2% Depth (50-Year)

- 3.8 ft
- 0.0 ft
- 0.0 ft
1% Depth (100-Year)

- 4.7 ft
- 0.1 ft
- 0.0 ft
0.2% Depth (500-Year)

- 8.9 ft
- 4.3 ft
- 1.7 ft
Percent Annual Chance of Flooding

- 10% +
- 0.4%
- 1%
Flood Risk During a 30-Year Mortgage

<table>
<thead>
<tr>
<th># of Years</th>
<th>2%</th>
<th>4%</th>
<th>10%</th>
<th>20%</th>
<th>50%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5%</td>
<td>10%</td>
<td>18%</td>
<td>41%</td>
<td>67%</td>
<td>97%</td>
</tr>
<tr>
<td>10</td>
<td>10%</td>
<td>10%</td>
<td>34%</td>
<td>63%</td>
<td>89%</td>
<td>100%</td>
</tr>
<tr>
<td>30</td>
<td>26%</td>
<td>45%</td>
<td>71%</td>
<td>96%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>50</td>
<td>39%</td>
<td>64%</td>
<td>87%</td>
<td>99%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>100</td>
<td>63%</td>
<td>87%</td>
<td>98%</td>
<td>100%</td>
<td>100%</td>
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<tr>
<td>250</td>
<td>92%</td>
<td>99%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>500</td>
<td>99%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Annual Chance

Chance of occurrence over # of Years

$y = -0.777x + 2.9593$

$R^2 = 0.9985$
Flood Risk During a 30-Year Mortgage
Watershed Flood Risk Report

• Watershed Background
• Project Results
• Flood Risk Assessment
  – Areas of Mitigation Interest
Flood Risk Map

Areas of Interest may include:

- Flood Control Structures (dams, levees, coastal, etc.)
- Floodplain “Pinch Points”
- Proposed and Recent Development within the Floodplain
- Locations of Concentrated Past Flood Claims
- Other Community-Identified “Hot Spots”
- Locations of Successful Mitigation Projects
Are The Non – Regulatory Products Useful?
FEMA Pilot Project Study

• FEMA Headquarters needed to better-understand the effectiveness of the non-regulatory products and their perceived value towards:
  – Communicating flood risk
  – Enhanced mitigation planning
  – Inspiring actions that reduce risk

• To accomplish this, FEMA used a variety of communication forums to collect feedback from:
  – Training participants from EMI courses where non-regulatory products were presented
  – Wide array of FEMA staff (HQ, Regions)
  – End-users and recipients of non-regulatory products (States and local officials)
FEMA Pilot Project Study

• Results were varied, but some trends emerged:
  – Overall, the non-regulatory products and datasets are valued for their ability to communicate flood risk, support mitigation plans, and promote actions.
  – Some datasets were not as well-received or locally understood

• Recommendations include:
  – Develop better communication/training around buying and delivering products and datasets that are tailored to communities’ risk, need, ability to pursue actions, GIS capabilities, etc. – one size does not fit all
Feedback Received from Communities

- Billerica, MA
- Burlington, MA
- Lexington, MA
- Tewksbury, MA
- Wilmington, MA
- Susquehanna Co, PA
- Broome Co, NY
- Passaic Co, NJ
- Madison Co, AL
- Lexington-Fayette (KY) Urban County Govt.
- City of Huntsville, AL
- Greenville Co, SC
- Gallatin, TN
- Butler Co, OH
- Fairfield, OH
- Medina Co, OH
- Middletown, OH
- Oxford, OH
- Clackamas Co, OR
- Charlotte-Mecklenburg County, NC
Feedback Received from Communities

- Overall trends/comments from respondents
  - Majority of communities either did not recall receiving the Non-Regulatory products, or hadn’t used them since receiving them
  - However, upon reminding them of what the products are and their purpose, there was almost universal interest in having access to at least some of the information
  - 3 of the 20 local communities had actually used some of the Non-Regulatory products/datasets for risk communication, mitigation planning, or actions
  - Majority of Respondents felt that the products should be provided to the general public, although most had not done so yet
How Were the Non–Regulatory Products Received in the Lower Levisa Watershed?
Scope of Work

- Detailed Studies – 82 miles
- Approximate Studies – 617 miles
- Redelineation – 207 miles
Scope of Work

<table>
<thead>
<tr>
<th>County</th>
<th>Preliminary Date</th>
<th>Number of Revised Panels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floyd</td>
<td>June 27, 2014</td>
<td>49</td>
</tr>
<tr>
<td>Johnson</td>
<td>June 27, 2014</td>
<td>32</td>
</tr>
<tr>
<td>Knott</td>
<td>June 27, 2014</td>
<td>5</td>
</tr>
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</table>
## Scope of Work

<table>
<thead>
<tr>
<th>County</th>
<th>Preliminary Date</th>
<th>Number of Revised Panels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lawrence</td>
<td>June 13, 2014</td>
<td>18</td>
</tr>
<tr>
<td>Magoffin</td>
<td>June 27, 2014</td>
<td>5</td>
</tr>
<tr>
<td>Morgan</td>
<td>June 27, 2014</td>
<td>4</td>
</tr>
<tr>
<td>Pike</td>
<td>June 27, 2014</td>
<td>31</td>
</tr>
</tbody>
</table>
Flood Risk Datasets and Products

• Flood Risk Datasets
  – Changes Since Last FIRM
  – Flood Depth & Analysis Grids
  – Flood Risk Assessment
  – Areas of Mitigation Interest

• Flood Risk Products
  – Flood Risk Database
  – Flood Risk Report
  – Flood Risk Map
Resilience Meetings

- Big Sandy Area Development District
- Pikeville
- Prestonsburg
- Paintsville
## Potential Uses for Depth & Analysis Grids

<table>
<thead>
<tr>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informs decisions on risk reduction efforts</td>
</tr>
<tr>
<td>Zero in on your areas of greatest flood risk vulnerability</td>
</tr>
<tr>
<td>Clear depiction of high flood risk areas for future planning</td>
</tr>
<tr>
<td>Inform future development decisions</td>
</tr>
<tr>
<td>Understanding current and future risk</td>
</tr>
<tr>
<td>Multiple datasets help visualize a variety of flood risk elements for local stakeholders</td>
</tr>
<tr>
<td>Demonstrating higher flood vulnerability in specific areas</td>
</tr>
<tr>
<td>Accessible source of data for cost-effectiveness</td>
</tr>
<tr>
<td>Assists with advanced recovery planning and disaster preparedness</td>
</tr>
</tbody>
</table>
Purpose of Areas of Mitigation Interest

- Provides input to local mitigation plans
- Identifies areas that may be affecting flood risk that would benefit from raised local awareness
- Raises awareness of local stakeholders within and upstream of the watershed that may be contributing to flood risk and associated interrelationships
Areas of Mitigation Interest

Items that may have an impact on the identified flood hazards or flood risks

- Dams
- Stream flow constriction
- Past claims hot spots
- Essential Facilities
- Other Flood Risk Areas
Areas of Mitigation Interest

Structures in the 10% annual chance floodplain
• Over 3900 identified

Stream constrictions or “pinch points”

Structure Inventory
Findings

- Changes to SFHAs
- Watershed is prone to disasters
- Many sensitive areas
  - Steep slopes conducive to flash floods
- Multiple repetitive losses and severe repetitive losses
- Opportunities to participate in the CRS program
- Opportunities for Mitigation Funding
Mitigation Goals from Hazard Mitigation Plans

1. Increase understanding and awareness of natural hazards
2. Identify and prioritize most vulnerable areas
3. Implement regulatory actions and policies for prevention
4. Protect critical facilities
5. Maximize partnerships to improve coordination and communication
6. Develop time frames and cost estimates for implementing mitigation actions
Community Rating System

<table>
<thead>
<tr>
<th>Community</th>
<th>CRS Rating</th>
<th>Policy Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pike County</td>
<td>9</td>
<td>5%</td>
</tr>
<tr>
<td>City of Pikeville</td>
<td>9</td>
<td>5%</td>
</tr>
<tr>
<td>City of Paintsville</td>
<td>9</td>
<td>5%</td>
</tr>
</tbody>
</table>
Funding Opportunities
Communicate Flood Risk

- Citizens expect to hear about flood risk from their mayor or floodplain manager.
- By sharing flood risk information with them, they can:
  - Take action to protect themselves, their families, and businesses.
  - Improve your community’s resilience to flooding.
  - Support implementation of your mitigation plan.
Communicate Flood Risk

- Risk MAP makes it easier to share flood risk information with your constituents:
  - Community outreach plan template
  - Draft letters to citizens
  - Draft media materials
  - Guidance on how to use the Risk MAP products to communicate risk
  - User friendly Flood Risk Report
Johnson County, Kentucky
Lawrence County, Kentucky