

Fatal Brown County Flash Flood July 18-19, 2015

Warning, Response and Lessons Learned

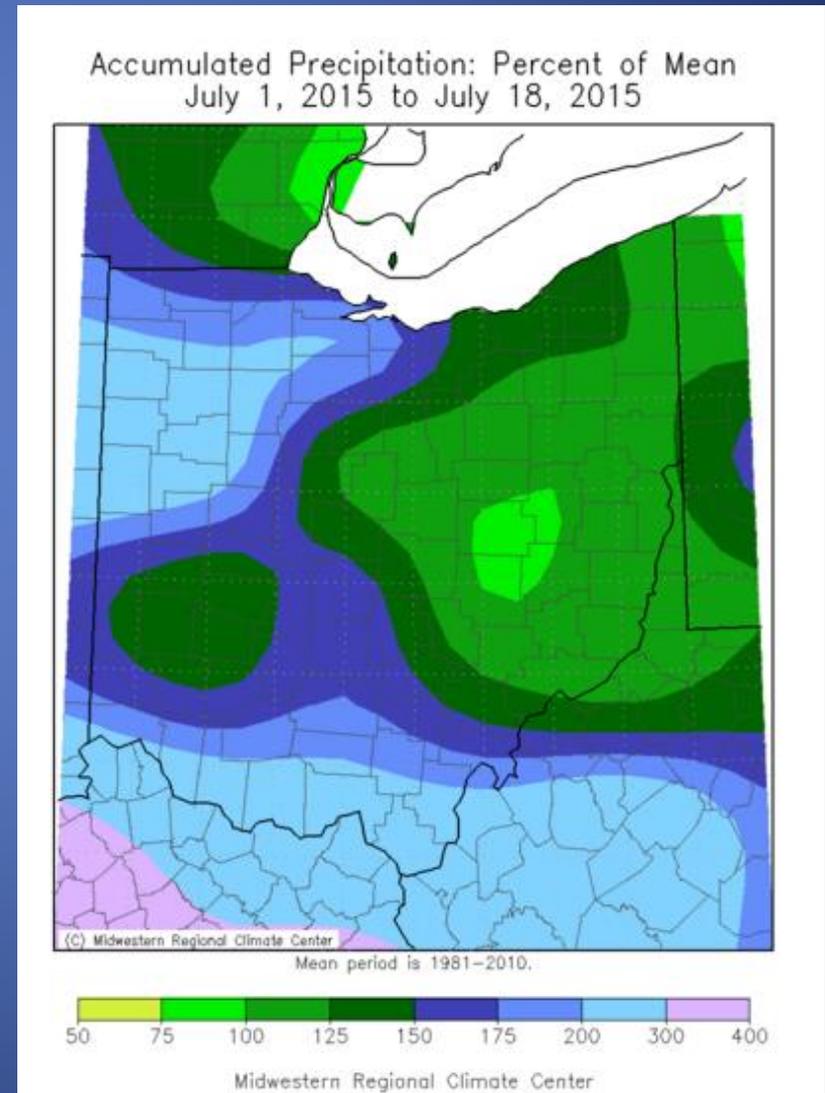
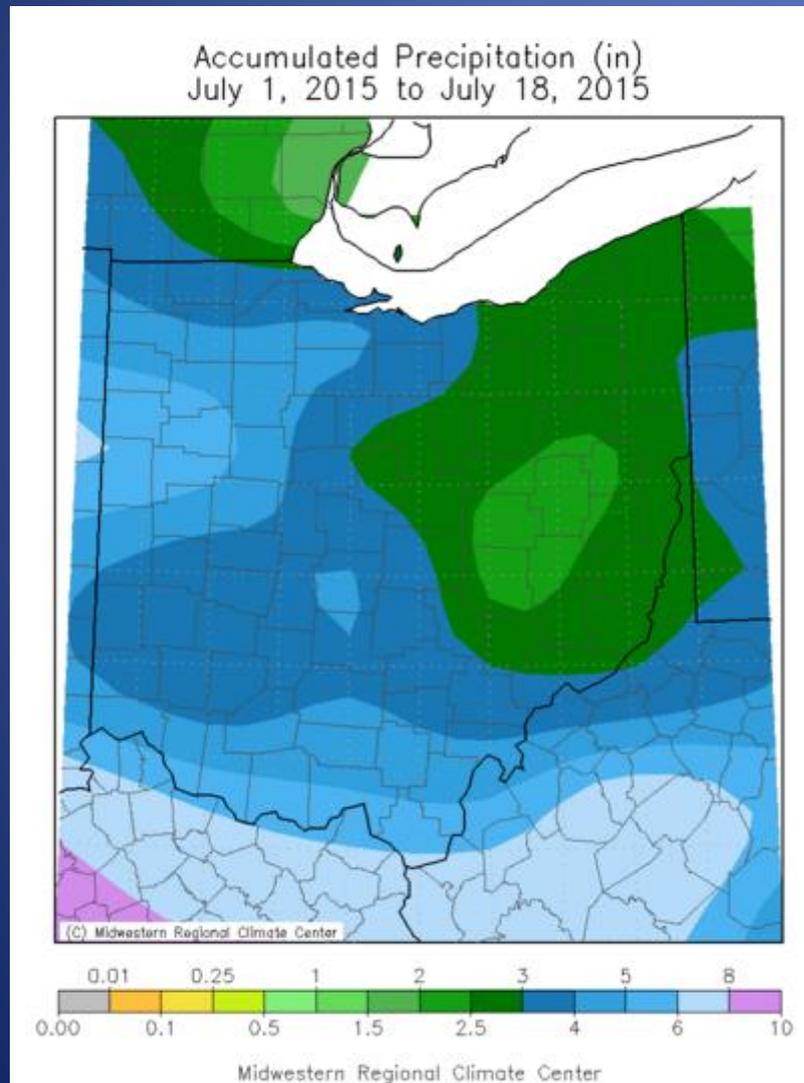
Beth Nevel, Brown County Emergency Management
Julie Dian-Reed, National Weather Service Wilmington

Ohio Emergency Management Directors' Conference
April 26th, 2016

Late June/Early July 2015 –

Far Southern Ohio Vulnerabilities

8 Days with Flash Flood Watch in Southern Ohio



HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE WILMINGTON OH
139 PM EDT SAT JUL 18 2015

Outlook

INZ066-073>075-080-KYZ089>096-OHZ070-071-078-191745-
FRANKLIN-RIPLEY-DEARBORN-OHIO-SWITZERLAND-CARROLL-GALLATIN-BOONE-
KENTON-CAMPBELL-OWEN-GRANT-PENDLETON-BUTLER-WARREN-CLERMONT-
139 PM EDT SAT JUL 18 2015

...HEAT ADVISORY IN EFFECT UNTIL 8 PM EDT SUNDAY...

THIS HAZARDOUS WEATHER OUTLOOK IS FOR INDIANA...NORTHERN KENTUCKY
AND SOUTHWEST OHIO.

.DAY ONE...THIS AFTERNOON AND TONIGHT.

PLEASE LISTEN TO NOAA WEATHER RADIO OR GO TO WEATHER.GOV ON THE
INTERNET FOR MORE INFORMATION ABOUT THE FOLLOWING HAZARDS.

HEAT ADVISORY.

**WHILE LOW CONFIDENCE IN DEVELOPMENT AND COVERAGE...THERE IS A
CHANCE FOR THUNDERSTORMS TO DEVELOP THIS AFTERNOON INTO THIS
EVENING. GIVEN THE EXTREMELY WARM AND MOIST AIRMASS...ANY STORM
COULD BECOME SEVERE WITH DAMAGING WINDS AND TORRENTIAL RAIN RATES
CAUSING BRIEF LOCALIZED FLOODING THE MAIN THREATS.**

.DAYS TWO THROUGH SEVEN...SUNDAY THROUGH FRIDAY.

PLEASE LISTEN TO NOAA WEATHER RADIO OR GO TO WEATHER.GOV ON THE
INTERNET FOR MORE INFORMATION ABOUT THE FOLLOWING HAZARDS.

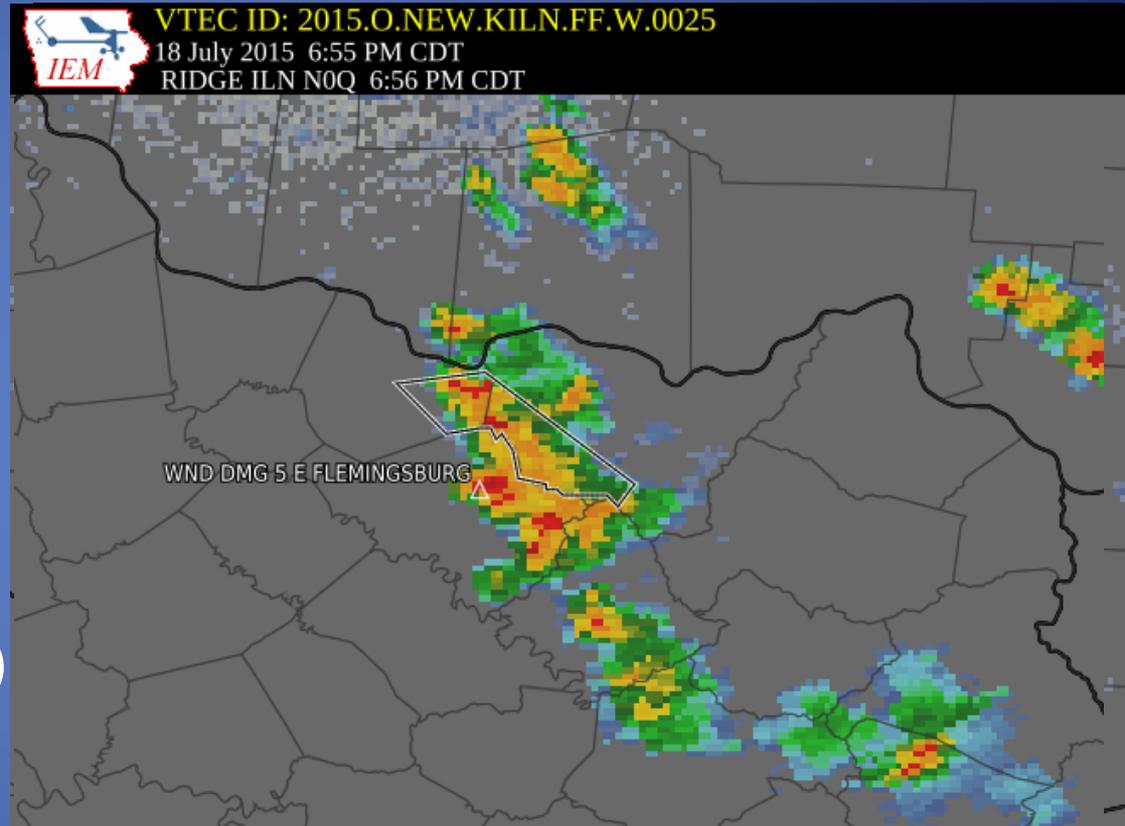
Flash Flood Watch

Can we 'go smaller' ?

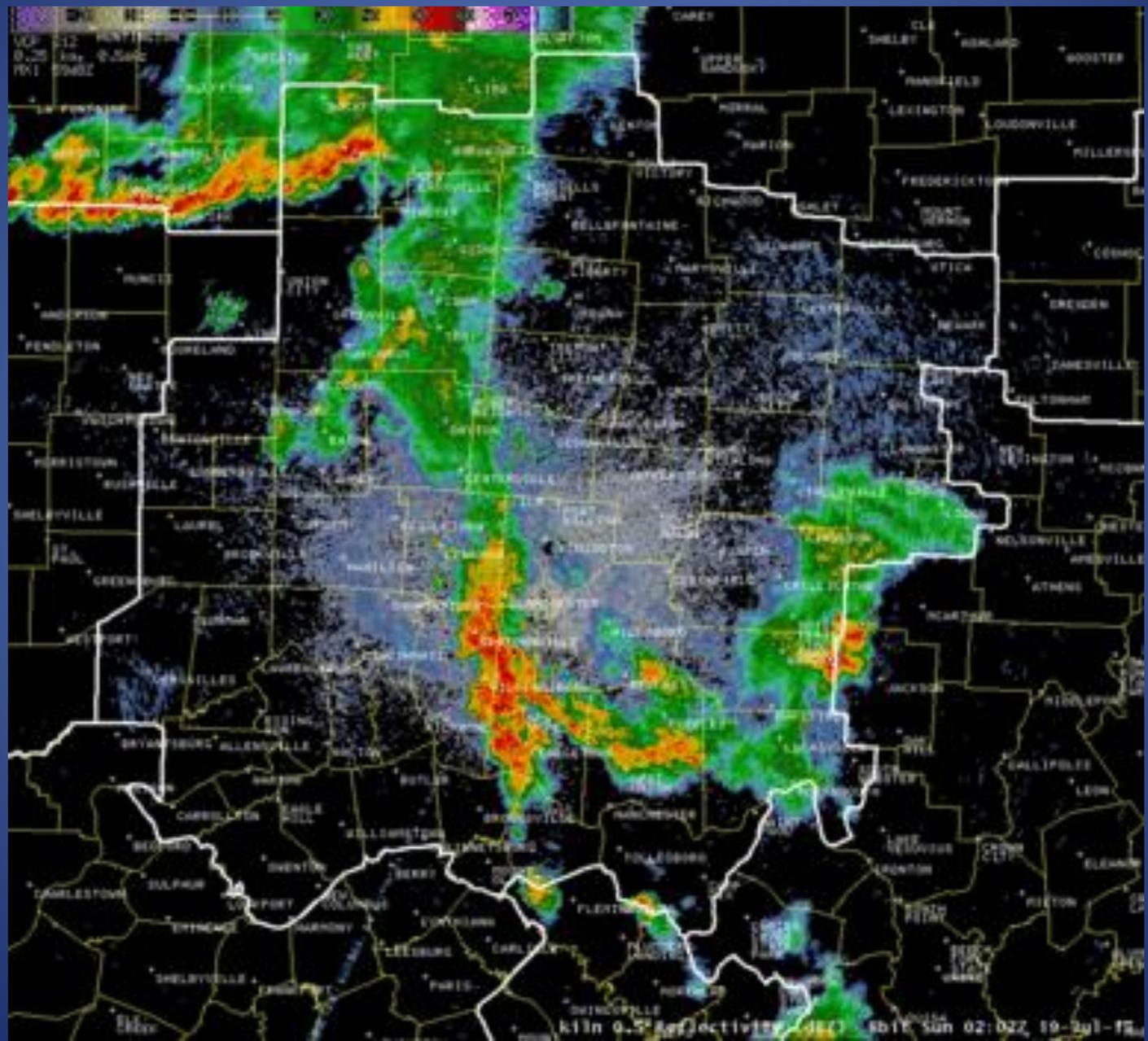
- A Flash Flood Watch is issued when conditions are favorable for flash flooding. It does not mean flooding will occur, but it is possible.
- Confidence in flash flooding threat
 - At least 50% confidence
 - Watch: Typically for a more widespread area (several counties, more than 'localized' threat)
- Environmental clues:
 - Looking for 'Large Scale' Potential for heavy rain
 - Fact: Smaller 'scale' flash flooding is a more common killer

Earlier that evening...

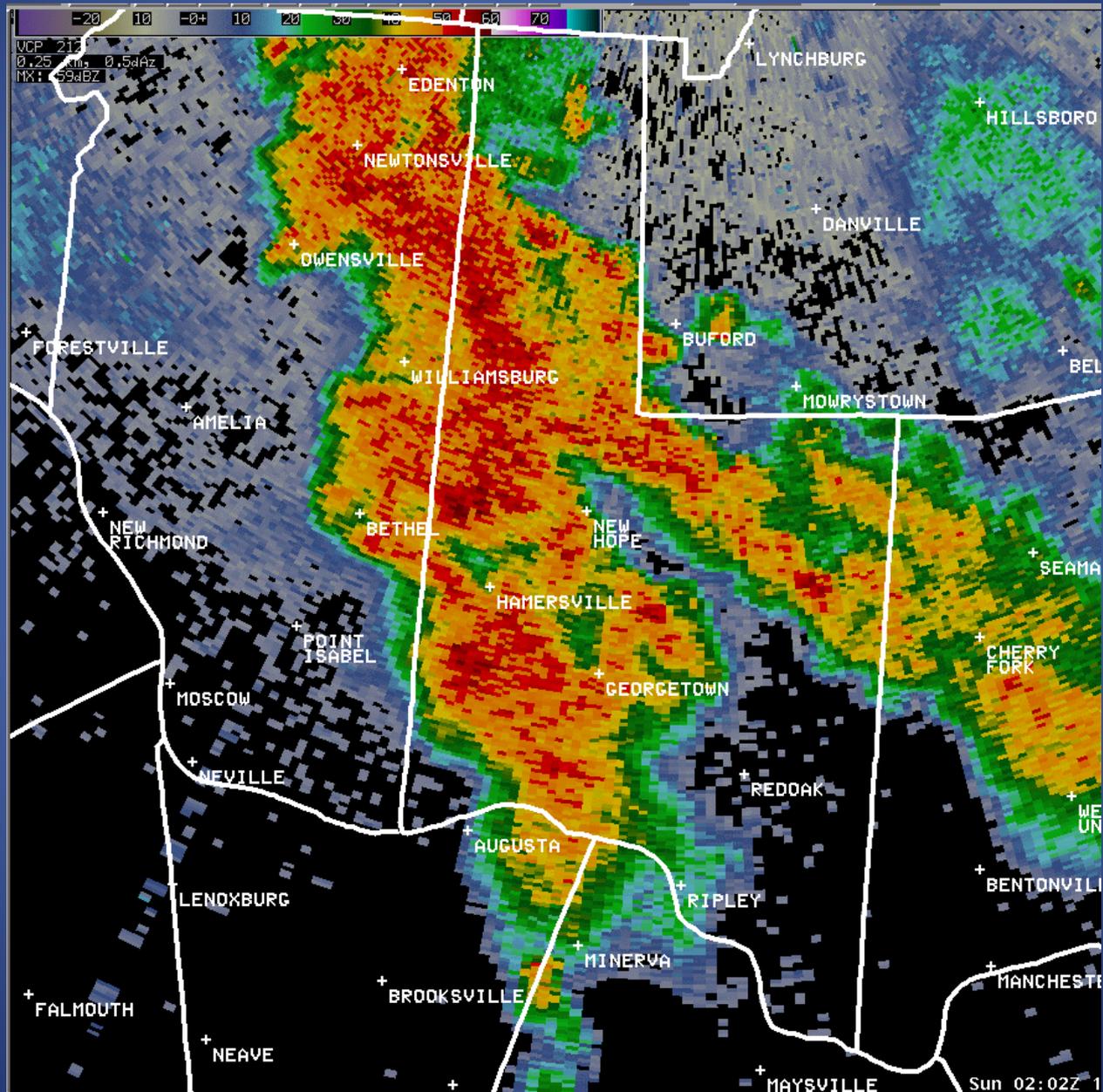
- 6 severe warnings/damage
- 2 Flash Flood Warnings (0 for 2...)
 - 1 'nuisance' flooding
 - 1 significant (didn't find out about flood problems until much digging days later)



Radar loop – 10:02PM – 11:47PM

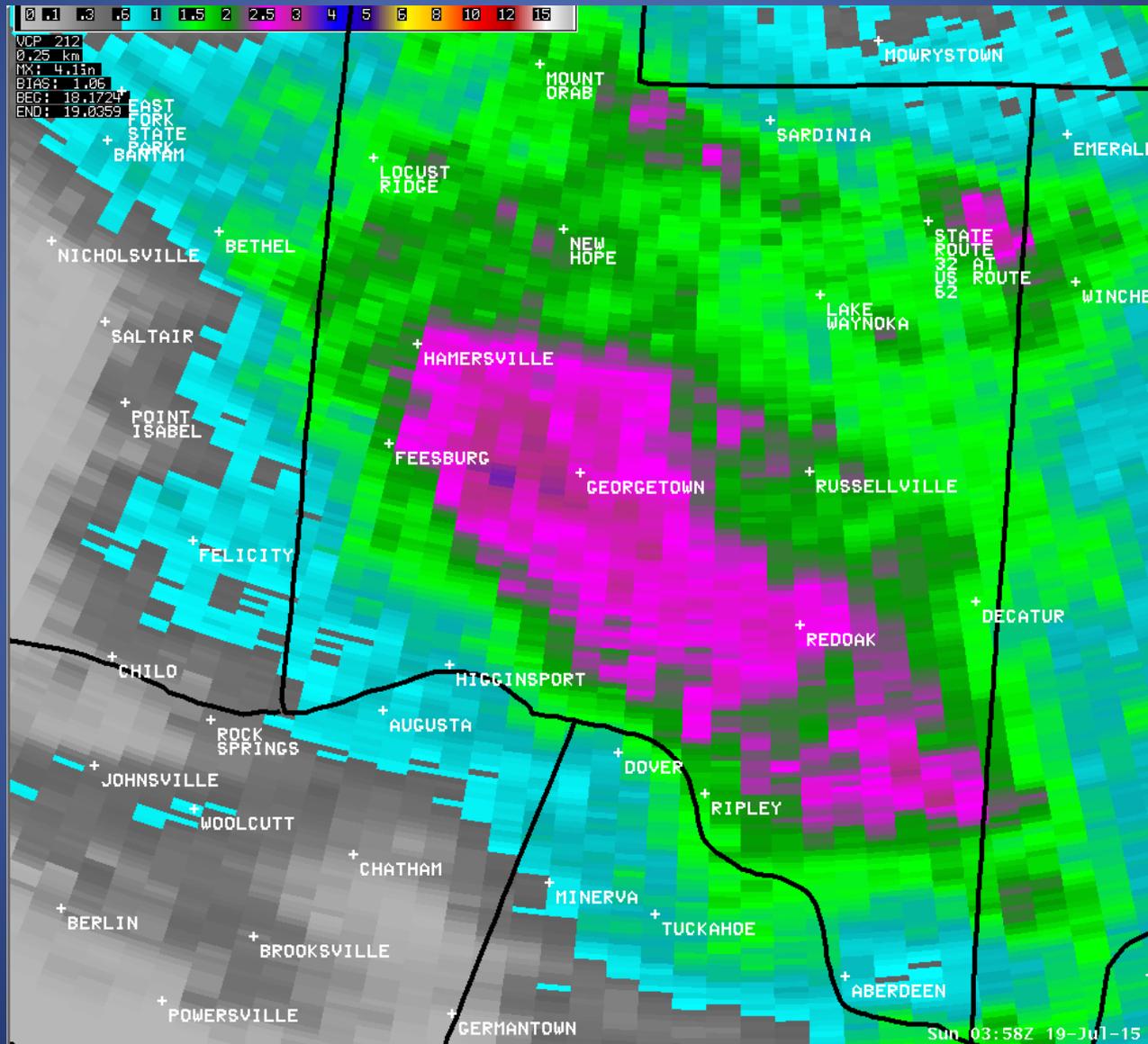


Radar Loop 10-11:15PM



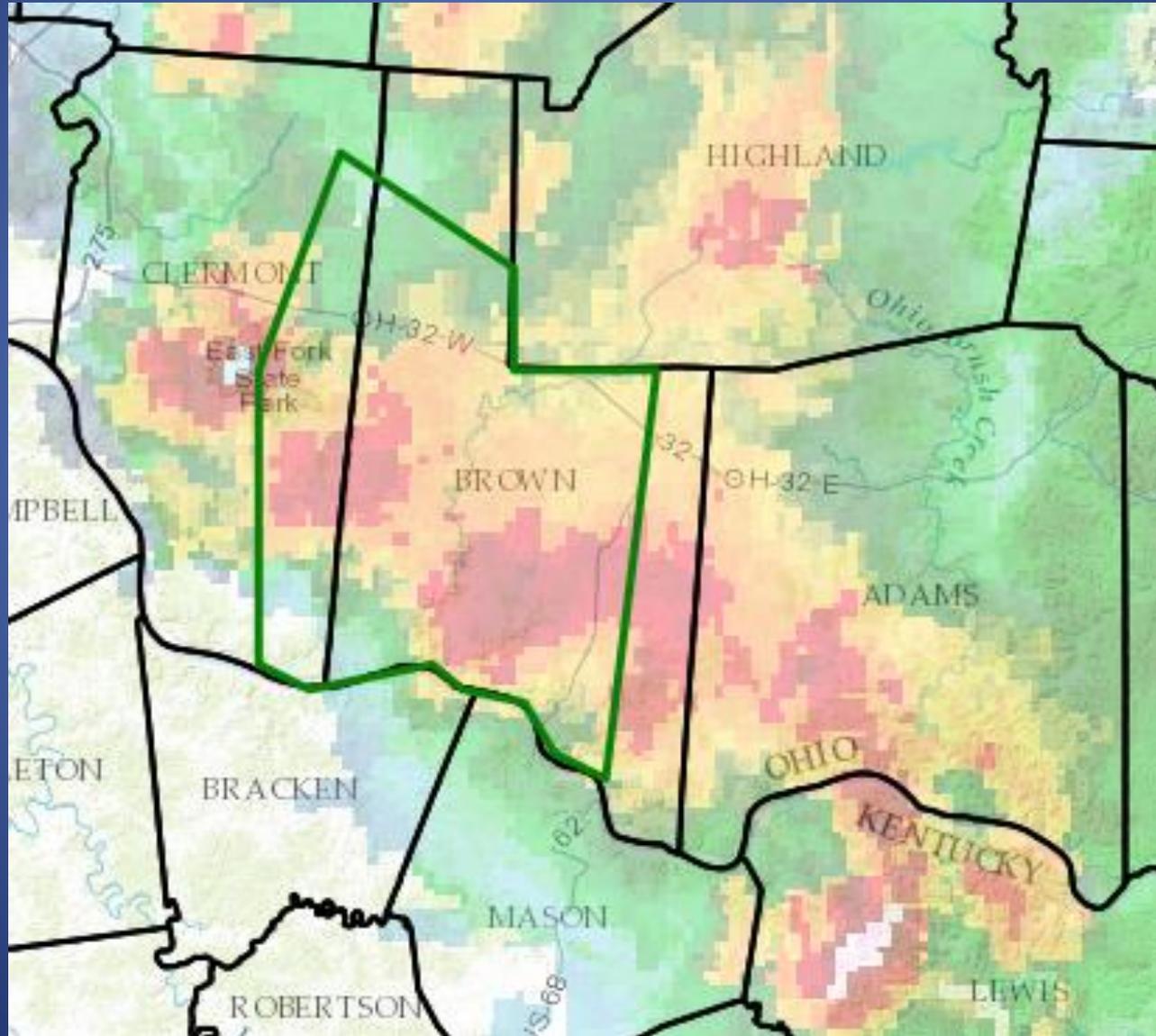
Storm Total Radar Estimates

through 11:45PM – Heaviest rain, White Oak Basin/Georgetown



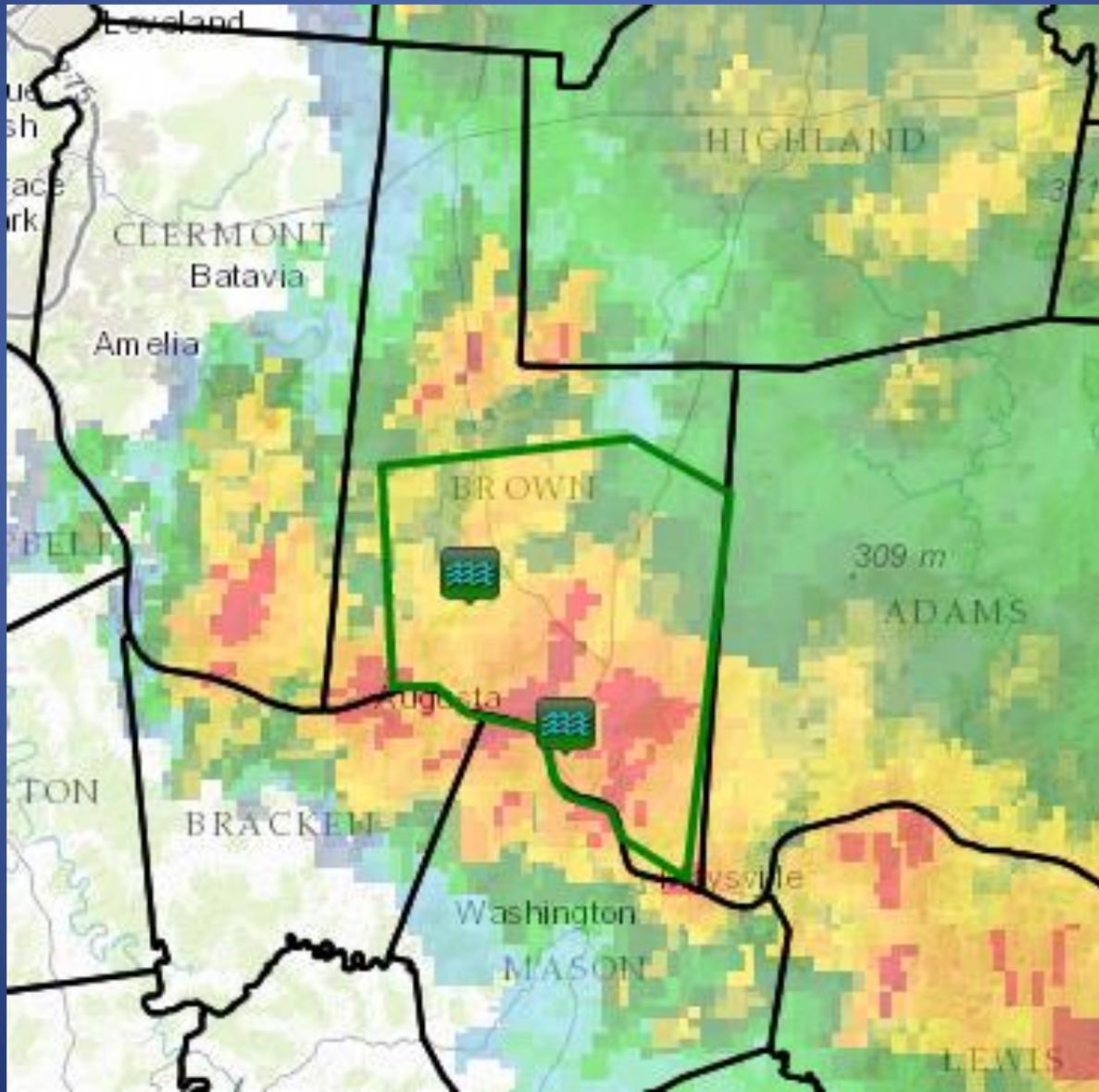
Flood Advisory

Issued 10:50 PM EDT



Flash Flood Warning

Issued 11:23PM EDT



A Saturday night in Brown County

9-1-1 Staffing, until.....

- Normal 9-1-1 staffing from noon to midnight:
 - One Supervisor with two Dispatchers
- A first responder calls on non-emergency line for a Township Trustees' phone number to place high water sign on roadway due to 2 plus inches of rain. Phone number given.
 - In hind sight, this is called a “clue”
- Call to Director at 2228 hours to increase staff “in case it gets stupid!”
- At 2250 hours, the NWS issued the Flood Advisory
 - One additional Dispatcher was brought on duty due to number of Alarm Company calls, staffing now at 5 people. This is called another “clue”
 - Brown County Communication (9-1-1) Center is a four seat PSAP

SECOND CALL TO DIRECTOR NEVEL...

- At 2325, a second call to Director to come to 9-1-1, couple minutes after Flash Flood Warning issued by NWS at 2323 hours
- Situation is there are cars washing off SR 125 on Georgetown Hill, SR 125 may be impassable, checking with FD, reported eastbound was passable at 0005 hours
- On way to 9-1-1, Director calls EMA Ops Manager to report to duty
- Once at 9-1-1 Center, the Temporary Supervisor reports “homes washed downstream in Ripley, unknown number of occupants”
- Director calls State Assessment Room at 1235 hours for life rescue
- Director calls Board of County Commissioner(s) to update; by 0128 hours, 2 County Commissioners were in 9-1-1 Center.
- Assigns PIO at 0136 hours (Georgetown Village Administrator) as two County PIO’s are out of town.

Call to State of Ohio: Assessment Room

1235 hours on July 18, 2015

Life Safety Rescue missions

Helicopter

ODNR

ODOT

1253 hours-called Reg. Supervisor

0103 hours- State called back-no
contact

0106 hours-Andrew Elder called

0115 hours Jim Dwertman called

0208 hours-

OSP helicopter deployed
from Columbus with
forward looking FLIR

ODNR/Eastfork deployed

- Email from OEMA:
- Sun 7/19/2015 4:35 AM

• Directors:

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- Please be advised that the State Emergency Operations Center – Assessment Room is open for Assessment to support ongoing response to flash flooding. Hours of operation will be maintained through the close of the event as determined by the situation.

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• Contacting the state EOC

- The state EOC assessment room can be contacted by phone **614-889-7150** or by email at eocassmt@dps.ohio.gov

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• WebEOC Event

- State partners are encouraged to utilize the state's incident in WebEOC to track impacts and actions for this event.
- The incident is named: **00 - OEMA 20150719 Southwest Ohio Flash Flooding**

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• Thank you,

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• State EOC

• Assessment Room

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Four lives lost, twelve lives saved

- https://youtu.be/x_T9SZAjrVk

Mobile Home frame with 4 fatalities and three rescues

- Power of water: Father found 30 feet up in tree

IMG_0241_1437312860958_21680439_ver1.0_900_675.jpg %d x %d pixels



Communications: Lessons Learned

- Overloaded 9-1-1 Center
 - No phones to call out of Center (spare cell phones)
 - NWS Chat would have worked well for NWS contact
- Local LE and Fire/EMS on different radio systems
 - Fire/EMS on high band, seven site steered system
 - All LE on MARCS
 - Local LE were P25 compatible
 - OSP was P16 compatible
 - Learned:
 - When using State resources, ID MARCS talkgroups prior to deployment

Responder Health and safety, lessons learned.....

- Responders WILL NOT take a break
- Nine (9) months later, lingering concerns in PS
- Critical Incident Stress Debrief was used
 - Voluntary (some 9-1-1 personnel did not attend)
 - EMA did NOT extend to all agencies (NWS)

Validation of event....Lessons learned

- Local media seems more believable by public...

WLWT News 5's Jennifer Schack said that between 9:45 p.m. and 11:30 p.m. Saturday, rainfall rates in some parts of Brown County were approaching four inches an hour.

TV Media: Lessons Learned

- The good, the bad and the ugly
- One station covered the cell phone app warning a twelve year old of the Flash Flood warning , which is credited with saving their lives. There were many self rescues that evening.
- And another station ran the investigative story about NWS, the 9-1-1 Center and responders that were unable to effect rescues
- Know your reporters and use them wisely

After-action: ID and touch base.

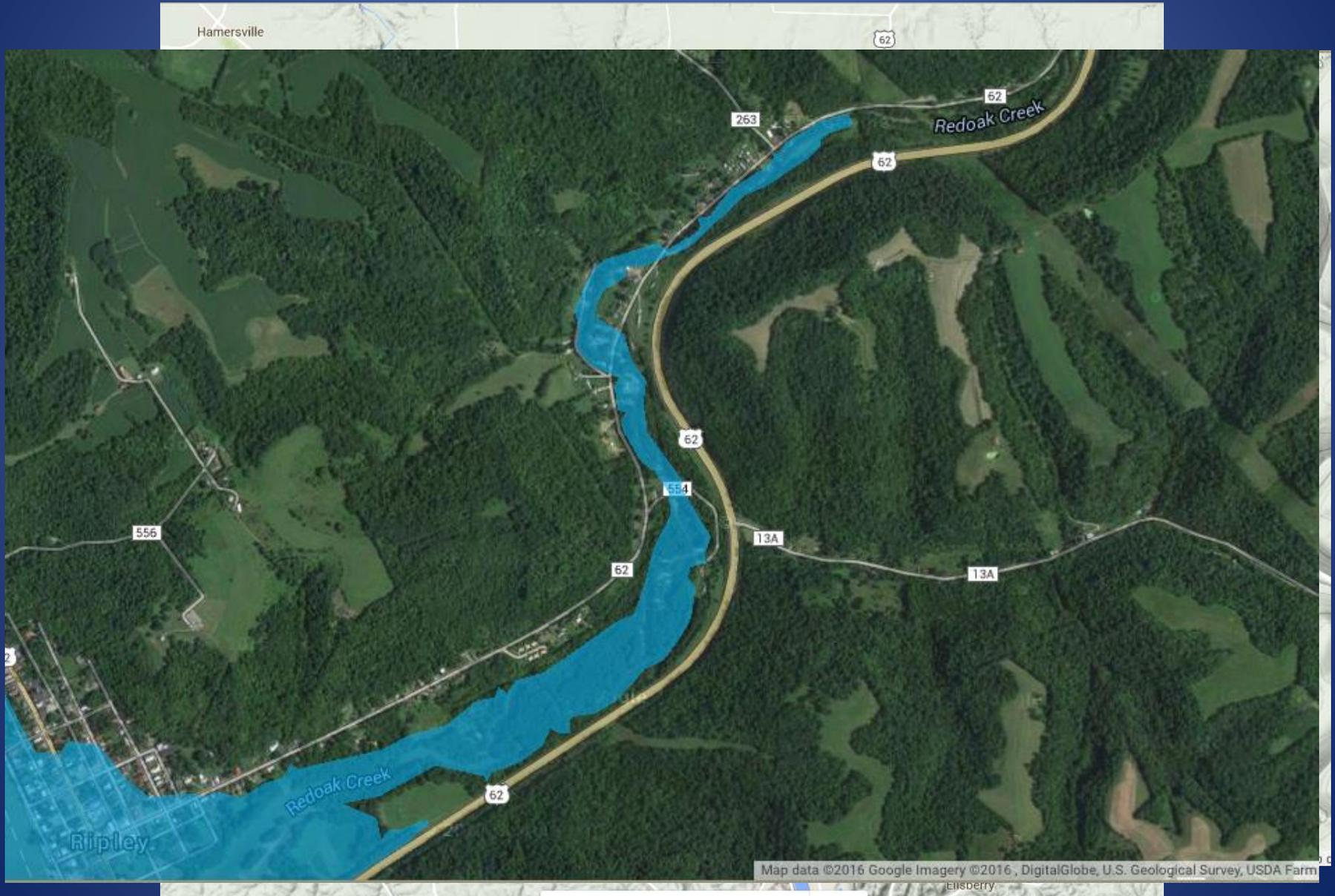
Julie and Seth,
Beth would like an opportunity to talk to the NWS about the flash flooding 7/18-19. We are reviewing the data and resources available to us trying to find how we could have been better prepared and better alert our citizen's about events like the one on 7/18. Is there any time in the next week or two that you could meet with Director Nevel.

Thanks,

Tom

Mon 7/27/2015 3:59 PM

Can it happen that fast?



Training/Education

- NWS Internal Training/Drills
 - 2016 Staff training focuses on RAPID ramp up of heavy rain and vulnerable locations
 - Gage ‘analyst’ separate from warning forecaster
 - NWS-wide Flash Flood Training
 - Improved radar estimates for flash flood decision making
- NWS Public Training
 - Education of flood threats at county/local level
 - Not ‘just the 100 year floodplain’ is at risk!

Watch/Outlook External Communication

is FF potential in our 'whole story':

- Quick Analysis of 20 'high end' flash floods in ILN area since 2008
(evacuations, water rescues, deep/flowing water)
 - Storm type, time of day, how widespread
 - Is Severe Weather also a threat?
- Greater emphasis of flash flood potential with severe weather in these environments, in addition to improved lead time efforts

Most true Flash Floods in NWS Wilmington area

- Late Evening/Overnight (June- Early August)

- OR

Supercells (May)

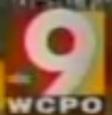
- In multiple 'waves' of heavy rain/transition from supercell to Heavy Rain



May 21, 2011

May 21, 2014 Montgomery/Miami County - Huber Heights/Troy

dale May 1, 2012

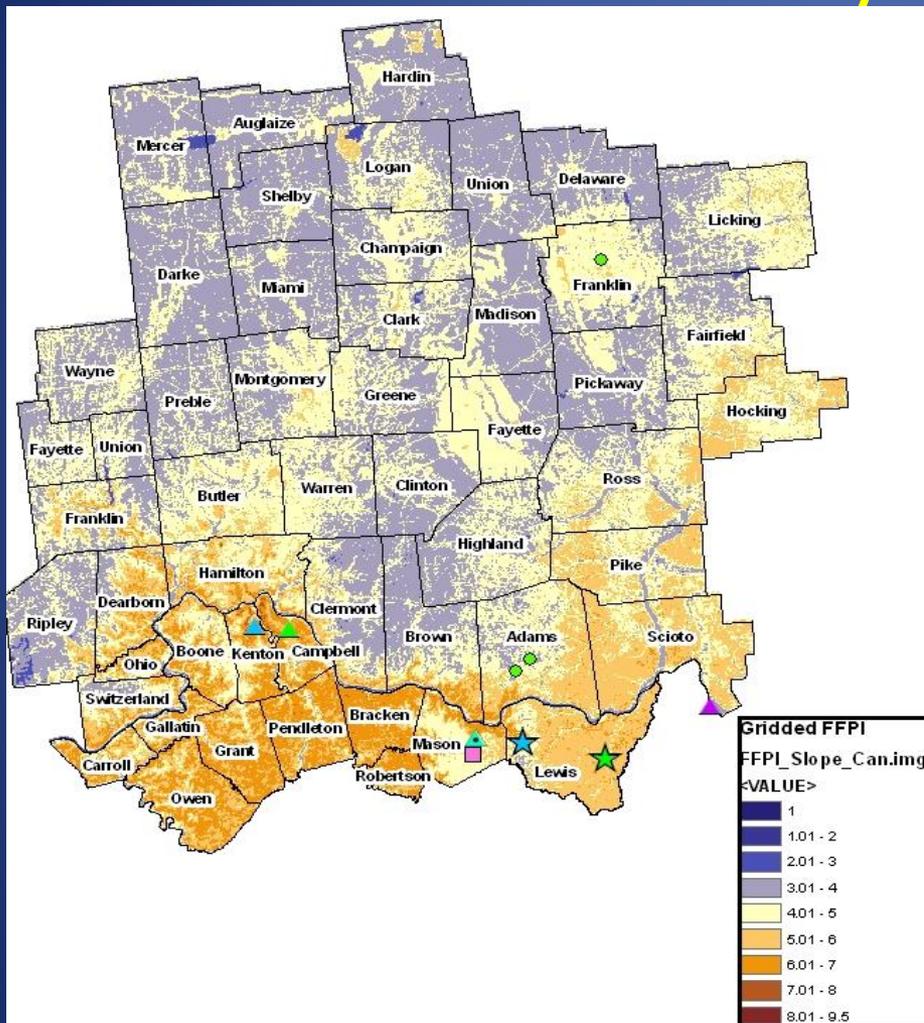


NWS Wilmington

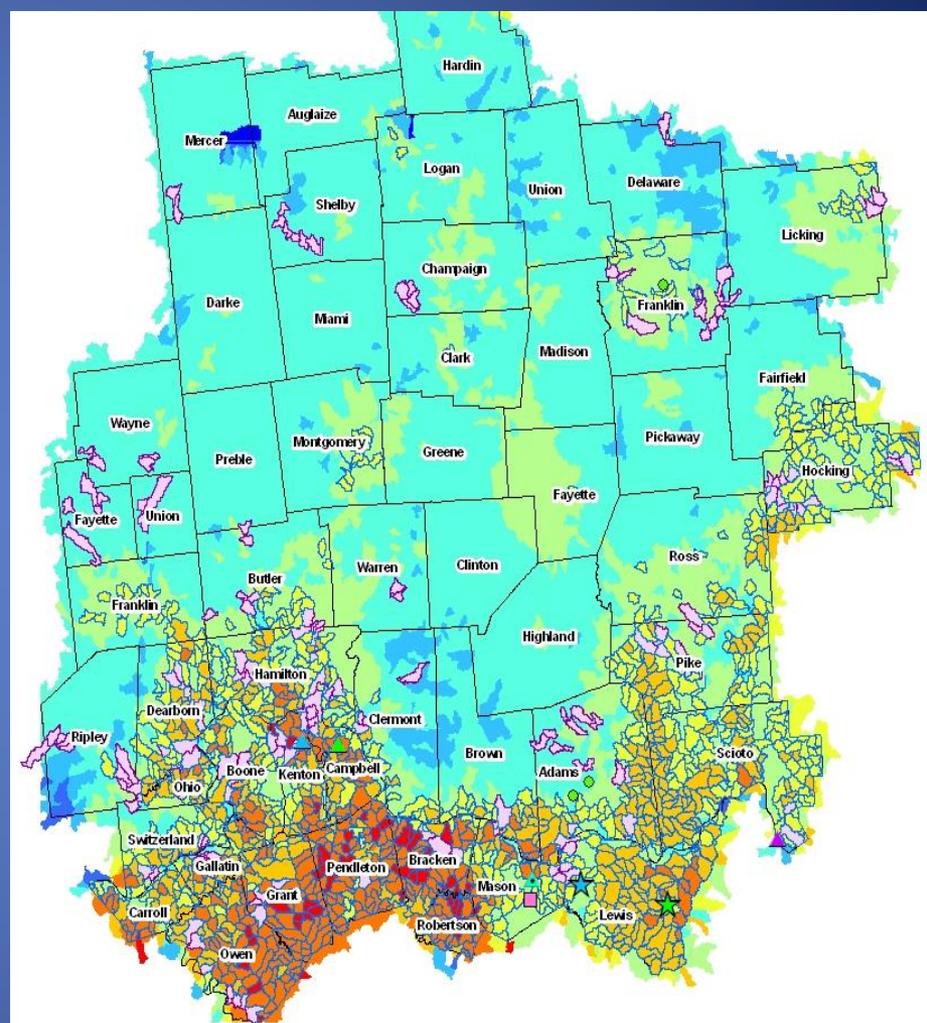
Review/Training/Action

- Staff Training on smaller scale storm environment and quicker interrogation of rain gages
- Working with Brown County on improved communications during rapidly evolving/life threatening events
 - E.g., Thresholds to be reported, what to report
- NWS awareness of impacts/vulnerable areas and threat education
 - Exercises
 - Public education of flood vulnerabilities outside of FEMA designated flood plain areas

Problems by terrain/soil/urbanization vs. Problems by infrastructure



Gridded FFPI above:
slope(*1.5)+soil type+land use+vegetation



FFPI by Basin and Flood Prone (purple)
Use BOTH, but Flood Prone basins are
KNOWN PROBLEM AREAS

We need to know ground-based vulnerabilities!

Let your local NWS office know



National Weather Service Wilmington OH Flood Survey 2016



Flood Vulnerable Locations

The NWS office in Wilmington has a geo-referenced database of 'flood vulnerable' locations. In order for forecast staff to be fully aware of local vulnerabilities not detectable to radar or rain gages, we could use your local knowledge and expertise.

While we do want to be aware of locations down to a 'frequently flooded intersection', we want to be especially aware of homes/businesses located in/near a quick-responding creek/stream.

Please provide the coordinates (latitude/longitude) of the flood vulnerable locations in your county, along with any details which may be important (i.e., commonly flooded road, commonly flooded road (floods very quickly), homes/businesses very close to fast-responding creek, etc).

State

- Kentucky
- Indiana
- Ohio

County

Your answer _____

Community

(i.e., Friendship)

Your answer _____

Latitude/Longitude of flood vulnerability (one way to do this - right click on Google Map and select 'what's here' for

Presenters

- Julia Dian-Reed, NOAA
 - Service Hydrologist/Meteorologist
 - NWS Weather Forecast Office, Wilmington, Ohio
 - 937-383-0428

- Beth Nevel
 - OCEM, Director
 - Brown County Dept. Public Safety
 - 513-748-7788