



FEMA

Flood Risk in the Schuylkill Watershed

Planning for Resilient Communities

RiskMAP

Increasing Resilience Together

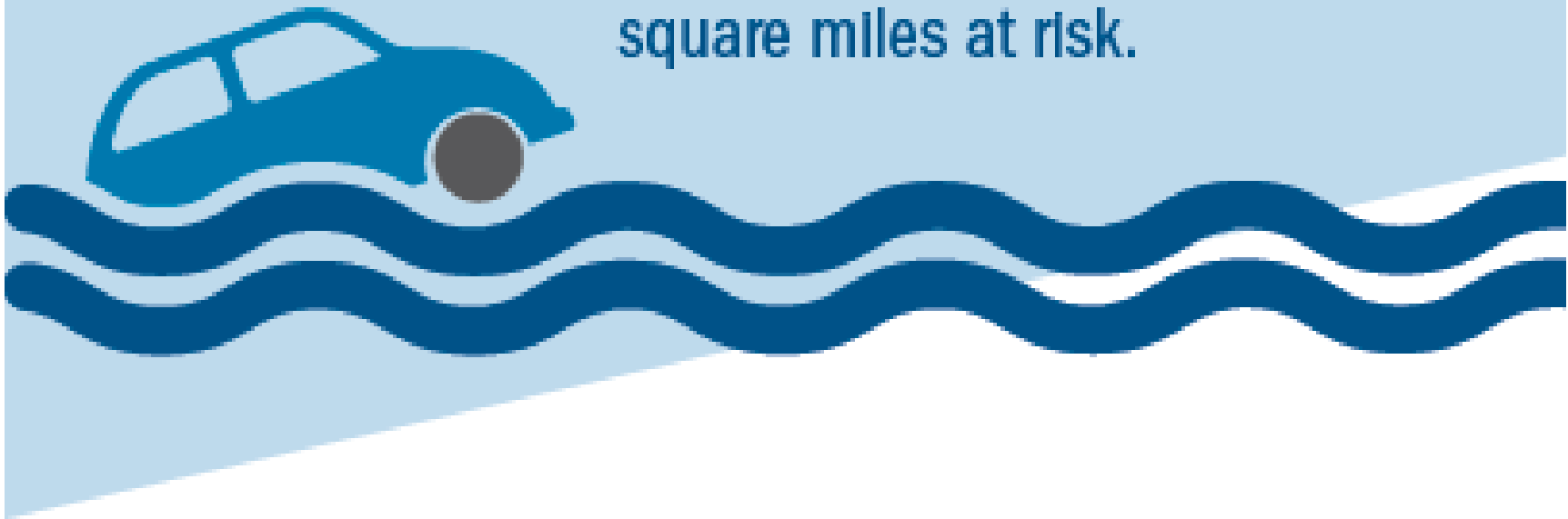


Welcome to Our Poster Session!

- **We are here to talk about:**
 - Flood Risk in the Schuylkill River Watershed
 - Taking Action to Reduce Impacts from Flooding
 - Building Resilient Communities

Do You Know Your Flood Risk?

DID YOU KNOW? Flooding occurs in all 50 states with nearly **12.5 MILLION** square miles at risk.



... And there are **1731** miles of mapped floodplain in the Schuylkill River watershed alone!

Where Does Flooding Occur?

- Almost Anywhere!
- Fact: ~25% of all National Flood Insurance Program (NFIP) claims occur outside of mapped floodplains!
- To learn more about the NFIP, go to:
- www.floodsmart.gov

DID YOU KNOW?



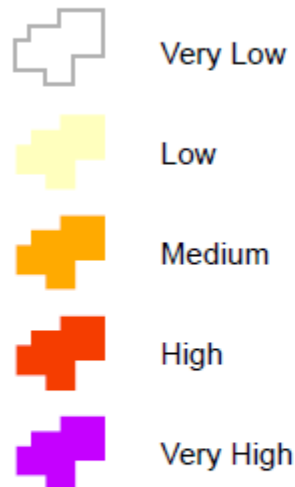
People outside of mapped high-risk flood areas file nearly 25% of all National Flood Insurance Program (NFIP) flood insurance claims and receive one-third of Federal Disaster Assistance for flooding. Floods are the most common natural disaster in the U.S. and since standard homeowners insurance doesn't cover flooding, it's important to have protection.

The NFIP was created by Congress in 1968 to help provide a means for property owners to financially protect themselves against flooding. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. To learn more about the NFIP and flood insurance, visit www.floodsmart.gov.

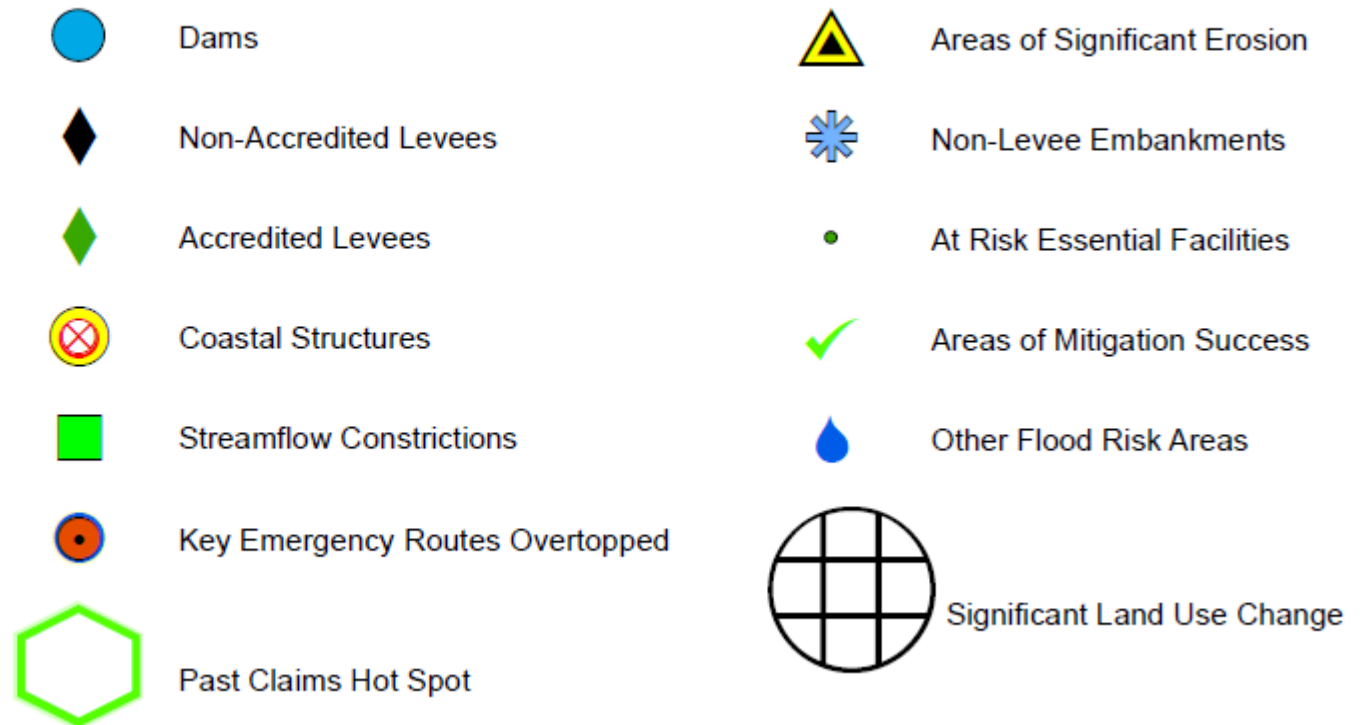
Flood Risk Factors in the Schuylkill Watershed...

- Our Poster Session Map shows locations of:

Flood Risk



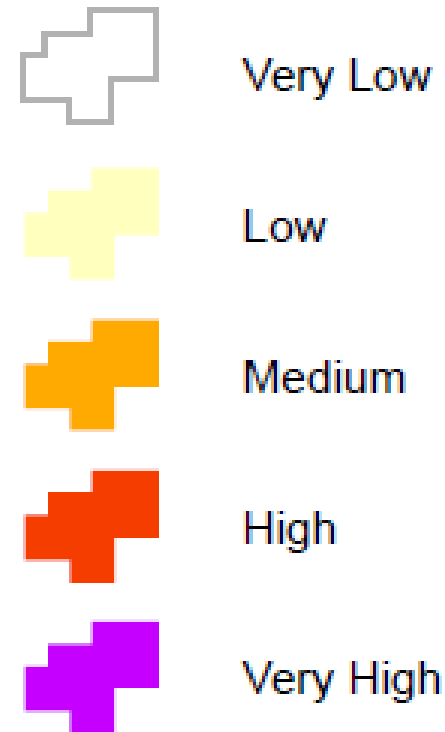
Areas of Mitigation Interest



Flood Risk Severity in \$

- We've color-coded Flood Risk in the watershed by severity
- The colors represent levels of economic impact due to flooding (ranging from Very Low to Very High)

Flood Risk

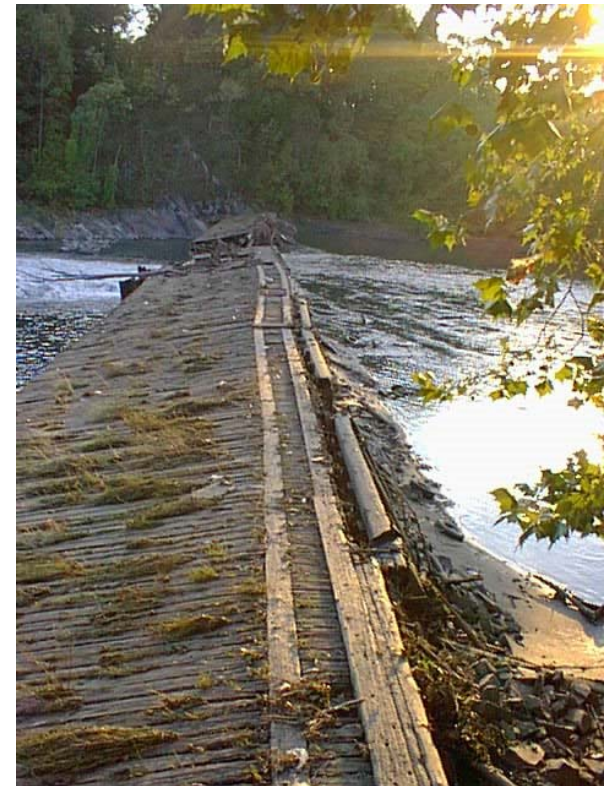


Examples of Flood Risk in the Schuylkill River Watershed

Significant land use changes causing increased run-off and flooding



Felix Dam Breach And Removal



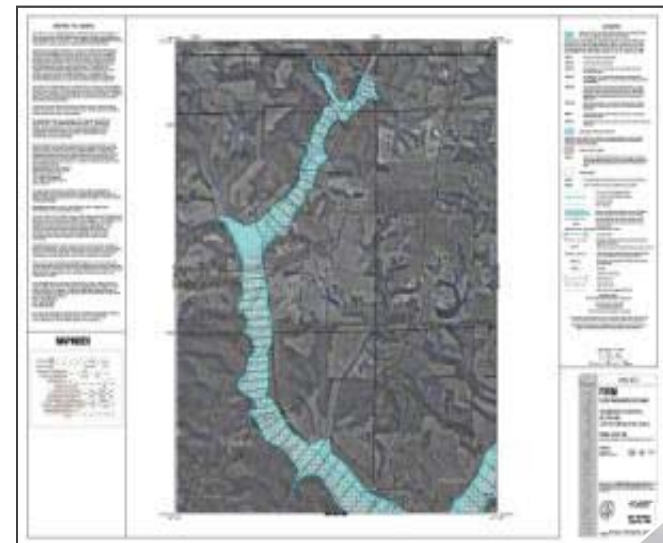
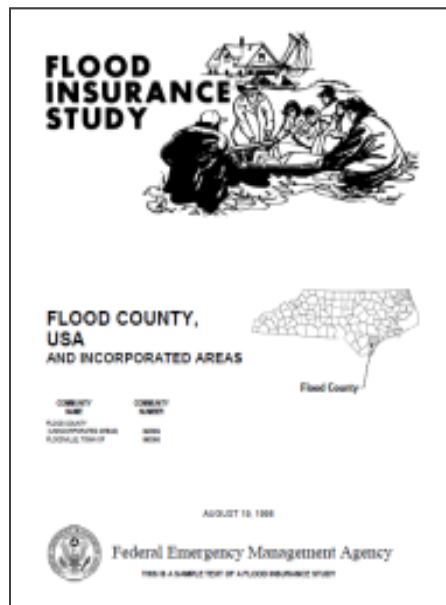
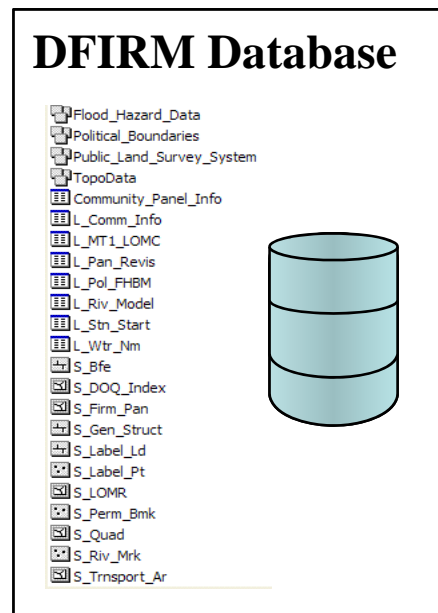
Bernville Levee



Others...

Know Your Risk – FEMA's Regulatory Products

- FEMA's Flood Insurance Rate Maps (FIRMs)
 - Flood Insurance Study Reports
 - GIS Database of Flood Layers
- Products used for floodplain management and insurance purposes as part of the National Flood Insurance Program (NFIP)





Know Your Risk – FEMA's Flood Risk Products

- FEMA's Flood Risk Map (FRM)
- Flood Risk Report
- GIS Database of Flood Risk Data

Use for Flood Risk Mitigation Planning



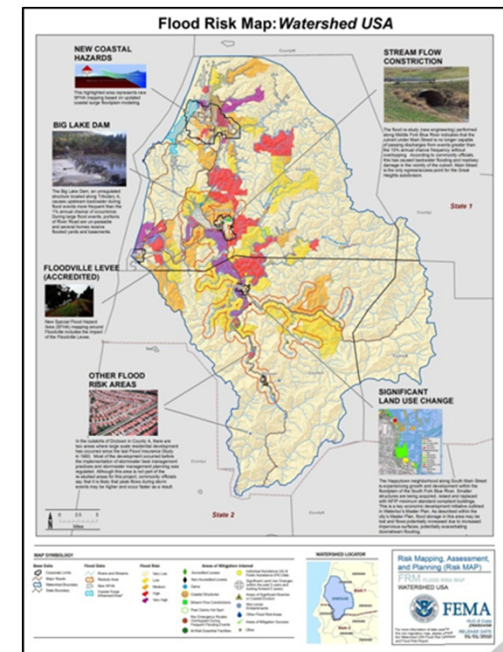
Flood Risk Database (FRD)

- Community_Panel_Info
- L_Comm_Info
- L_MT_LOMC
- L_Pan_Revis
- L_Pol_FHEM
- L_Riv_Model
- L_Sm_Start
- L_Wtr_Pan
- S_Bfe
- S_DOQ_Index
- S_Firm_Pan
- S_Gen_Struct
- S_Label_Id
- S_Label_Pt
- S_LOMR
- S_Perm_Bsk
- S_Quad
- S_Riv_Msk
- S_Transport_Ar

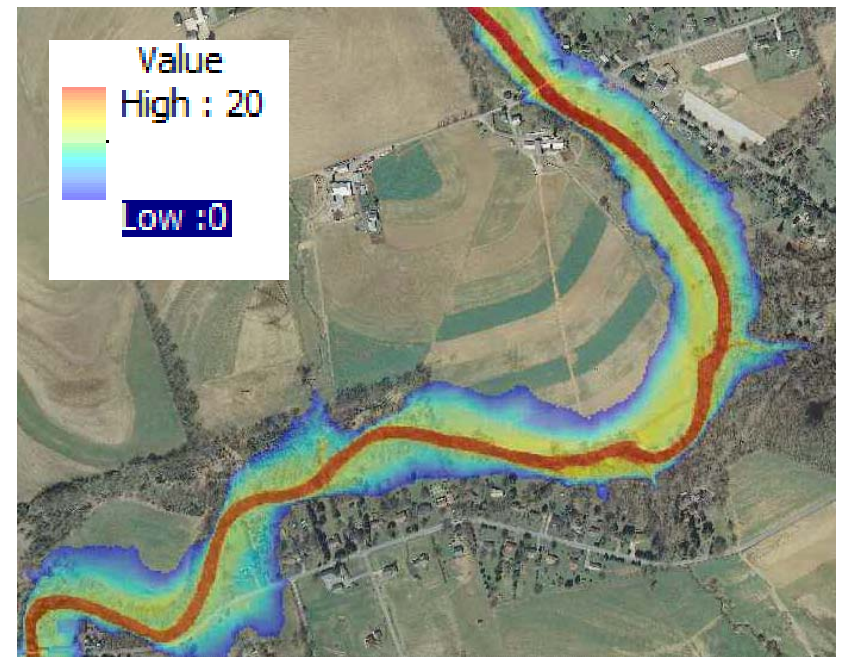
Flood Risk Report
Watershed USA, 01-98765

County A*, County B* and County C*
Village of Coastland, Village of Drytown, City of Floodville, City of Metropolis, Towns of Waterloo
Maryland
*Spans more than one watershed. This report covers only the area within the studied watershed.
Report Number 01
03/02/2011

Flood Risk Products and Datasets

- Flood Risk Products
 - Flood Risk Report
 - Flood Risk Database
 - Flood Risk Map
- Flood Risk Datasets
 - Changes Since Last FIRM
 - Depth Grids
 - Flood Risk Assessment
- Flood Risk Products help communities:
 - Gain a better understanding of flood risk and its potential impact on communities and individuals
 - Take proper mitigation actions to reduce this risk



Goal: Sustainable, Resilient Communities

RESILIENT

- tending to recover from or adjust easily to misfortune or change

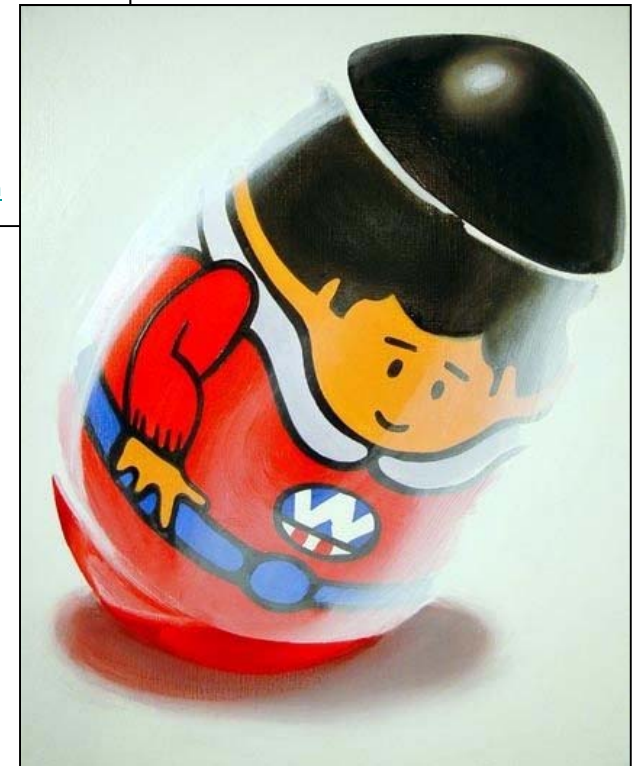
SUSTAIN

- from Latin *sustinēre* to hold up
- Synonyms: [nourish](#), [nurture](#)

<http://www.merriam-webster.com>

A Community that plans for and mitigates against natural disasters is **Resilient** and more **Sustainable**:

- Economically – businesses reopen more quickly
- Socially – daily lives not as disrupted and stressed
- Environmentally - better functioning ecosystems with restored biodiversity



Weebles Wobble but they don't fall down...

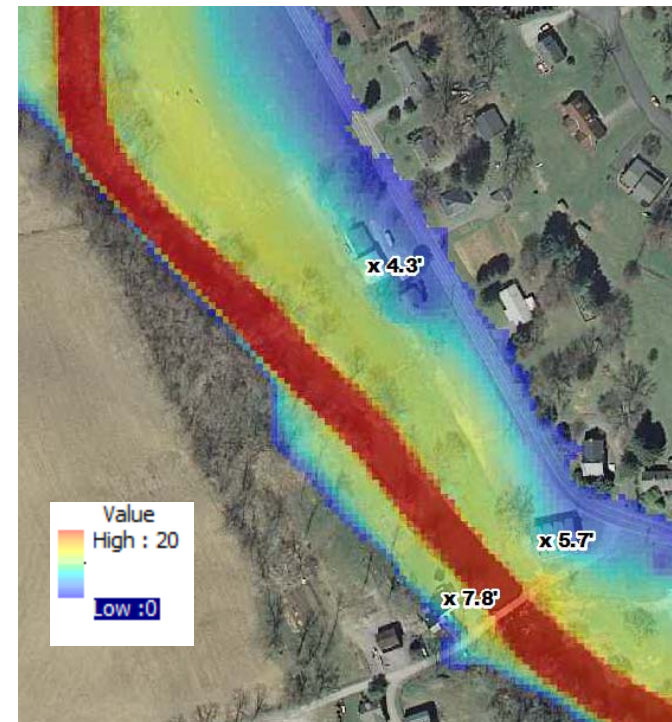
How to Attain the Resilience Goal: Hazard Mitigation!

- Hazard Mitigation is defined as any sustained **action taken to reduce or eliminate long-term risk** to life and property from hazards
- FEMA encourages local governments to develop Hazard Mitigation Plans
 - To increase public and political support and commitment for mitigation
 - To be eligible for Hazard Mitigation Assistance grants
- Use our Flood Risk information to plan and take flood mitigation actions!

Using Depth and Analysis Grids for Identifying Mitigation Actions

Depth Analysis Grids

- Better information on depth and percent chance of flooding
- More information on multiple frequency (10, 50, 100, 500 year) flood events
- These provide enhanced data to develop a more accurate Benefit Cost Analysis (BCA) for mitigation projects, a big step towards implementation

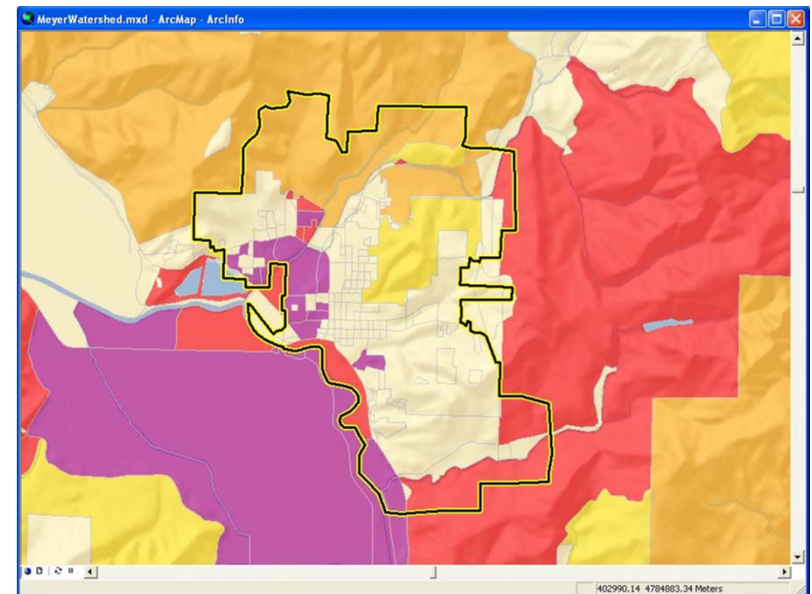


Using Flood Risk Assessment for Identifying Mitigation Actions

Flood Risk Assessment

- Identifies areas of higher flood risk by census block
- Quantifies potential future flood losses to existing structures
- Improves ability to identify areas that would benefit from higher building code requirements
- Supports mitigation plan updates and disaster recovery planning through improved risk quantification

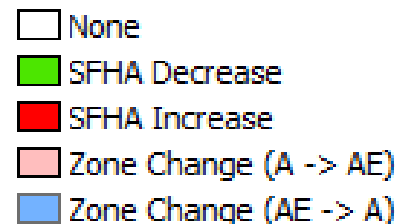
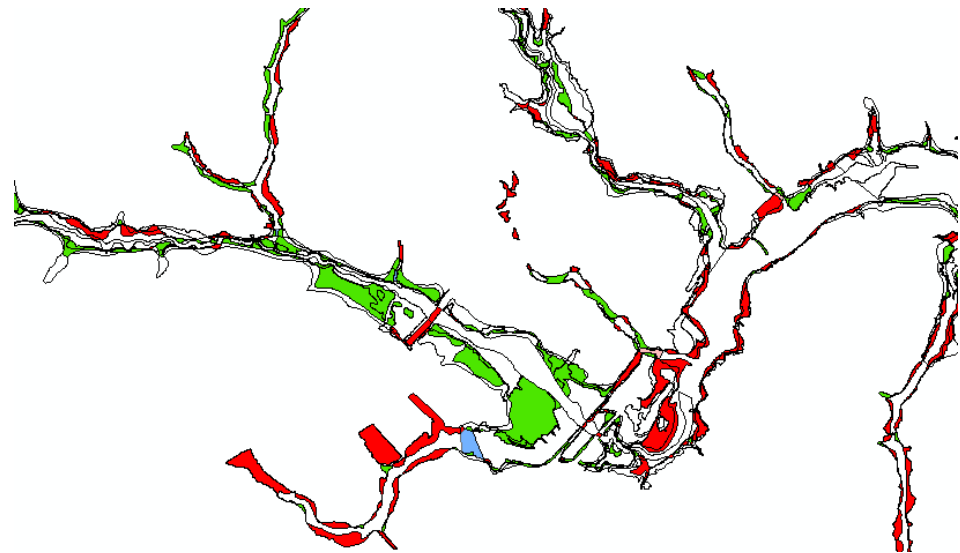
1% Chance Risk (100-yr)



Using Changes Since Last FIRM for Identifying Mitigation Actions

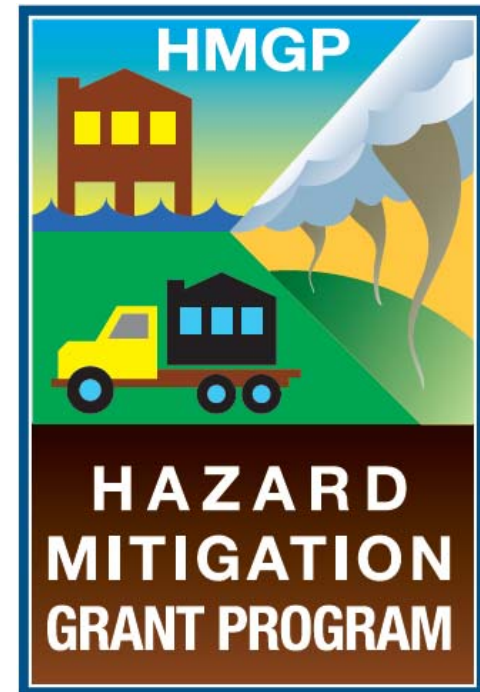
Changes Since Last FIRM

- Communities and homeowners can use this to identify the impacts of new maps on the regulatory Special Flood Hazard Area (SFHA)
- Also reveals new areas that may need mitigation actions – either for existing assets or for future planning



Ways to take Action

- Floodplain Management Ordinances
 - Higher building standards
- Community Rating System (CRS)
 - Reduces flood insurance premiums
- Technical assistance
 - Federal agencies and professional associations
- Grants for Mitigation Projects
 - FEMA: HMGP
 - Other Federal Agency grants: HUD/CDBG



Categories of Flood Mitigation Activities



Property Protection Measures

- Buy outs
- Flood proofing
- Relocation
- Structure elevation



Education and Outreach Measures

- Brochures
- Booths at fairs and festival
- Annual meetings



Prevention Measures

- Flood ordinance,
- Stormwater programs
- Building codes



Natural Resource Protection Measures

- Wetland and stream restoration
- Riparian buffer ordinances



Structural Project Measures

- Levees,
- Dikes,
- Floodwall
- Culvert replacement
- Bridge Replacement
- Stream maintenance



Emergency Services Measures

- Reverse 911
- Swift water rescue equipment



Recommended Higher Standards

- 1 - 2 feet of freeboard
- Restrictions on hazardous material storage
- Regulated high risk land uses (e.g. manufactured homes/critical infrastructure)
- 50 foot Setbacks/ Buffers
- Conservation/open space area
- Cumulative Substantial Damage/Substantial Improvement
- Lower threshold for Substantial Damage
- Subdivision design triggering flood study (5 lots or 5 acres, whichever is lesser)
- Prohibitions
 - SFHA development
 - Manufactured homes
 - Fill
- Community Identified Flood Areas

Project Timeline for Schuylkill Watershed

- Discovery Meeting held – June/July 2011
- New flood studies commence in the upper watershed in 2014, starting in Schuylkill County
- Depth Grids and Flood Risk Assessment due in mid-2015
- A possible restudy of the Schuylkill River main stem, and Little Schuylkill River starting in 2015
- Montgomery and Bucks County maps to be released in 2015

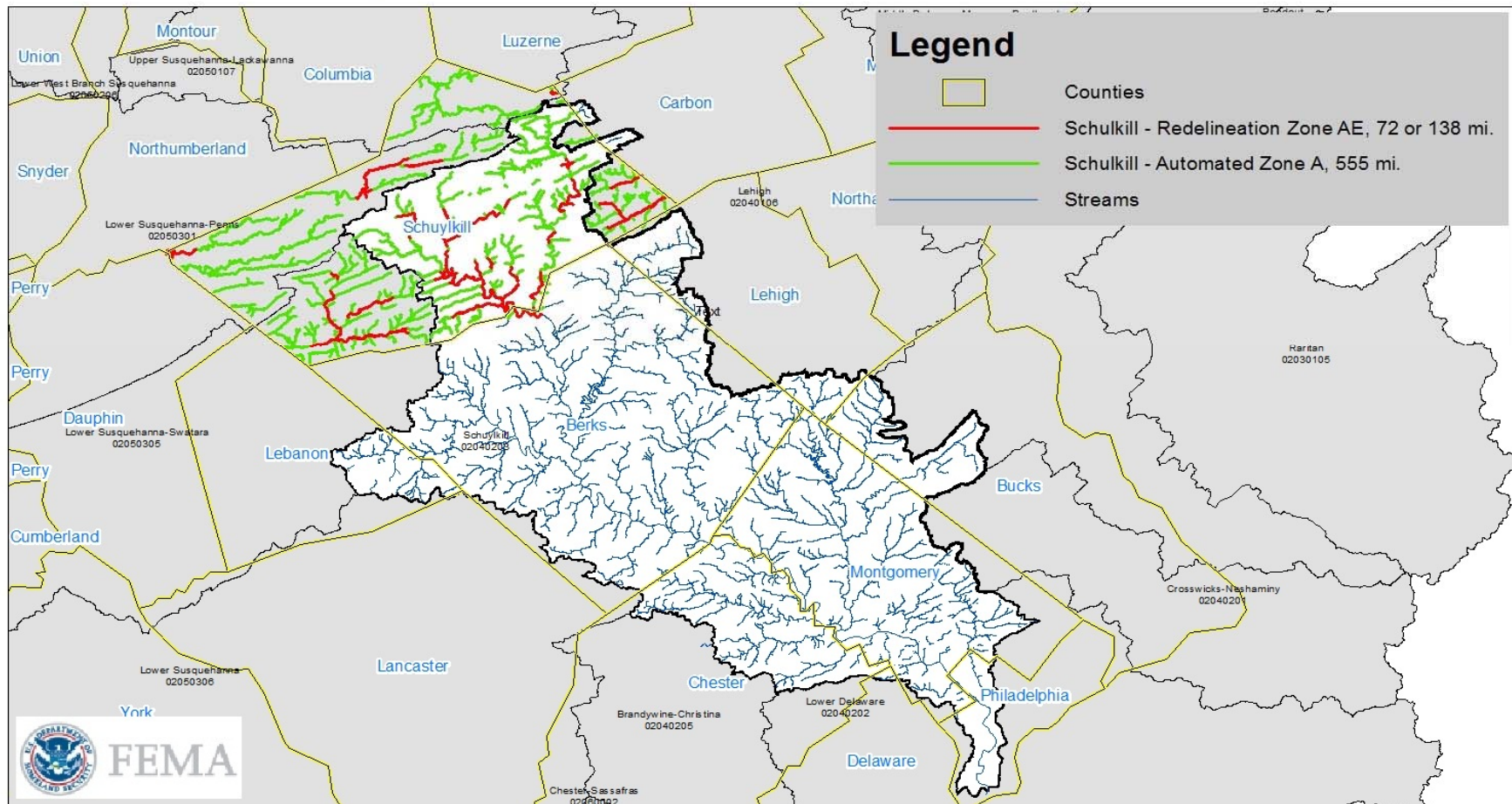


Year 1 – Schuylkill Flood Risk Project

Flood Study Type Year 1 - Schuylkill Watershed Project



1 inch = 50,000 feet





FEMA