Blue Moon: Kentucky’s Contribution to the FEMA Moonshots

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Flooding is a concern throughout the Commonwealth of Kentucky


Please follow us along at: http://arcg.is/1eejv9
Why do we care?

• KY has had 85 flood deaths from 1996 – 2018
  • 7 in 2018 alone
• KY has 1% of the U.S. population but accounts for 4% of U.S. flood deaths between 1996 and 2018
• 45 Kentucky counties have experienced deadly floods since 1996
Flood Risk Management is essential

• Common goals
• Shared responsibilities
• Respect missions and authorities
• Concise, unified message is a need
• Explore multiple methods of delivery
Flood Risk Management is coordinated across state agencies....

- DOW
  - National Flood Insurance Program (NFIP)
  - Floodplain permitting
  - Flood hazard mapping
  - Dam Safety
  - 401 Water Quality Certification
  - Stormwater
  - Clean Water Act
  - Safe Water Drinking Act

- KYEM
  - Response, Recovery, and Mitigation
  - Public Assistance
  - Individual Assistance
  - Hazard Mitigation Assistance programs
    - HMGP
    - FMA
    - PDM
...and delivered to key stakeholders and citizens using Flood Hazard Mapping and Risk Tools

- Risk MAP
  - Mapping
  - Assessment
  - Planning

- Informs floodplain management, regulations, flood insurance, and mitigation

- Ties flood hazard identification, flood risk assessments and hazard mitigation planning together
Disasters are getting worse...

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>Number of Storms</th>
<th>Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980 - 1989</td>
<td>28</td>
<td>169.3</td>
</tr>
<tr>
<td>2006 - 2015</td>
<td>90</td>
<td>411.6</td>
</tr>
<tr>
<td>2016 - 2018</td>
<td>45</td>
<td>452.7</td>
</tr>
</tbody>
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* CPI adjusted to 2018 (NOAA)
... and floods don’t follow SFHA Boundaries

52 Percent of Flooded Properties From Hurricane Harvey Not in Designated Flood Zones

Residential News » Houston Edition | By Michael Gerrity | August 29, 2017 9:00 AM ET
The National Academies Report on Urban Flooding (April 2019)

Report Conclusion:
The current costs and impacts to urban flooding merit national attention. Further, flood problems are likely to get worse with continued urban development and population growth in urban areas, as well as with climate change, which is increasing sea level rise and frequency of heavy precipitation events.

Finding: A new generation of flood maps and visualizations that integrate predictions and local observations of flood extent and impact is needed to communicate urban flood risk. Improved methods for updating the maps to keep pace with urbanization and climate change are also needed.
FEMA recognized this in its Strategic Plan
Leveraging technology and data will **streamline** the underwriting and policy issuance process.

A **more credible view of risk** will encourage coverage in all risk-prone areas.

**Offering more mitigation credits** will incentivize risk reduction efforts.

**Intuitive rating variables** that clearly communicate risk will highlight mitigation opportunities.
Kentucky uses best practices to educate key stakeholders to help drive actions to meet the FEMA moonshots

- Communicate Key Messages
- Best Practices
  - DOW Water Maps Portal
  - Interactive Surveys
  - Virtual Reality
  - Structure-based flood risk assessments
Communicate Key Messages: Explain Insurance Benefits and Implications

**Risk Rating and Policy Forms Redesign**

- Reflects local flood risk
  - Not just in-or-out of the floodplain
- Reflect different types of flood risk, including fluvial, pluvial, and coastal surge
- Reflects the cost to rebuild
  - Because of increased housing sizes and related costs, the current system overcharges inexpensive homes
- The best way to reduce flood risk is to transfer a portion to insurance companies
Communicate Key Messages:
Explain Insurance Benefits and Implications

Understand Your Flood Risk, Floyd County:
Why You Shouldn’t Cancel Your Flood Insurance Policy if Your Flood Zone Is Changing from High Risk to Moderate or Low Risk

Preliminary flood insurance zones near Prestonsburg. High risk flood zones are identified in blue and moderate risk flood zones are identified in orange.
Communicate Key Messages:
Encourage Mitigation Actions in Communities
Kentucky DOW Water Maps Portal

- Flood Hazard Portal
- Water Health Portal
- KY Watershed Viewer
- DOW Story Maps Gallery
- Harmful Algal Blooms (HAB) Viewer
- Special Use Waters
- Drought Viewer
- Flood Map Project Updates
- Certified Well Driller’s Webapp

http://watermaps.ky.gov
Kentucky Flood Hazard Portal

- Statewide flood hazard areas in a single map
  - Displays the same floodplain as the FEMA GeoPlatform
- Provides: Zone A flood hazard data in 119 counties (excludes Louisville Metro)
  - 1% annual chance flood elevations in Zone A floodplains with a simple click on the stream centerline
  - Hydrologic & Hydraulic reports and HEC RAS models available for download
  - FIS also available for download
- Future Improvements
  - Flood depth grids and other Risk MAP products
  - Dam safety information
  - Mobile-friendly

http://watermaps.ky.gov/RiskPortal/
Flood Map Project Updates

- DOW is in the process of revising flood hazard maps for several watersheds in the Commonwealth
- Preliminary maps for communities to review
  - Not Effective for Regulatory Use
  - May be used as best available data
- Three studies currently available for review
  - Lower Cumberland watershed
  - Jefferson County (Louisville Metro)
  - Silver-Little Kentucky River watershed
- Generally, not all FIRMs are updated during this process

http://watermaps.ky.gov/
Story Maps

• Simplifies engagement
• Facilitates consistent interaction between stakeholders
• Provides robust tools in a simple interface
Interactive Surveys

- Engages stakeholders
- Surveys provided at beginning, middle, and end of flood hazard mapping projects
- Goal is to assess stakeholder development over project lifecycle
Virtual Reality

Crittenden County, Kentucky – No Flooding
Virtual Reality

Crittenden County, Kentucky – 1% Annual Chance Event
Virtual Reality

Crittenden County, Kentucky – 0.2% Annual Chance Event
Structure-based flood risk

• DOW focused on defining a methodology with the following objectives:
  • May be implemented with currently available data;
  • Is cost effective;
  • Produces a risk score that is not skewed towards high-value assets (i.e. is independent of structure value);
  • Has the flexibility to be applied to structure values to help floodplain administrators and community officials quantify projected flood damage and losses
Structure-based flood risk

- Average Annualized Percent Loss (AAPL)
  - AAPL is a risk score and coefficient that is specific to a structure.
  - May be produced from datasets created through Risk MAP program and other available public data.
  - AAPL is derived from the relationship of how much damage a structure is projected to sustain during a flood event and the probability of that event happening.
  - Damage to a structure is expressed as the percent of a structure’s value that is lost during a flood event.
Structure-based flood risk
How do we bring it together? Promote six categories of mitigation!

- Prevention
- Property Protection
- Structural Projects
- Emergency Services
- Public Outreach
- Natural Resources
How do we bring it together? Collaboration!
Questions?

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