

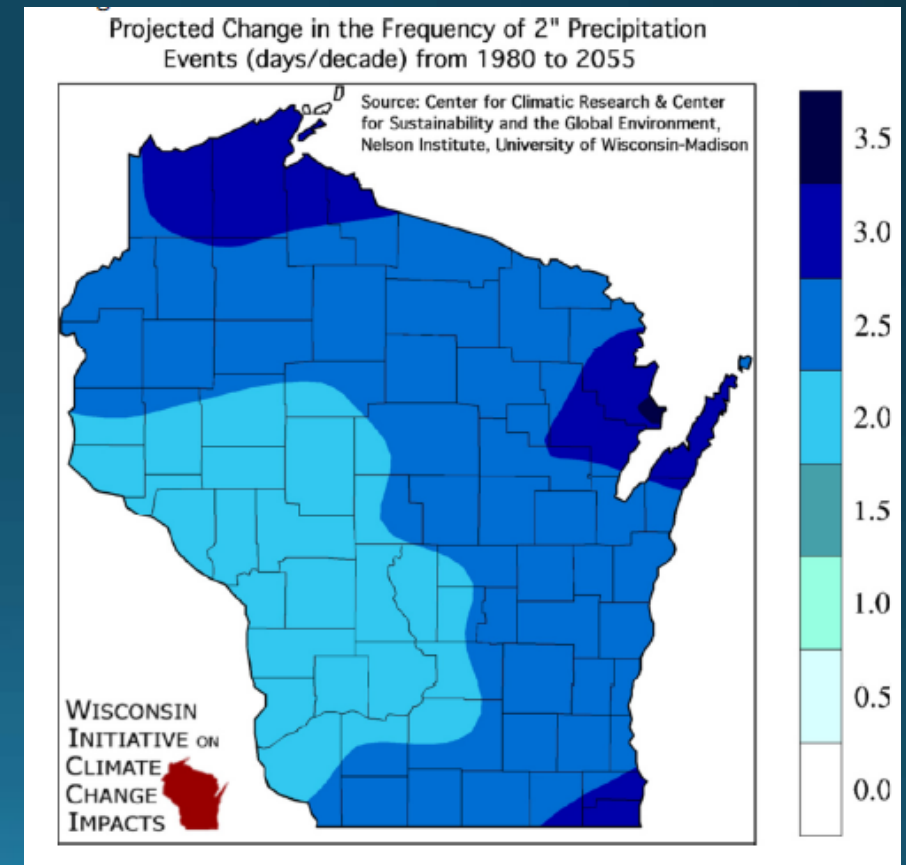


Risks Beyond the Floodplain

2018 Dane County Floods

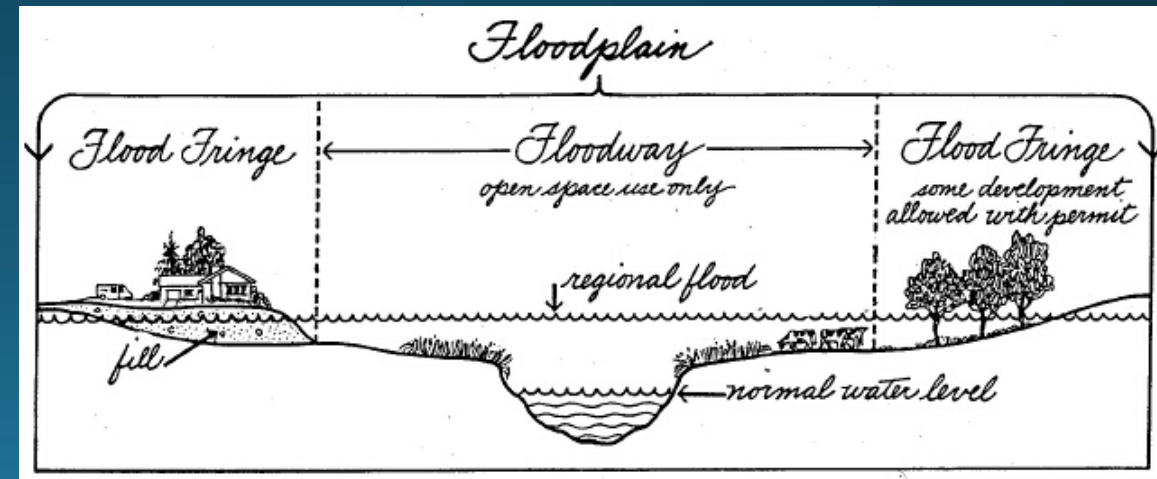
Project Goals

- Get a better understanding of flood risk in Dane County
 - Recent flooding history
 - Projected changes due to climate change
- Identify high-risk areas
 - Areas outside regulated floodplain
- Educate public
 - “Spectrum of risk” vs. “In / Out” of floodplain
 - Put risks in dollar terms
- Develop mitigation strategies
 - Education, not regulatory
 - Voluntary purchase of private flood insurance (cheaper for properties not in regulated floodplain)
 - Best practices (e.g. raising mechanicals, store irreplaceable items in attic)

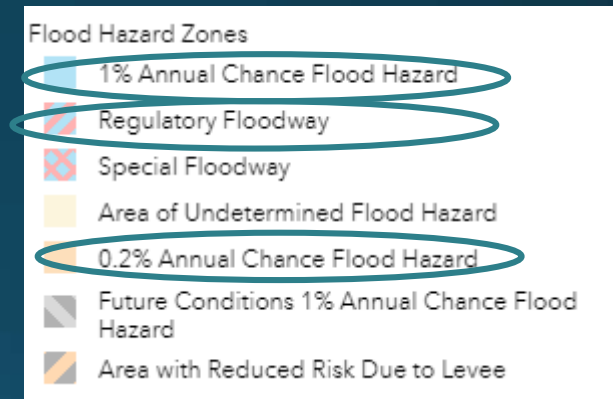
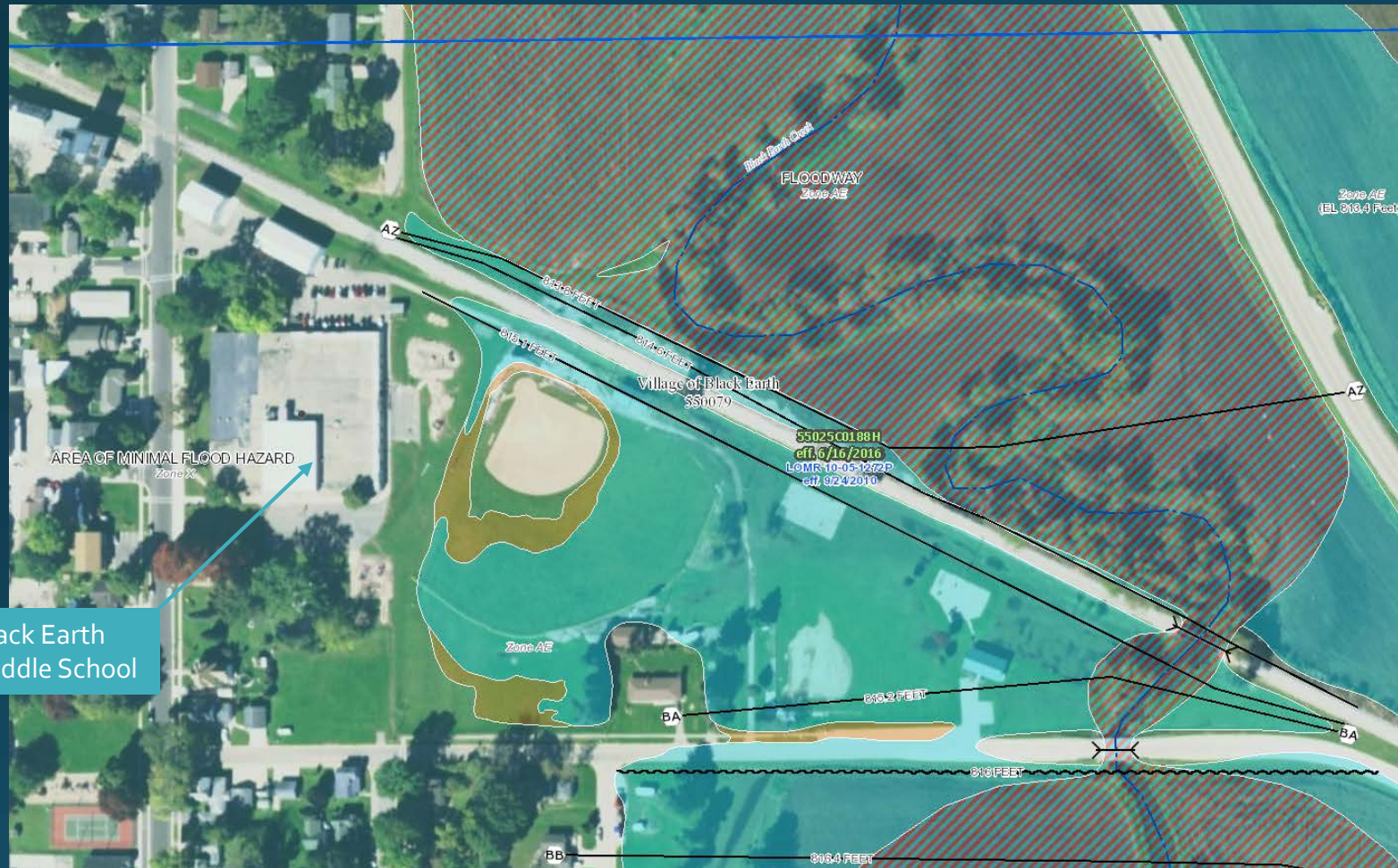


National Flood Insurance Program

- Based on “1% Regional Flood” (A.K.A. “100-year flood”)
- 1% floodplains modelled and mapped based on:
 - Historic flood elevations
 - Best-available digital contour data
- Insurance premiums subsidized by federal government
- Insurance coverage mandatory for federally-backed mortgages
- Local governments (including counties) must regulate 1% Regional Floodplain

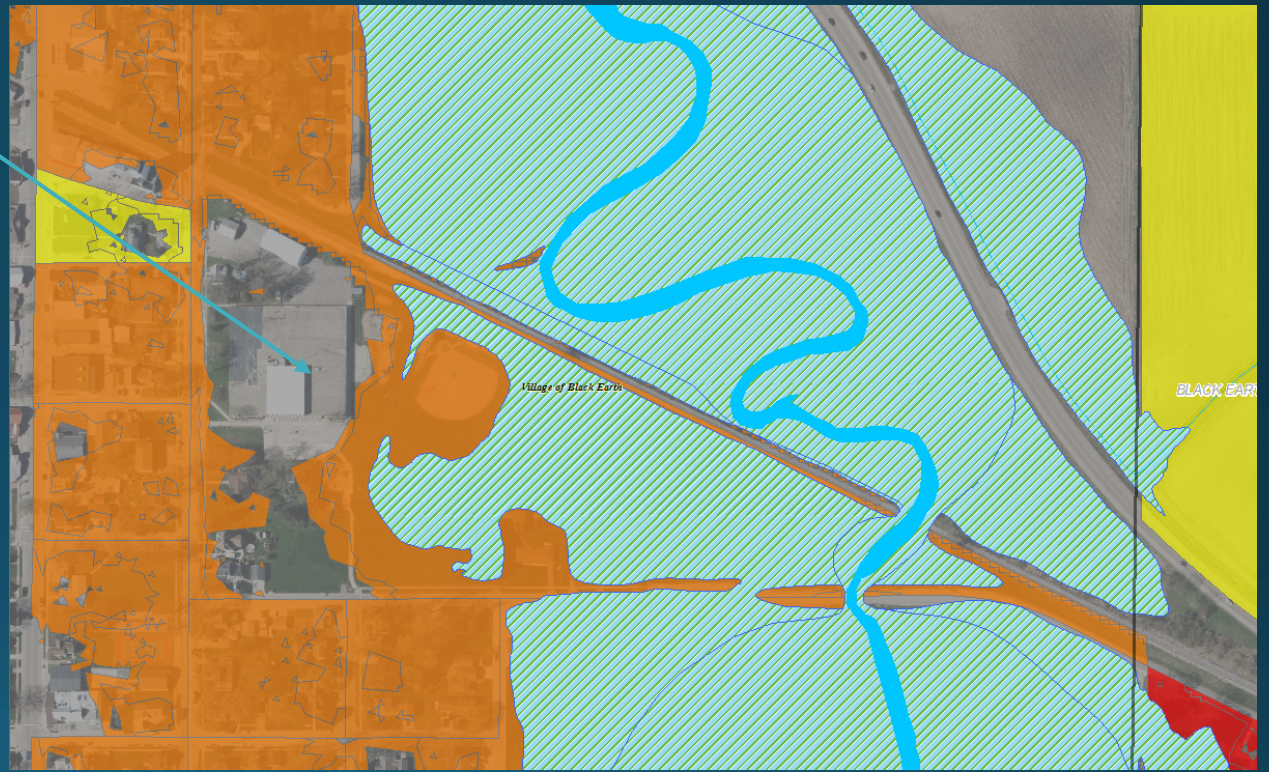
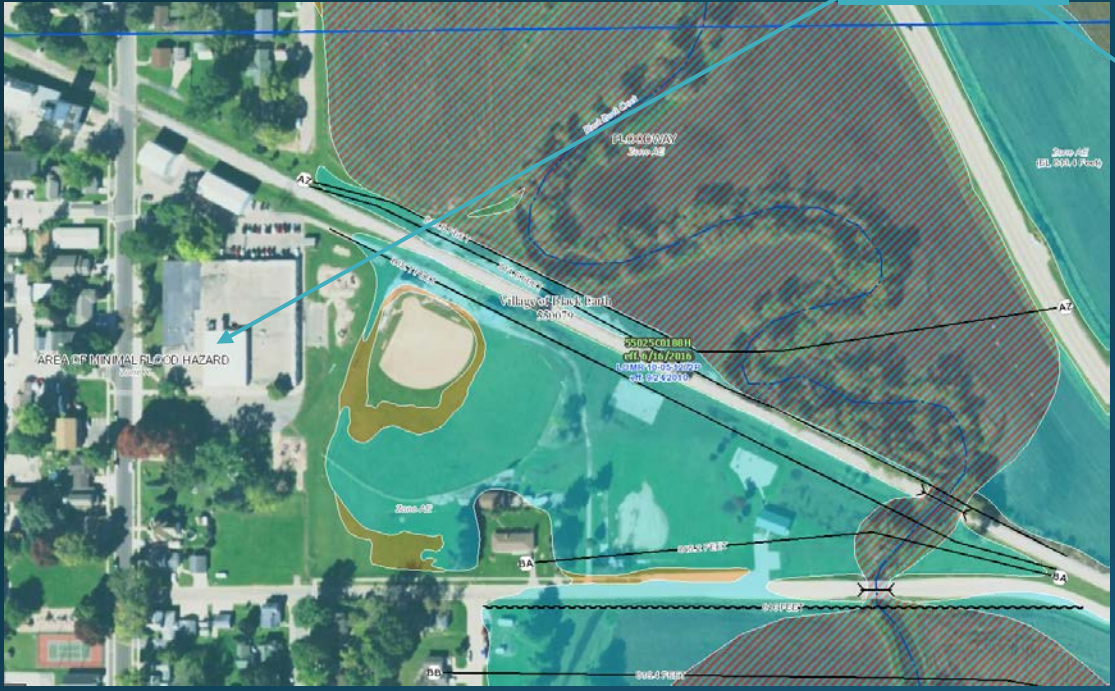


FEMA Flood Insurance Rate Maps (FIRMs)



Am I safe if my property is out of the 1% floodplain? Not necessarily.

Black Earth
Middle School



<input checked="" type="checkbox"/>	Average FEMA-paid Damages per Household
<input type="checkbox"/>	Avg_Total
<input checked="" type="checkbox"/>	\$270 - \$3,673
<input checked="" type="checkbox"/>	\$3,673 - \$11,320
<input checked="" type="checkbox"/>	\$11,320 - \$37,537

FEMA Disaster Relief Individuals and Households Program

- How granted
 - Requires Presidential disaster declaration
 - Pays for costs *NOT* covered by insurance
 - Individual awards capped at \$35,500
- Eligible costs:
 - Home Repairs
 - Rental Assistance
 - Personal Property
 - Dental / Medical
 - Moving / Storage
 - Transportation
- Intended only to make homes “habitable,” not restore to pre-disaster condition
- Data protected under Privacy Act of 1974



Individual Assistance Program and Policy Guide (IAPPG)

FP 104-009-03 | March 2019

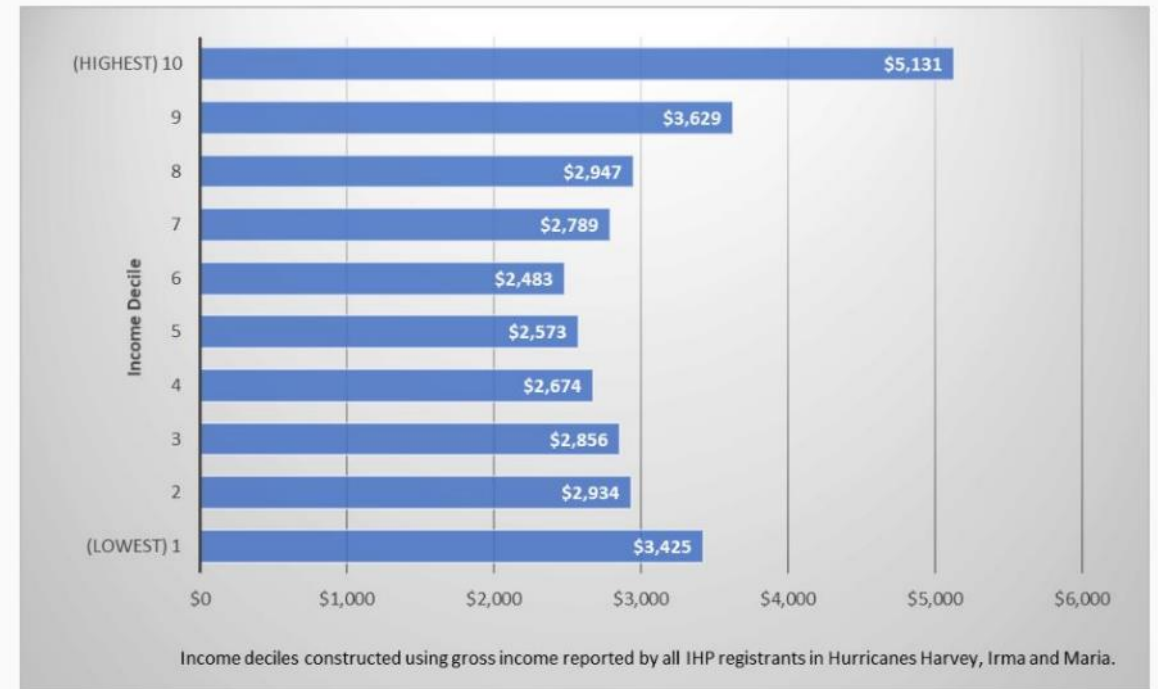


FEMA

FEMA Disaster Relief Individuals and Households Program

- FEMA data undercounts total damage
 - Only covers residential losses, not commercial or public infrastructure
 - Only pays for uninsured losses
 - Losses over \$35,550 per household not covered
 - Make "habitable," not "restore"
 - Requires inspection and verification by FEMA
 - Not everyone applies
- Equity concerns
 - Who's left out?

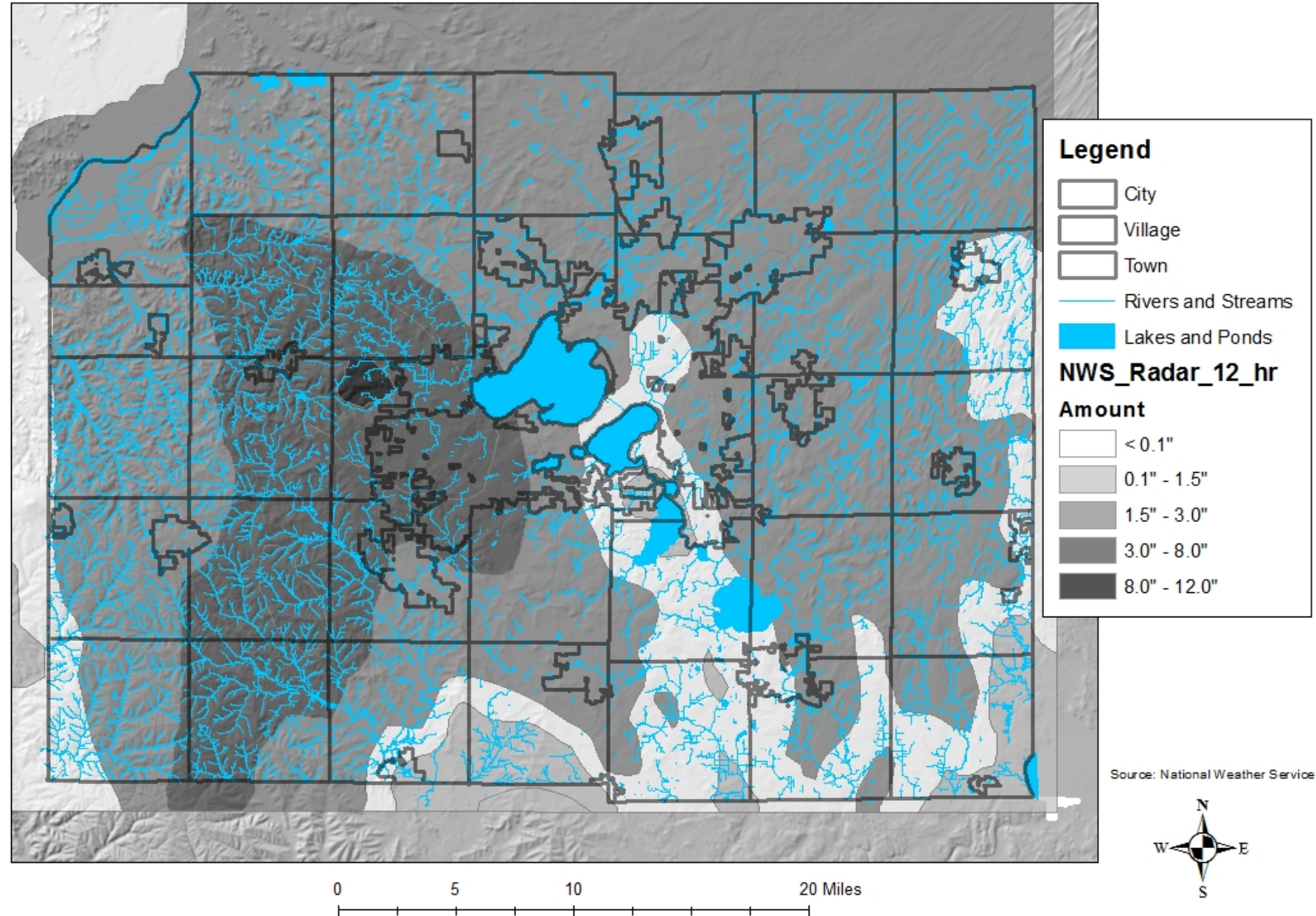
Figure 2. FEMA Individuals and Households Program: Average Housing Assistance for Homeowners and Renters in Hurricanes Harvey, Irma, and Maria, by Income Decile



Source: [Margaret Walls](#) and [Danae Hernandez Cortes](#), 2018, [Risk Management And Decision Processes Center](#), University of Pennsylvania

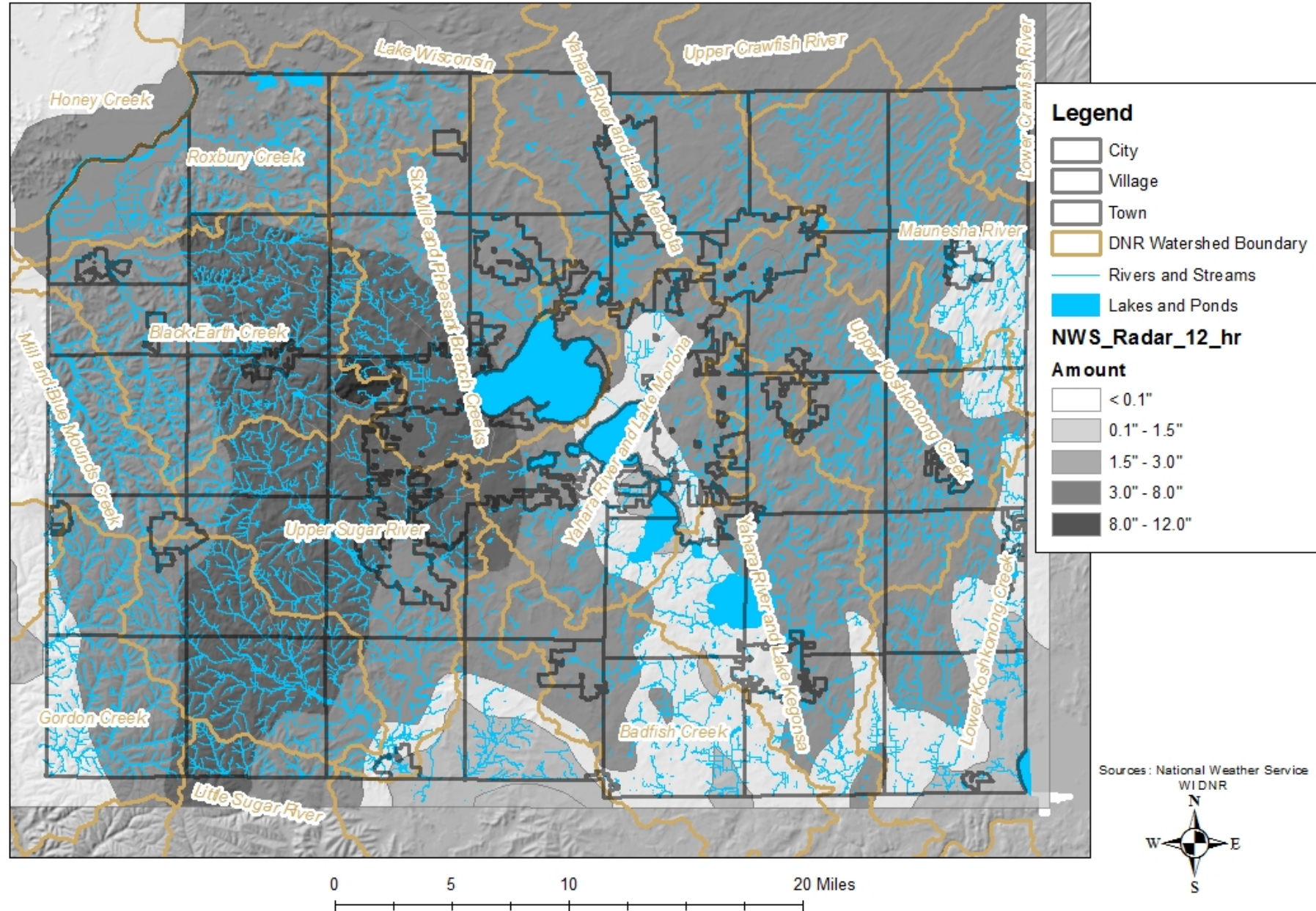
Rainfall: August 20, 2018

August 20, 2018 12-hour Rainfall

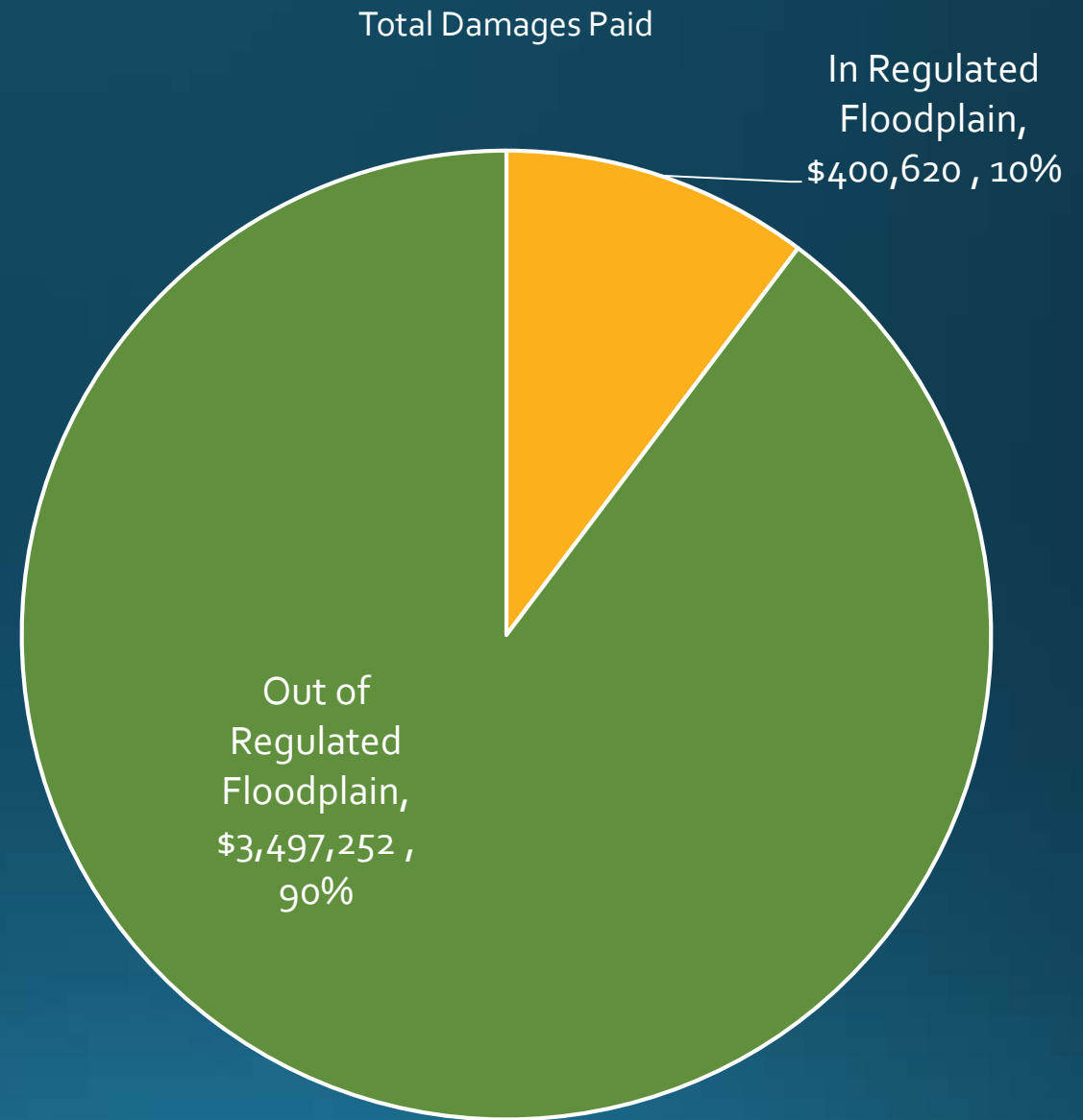


Rainfall: 8/20/18 Where did it fall?

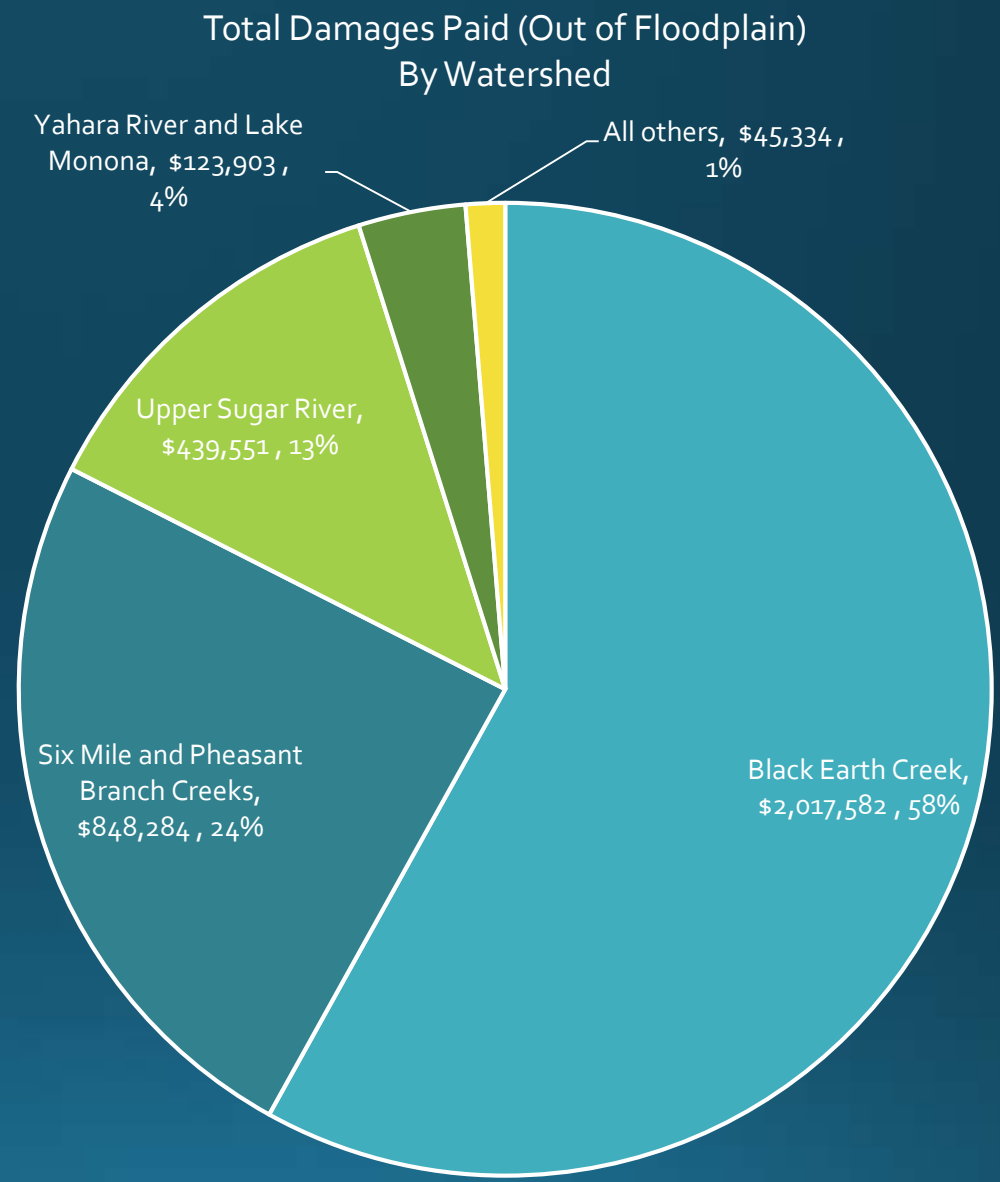
August 20, 2018 12-hour Rainfall



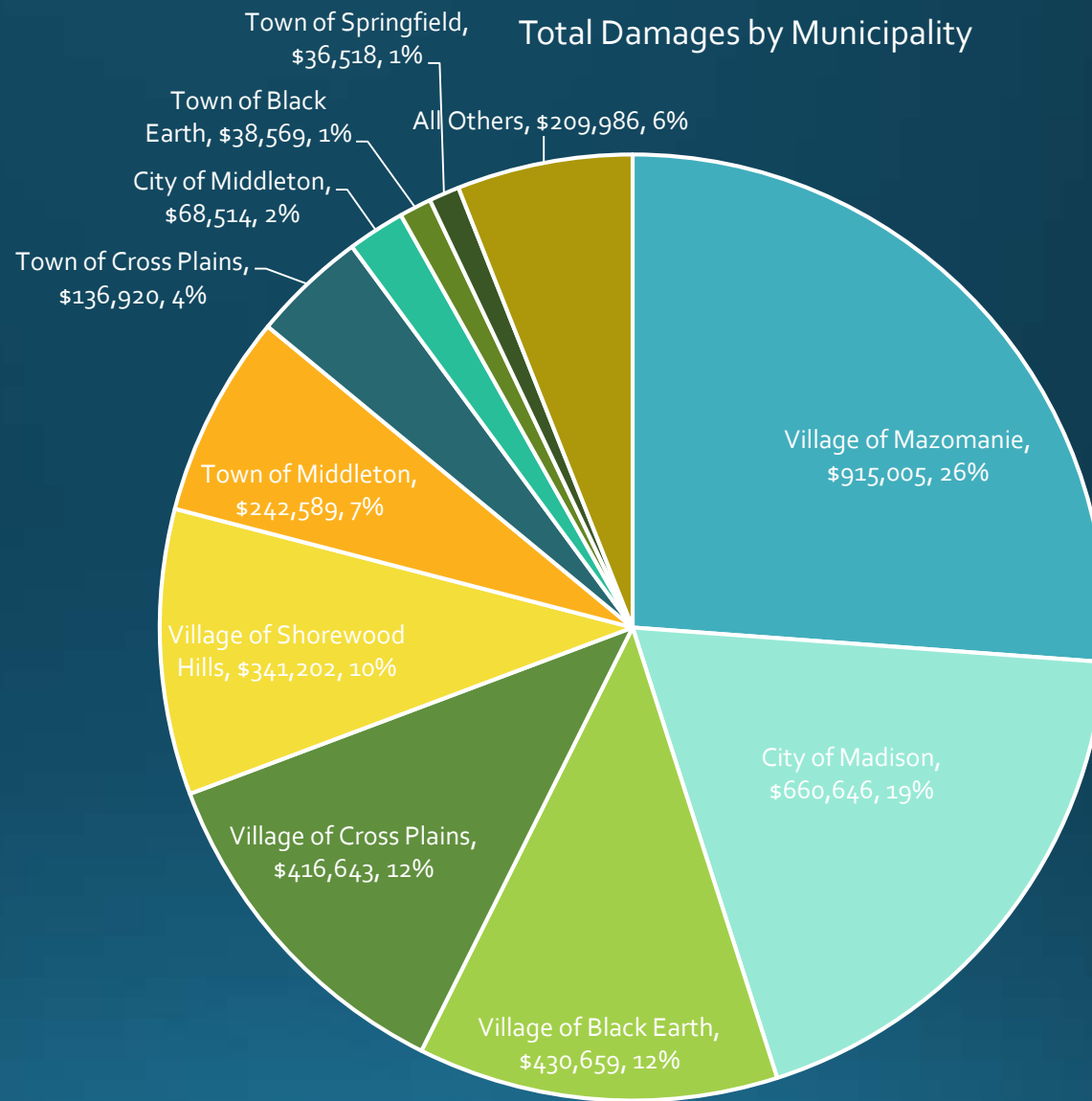
2018 Floods: Properties Receiving Disaster Relief In and Out of 1% Regional Floodplain



2018 Floods: Properties Receiving Disaster Relief (Out of 1% Floodplain) Damages by Watershed

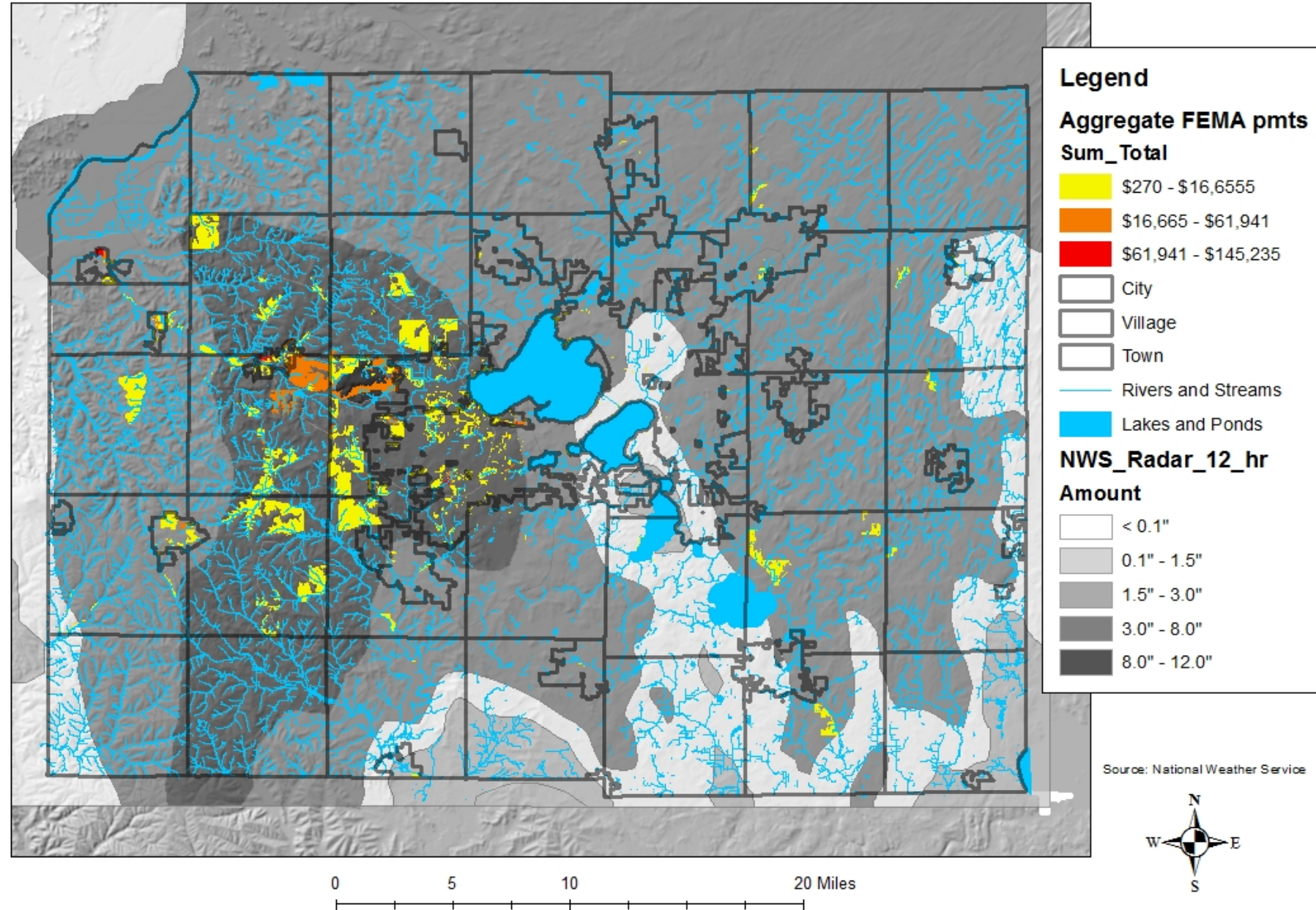


2018 Floods: Properties Receiving Disaster Relief (Out of 1% Floodplain) Damages by Watershed



Total Damages Paid by FEMA

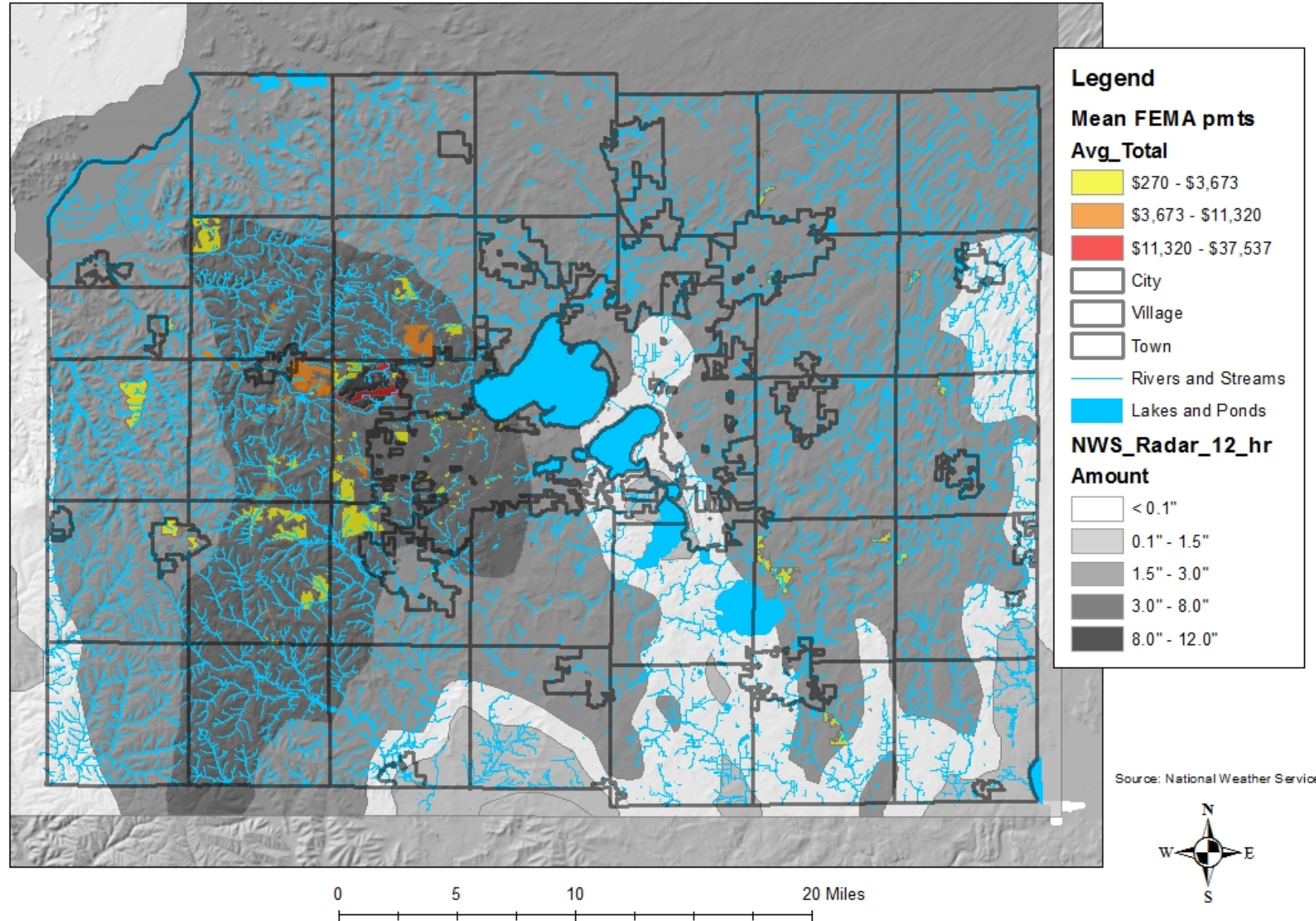
Aggregate FEMA Payments by Census Block



Average Damages per Property Paid by FEMA

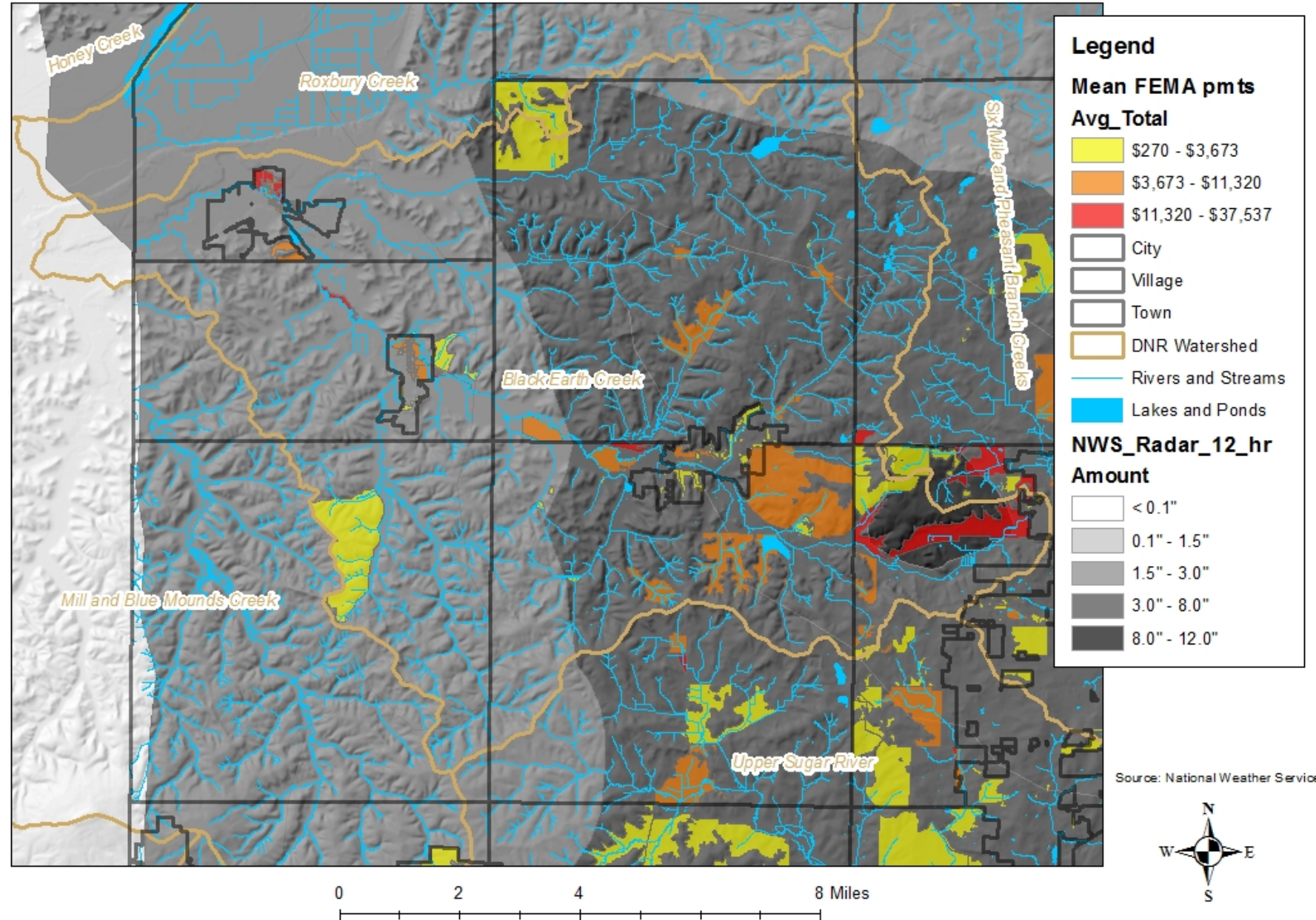
Average FEMA Payments per Household

DANE COUNTY
PLANNING & DEVELOPMENT



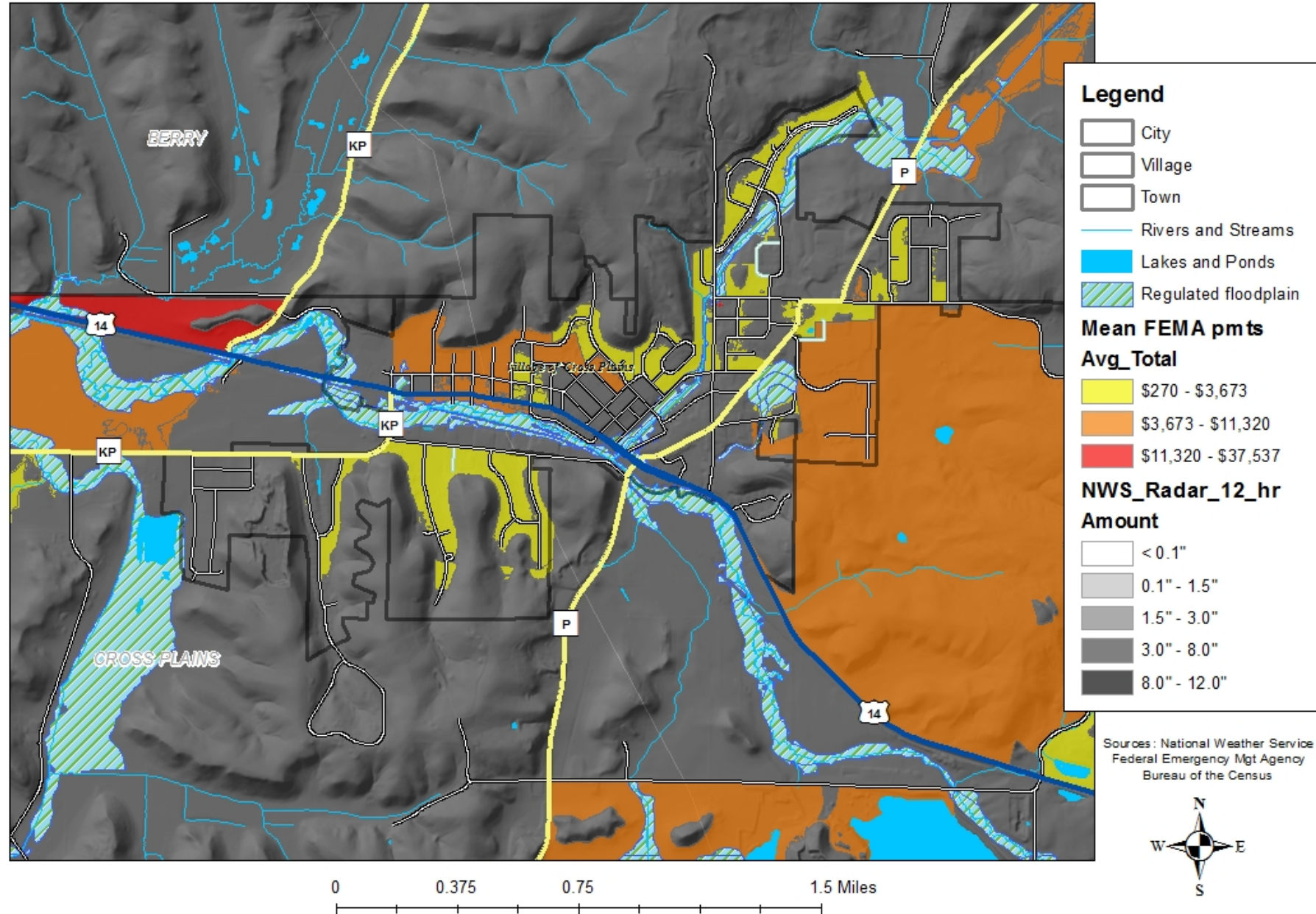
Average Damages: Black Earth Creek Watershed

Average FEMA Payments per Household



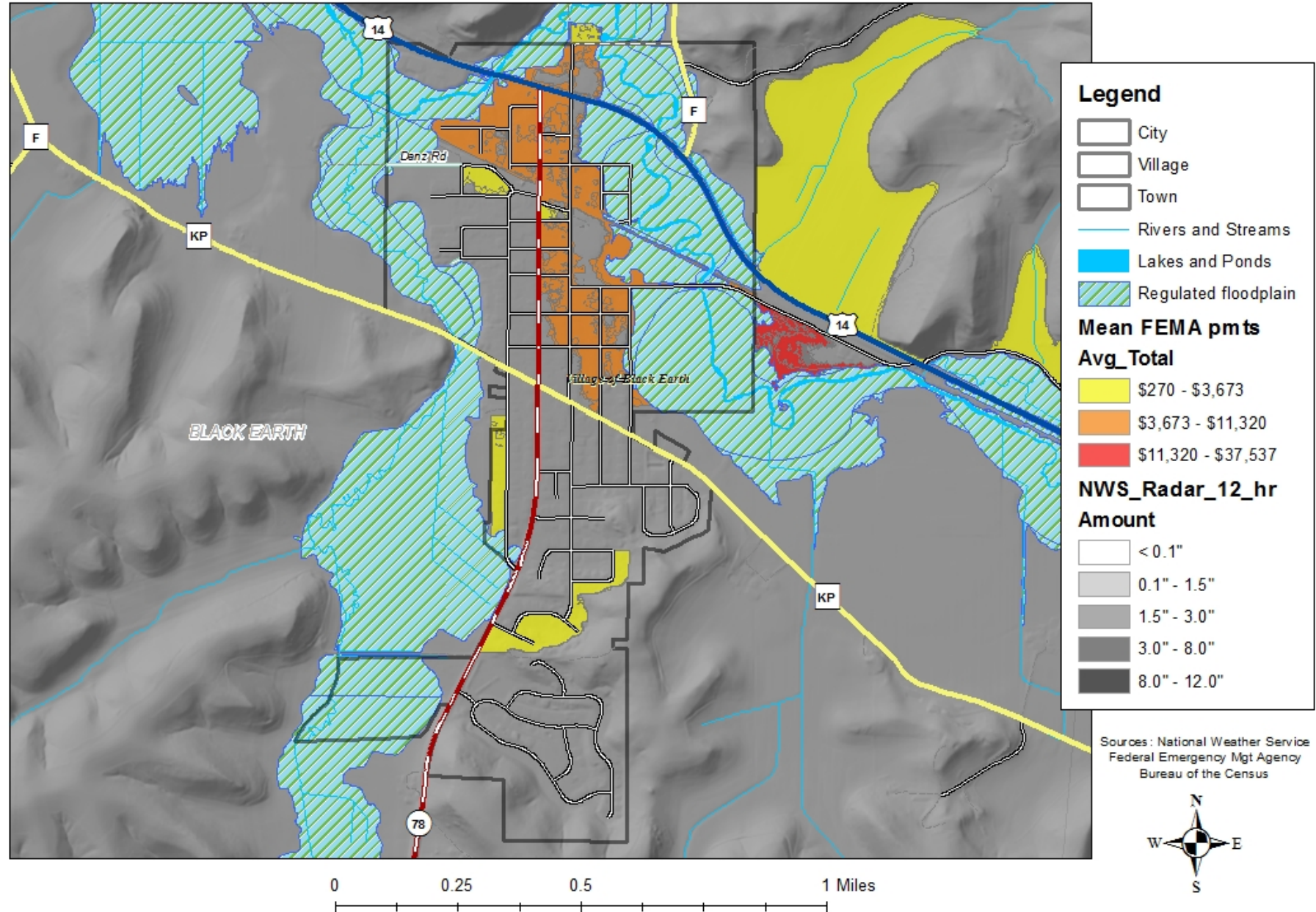
Average Damages: Village of Cross Plains

Average FEMA Payments by Census Block
Village of Cross Plains



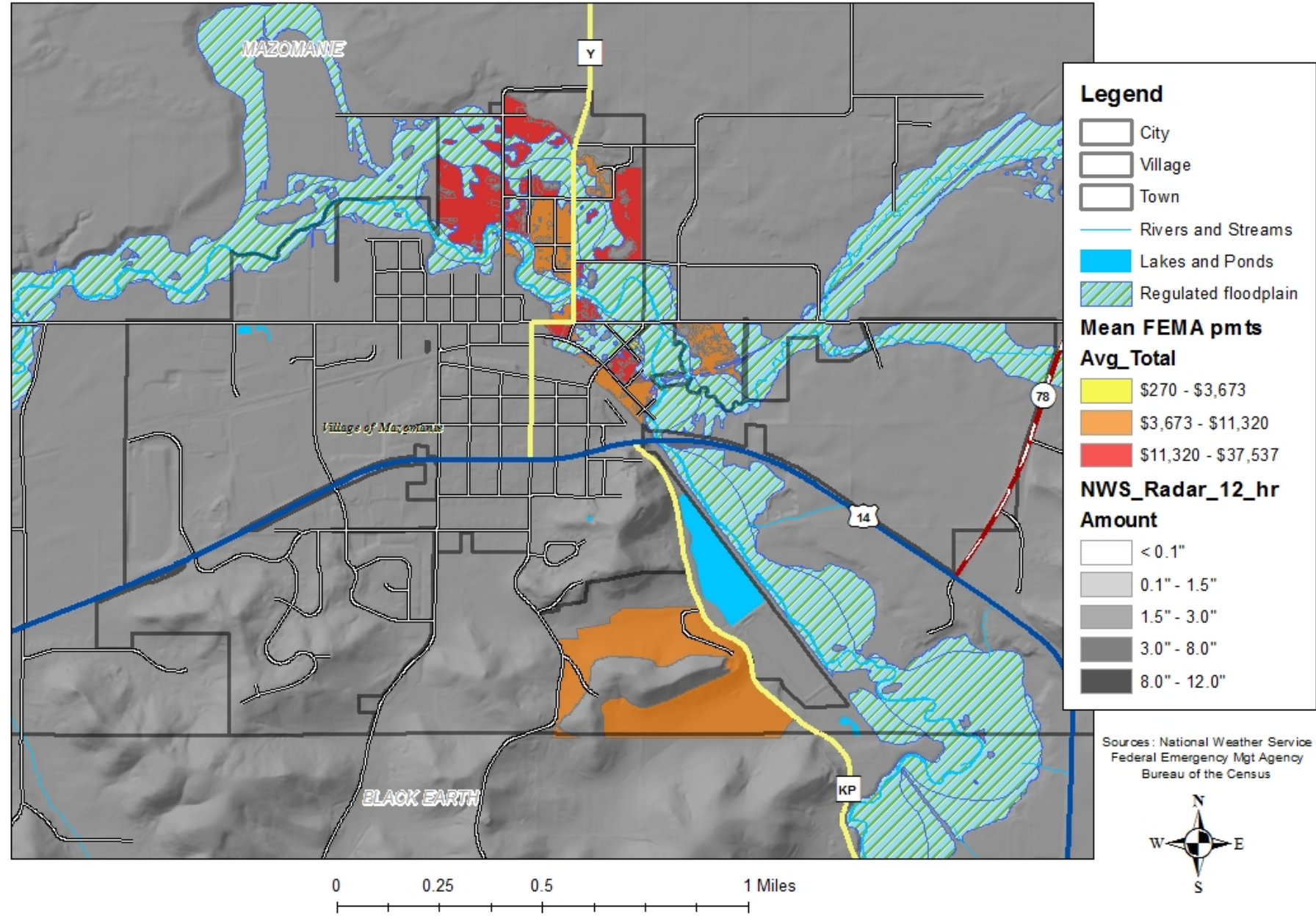
Average Damages: Village of Black Earth

Average FEMA Payments by Census Block
Village of Black Earth

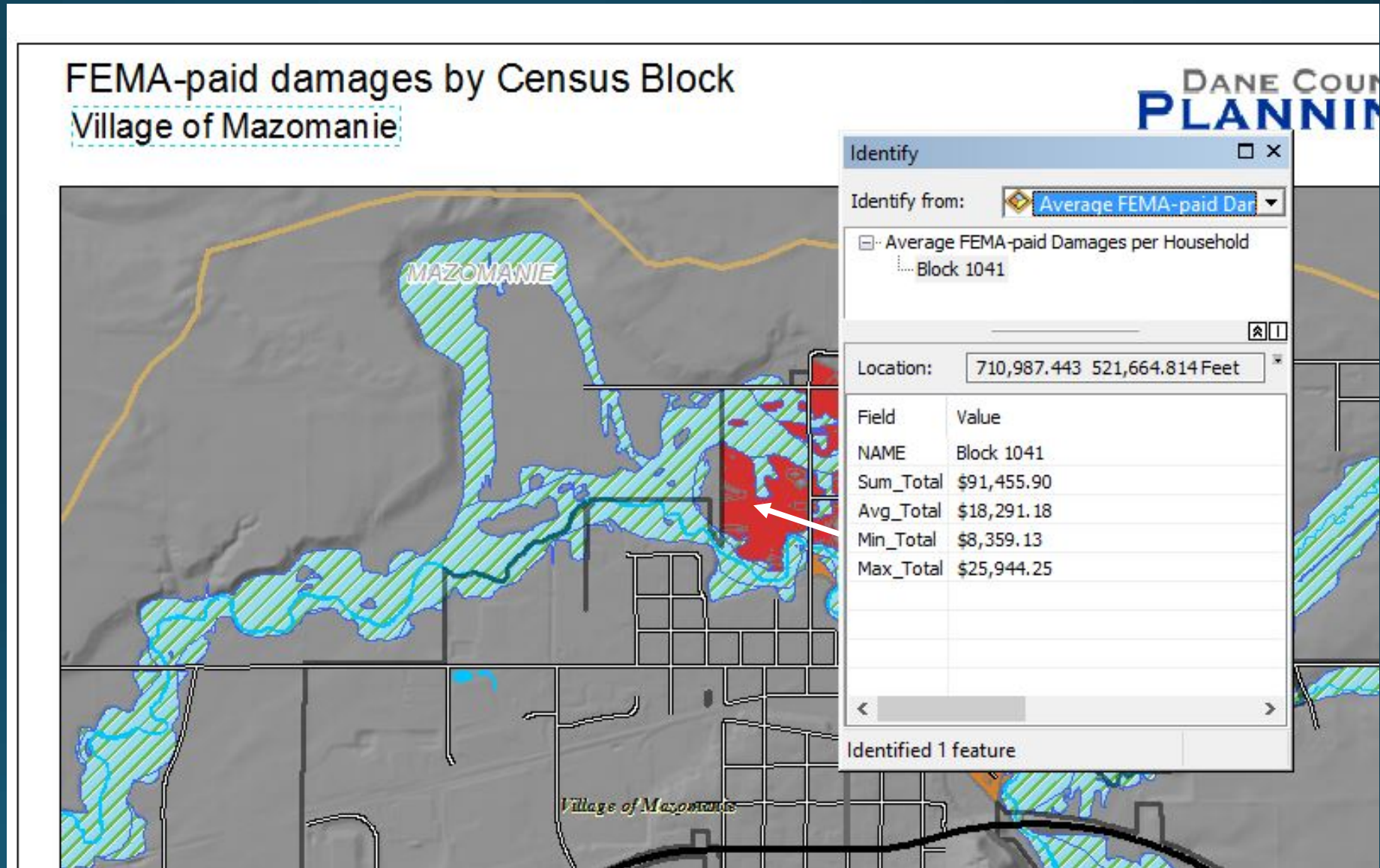


Average Damages: Village of Mazomanie

Average FEMA Payments by Census Block Village of Mazomanie

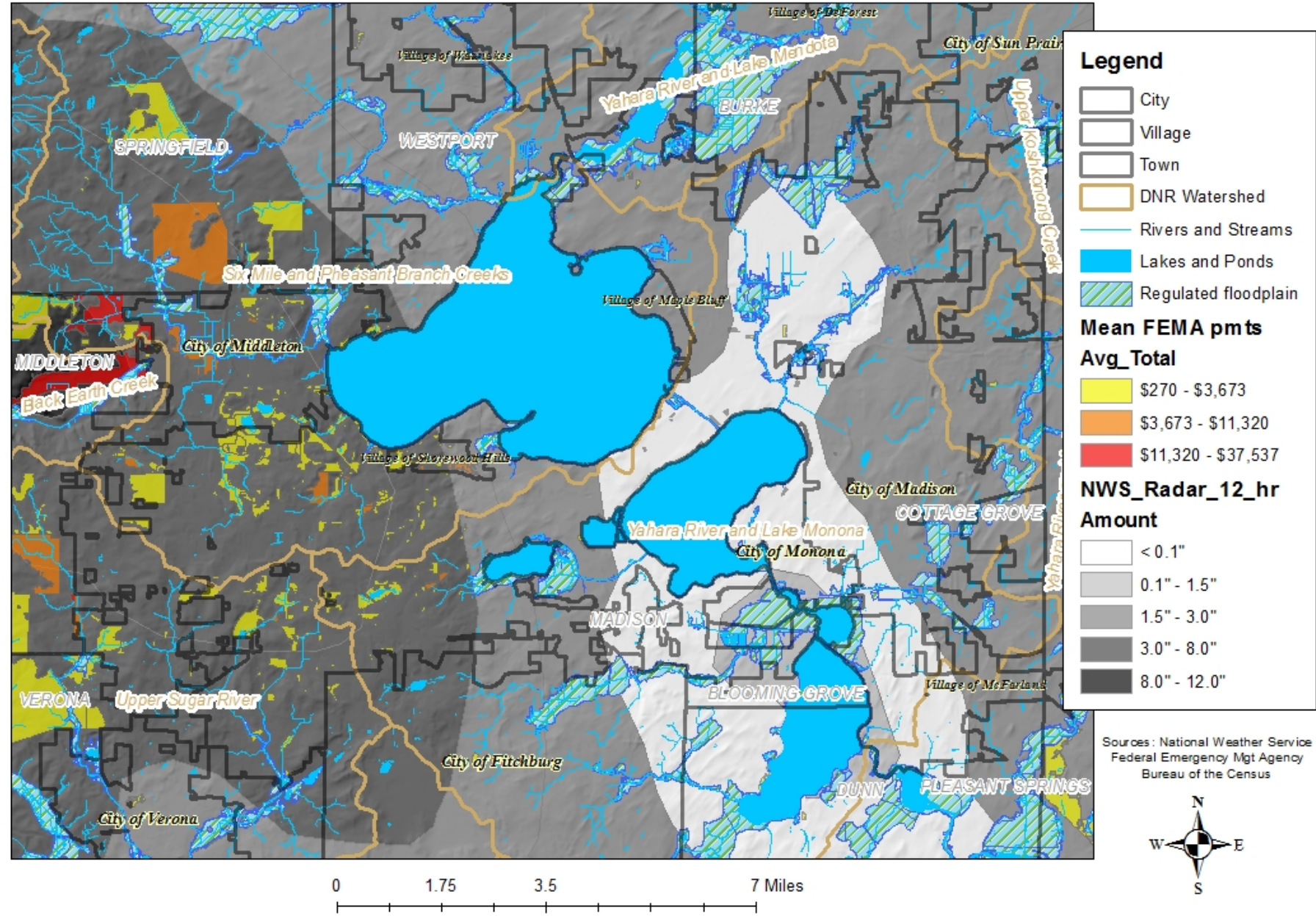


Detailed Data: Village of Mazomanie



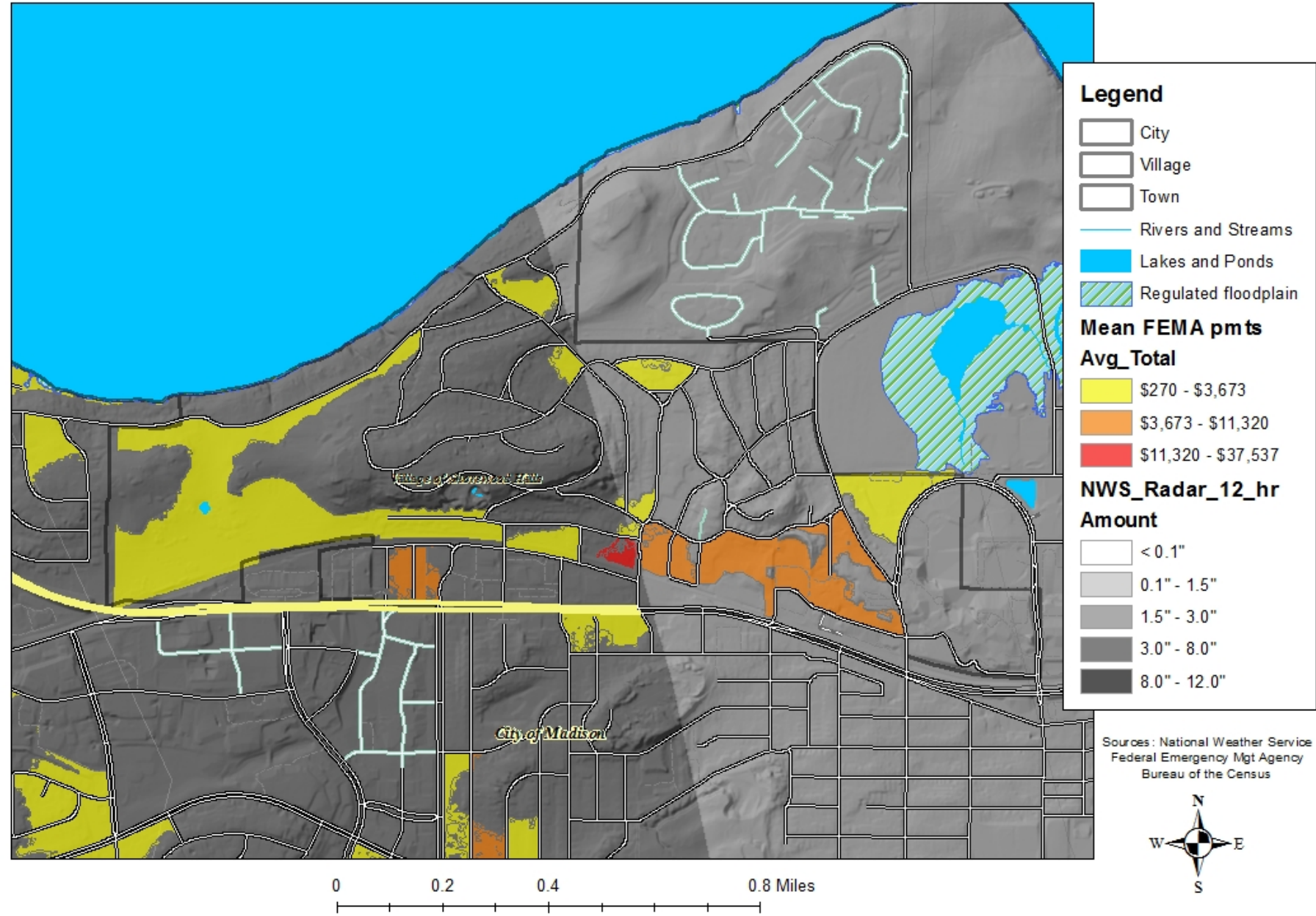
Average Damages: City of Madison

Average FEMA Payments by Census Block City of Madison



Average Damages: Village of Shorewood Hills

Average FEMA Payments by Census Block
Village of Shorewood Hills



Next Steps

- Add data from 2008 flood event
 - Centered on Eastern Dane County
 - Long period of constant rain, not one intense storm
 - Different terrain, hydrology
- Develop public education strategy
 - Web-based risk mapping
 - Best practices for risk management
 - Collaborate with other, nationwide projects [e.g., “[Flood Factor](#)” ([First Street Foundation](#))]
 - Outreach to landowners, renters, real estate / financial professionals
- Model likelihood / intensity / impact of future storms
 - How likely is another 2018 storm?
 - “[Rainy Day](#)” localized stochastic model ([Daniel Wright, U.W. Engineering](#))
 - Where will future flooding occur?
 - “[HAZUS](#)” mapping “what-if” impact analysis ([FEMA](#))
 - Promote resiliency in face of changing climate

