

**Historical Crests**

- 28.95 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 09/22/1945
- 26.21 ft on 09/12/1964
- 26.10 ft on 10/09/1964

Graphical representation of flood inundation for NWS flood categories are based on steady state hydraulic modeling of water surface elevations for incremented discharges. Map shows approximate inundation areas for given water surface elevations and should not be used for navigation or permitting or other legal purposes, but strictly as a planning reference tool.

### Flood Category Map

Water Predictions  
for  
Life Decisions

"America's NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life"



# National Weather Service

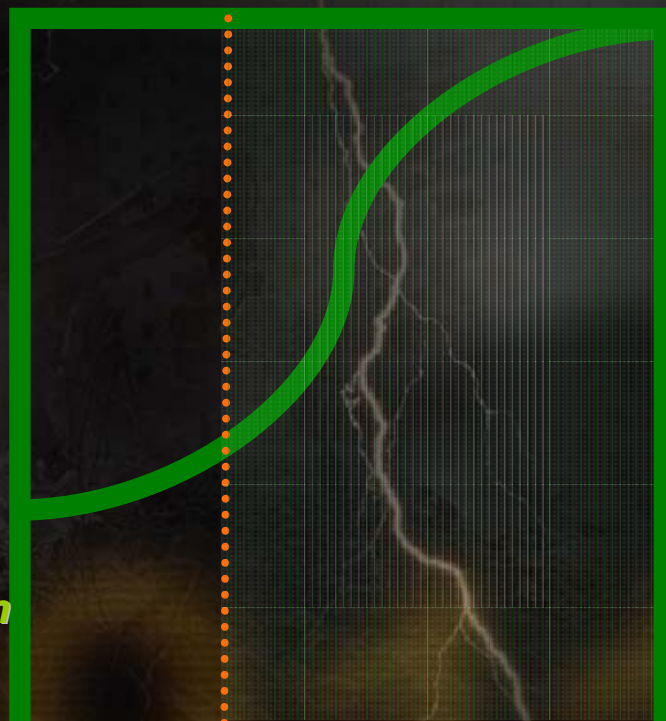
## Flood Mapping Science

Inundation Map Development

### Risk Mapping Improvements

2008 - 2015

- *More Affordable LIDAR DATA*
- *More Expertise in H&H/GIS modeling*
- *More Collaboration/Partnerships*
- *More inundation mapping in high risk communities.*



1995

2000

2005

2010

2015

Water Predictions  
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# National Weather Service

## Flood Mapping Science

Inundation Map Development

### National Risk Mapping Goals

- *Safer, Smarter, and more Resilient Communities.*
- *Reduce Repetitive Flood Losses*
- *Better Floodplain Management*
- *Lower the Risks and Reduced the Liabilities*



Water Predictions  
for  
Life Decisions

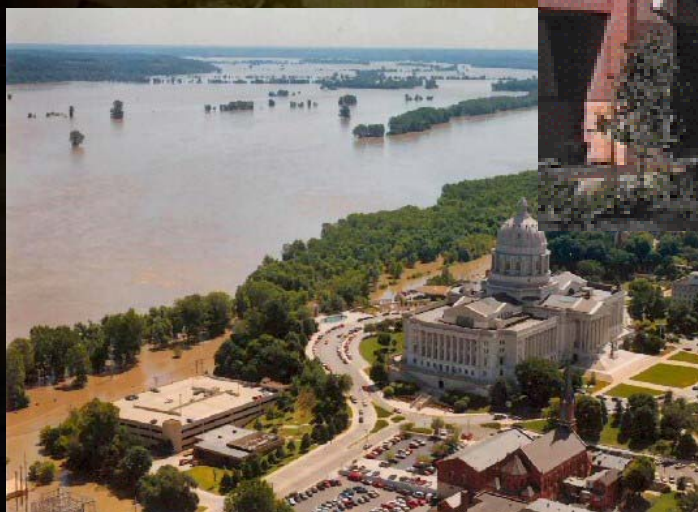
“America’s NOAA National Weather Service: Protecting Lives, Livelihoods, and A Way of Life”



# National Weather Service

**Floods...a National Issue ... Anytime ... Anywhere ...**

**Working to improve the communication of flood risks.**



**State House**



**Our House**

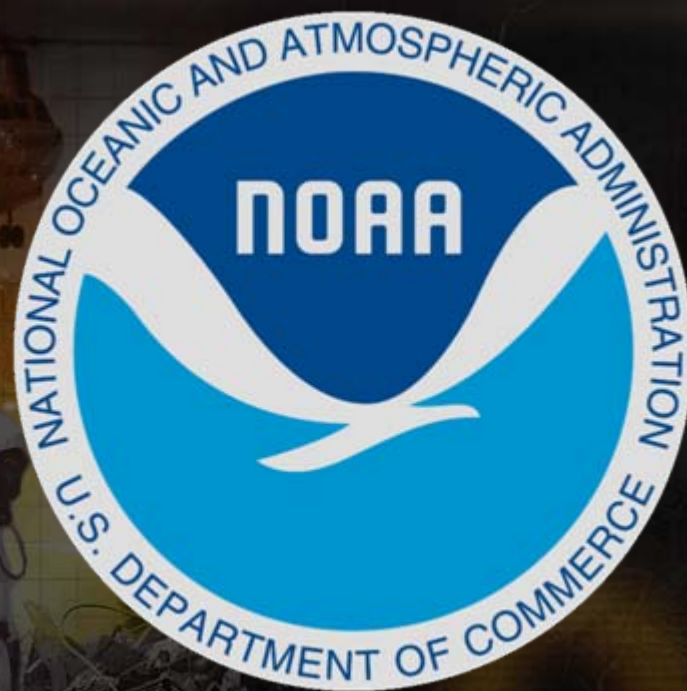


**Your House**





# National Weather Service



***Forecasting Water from the Summit to the Sea***