What if?

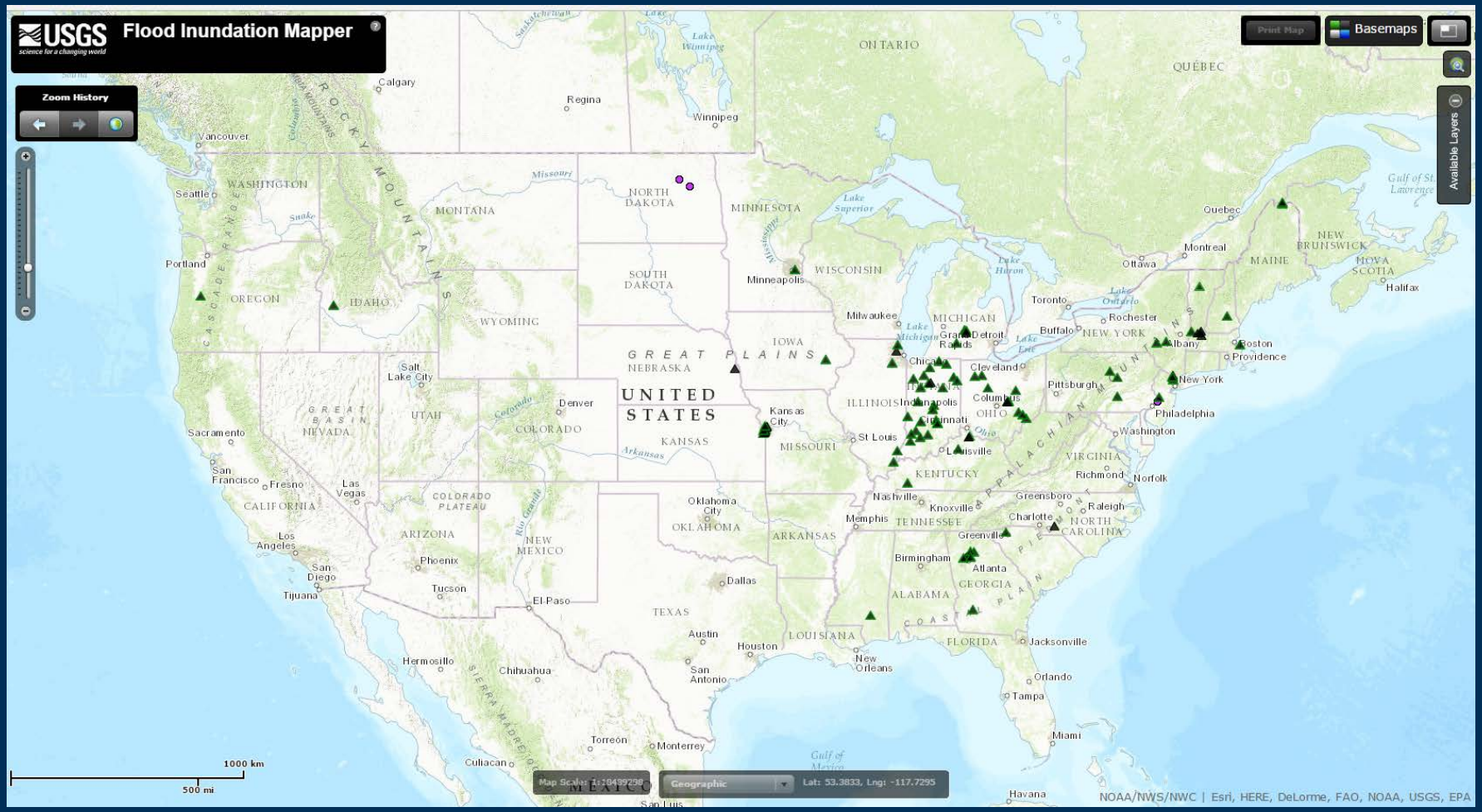
USGS Flood Inundation Mapping Initiative

Katherine Chase, USGS

Association of Montana Floodplain Managers 17th Annual Conference
Missoula, MT, March 6 – 9, 2017

U.S. Department of the Interior
U.S. Geological Survey

USGS Flood Inundation Mapper



http://wimcloud.usgs.gov/apps/FIM/FloodInundationMapper.html

What is Flood Inundation Mapping?

Flood Inundation Mapping (FIM)

- Real Time
- Online
- Operational
- USGS streamgage readings
- NWS Forecasts
- ➡ FLOOD RISK

Benefits

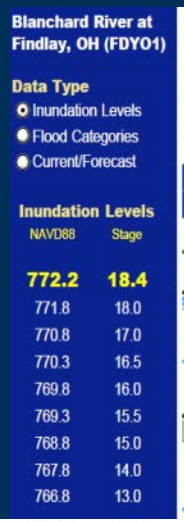
- Public Safety
- Understanding changing natural processes that produce hazards
- Development of hazard mitigation strategies and technologies
- Effectively reduce vulnerability and repetition of loss to infrastructure
- Promotion of risk-wise behavior

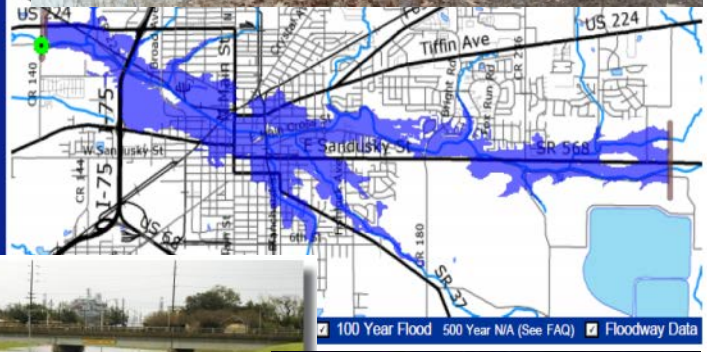
USGS

NATIONAL WEATHER SERVICE · U.S. DEPARTMENT OF COMMERCE · NOAA

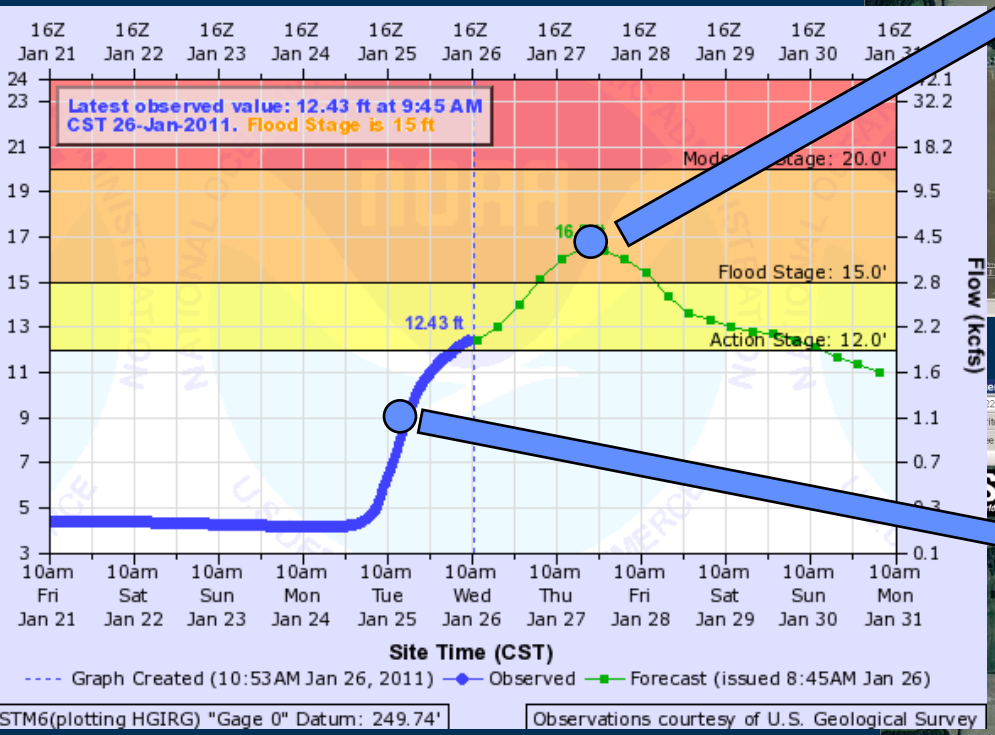
Flood Inundation Maps provide tools for flood…..

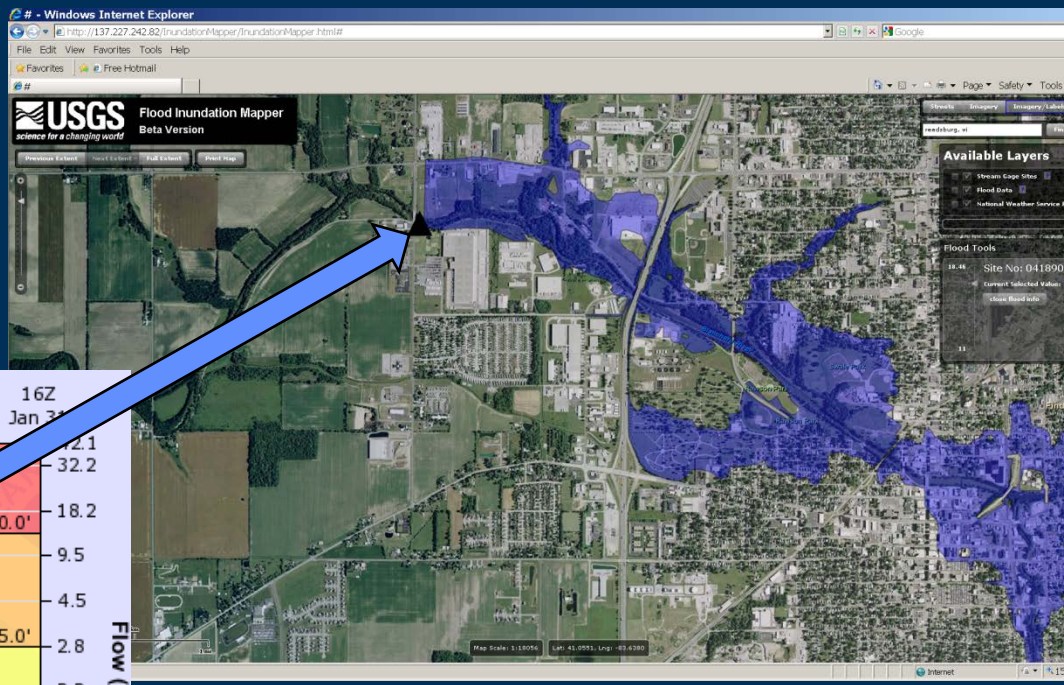
- Preparedness
  - "What-if" scenarios
- Response
  - Tied to gage & forecast data
- Recovery
  - Damage assessment
- Mitigation & planning
  - Flood risk analyses
- Environmental & ecological assessments

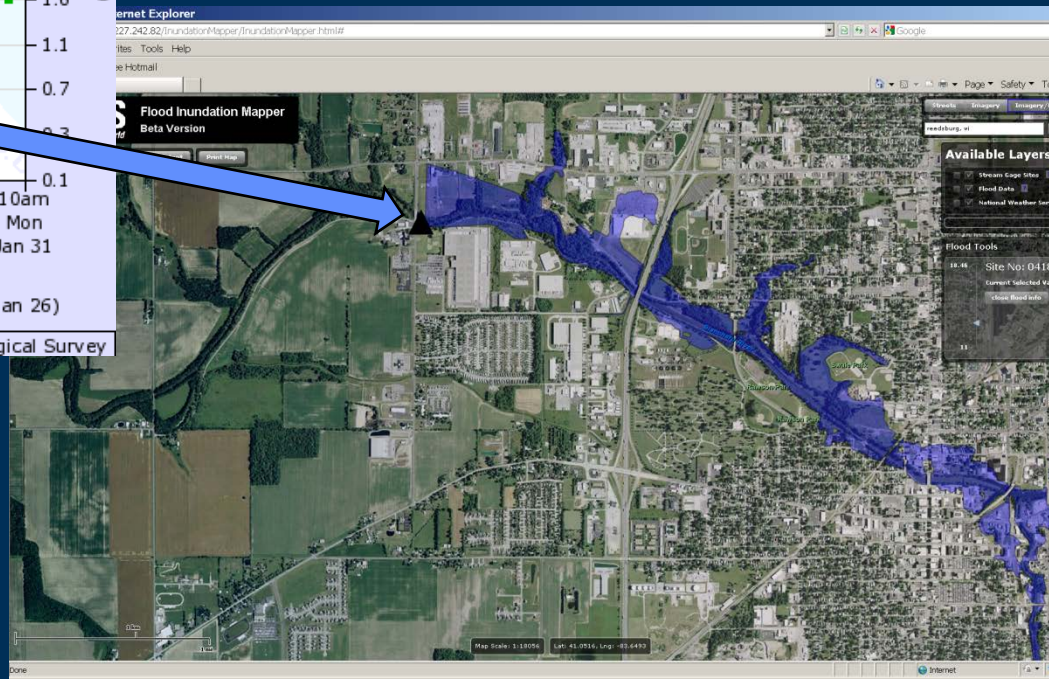




Flooded underpass, Beaumont, TX (photo courtesy of L. Roll/FEMA)


Latest observed value: 12.43 ft at 9:45 AM CST 26-Jan-2011. Flood Stage is 15 ft
Mode Stage: 20.0'
Flood Stage: 15.0'
Action Stage: 12.0'
12.43 ft
Flow (kcfs)
Site Time (CST)
Graph Created (10:53AM Jan 26, 2011)
Observed
Forecast (issued 8:45AM Jan 26)
STM6(plotting HGIRG) "Gage 0" Datum: 249.74'
Observations courtesy of U.S. Geological Survey


Flood Inundation Mapper
Beta Version
Available Layers
Flood Tools


Flood Inundation Mapper
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Integrated Water Research Science and Services (IWRSS)

- USGS
- National Weather Service
- U.S. Army Corps of Engineers
- Federal Emergency Management Agency

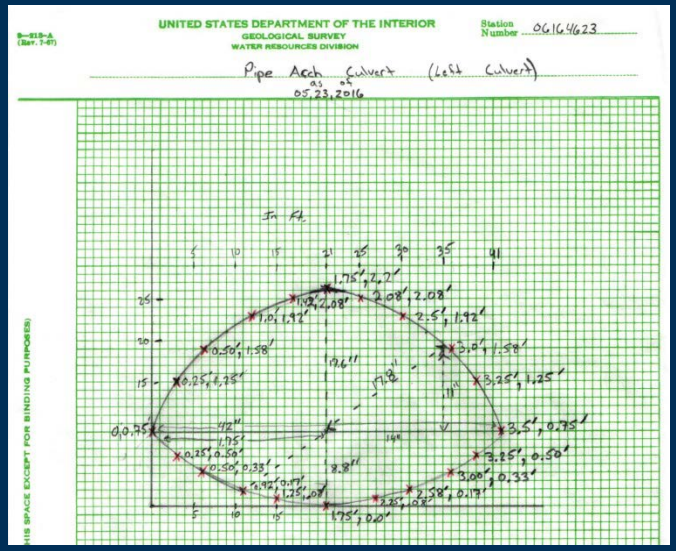
USGS

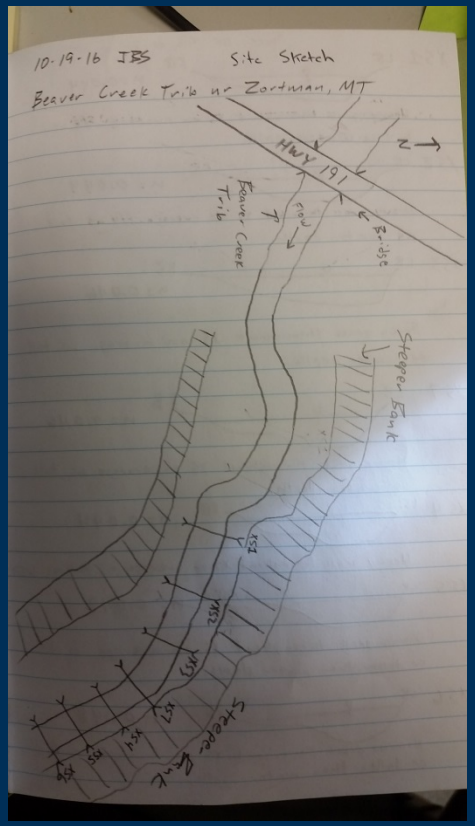
USGS Streamgages

USGS At Work During Floods…

Milk River at Tampico

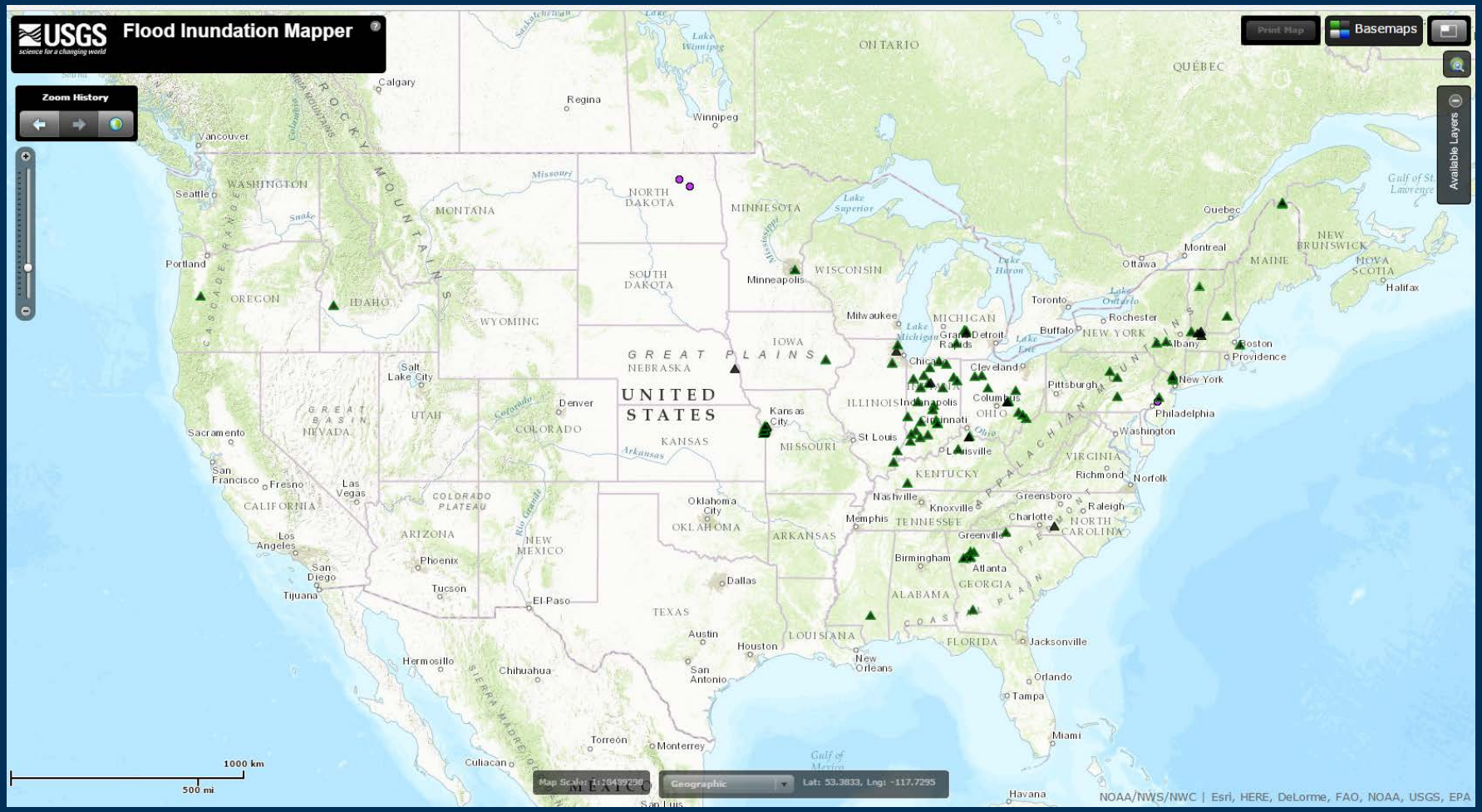
USGS At Work … After Floods





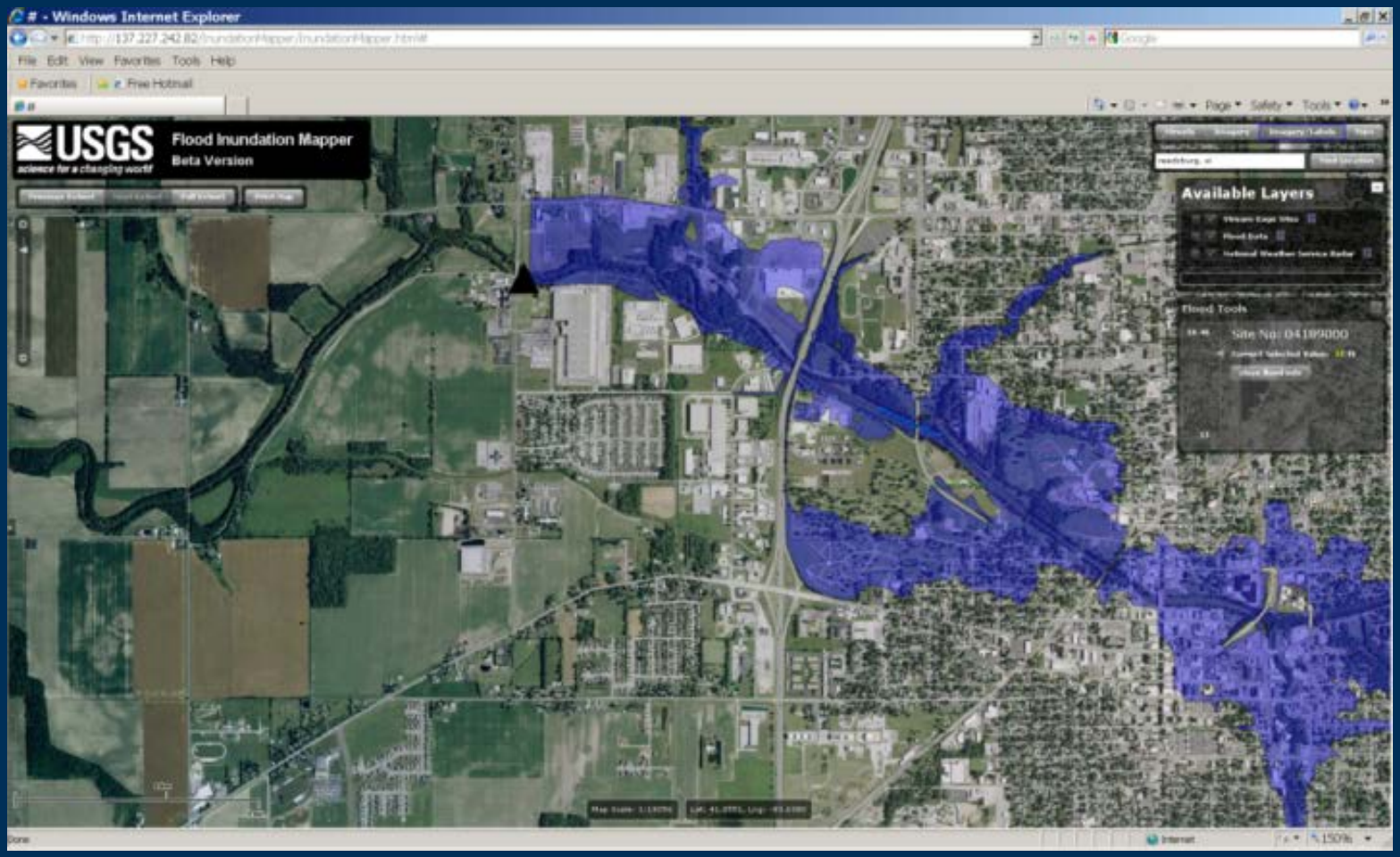
USGS

Web Portal



http://wimcloud.usgs.gov/apps/FIM/FloodInundationMapper.html

FIMI Web Mapping Application



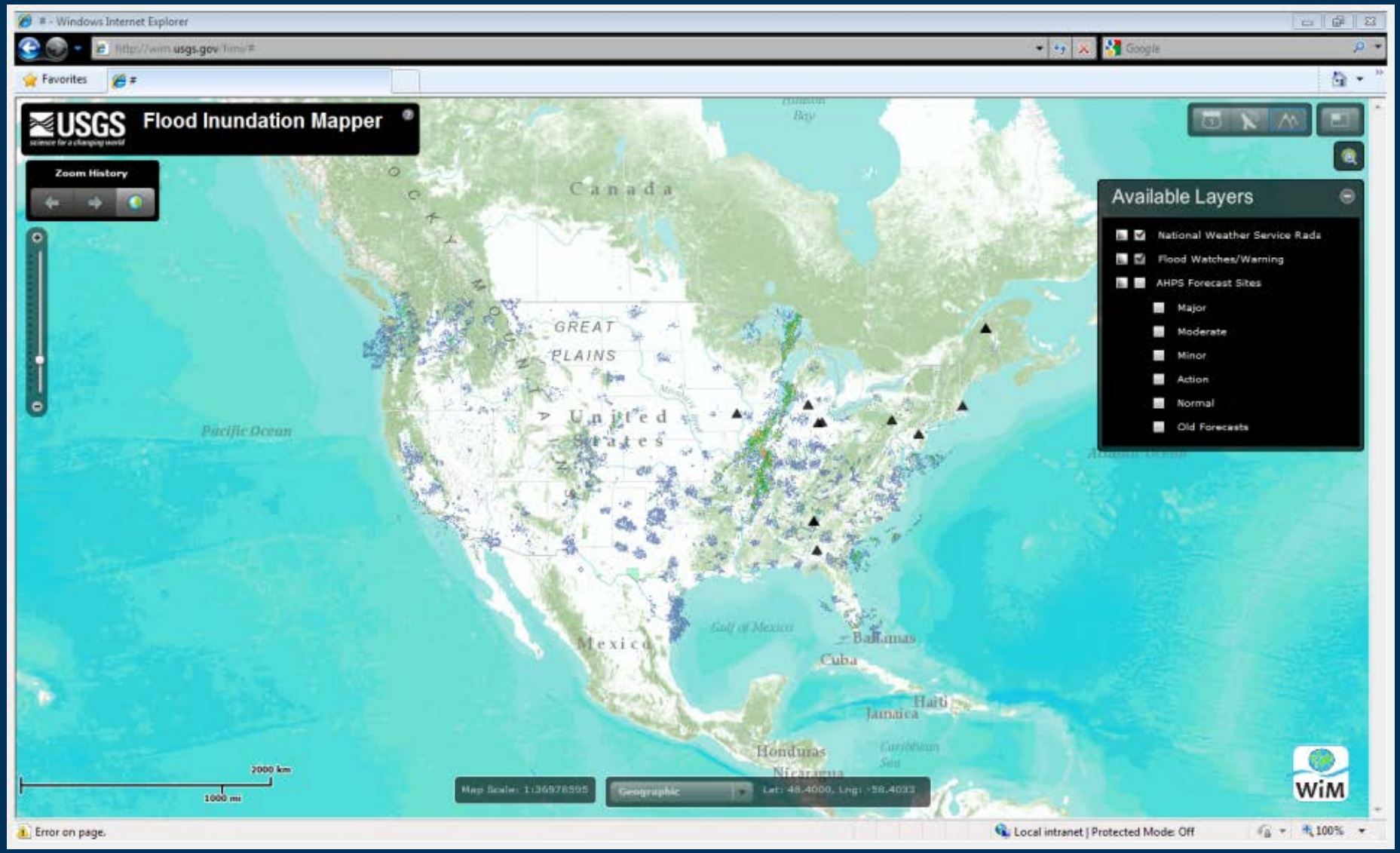
USGS http://wimcloud.usgs.gov/apps/FIM/FloodInundationMapper.html

FIMI WMA Screenshots

Backup Demo Plan

Marie Peppler, WI WSC
WiM Coordinator

U.S. Department of the Interior
U.S. Geological Survey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Flood Inundation Mapper
Zoom History
Available Layers
National Weather Service Rads
Flood Watches/Warning
AHPS Forecast Sites
Major
Moderate
Minor
Action
Normal
Old Forecasts
Canada
GREAT PLAINS
United States
Pacific Ocean
Mexico
Gulf of Mexico
Bahamas
Cuba
Haiti
Jamaica
Honduras
Nicaragua
Caribbean Sea
2000 km
1000 mi
WiM
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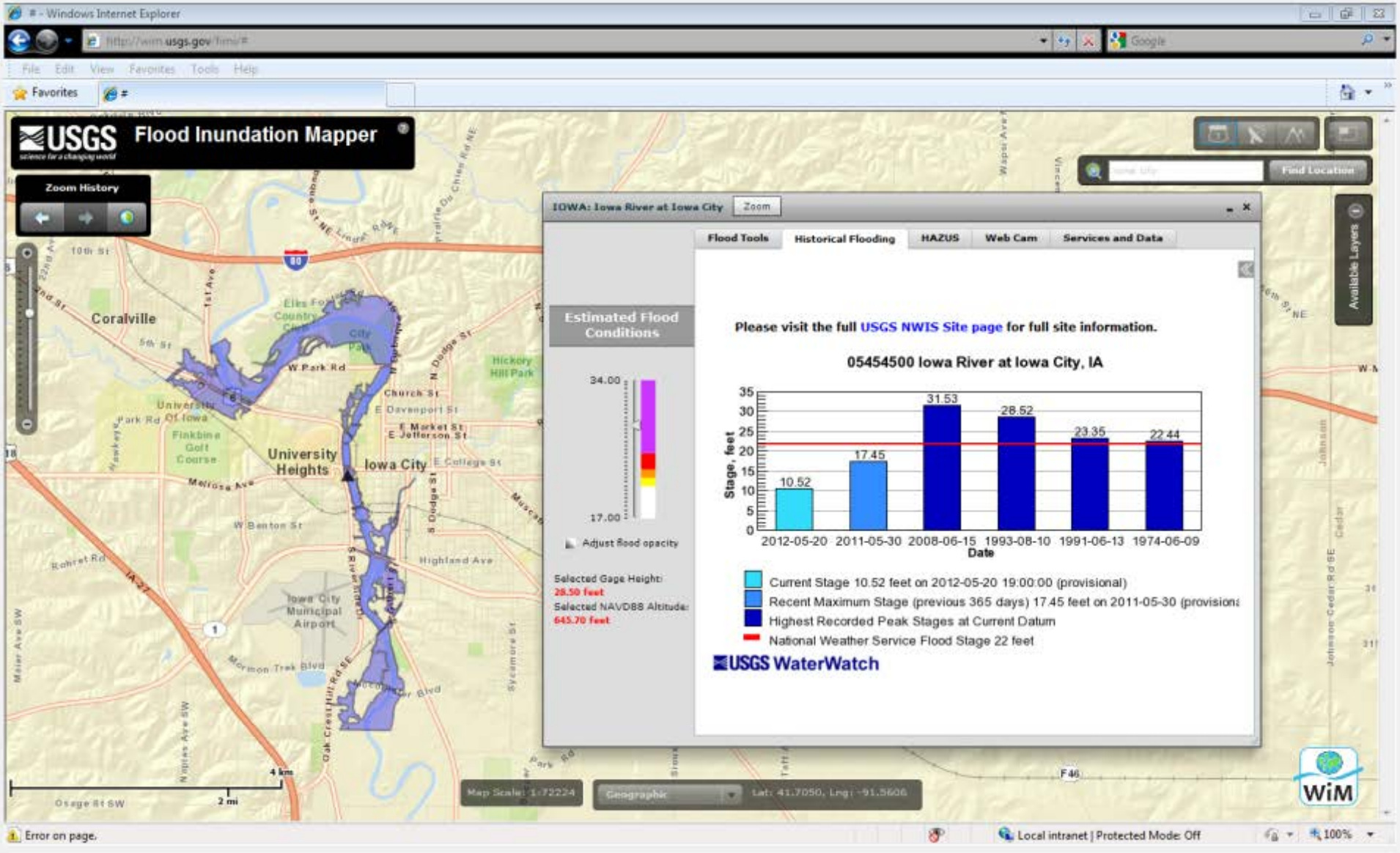
USGS


Windows Internet Explorer
USGS
Flood Inundation Mapper
Zoom History
Find Location
Available Layers
IOWA: Iowa River at Iowa City
Zoom
Flood Tools
Historical Flooding
HAZUS
Web Cam
Services and Data
Estimated Flood Conditions
34.00
17.00
Adjust flood opacity
Selected Gage Height:
28.50 feet
Selected NAVD88 Altitude:
645.70 feet
Please visit the full USGS NWIS Site page for full site information.
05454500 Iowa River at Iowa City, IA
Stage, feet
Date
10.52
17.45
31.53
28.52
23.35
22.44
2012-05-20
2011-05-30
2008-06-15
1993-08-10
1991-06-13
1974-06-09
Current Stage 10.52 feet on 2012-05-20 19:00:00 (provisional)
Recent Maximum Stage (previous 365 days) 17.45 feet on 2011-05-30 (provisional
Highest Recorded Peak Stages at Current Datum
National Weather Service Flood Stage 22 feet
USGS WaterWatch
Coralville
University Heights
Iowa City
Finkbine Golf Course
Iowa City Municipal Airport
Map Scale: 1:72224
Geographic
Lat: 41.7050, Lng: -91.5606
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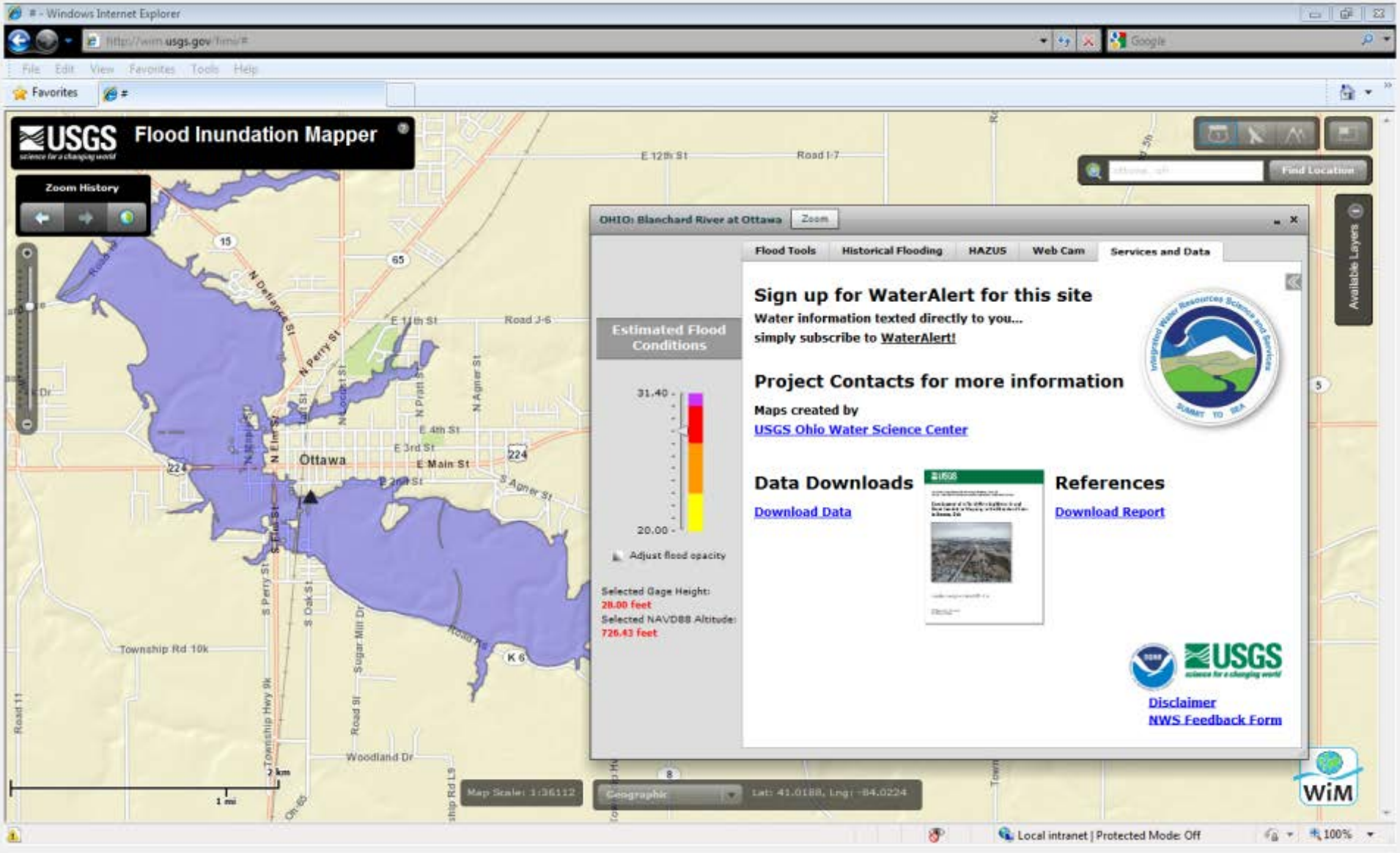
USGS



- Windows Internet Explorer
http://wim.usgs.gov/fims/#
File Edit View Favorites Tools Help
Favorites
USGS
Flood Inundation Mapper
Zoom History
Find Location
Available Layers
OHIO: Blanchard River at Ottawa
Zoom
Flood Tools
Historical Flooding
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Estimated Flood Conditions
31.40
20.00
Adjust flood opacity
Selected Gage Height:
28.00 feet
Selected NAVD88 Altitude:
726.43 feet
Sign up for WaterAlert for this site
Water information texted directly to you...
simply subscribe to WaterAlert!
Project Contacts for more information
Maps created by
USGS Ohio Water Science Center
Data Downloads
Download Data
References
Download Report
Disclaimer
NWS Feedback Form
Ottawa
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E 11th St
Road J-6
E 4th St
E 3rd St
E Main St
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N Defiance St
N Perry St
N Elm St
N Pratt St
N Agner St
S Agner St
S Perry St
S Oak St
Sugar Mill Dr
Road 9I
Township Rd 10k
Township Hwy 9k
Woodland Dr
Road 11
Road 4B
K 6
Map Scale: 1:36112
Geographic
Lat: 41.0188, Lng: -84.0224
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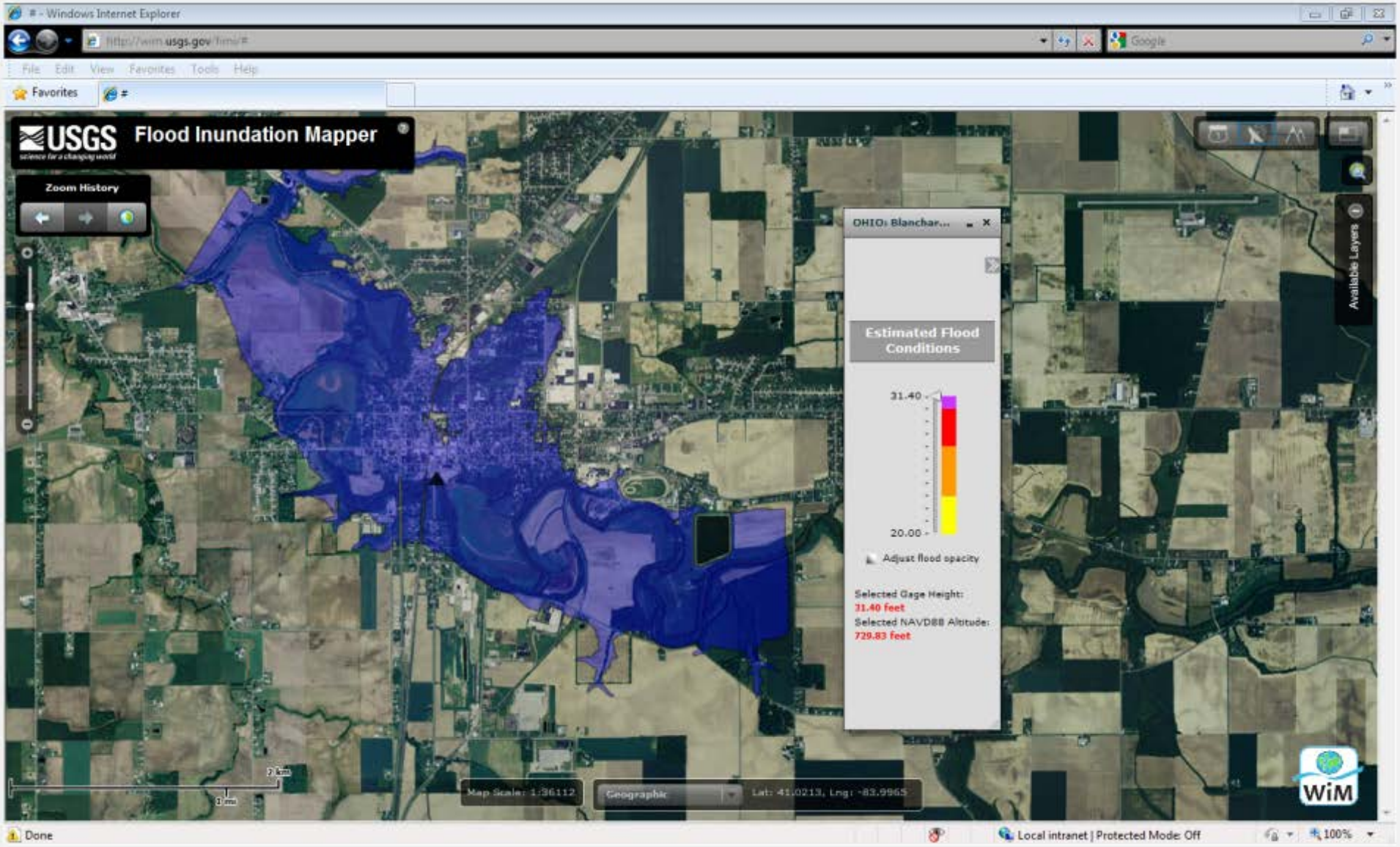
Windows Internet Explorer
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Favorites
USGS
Flood Inundation Mapper
Zoom History
OHIO: Blanchar...
Estimated Flood Conditions
31.40
20.00
Adjust flood opacity
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31.40 feet
Selected NAVD88 Altitude:
729.83 feet
Available Layers
Map Scale: 1:36112
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WiM
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Local intranet | Protected Mode: Off
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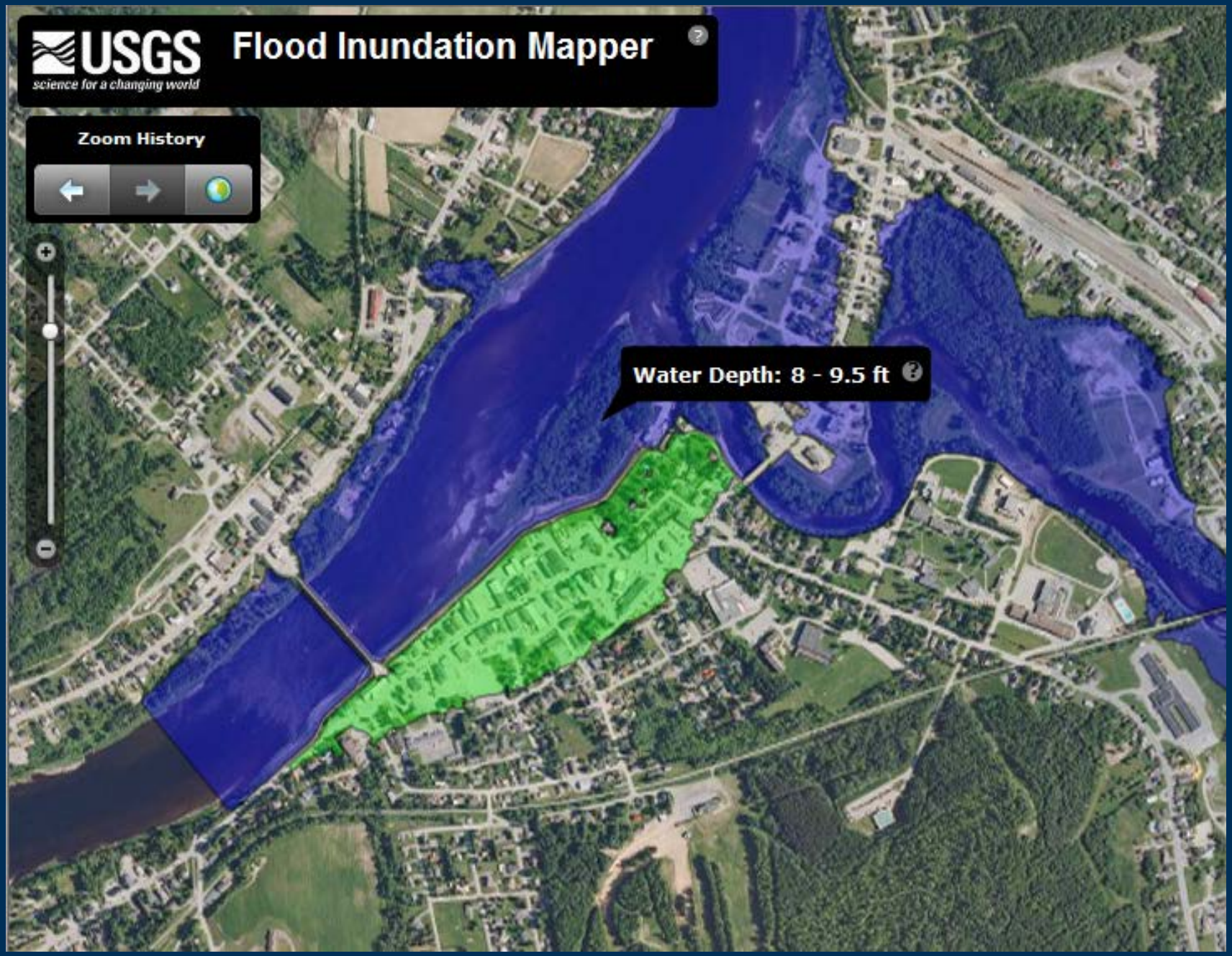
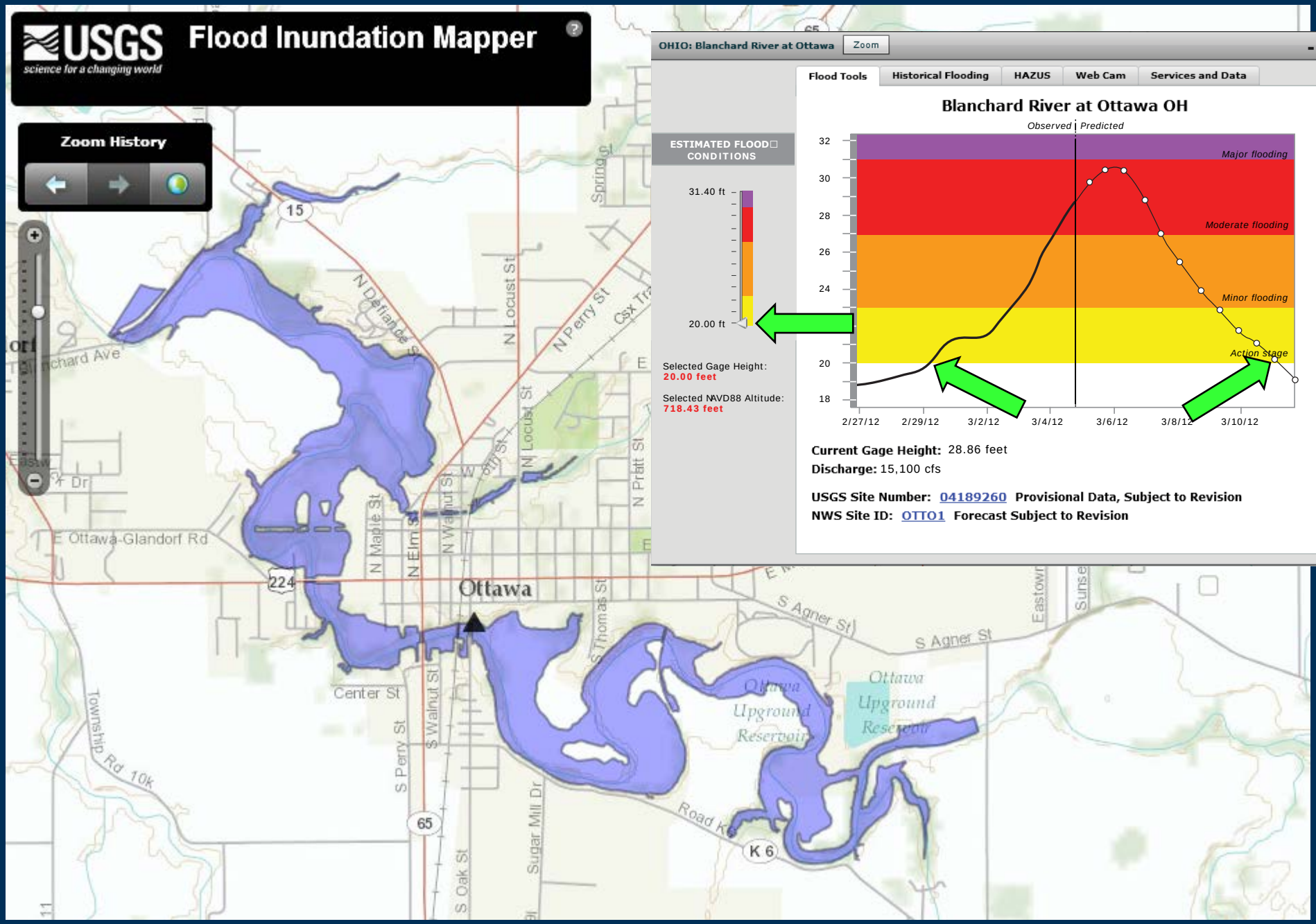
USGS


USGS
science for a changing world
Flood Inundation Mapper
Zoom History
Water Depth: 8 - 9.5 ft


USGS
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Flood Inundation Mapper
Zoom History
OHIO: Blanchard River at Ottawa
Zoom
Flood Tools
Historical Flooding
HAZUS
Web Cam
Services and Data
Blanchard River at Ottawa OH
Observed
Predicted
Major flooding
Moderate flooding
Minor flooding
Action stage
32
30
28
26
24
20
18
2/27/12
2/29/12
3/2/12
3/4/12
3/6/12
3/8/12
3/10/12
ESTIMATED FLOOD CONDITIONS
31.40 ft
20.00 ft
Selected Gage Height:
20.00 feet
Selected NAVD88 Altitude:
718.43 feet
Current Gage Height: 28.86 feet
Discharge: 15,100 cfs
USGS Site Number: 04189260 Provisional Data, Subject to Revision
NWS Site ID: OTTO1 Forecast Subject to Revision
Ottawa
Ottawa Upground Reservoir
Ottawa Upground Reservoir
E Ottawa-Glandorf Rd
Center St
S Agner St
S Agner St
N Defiance St
N Locust St
N Perry St
N Maple St
N Elm St
N Walnut St
N Pratt St
S Thomas St
S Walnut St
S Perry St
S Oak St
Sugar Mill Dr
Township Rd 10k
Road K
K 6
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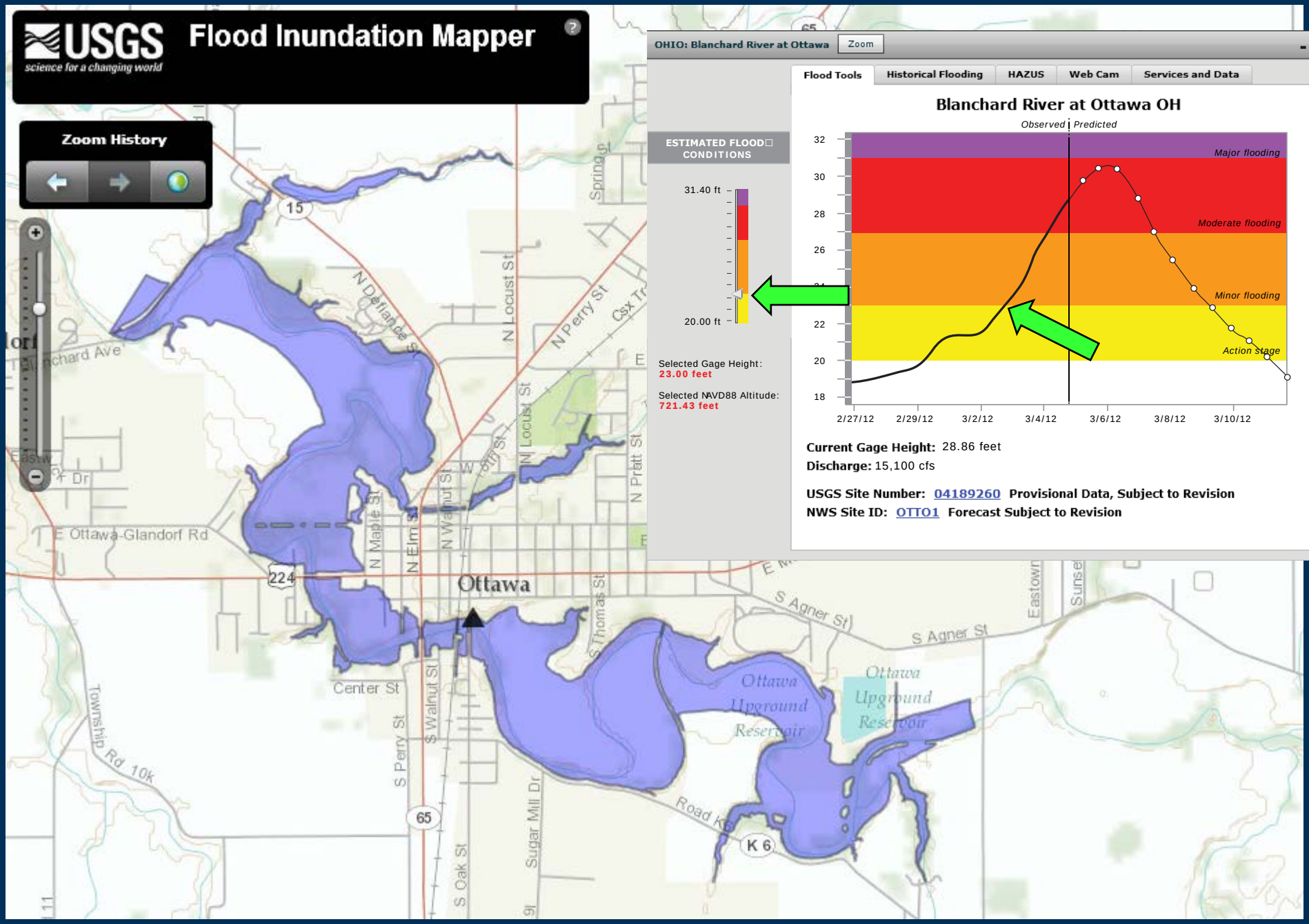
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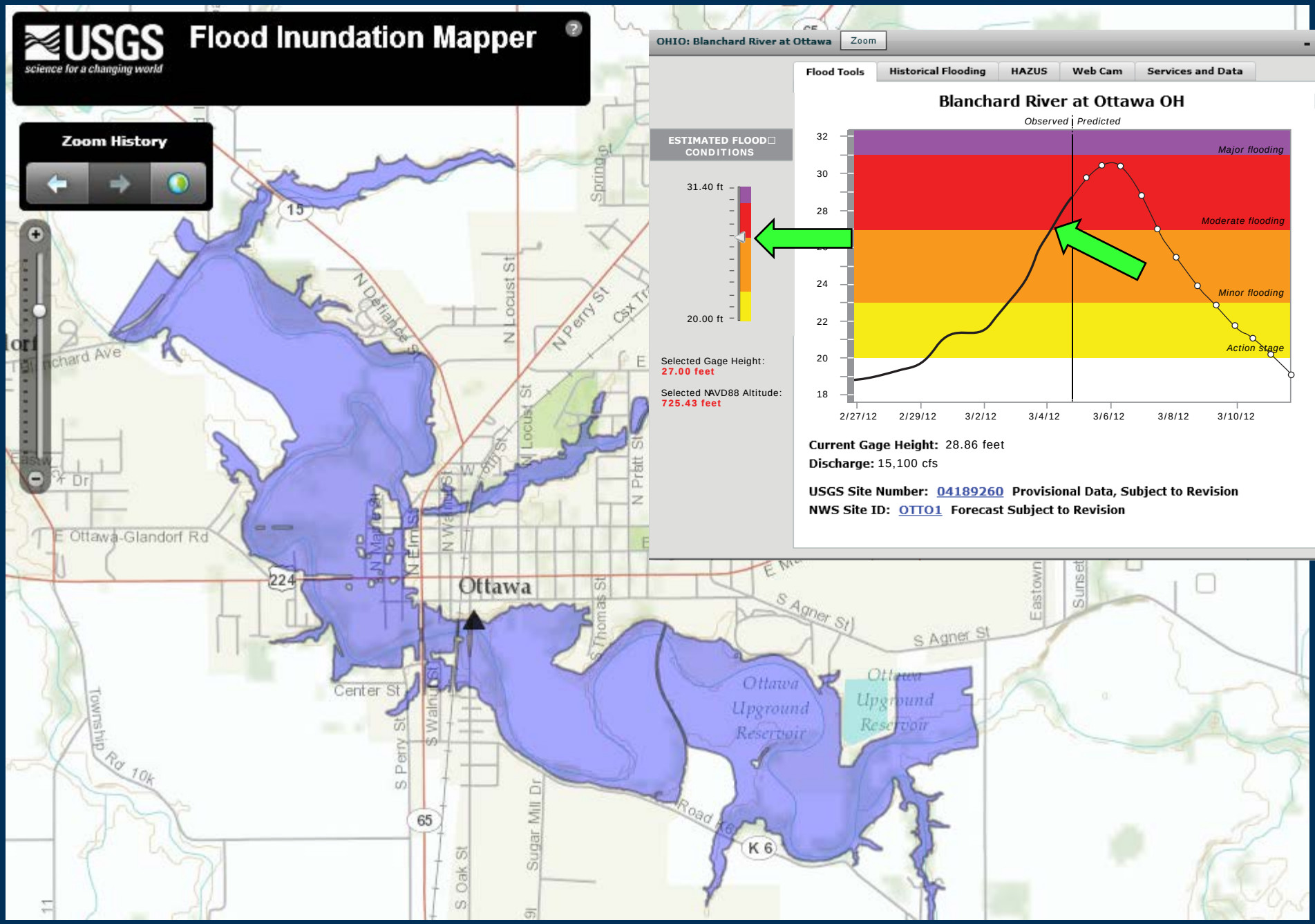
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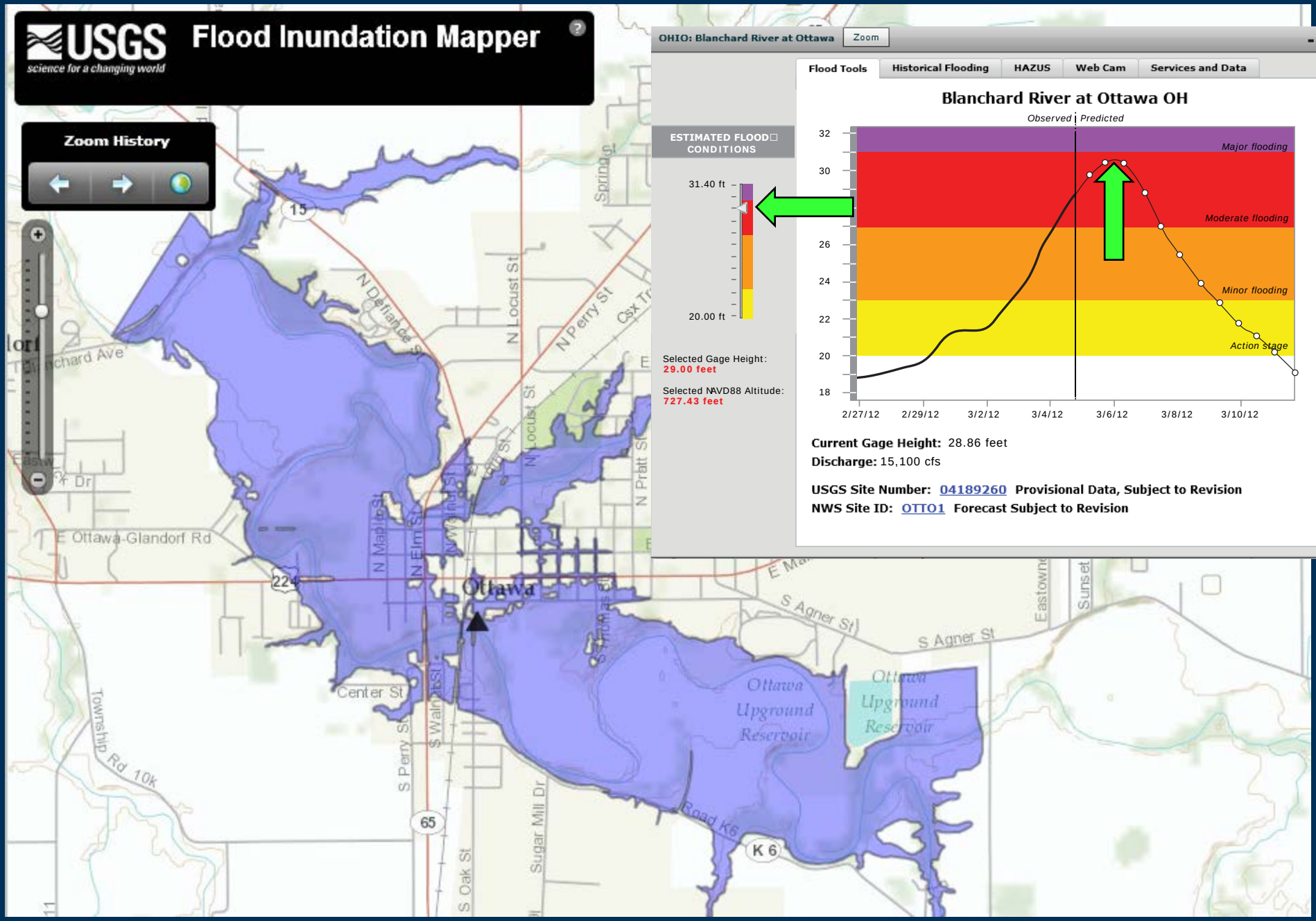
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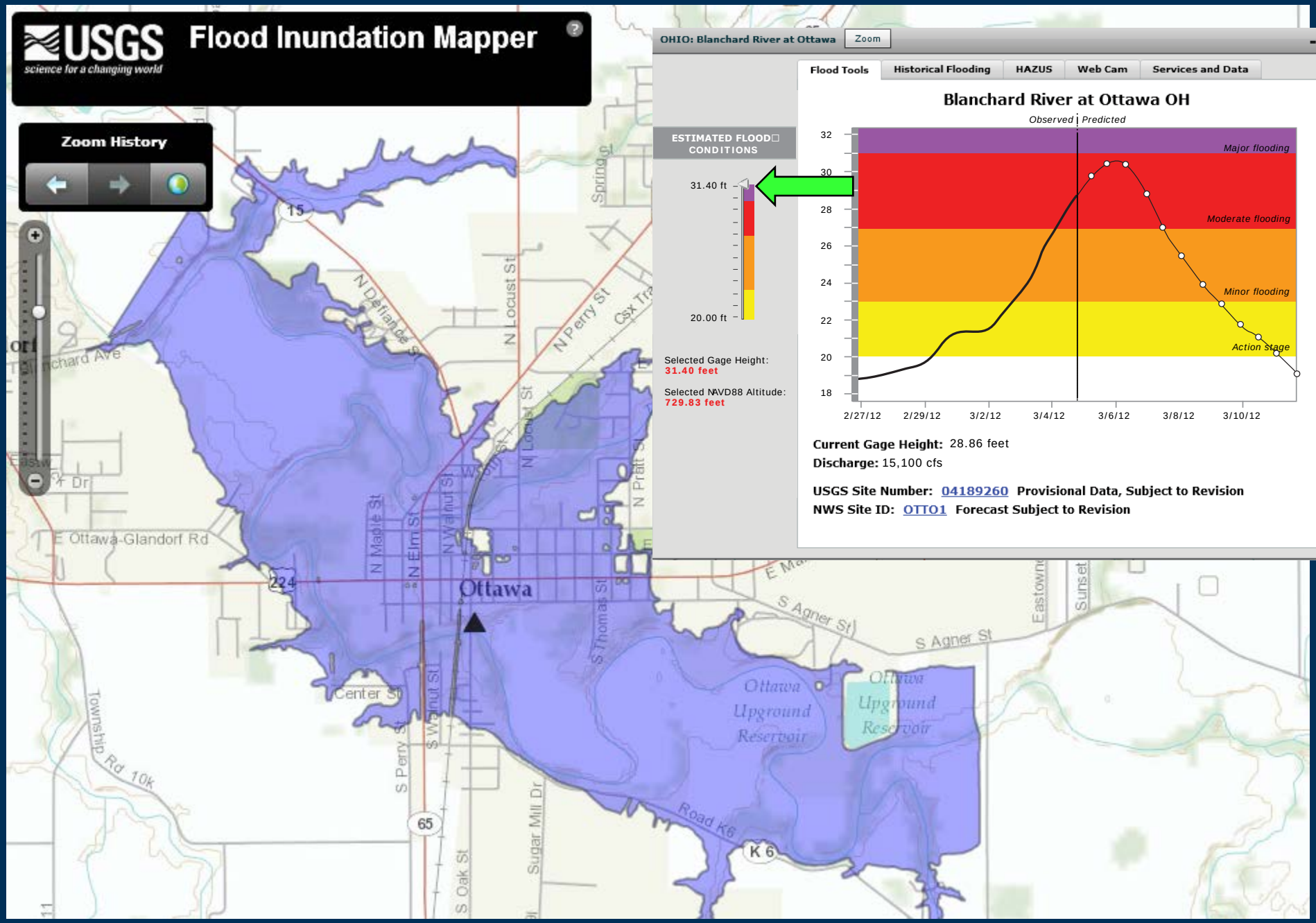
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Sugar Mill Dr
Township Rd 10k
Road K6
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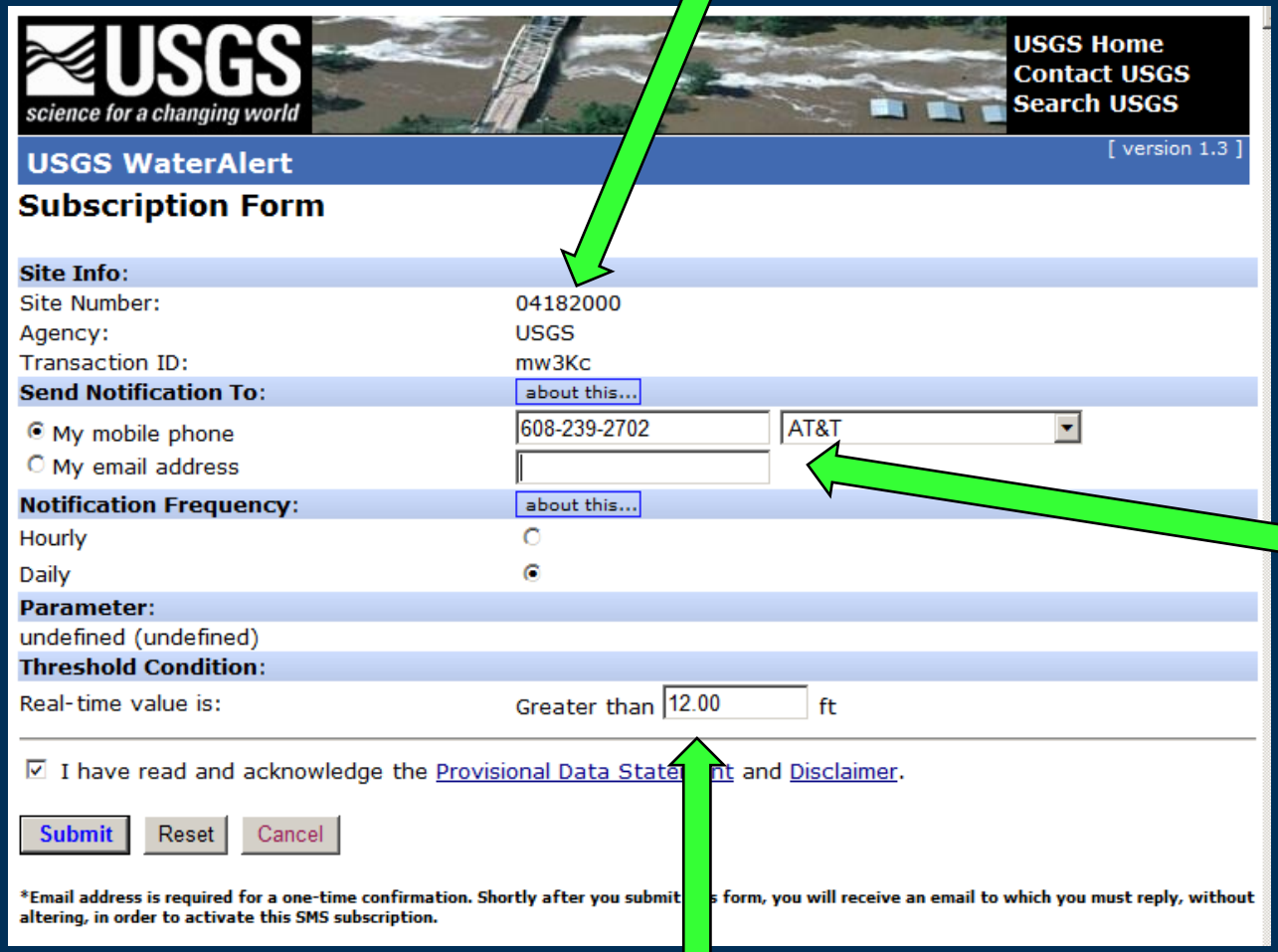
Sunset

WaterAlert form

Site number, sent by mapper



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USGS WaterAlert [version 1.3]

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Site Info:

Site Number: 04182000
Agency: USGS
Transaction ID: mw3Kc

Send Notification To: about this...

My mobile phone 608-239-2702 AT&T
My email address

Notification Frequency: about this...

Hourly
Daily

Parameter:

undefined (undefined)

Threshold Condition:

Real-time value is: Greater than 12.00 ft

I have read and acknowledge the Provisional Data Statement and Disclaimer.

Submit Reset Cancel

*Email address is required for a one-time confirmation. Shortly after you submit this form, you will receive an email to which you must reply, without altering, in order to activate this SMS subscription.

Personal info

Threshold level, selected by mapper

USGS

What is Measured at USGS Streamgages?

A. Streamflow

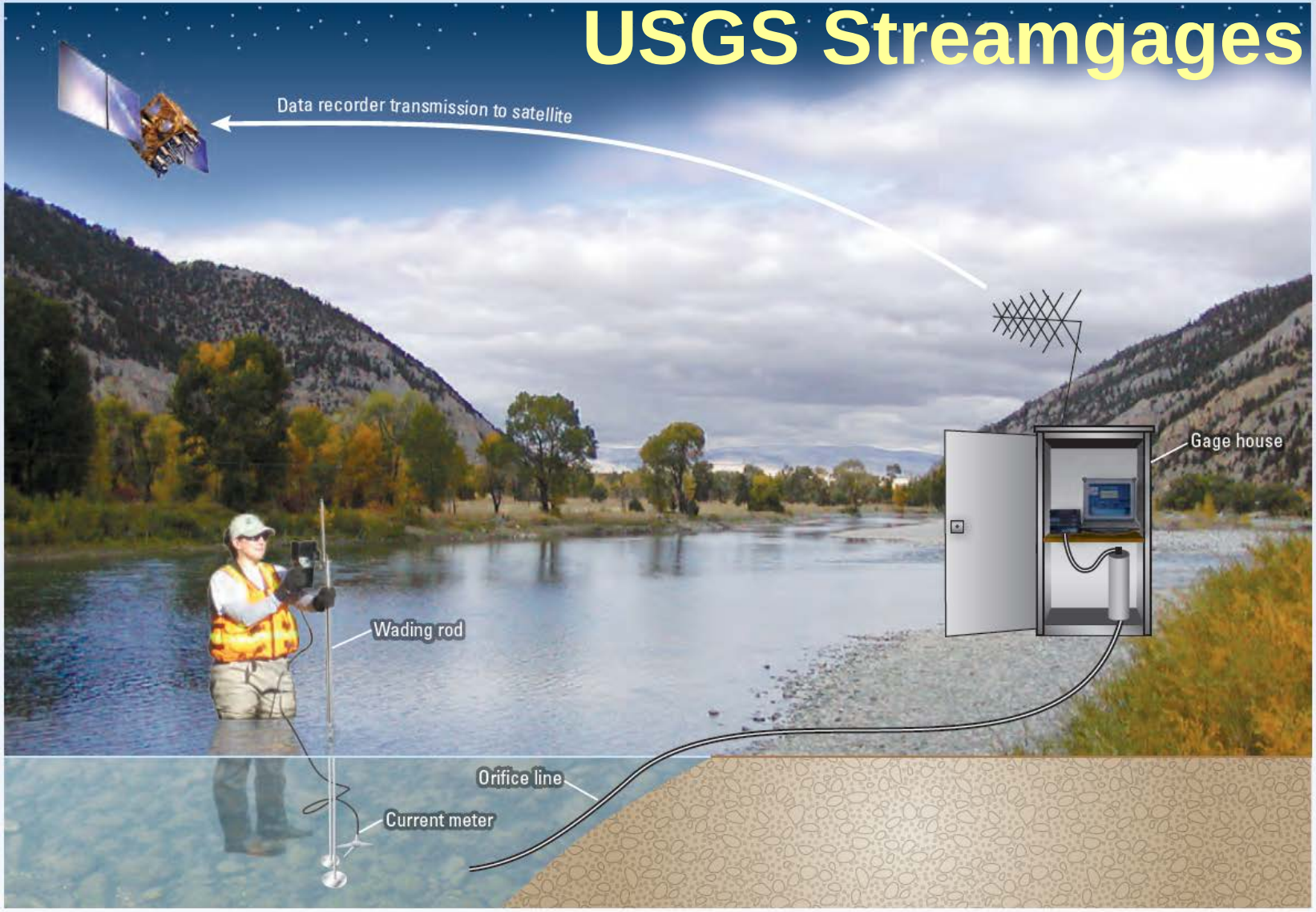
B. Stream stage

C. Both A and B

D. None of the above

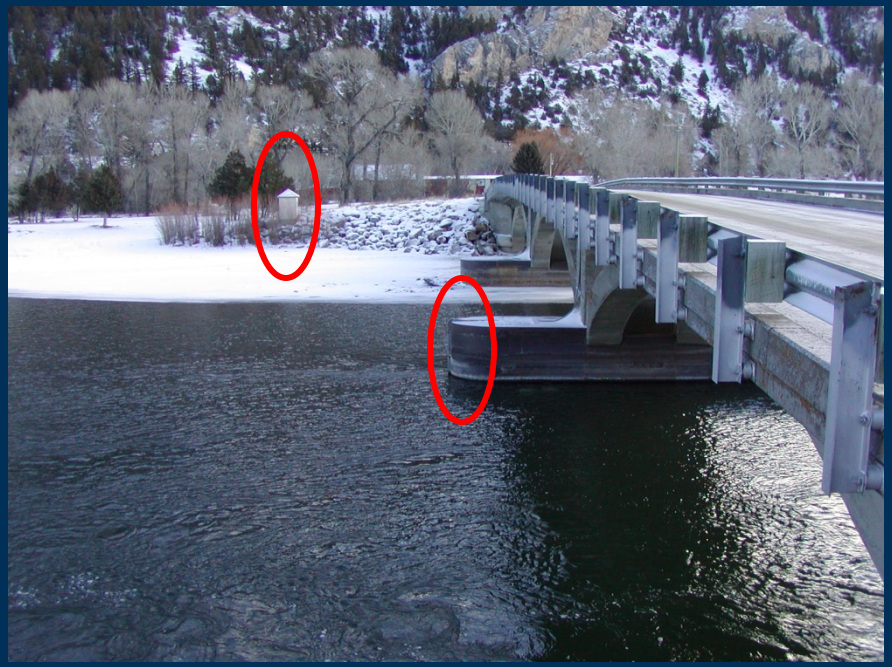
USGS

USGS Streamgages



USGS

Observed Streamflows



Yellowstone River near Livingston

USGS

Rating Curve Example

USGS

Observed Streamflows

USGS

Observed Streamflows – 2006 Swiftcurrent Creek Flood

USGS