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# Discovery Meeting: Milwaukee Watershed

May 16, 2013

**RiskMAP**  
Increasing Resilience Together



# Introductions

- Risk MAP Project Team
- Local partners and officials
- State partners and officials
- Other Federal Agency partner representatives
- Private-sector entity representatives

# Agenda

- **Communities in Milwaukee Watershed**
- **Risk MAP Program Overview**
- **Discovery Overview & Discussion**
- **Flood Risk Assessment Products Overview**
- **Mitigation Planning and Communication**
- **Questions to Consider**
- **Next Steps**





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# Risk MAP Program and Project Overview

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# Program Overview

## ■ Risk MAP

- Mapping – Flood hazard and risk identification
- Assessment – HAZUS and other risk assessment tools
- Planning – Hazard mitigation planning and HMA grants

## ■ Risk MAP Vision

- Deliver quality data
- Increase public awareness of flood risk
- Encourage local/regional actions that reduce risk

# RiskMAP

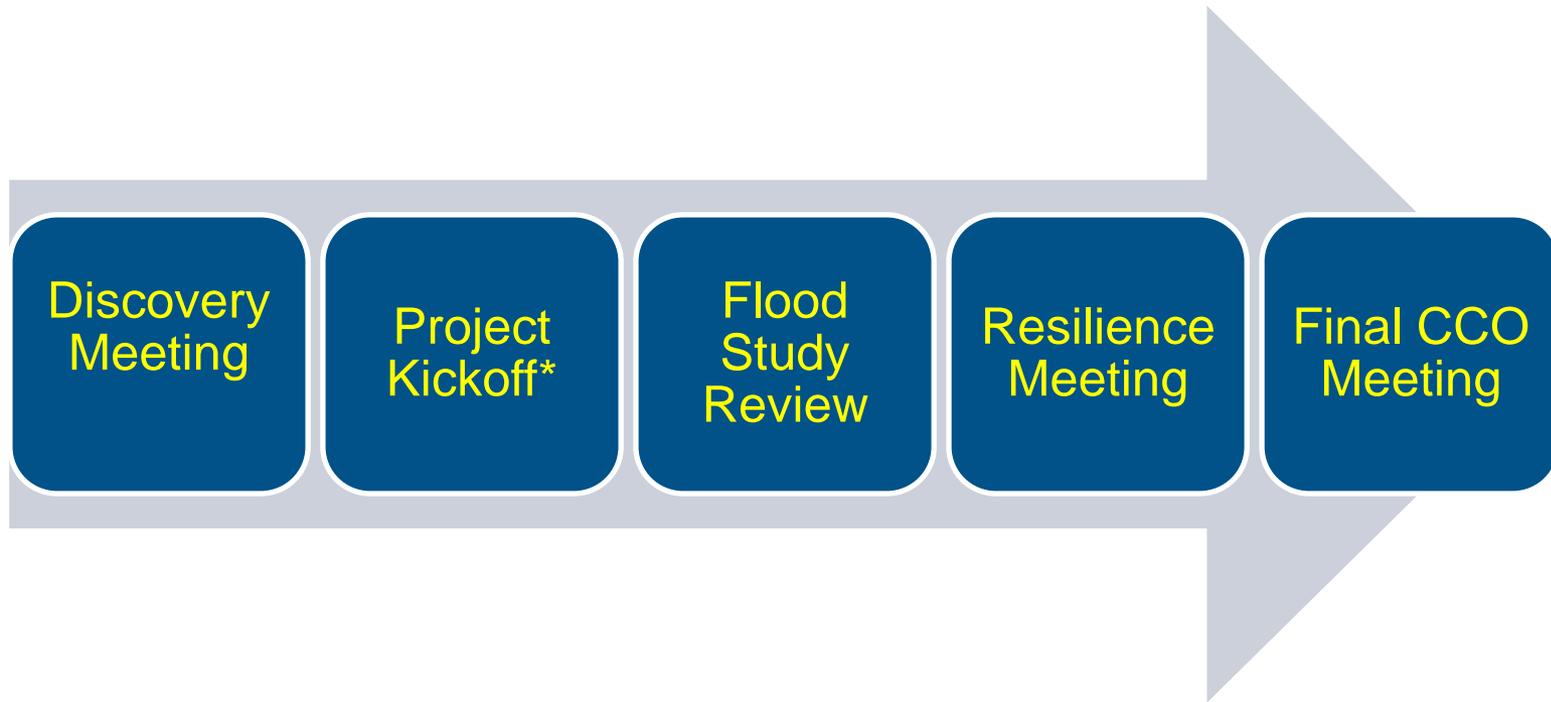
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# Risk MAP Project Benefits

- **Flood risk products and flood hazard maps that are:**
  - Developed by FEMA in accordance with communities
  - Based on the best available data from the community and latest technologies
  - Conducted by watershed
  - Strengthened by partnerships
  
- **Risk MAP tools and data can be used to:**
  - Create or improve your Hazard Mitigation Plans
  - Make informed decisions about development, ordinances, and flood mitigation projects
  - Communicate with citizens about flood risk

# Risk MAP Project Timeline



3-5 Year Process

\*Kickoff and subsequent steps will only occur if a Risk MAP project is conducted.

# Communities in Watershed

## Milwaukee Watershed

- **Counties:** Dodge, Fond du Lac, Milwaukee, Ozaukee, Sheboygan, Washington and Waukesha
- 39 additional communities
- **630 total mapped stream miles**
  - 359 miles of detailed studies
  - 271 miles of approximate studies

## Focus Areas:

- Studied streams with outdated methodologies
- Unstudied streams with development pressure or other issues



# Discovery Process

- **Data Collection**

- Collect information about the communities in the watershed
- Develop draft Discovery Report and Map

- **Discovery Meeting**

- Present potential flood risk products and get feedback
- Discuss and prioritize areas needing flood risk study
- Discuss local planning and communication assistance

- **Outcome**

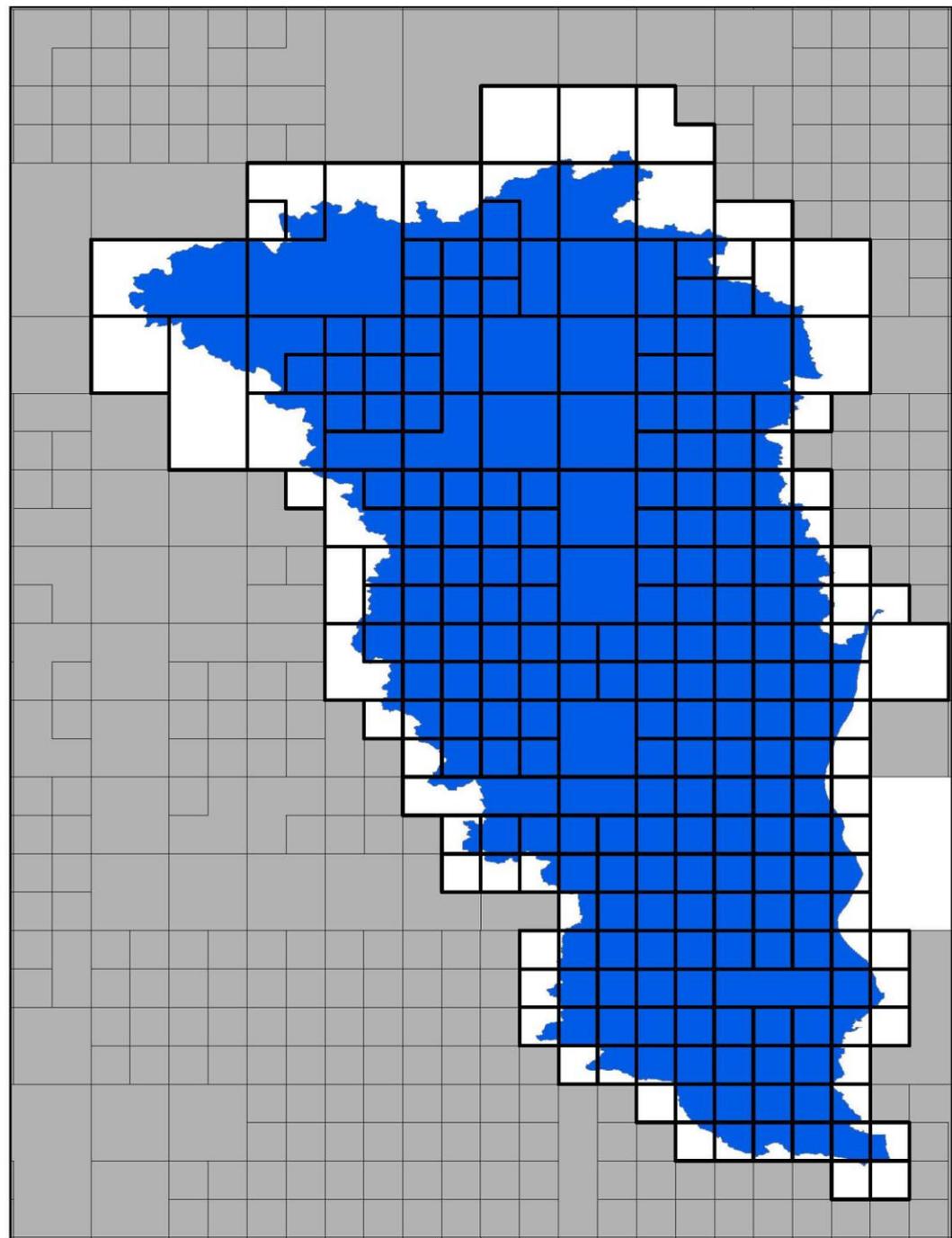
- Finalize Discovery Report and Map
- Develop a scope of work and budget for Risk MAP project
- Determine available local contributions

# Floodplain Mapping

- **FEMA funding determination**
  - September 2013
- **Field Survey**
  - Spring/Summer 2014
- **Hydrologic & Hydraulic Engineering**
  - Fall/Winter 2014-2015
- **FIRM Mapping & Non-Regulatory Products**
  - Based upon availability of grants – Summer 2015

# Floodplain Mapping

- **Physical Map Revision (PMR)**
  - Revised panels only for new studies
- **Revised Map Panels & FIS Report**
  - Adopted by affected communities



# Next Steps

- **Based on today's discussion and WDNR 5-level ranking system, project scope is developed (areas to be studied)**
  1. Streams currently mapped as Zone AE where the study has been deemed "Invalid" (CNMS).
  2. Gaps between detailed studies that are either currently mapped as Zone A or not mapped at all.
  3. Streams currently mapped as Zone A where a community request was made to study the reach in detail.
  4. Streams currently mapped as Zone A that will be engineered, but remain mapped as Zone A.
  5. Streams that are not currently mapped where a community request was made to study the reach in detail.

# Next Steps

- **After Discovery Meeting:**
  - Compile comments, update Discovery Map with community concerns
  - Results posted on WDNR Floodplain Mapping website
  - 2-week comment period for additional/missed issues
  - Update Discovery Report and map with results of the meeting and finalized scope of work



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# Flood Risk Assessment Products

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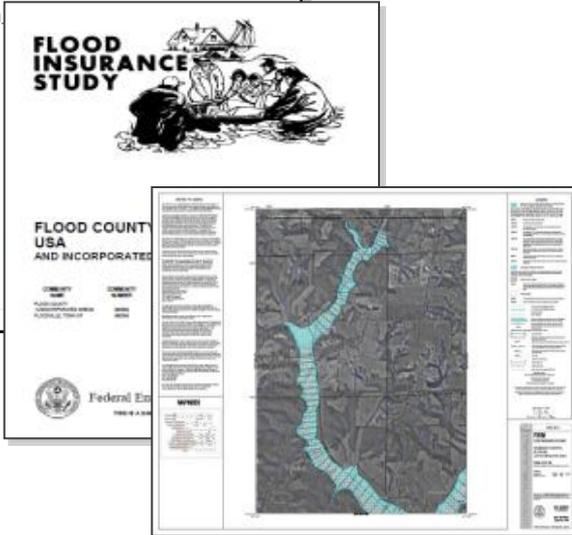


# Program Product Comparisons

## Traditional Regulatory Products

### DFIRM Database

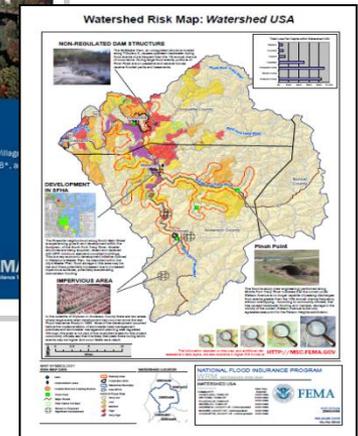
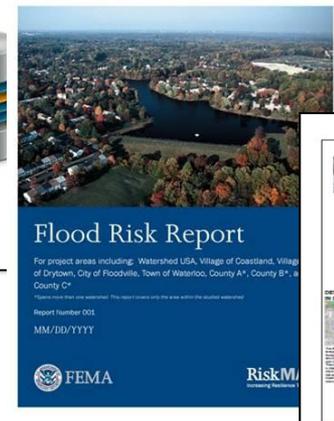
- Flood\_Hazard\_Data
- Political\_Boundaries
- Public\_Land\_Survey\_System
- TopoData
- Community\_Panel
- L\_Comm\_Info
- L\_MT1\_LOMC
- L\_Pan\_Revis
- L\_Pol\_FHBM
- L\_Riv\_Model
- L\_Stn\_Start
- L\_Wtr\_Nm
- S\_Bfe
- S\_DOQ\_Index
- S\_Firm\_Pan
- S\_Gen\_Struct
- S\_Label\_Ld
- S\_Label\_Pt
- S\_LOMR
- S\_Perm\_Bmk
- S\_Quad
- S\_Riv\_Mrk
- S\_Trnsport\_Ar



## Non-Regulatory Products

### Flood Risk Database

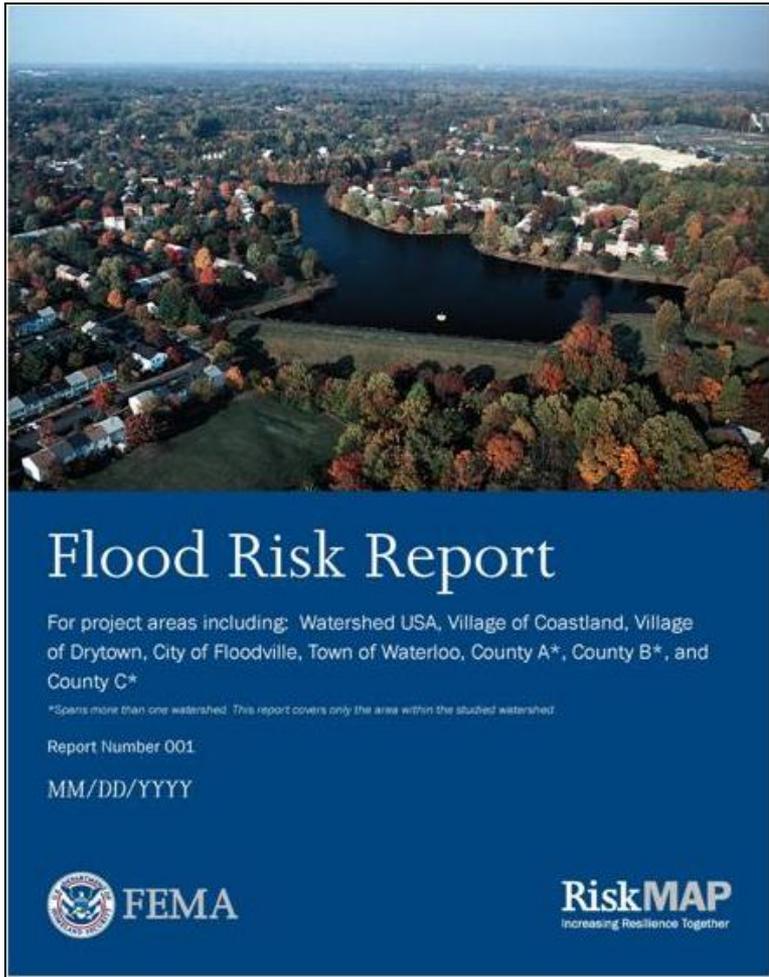
- Community\_Panel\_Info
- L\_Comm\_Info
- L\_MT1\_LOMC
- L\_Pan\_Revis
- L\_Pol\_FHBM
- L\_Riv\_Model
- L\_Stn\_Start
- L\_Wtr\_Nm
- S\_Bfe
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- S\_Label\_Pt
- S\_LOMR
- S\_Perm\_Bmk
- S\_Quad
- S\_Riv\_Mrk
- S\_Trnsport\_Ar



\*Subject to statutory due-process requirements

\*Not subject to statutory due-process requirements

# Flood Risk Report

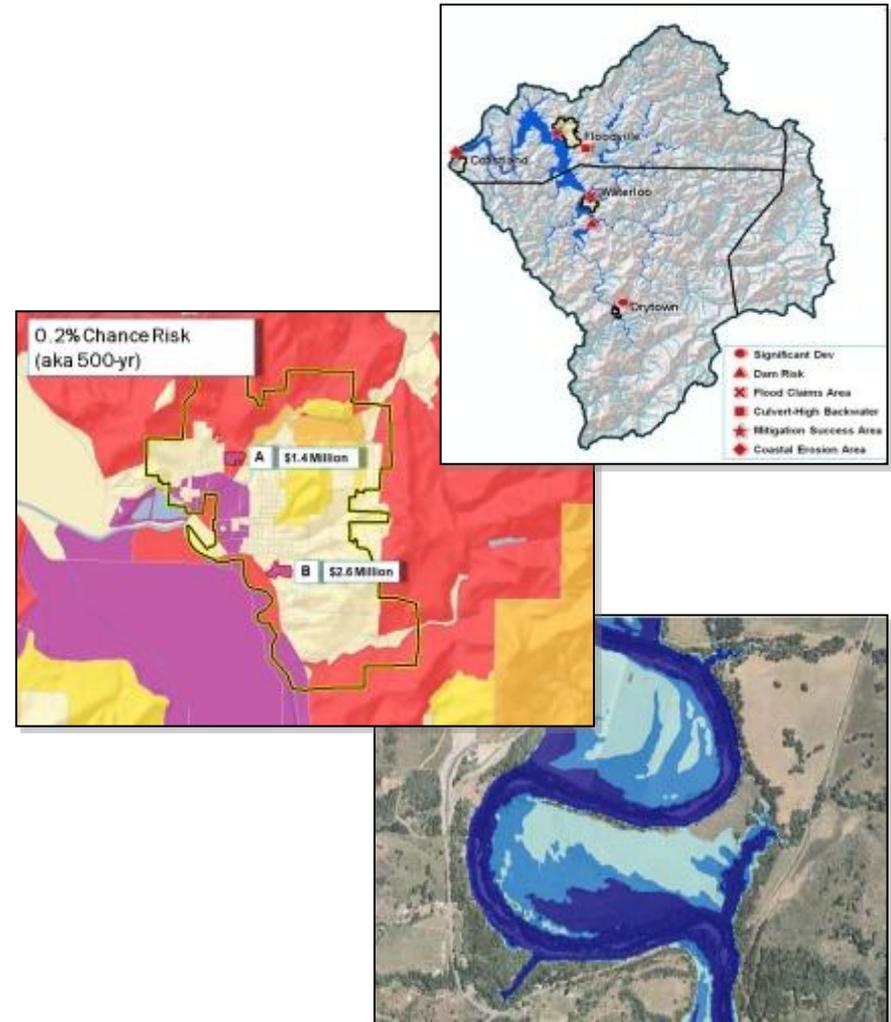


- **Background**
  - Purpose, Methods
  - Risk Reduction Practices
- **Project Results**
  - Changes Since Last FIRM
  - Depth & Analysis Grids
  - Flood Risk Assessment
  - Enhanced Analyses
- **Summarized by Locations**
  - Communities and Watersheds

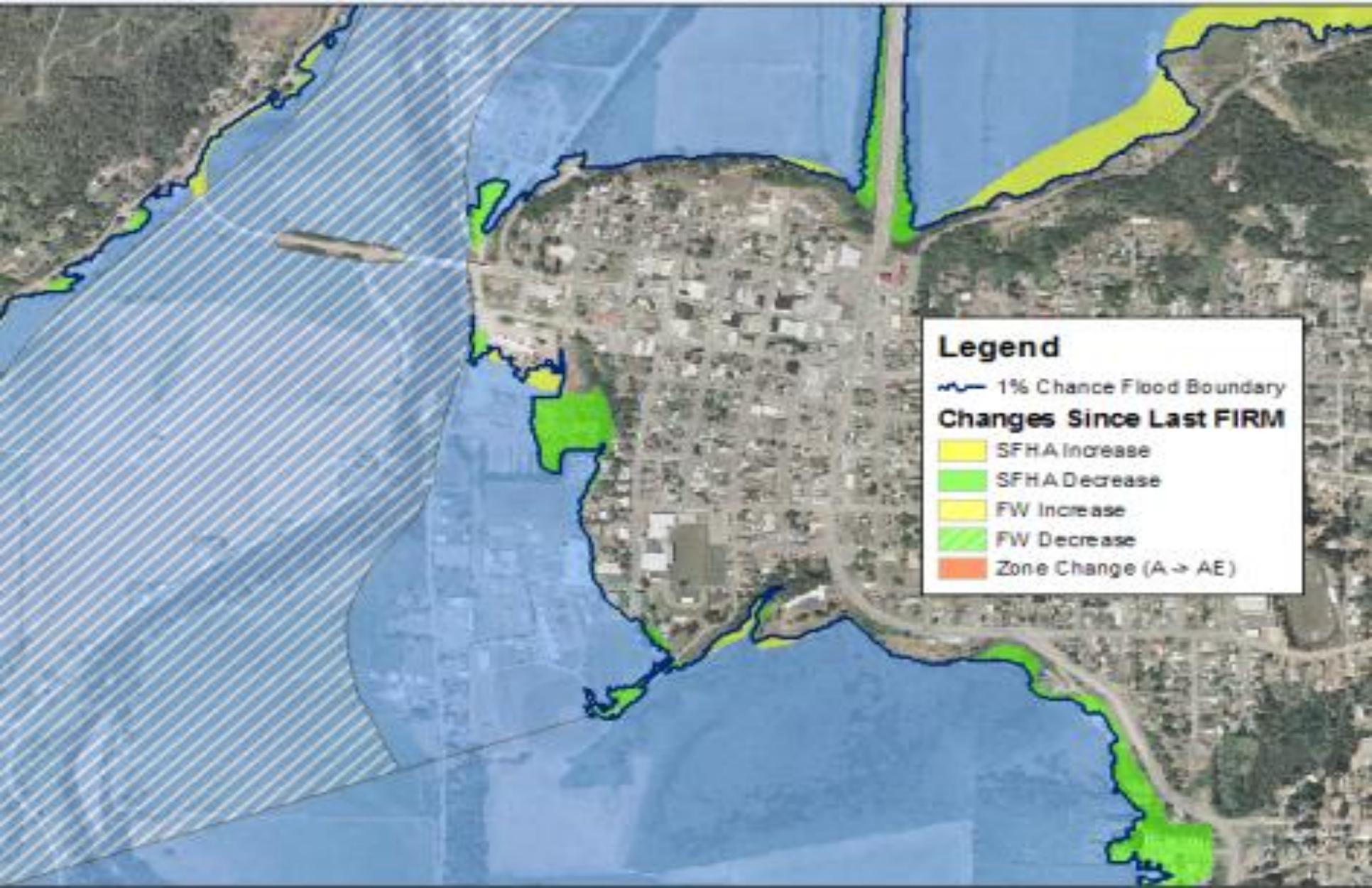


# Flood Risk Products

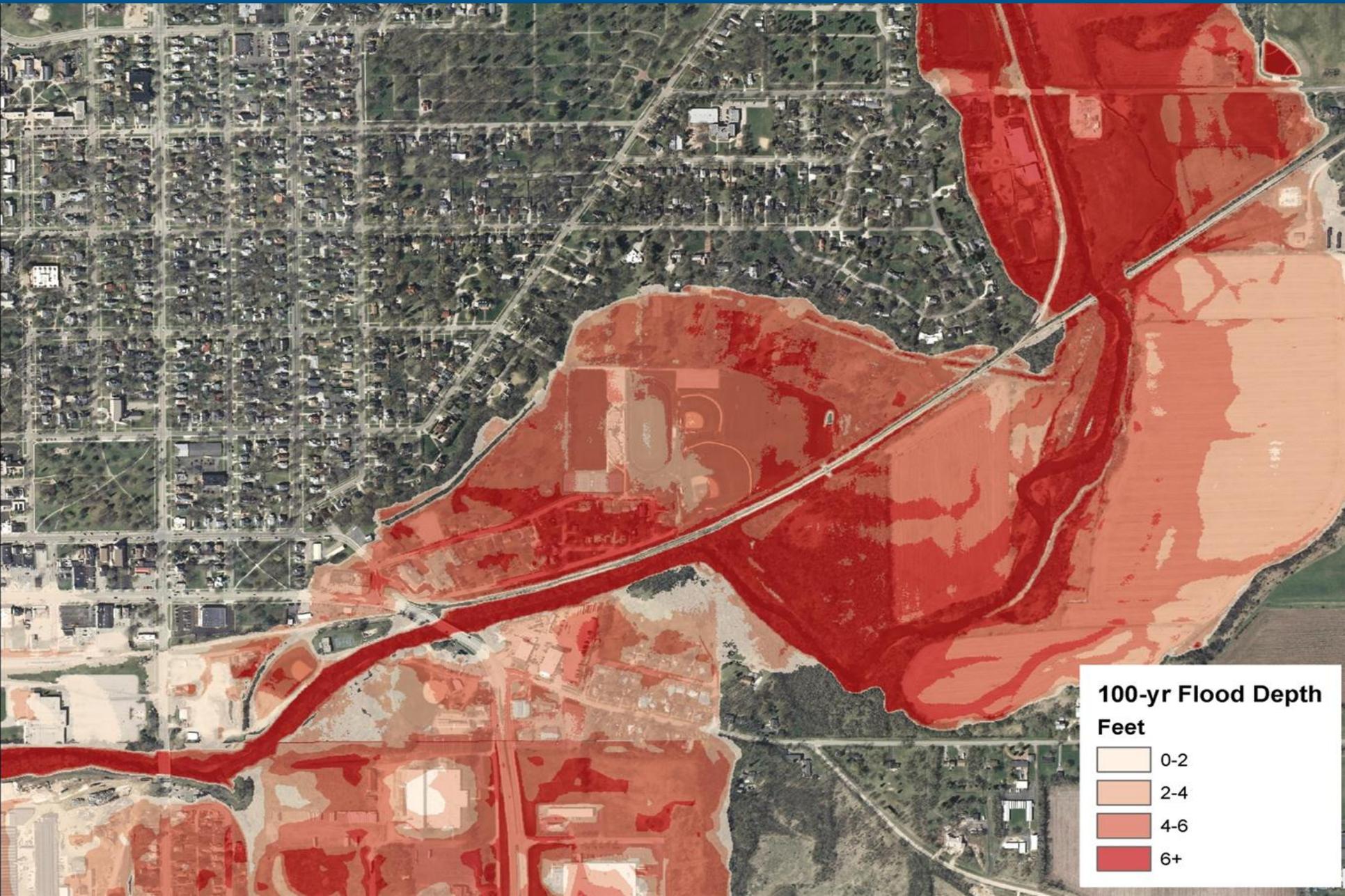
- Changes Since Last FIRM
- Depth and Analysis Maps
- Flood Risk Assessment (HAZUS)
- Areas of Mitigation Interest (if applicable)



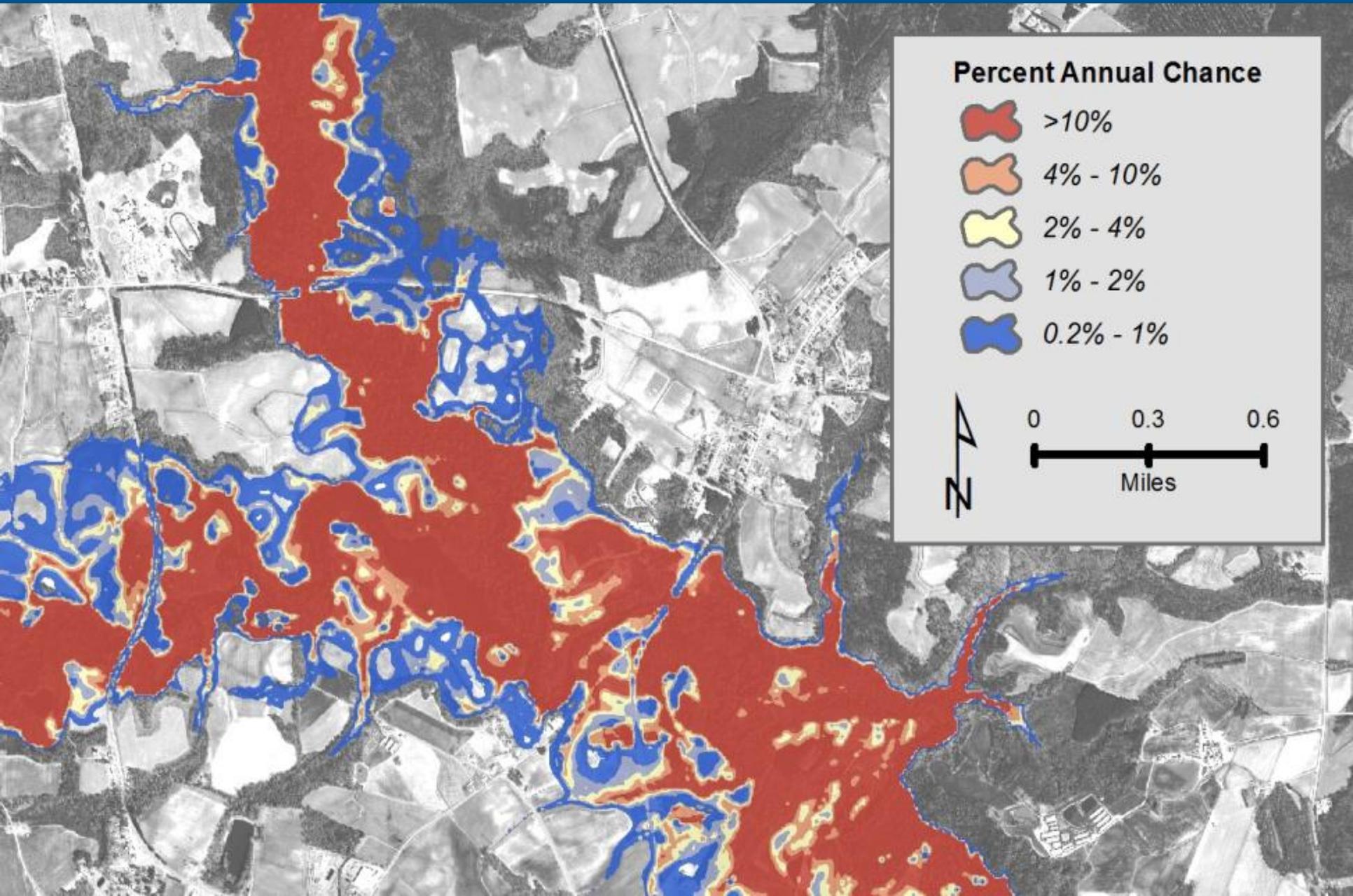
# Changes Since Last FIRM



# Flood Depth & Analysis Grids



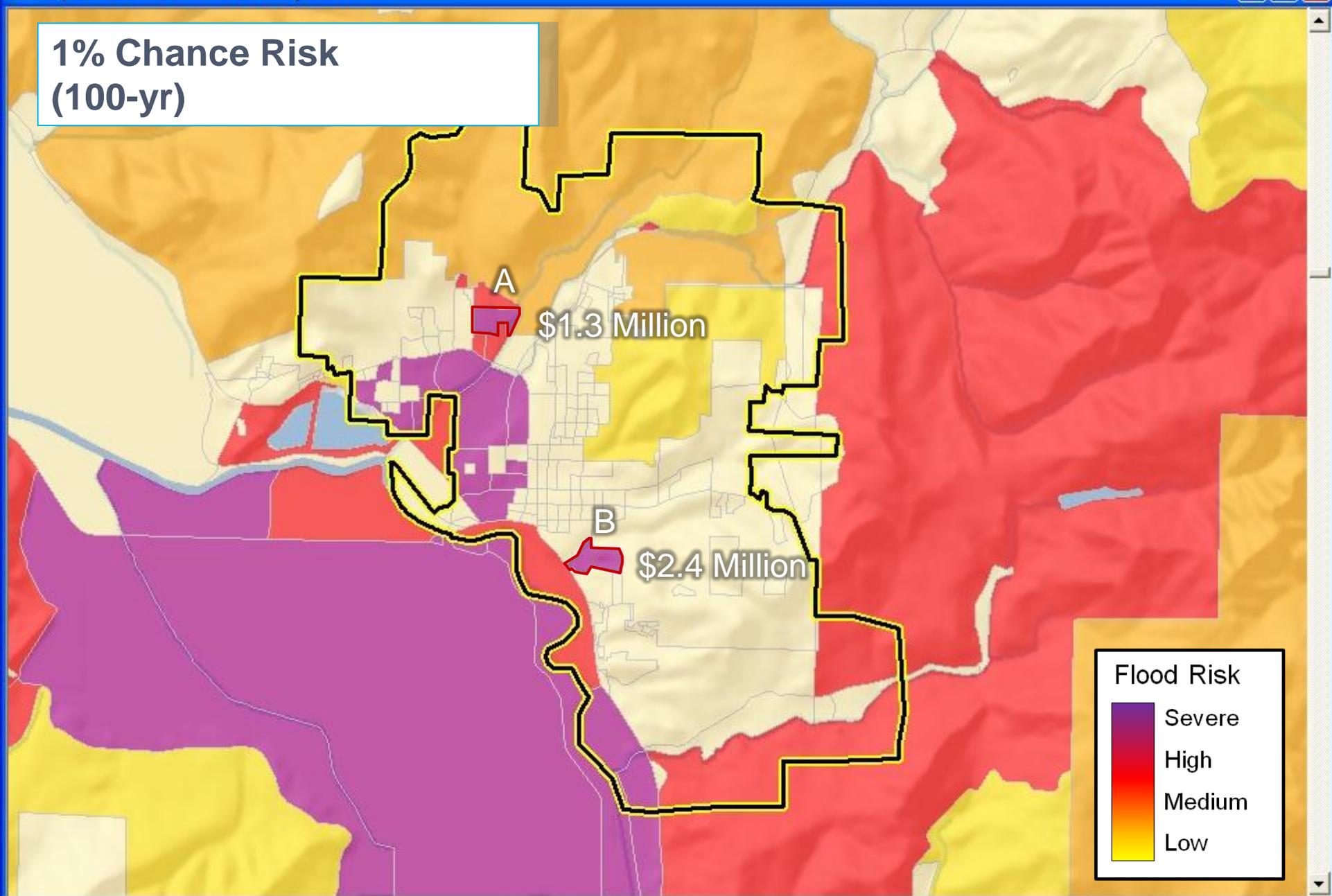
# Percent Annual Chance Grid



# Flood Risk Assessment

- **HAZUS = GIS-based hazard loss estimation software**
- **Quantifies flood risk in dollars:**
  - Potential damage severity for different flood frequencies
  - Identify locations with possible cost effective mitigation options
- **Identifies areas of relative flood risk:**
  - Floodprone areas (census block)
  - Vulnerable people and property
- **Helps estimate potential losses due to flood risk:**
  - Losses from Average Annualized Loss (AAL) Study
  - Refined losses from new flood study depth grids, local building data

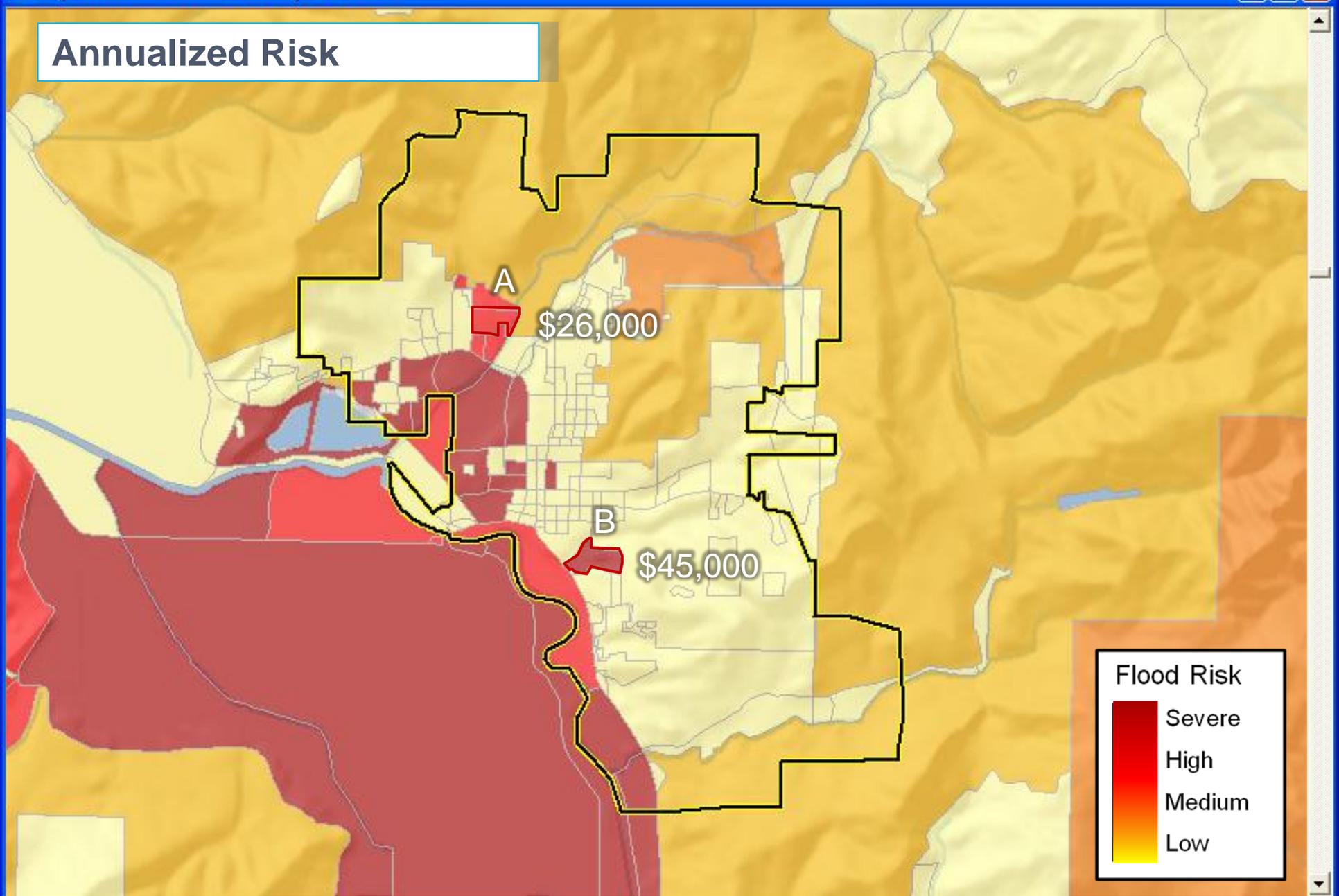
# 1% Chance Risk (100-yr)



**Flood Risk**

- Severe
- High
- Medium
- Low

# Annualized Risk



**Flood Risk**

- Severe
- High
- Medium
- Low

# Areas of Mitigation Interest (AOMI)

- **Opportunity for flood risk reduction:**
  - Community identified hot spots
  - Previous clusters of claims
  - Riverine and coastal flood control structures (dams, levees, berms)
  - Floodplain “pinch points” (undersized culverts and bridge openings)
  - Significant proposed and recent floodplain development
  - Locations of successful mitigation projects



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# Mitigation Planning and Communication

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# Moving Beyond Floodplain Maps





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# Flood Risk Data and Discovery Maps

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# Data Collection

- **From the communities we look for:**
  - Infrastructure information for levees and new bridges, dams, culverts, and road improvements
  - Building footprints or parcel data
  - Boundary, hydrography, and transportation layers
  - Elevation data

# County LiDAR Dates

- **Dodge – 2006 LiDAR available**
- **Fond du Lac – 2011 LiDAR available**
- **Milwaukee – 2010 LiDAR available**
- **Ozaukee – 2010 LiDAR available**
- **Sheboygan – 2005 LiDAR available**
- **Washington – 2007 LiDAR available**
- **Waukesha – 2012 LiDAR available**

| <b>Data Types</b>                                   | <b>Description</b>                                      | <b>Source</b>                                          |
|-----------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|
| <b>Average Annualized Loss</b>                      | FEMA's Level 1 HAZUS Average Annualized Loss Analysis   | <b>FEMA &amp; WEM</b>                                  |
| <b>Community Boundaries</b>                         | Location of municipal boundaries                        | <b>Wisconsin Department of Transportation</b>          |
| <b>Coordinated Needs Management Strategy (CNMS)</b> | Engineering study needs as defined by Phase 3 CNMS data | <b>Region V CNMS inventory</b>                         |
| <b>County Boundaries</b>                            | Location of county boundaries                           | <b>USGS Topographic Maps</b>                           |
| <b>Dams</b>                                         | Location of dams                                        | <b>WDNR Inventory</b>                                  |
| <b>Streams and Rivers</b>                           | Stream centerlines based on USGS topo quads             | <b>USGS Topographic Maps</b>                           |
| <b>HUC-8 Watershed</b>                              | Watershed boundary                                      | <b>USGS Watershed Boundary Data</b>                    |
| <b>Ice Jams</b>                                     | Location of ice jams                                    | <b>U.S. Army Corps of Engineers - Ice Jam Database</b> |
| <b>Letters of Map Change</b>                        | Locations of letters of map change                      | <b>FEMA National Flood Hazard Layer</b>                |
| <b>Major Roads</b>                                  | Location of interstates and major highways              | <b>Wisconsin Department of Transportation</b>          |
| <b>Special Flood Hazard Areas</b>                   | Location of FEMA flood hazard areas                     | <b>FEMA Digital Flood Insurance Rate Maps</b>          |
| <b>Stream Gages</b>                                 | Location of stream gages operated by multiple agencies  | <b>USGS National Hydrography Dataset</b>               |
| <b>Watershed Boundaries</b>                         | Hydrologic Unit Code-8, watershed boundaries            | <b>USGS National Hydrography Dataset</b>               |
| <b>Wetland</b>                                      | Wetland delineations digitized from 24K USGS topo quads | <b>Wisconsin DNR</b>                                   |

# Discovery Map



**NATIONAL FLOOD INSURANCE PROGRAM**  
**Discovery Map: Flood Hazard**  
**MILWAUKEE WATERSHED**  
 HUC-8 Code  
**04040003**

Total Stream Miles 630  
 Detailed Study Miles 359  
 Approximate Study Miles 271  
 Population 1,017,536

## MAP SYMBOLOGY

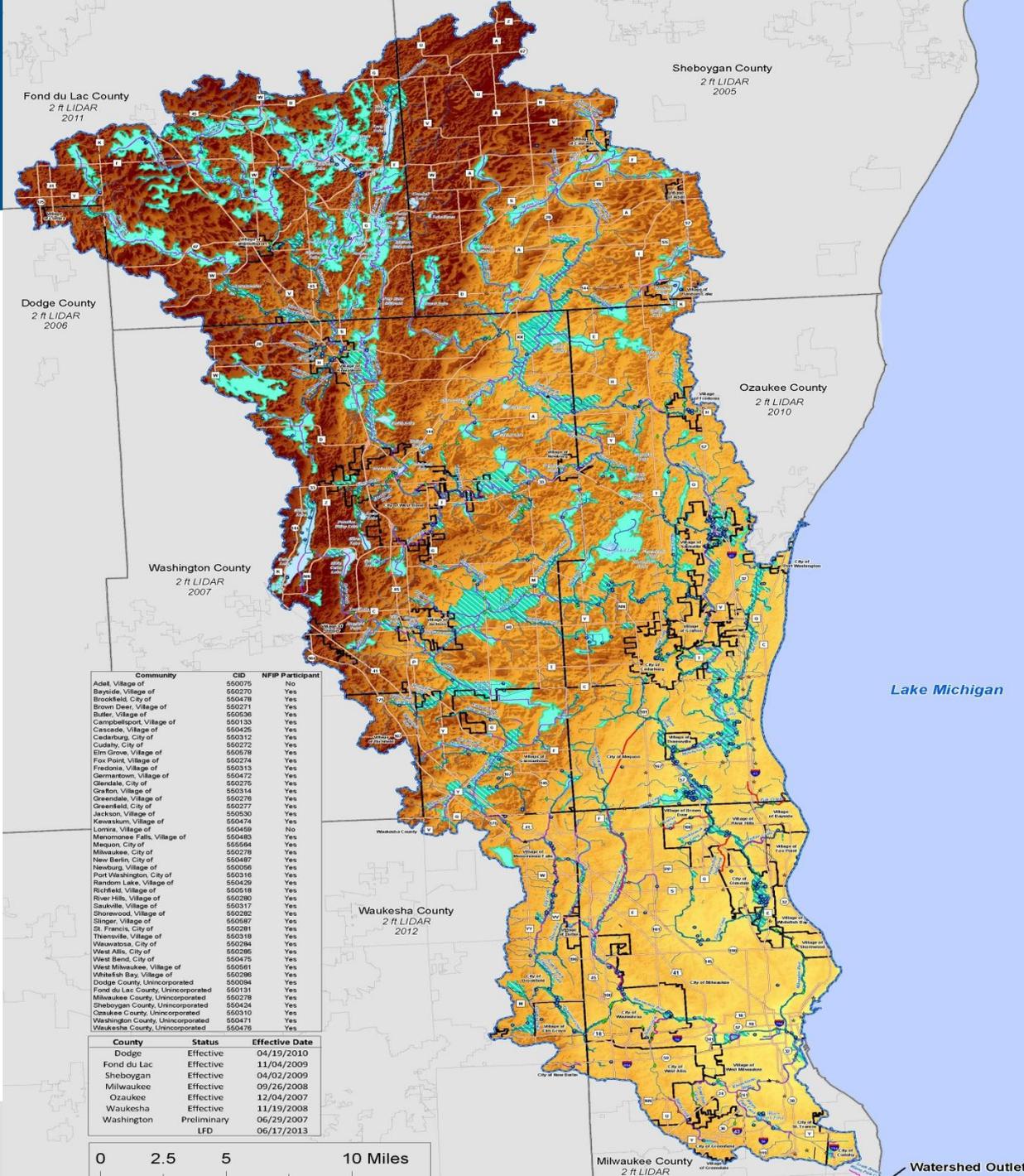
### Flood Hazard Area

- Zone A
- Zone AE
- DNR Recommends Restudy

### FEMA Coordinated Needs Management Strategy (CNMS)

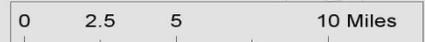
- Validated
- Requires Assessment
- Dams
- USGS Gages
- LOMC Locations
- Ice Jams

- Unmapped Stream
- Major Road
- Levee
- Lake
- Watershed
- County Boundary
- Municipal Boundary



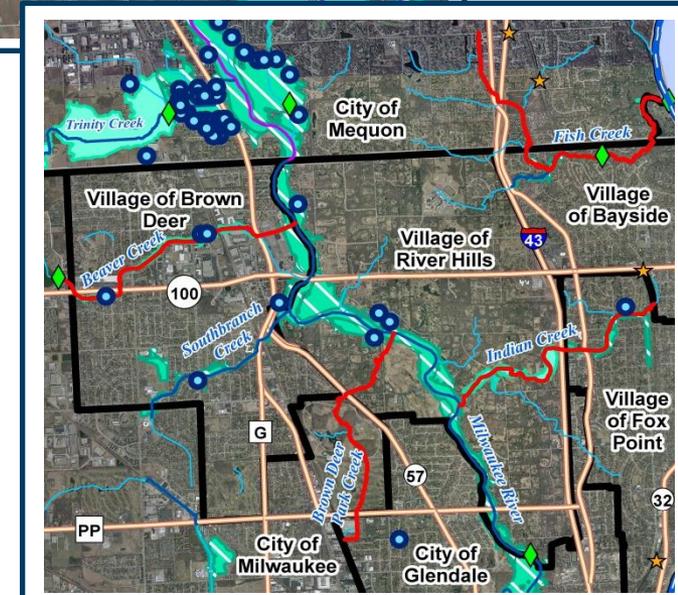
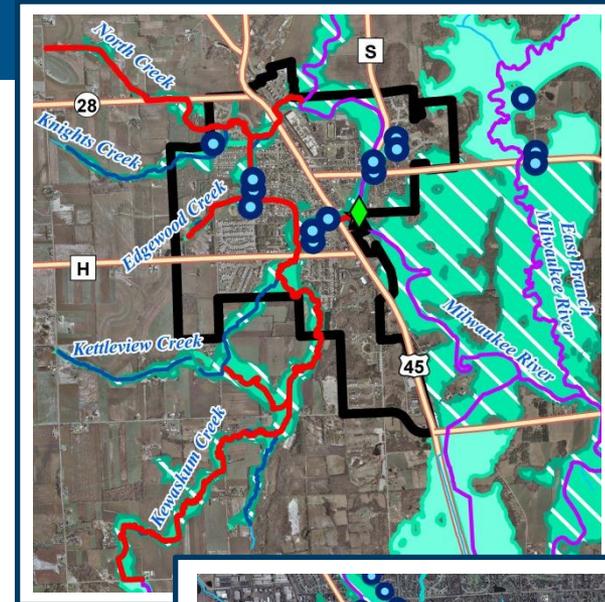
| Community                          | CID    | NFIP Participant |
|------------------------------------|--------|------------------|
| Adel, Village of                   | 550075 | No               |
| Bayside, Village of                | 550270 | Yes              |
| Brookfield, City of                | 550478 | Yes              |
| Brown Deer, Village of             | 550271 | Yes              |
| Buller, Village of                 | 550536 | Yes              |
| Campbellsport, Village of          | 550153 | Yes              |
| Cascade, Village of                | 550425 | Yes              |
| Cedarburg, City of                 | 550312 | Yes              |
| Cudahy, City of                    | 550272 | Yes              |
| Elm Grove, Village of              | 550578 | Yes              |
| Fox Point, Village of              | 550274 | Yes              |
| Fredonia, Village of               | 550313 | Yes              |
| Germantown, Village of             | 550472 | Yes              |
| Glendale, City of                  | 550275 | Yes              |
| Grafton, Village of                | 550314 | Yes              |
| Greendale, Village of              | 550276 | Yes              |
| Greenfield, City of                | 550277 | Yes              |
| Jackson, Village of                | 550530 | Yes              |
| Kewaskum, Village of               | 550474 | Yes              |
| Lomira, Village of                 | 550488 | No               |
| Milwaukee Falls, Village of        | 550483 | Yes              |
| Mequon, City of                    | 550554 | Yes              |
| Milwaukee, City of                 | 550278 | Yes              |
| New Berlin, City of                | 550487 | Yes              |
| Newburg, Village of                | 550566 | Yes              |
| Port Washington, City of           | 550316 | Yes              |
| Random Lake, Village of            | 550429 | Yes              |
| Richton, Village of                | 550518 | Yes              |
| River Hills, Village of            | 550280 | Yes              |
| Saukville, Village of              | 550317 | Yes              |
| Shorewood, Village of              | 550282 | Yes              |
| Slinger, Village of                | 550587 | Yes              |
| St. Francis, City of               | 550281 | Yes              |
| Thiensville, Village of            | 550318 | Yes              |
| Wauwatosa, City of                 | 550284 | Yes              |
| West Allis, City of                | 550285 | Yes              |
| West Bend, City of                 | 550475 | Yes              |
| West Milwaukee, Village of         | 550561 | Yes              |
| Whitefish Bay, Village of          | 550286 | Yes              |
| Dodge County, Unincorporated       | 550584 | Yes              |
| Fond du Lac County, Unincorporated | 550131 | Yes              |
| Milwaukee County, Unincorporated   | 550279 | Yes              |
| Sheboygan County, Unincorporated   | 550424 | Yes              |
| Ozaukee County, Unincorporated     | 550310 | Yes              |
| Washington County, Unincorporated  | 550471 | Yes              |
| Waukesha County, Unincorporated    | 550476 | Yes              |

| County      | Status      | Effective Date |
|-------------|-------------|----------------|
| Dodge       | Effective   | 04/19/2010     |
| Fond du Lac | Effective   | 11/04/2009     |
| Sheboygan   | Effective   | 04/02/2009     |
| Milwaukee   | Effective   | 09/26/2008     |
| Ozaukee     | Effective   | 12/04/2007     |
| Waukesha    | Effective   | 11/19/2008     |
| Washington  | Preliminary | 06/29/2007     |
|             | LFD         | 06/17/2013     |



# Examples of Areas of Concern

- **Area of Concern #1 - Village of Kewaskum**
  - Potential study needs – Kewaskum Creek, Edgewood Creek, North Creek
- **Area of Concern #2 – NE Milwaukee County/Southern Ozaukee County**
  - Potential study needs – Beaver Creek, Fish Creek, Brown Deer Park Creek, Indian Creek
    - Reason: Encroaching development in the mapped floodplain voids current study due to either change in topography or increase in the 100-yr elevation



# Break Out Session

# Questions to Consider

- Do you have flood hazard data used for planning/management not reflected on the FIRM?
- Are there inaccuracies in the FIRMs for your community? Where?
- Are there new road crossings that are not reflected on the FIRM?
- Are there areas of high population (or population growth) where a Zone A exists on the FIRM?
- Are there areas of future development pressure where a mapped floodplain would be helpful to identify risk?
- Where are problem flooding areas?
- Where are areas of concern for emergency response, i.e., evacuation routing, critical facilities, other vulnerabilities?
- Do you agree with the identified requests and needs currently shown on FEMA's Discovery Map?
- How would you prioritize these issues and needs?