FEMA

Strategies for Smart Growth and Long-term Flood Risk Reduction: a case study in Tipton, IN

An Action Discovery Project as part of the FEMA Upper White River Watershed Discovery Report

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IAFSM Annual Conference

Springfield, IL

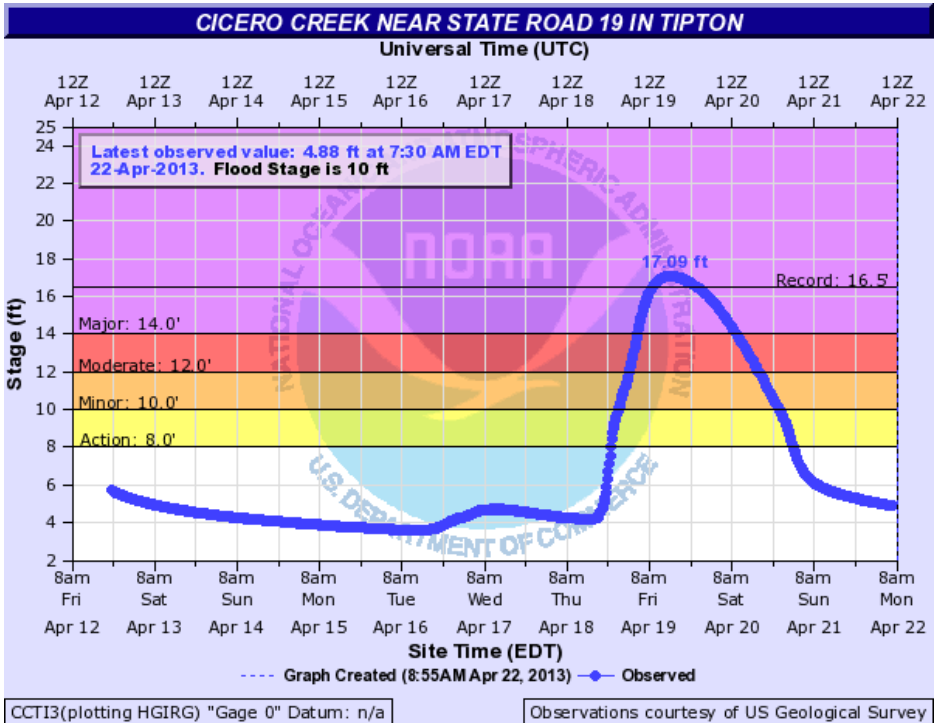
March 8, 2017

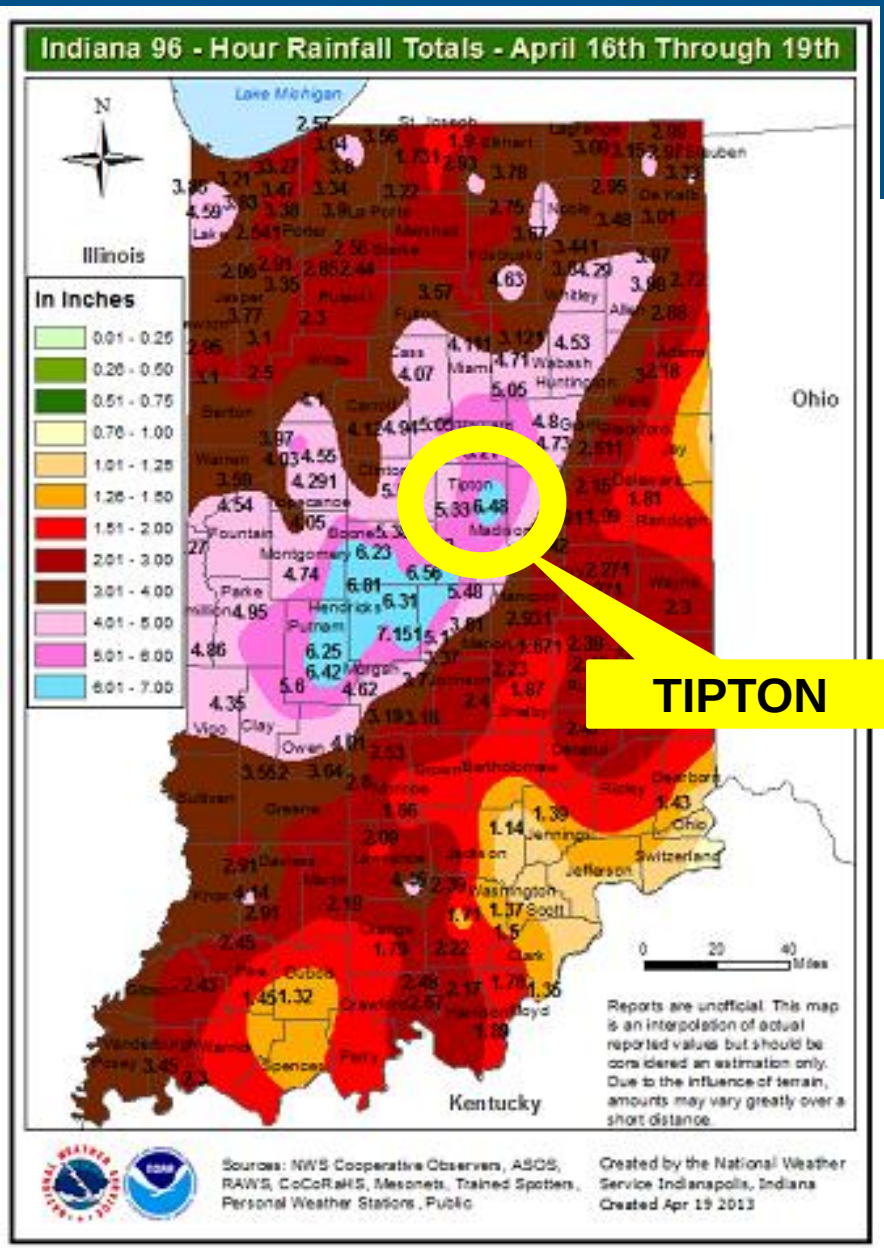
RiskMAP

Increasing Resilience Together

NWS has issued a flood warning…

April 2013 Flood





April 2013 Flood

Flooding Damage Tops $2.5M in Tipton, Indiana

May 8, 2013

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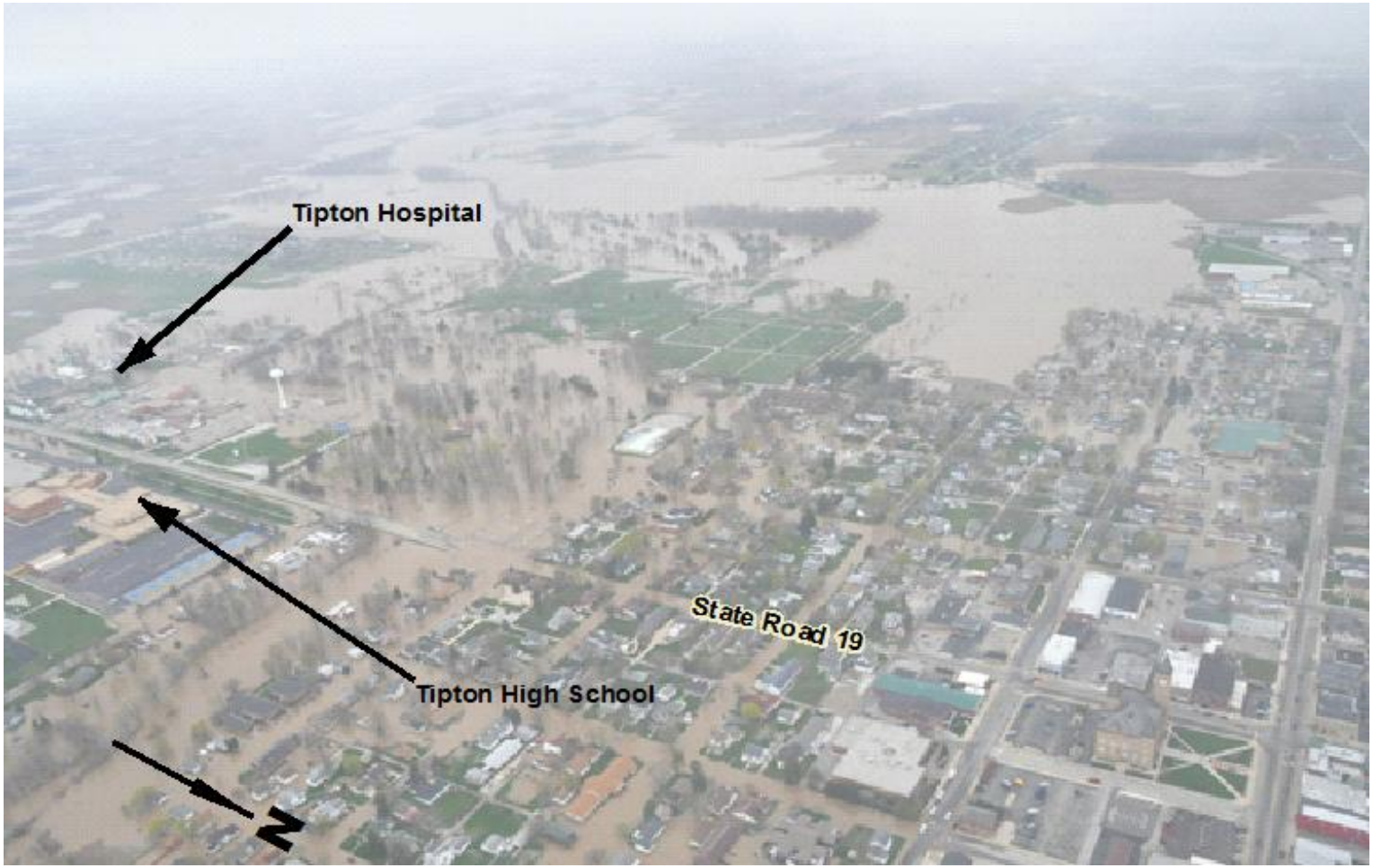
Article Comments

The mayor of the central Indiana city of Tipton says recent flooding has caused more than $2.5 million in property damage and a loss of as much as 10 percent in its property tax base.

Mayor Don Havens says in an impact statement to the Federal Emergency Management Agency that the floods also displaced about 5 percent of the city's population of about 5,000 people.

Insurance Journal
http://www.insurancejournal.com/news/midwest/2013/05/08/291367.htm

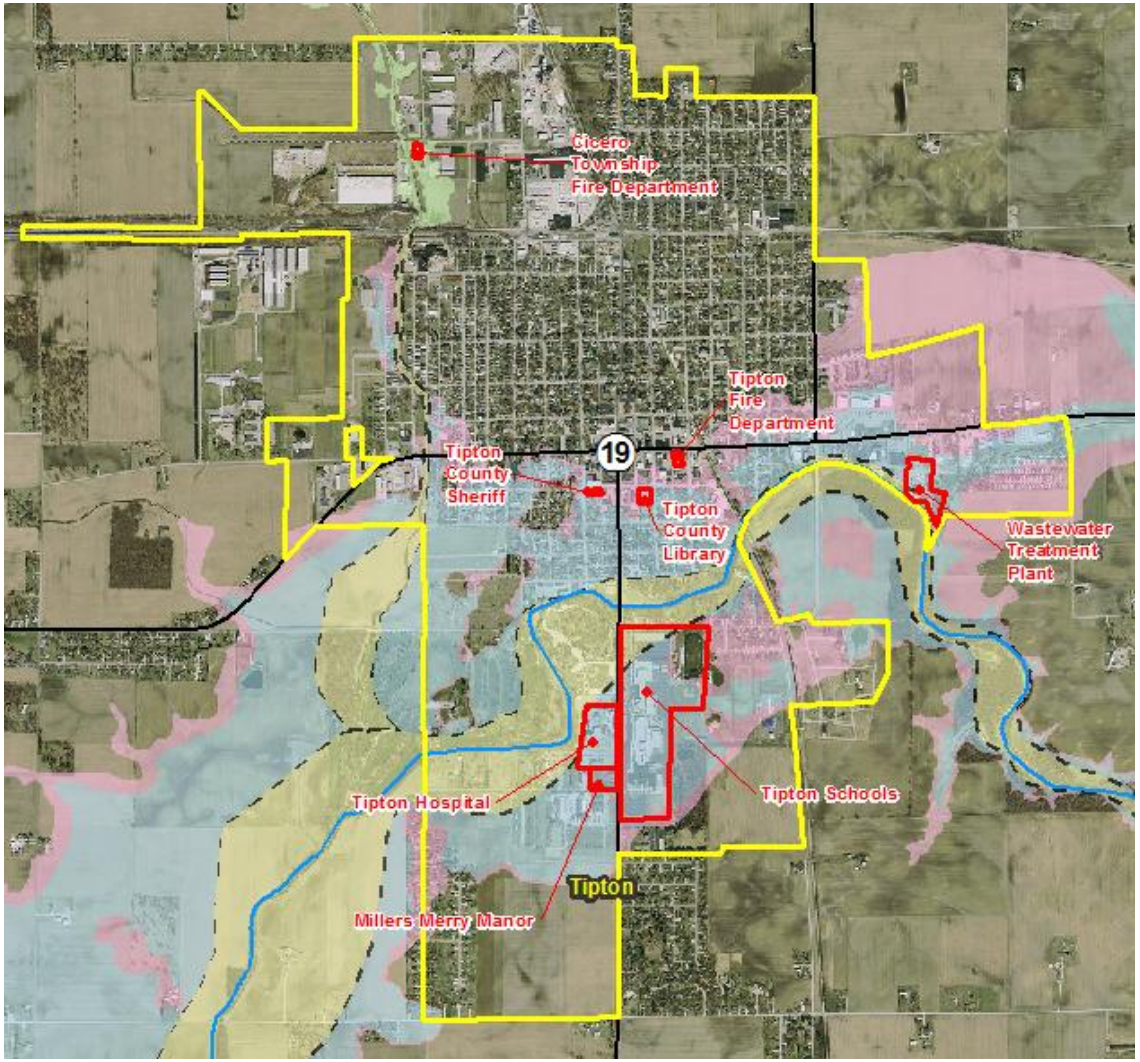
April 2013 Flood



Tipton – Flood Zones

Flood Zones

- Floodway
- 1.0% ACFH
- 0.2% ACFH
- Zone A
- Critical Facility



Tipton – Flood Control Studies

- 2006 Flood Control Study of Big Cicero Creek
- 2014 Big Cicero Creek Bypass Study
- 2014 Big Cicero Creek Watershed Flood & Erosion Risk Management Plan
- 2016 Flood Depth Maps & Critical Facilities Flood Protection Analysis

- **Studies concluded that there are no effective and feasible structural solutions to protect Tipton from flooding**

What is Tipton to do?

- 800+ buildings in the floodplain (8 critical facilities)
- Continued vulnerability to significant flooding
- No feasible effective flood control alternative
- Climate change projections suggest floods will intensify
- Desire to be resilient, economically viable city despite its flood vulnerable settings

Land use planning policy approach
FLOOD RESILIENCE PLANNING

- ***How?*** **EPA & FEMA 2014 report "Planning for Recovery and Long-Term Resilience in Vermont"**

Pilot Project Partnerships

Flood Resilience Planning Defined

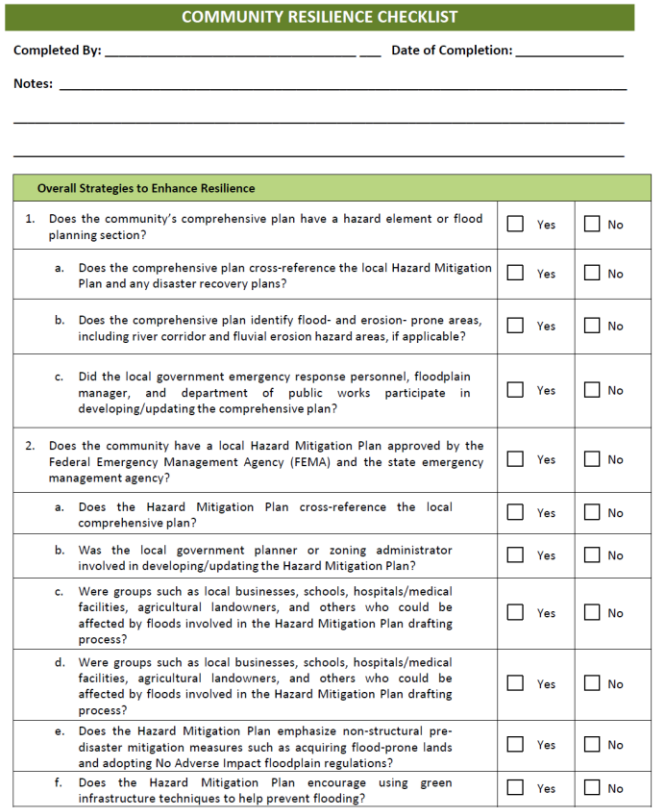
- Resilience is the ability to adapt to changing conditions and prepare for, withstand, and rapidly recover from disruption.
- Measures taken to reduce vulnerability to damages from flooding and to support long-term recovery after an extreme flood event through:
  1. Integrating smart growth principles into policies
  2. Enhancing local development regulations
  3. Integrating strategies in Hazard Mitigation Plan, Comprehensive Plan, Development Codes, and Capital Improvement Plans

Overview of the Planning Process

- **10-month planning process**
- **Review and consolidation of flood-related data and studies**
- **Meetings with stakeholders:**
  - Large group meetings and individual meetings
- **Develop recommendations for:**
  1. Resiliency Checklist
  2. Flood Resilience Planning Areas
  3. Overall Strategies

1. Resiliency Checklist

- **Conduct regular audits of programs and policies**
  - Multiple plans, policies, and regulations play role in resilience including:
    - Comprehensive Plan
    - Multi-Hazard Mitigation Plan
    - Zoning / Subdivision Control Ordinance
    - Capital Improvement Plan
    - Economic Development Plan
    - Floodplain / Stormwater Ordinances
  - Need for coordination and complementary language
  - ***Tipton needs to review current language and conduct regular audits to ensure consistency***



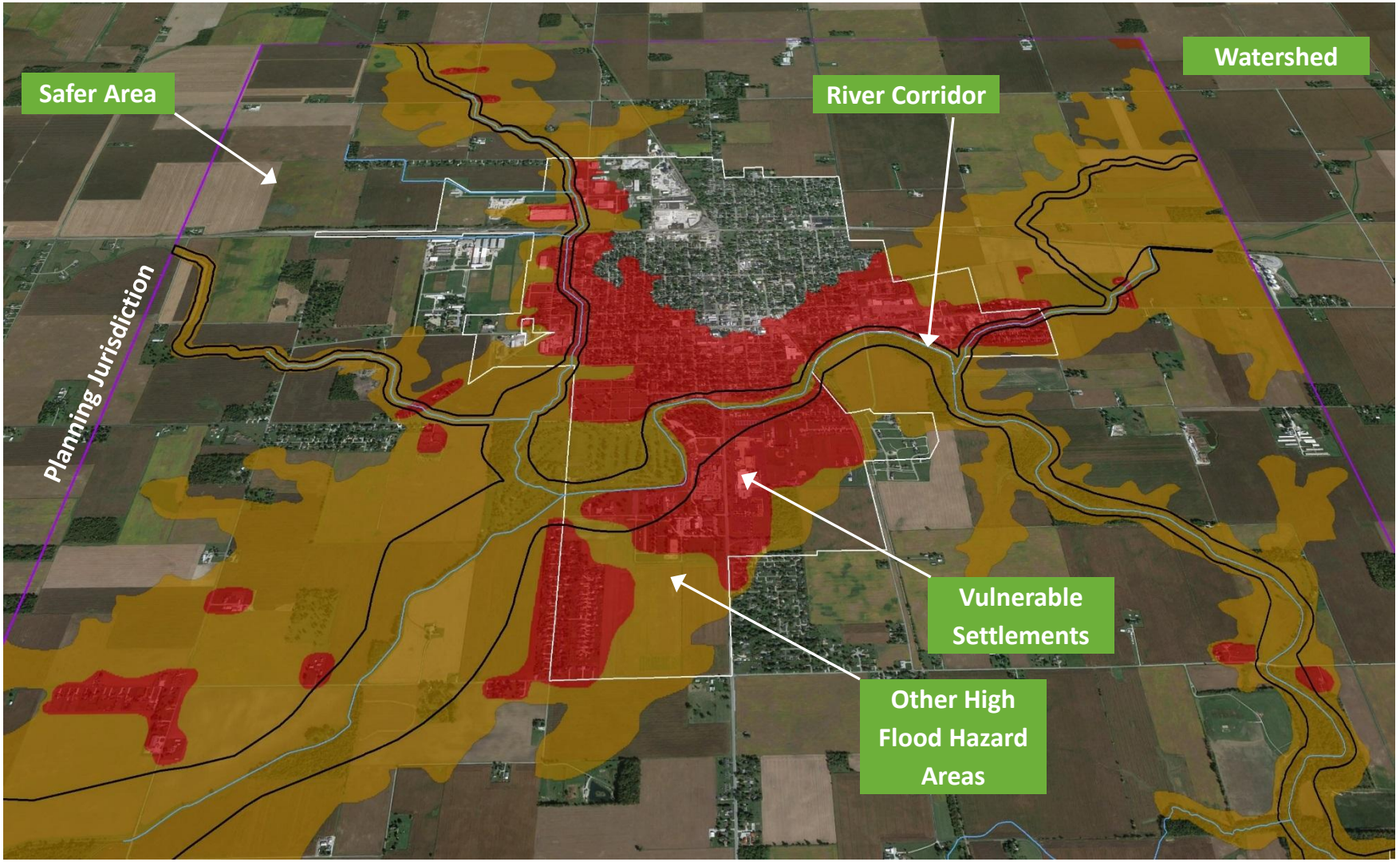
COMMUNITY RESILIENCE CHECKLIST

Completed By: _____ Date of Completion: _____

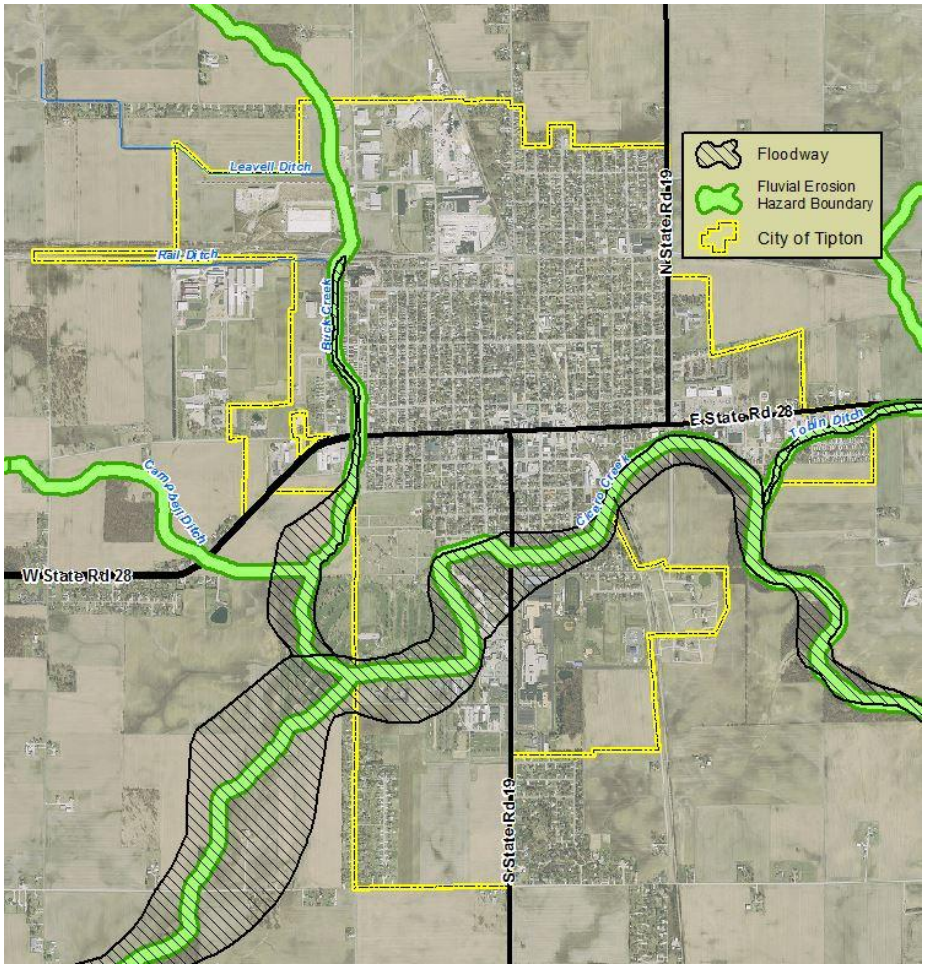
Notes: _____

Overall Strategies to Enhance Resilience		
1. Does the community's comprehensive plan have a hazard element or flood planning section?	☐ Yes	☐ No
a. Does the comprehensive plan cross-reference the local Hazard Mitigation Plan and any disaster recovery plans?	☐ Yes	☐ No
b. Does the comprehensive plan identify flood- and erosion- prone areas, including river corridor and fluvial erosion hazard areas, if applicable?	☐ Yes	☐ No
c. Did the local government emergency response personnel, floodplain manager, and department of public works participate in developing/updating the comprehensive plan?	☐ Yes	☐ No
2. Does the community have a local Hazard Mitigation Plan approved by the Federal Emergency Management Agency (FEMA) and the state emergency management agency?	☐ Yes	☐ No
a. Does the Hazard Mitigation Plan cross-reference the local comprehensive plan?	☐ Yes	☐ No
b. Was the local government planner or zoning administrator involved in developing/updating the Hazard Mitigation Plan?	☐ Yes	☐ No
c. Were groups such as local businesses, schools, hospitals/medical facilities, agricultural landowners, and others who could be affected by floods involved in the Hazard Mitigation Plan drafting process?	☐ Yes	☐ No
d. Were groups such as local businesses, schools, hospitals/medical facilities, agricultural landowners, and others who could be affected by floods involved in the Hazard Mitigation Plan drafting process?	☐ Yes	☐ No
e. Does the Hazard Mitigation Plan emphasize non-structural pre-disaster mitigation measures such as acquiring flood-prone lands and adopting No Adverse Impact floodplain regulations?	☐ Yes	☐ No
f. Does the Hazard Mitigation Plan encourage using green infrastructure techniques to help prevent flooding?	☐ Yes	☐ No

2. Flood Resilience Planning Areas



2A. River Corridor



Area Boundary – floodway or fluvial erosion hazard area, whichever is greater

Intent of Area Strategy – to conserve land and prohibit new development

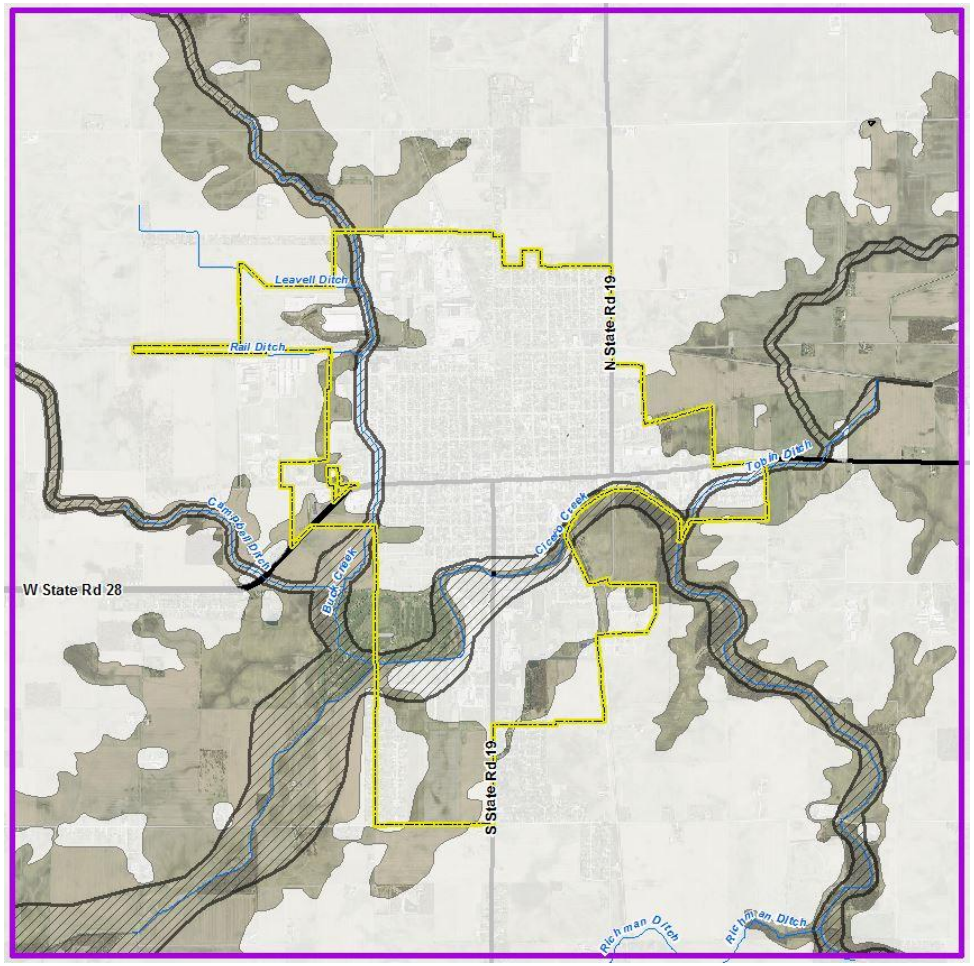
2A. River Corridor

- **Strategies for Flood Resilience**
  1. Adopt a river corridor overlay zone and prohibit land disturbance in this zone
  2. Protect undeveloped land in the river corridors
  3. Minimize streambank erosion

2A. River Corridor – in detail

- **Adopt a river corridor overlay zone and prohibit land disturbance in this zone**
  - Establish additional or stricter standards and criteria to those of the underlying zoning district
  - Due to susceptibility and vulnerability to flooding and erosion, development or disturbance should be prohibited
    - Structures
    - Infrastructure and utilities
    - Land clearing, grading and excavation
  - ***Tipton should define and adopt a more restrictive river corridor overlay zone into their zoning ordinance***

2B. Other High Flood Hazard Areas



Area Boundary – undeveloped land in the floodway fringe

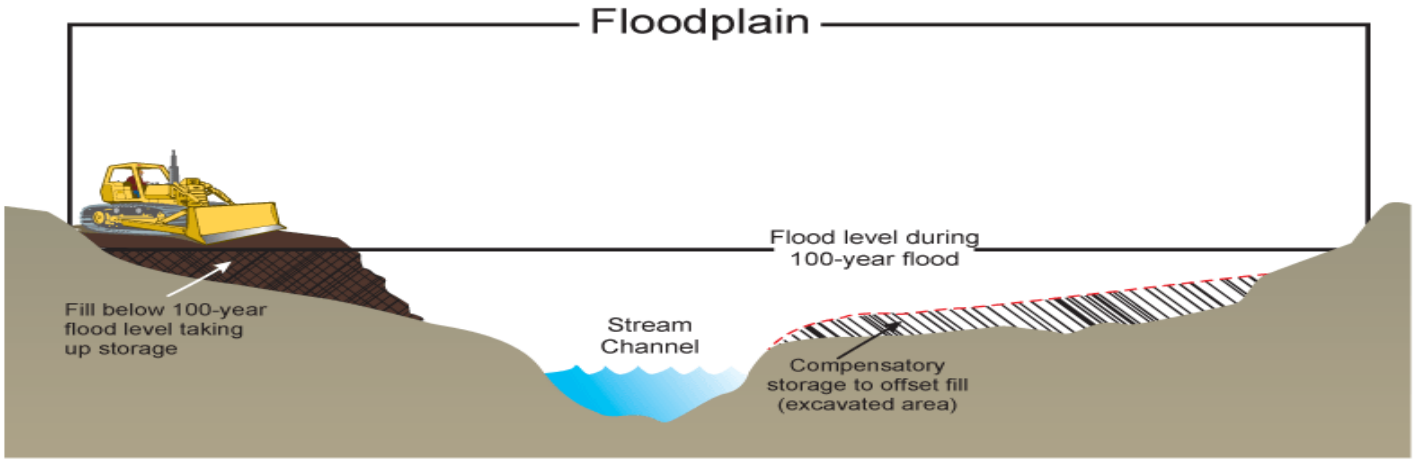
Intent of Area Strategy – to conserve land and maintain the natural and beneficial function of the floodway fringe

2B. Other High Flood Hazard Areas

- **Strategies for Flood Resilience**
  1. Prohibit development in the floodway fringe (including critical facilities)
  2. Protect undeveloped land in the floodway fringe
  3. Adopt compensatory floodplain storage requirement

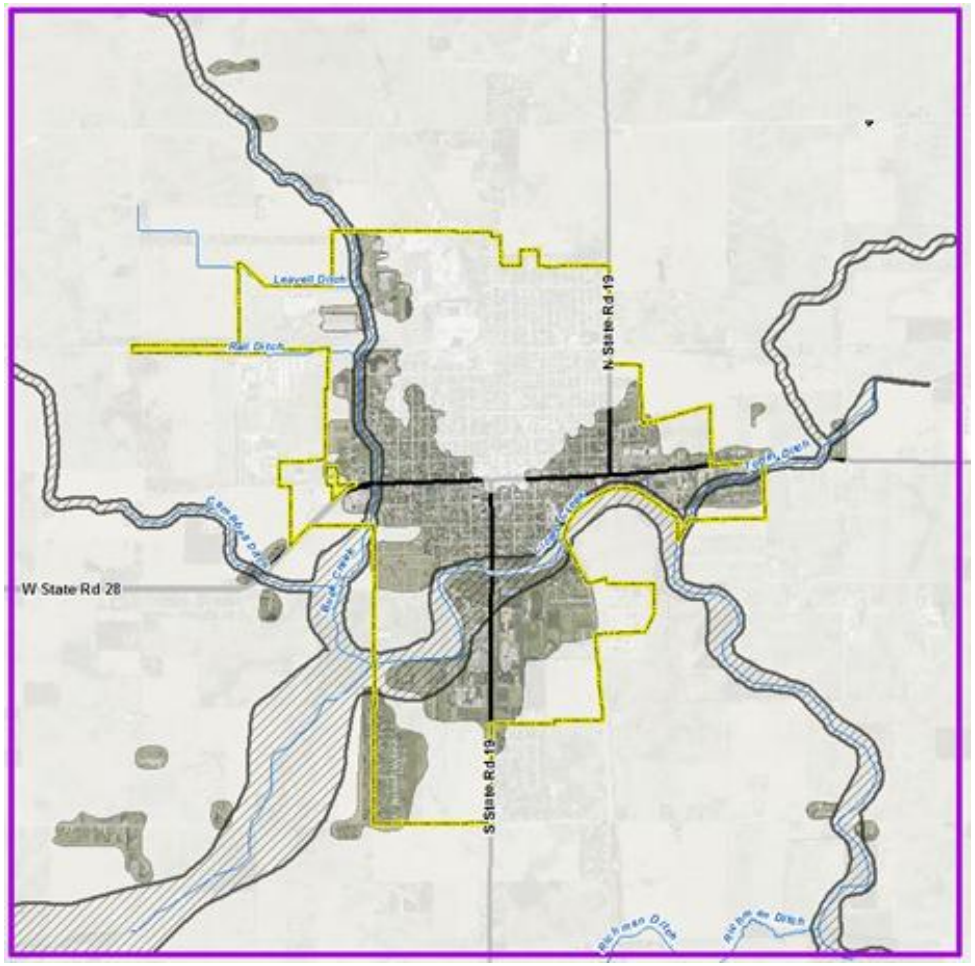
2B. Other High Flood Hazard – in detail

- **Adopt compensatory floodplain storage requirements**
  - Only when placement of fill unavoidable and variance granted
  - Loss of floodplain storage could negatively impact other properties
  - Effective regulatory tool to compensate for any fill, structure, or other materials above grade in the regulatory floodplain



  - ***Tipton should adopt a 3:1 compensation of floodplain storage into the proposed comprehensive stormwater ordinance***

2C. Vulnerable Settlements



Area Boundary – existing developed land in the SFHA (floodway and floodway fringe)

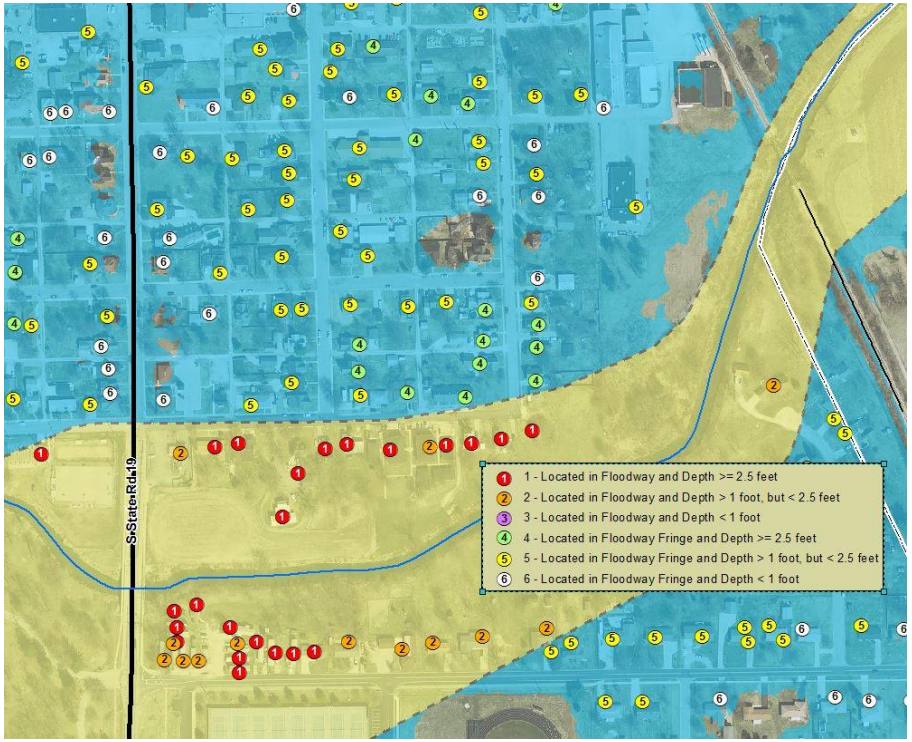
Intent of Area Strategy – to protect people, buildings, and facilities in vulnerable areas and reduce future flood risk

2C. Vulnerable Settlements

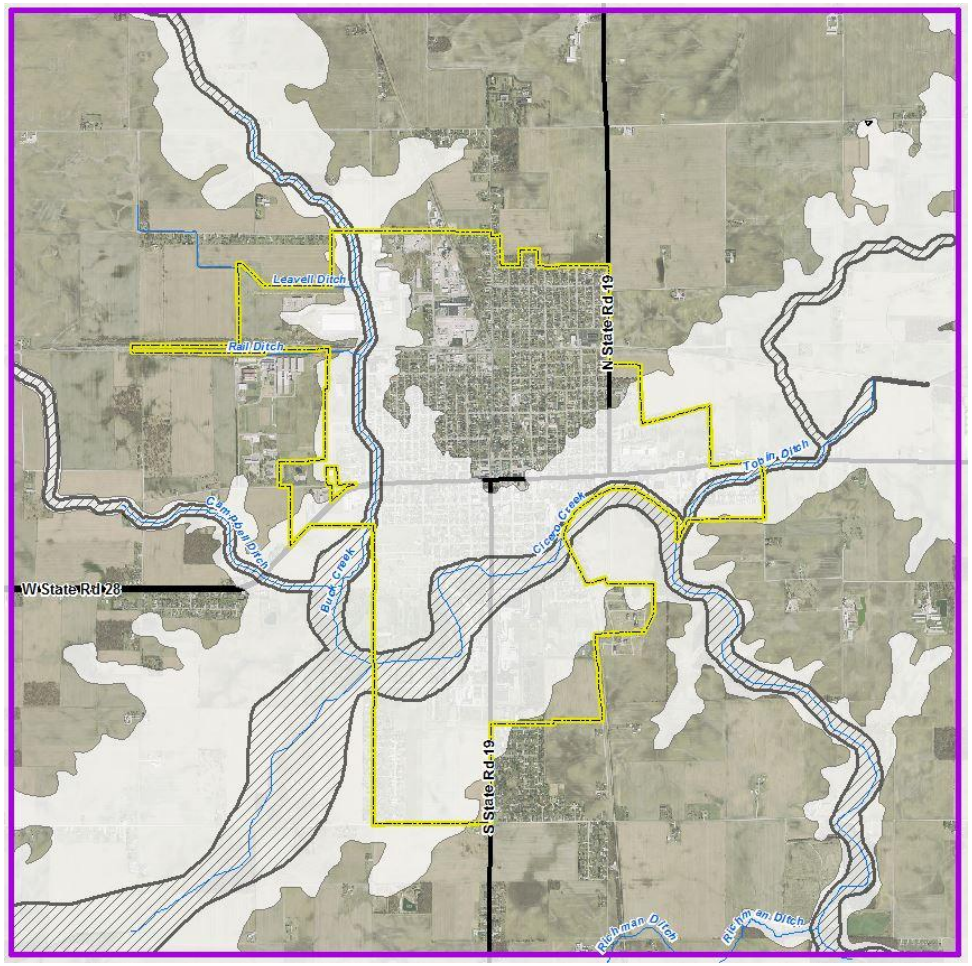
- **Strategies for Flood Resilience**
  1. Protect existing critical facilities
  2. Relocate / buyout structures
  3. Floodproof structures
  4. Bring nonconforming uses into compliance
  5. Create new flood storage capacity through redevelopment
  6. Require building expansion and new accessory structure to meet additional requirements
  7. Adopt a flood response plan
  8. Adopt post-flood damage assessment data collection and protocols
  9. Connect people to the river

2C. Vulnerable Settlements – in detail

- **Relocate/Buyout Floodprone Structures**
  - Remove structures and create open space within flood hazard areas
  - 823 homes and businesses are vulnerable to flooding
    - 41 in the floodway
    - 197 in the floodway fringe with flood depths expected over 2.5 feet
    - Good candidates for buyout
  - ***Tipton should secure funding from FEMA to implement a relocation/buyout program***



2D. Safer Areas



Area Boundary – outside the SFHA but within the planning jurisdiction

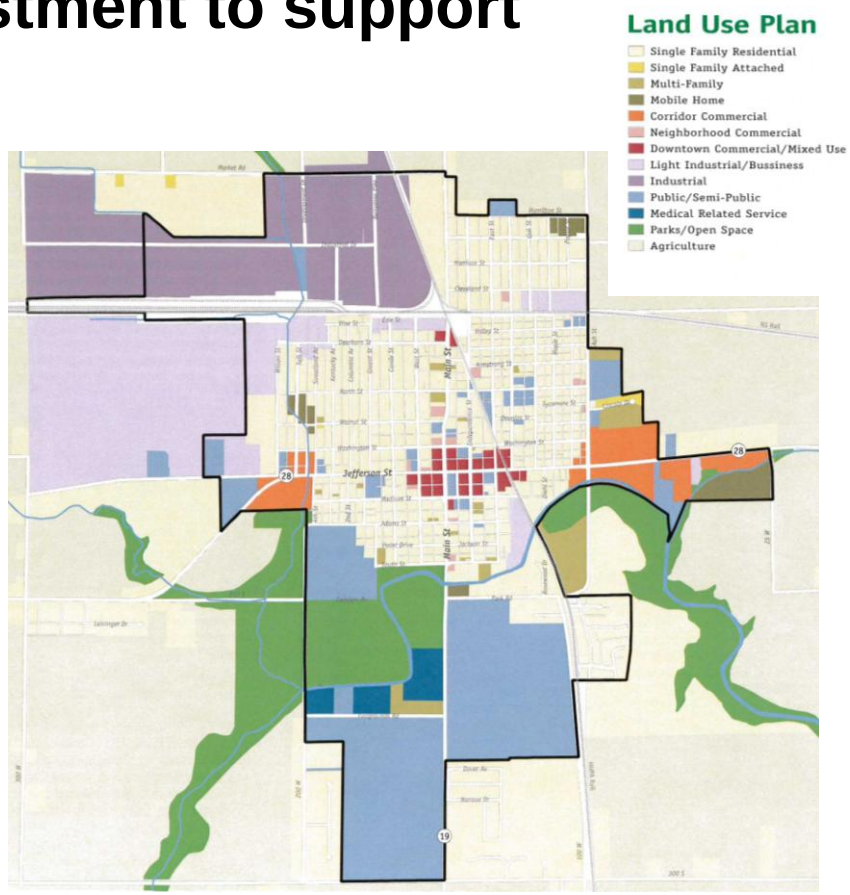
Intent of Area Strategy – to plan for and promote development in areas that are less vulnerable to future floods

2D. Safer Areas

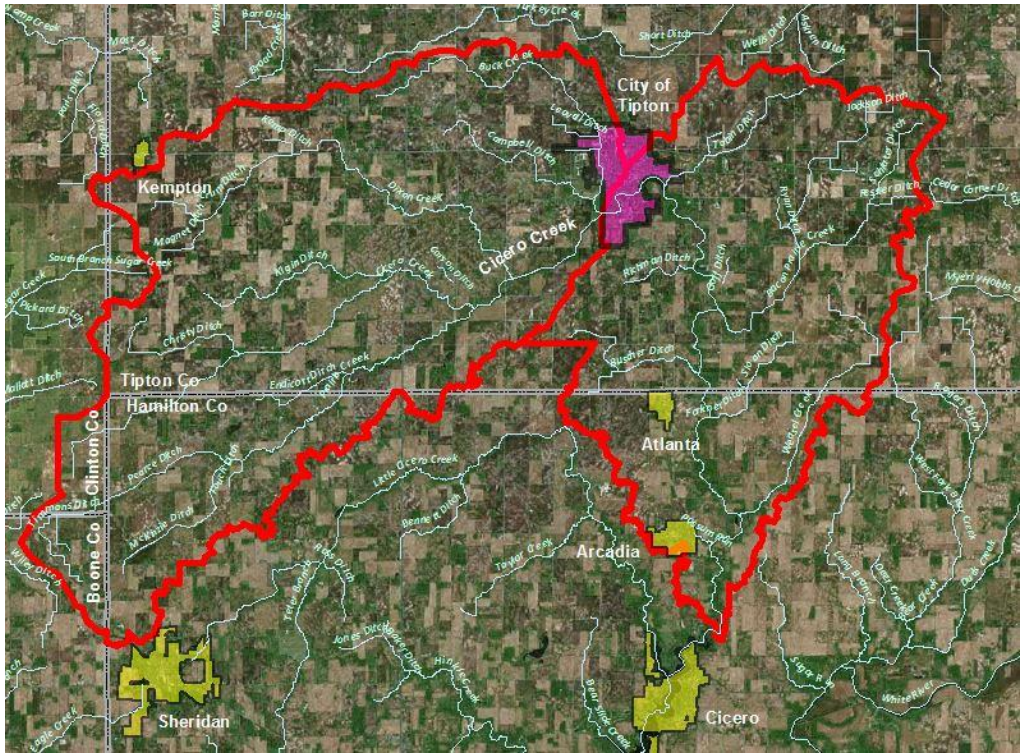
- **Strategies for Flood Resilience**
  1. Steer public policy and investment to support development in safer areas
  2. Promote conservation design
  3. Promote placement of critical facilities in safer areas

2D. Safer Areas – in detail

- **Steer public policy and investment to support development in safer areas**
  - Current plan includes future growth and development in the SFHA
  - Guide new development with capital improvement projects and expansion of utilities and infrastructure into safer areas
  - ***Tipton should revisit their Comprehensive Plan to promote new development in safer areas***



2F. Watershed



Area Boundary – entire drainage area

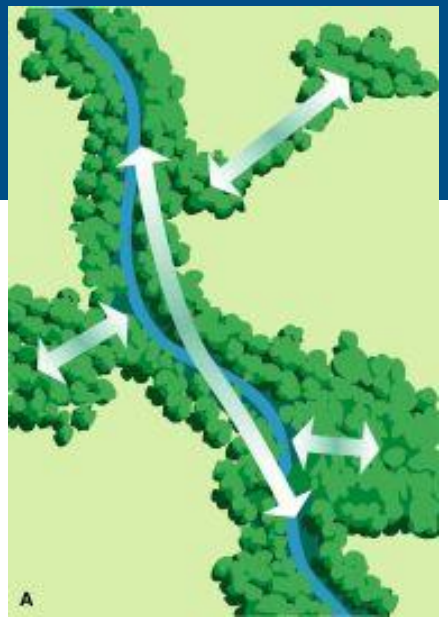
Intent of Area Strategy – to promote coordination and partnerships and implement practices to slow, spread, and infiltrate flood water

2F. Watershed

- **Strategies for Flood Resilience**
  1. Support the efforts of the Big Cicero Creek Drainage Board
  2. Adopt a natural resource overlay zone

2F. Watershed – in detail

- **Adopt a natural resource overlay zone**
  - Protect and improve the water resource
  - Includes open water, floodplain, riparian corridors, wetlands, woodlots, and urban tree canopy
  - Improve flooding, water quality, fish and wildlife habitat, economic resource, recreation, and aesthetics
  - Promotes sustainable development and agricultural practices
  - ***Tipton should partner with the Big Cicero Joint Drainage Board to delineate, draft language, and adopt an overlay zone***



3. Overall Strategies

- **Strategies for Flood Resilience**
  1. Conduct regular audits of plans, policies, and programs for consistency
  2. Update, integrate, and revise Hazard Mitigation Plan, Comprehensive Plan, Development Codes, and Capital Improvement Plans
  3. Participate in the Community Rating System

3. Overall Strategies – in detail

- **Participate in the Community Rating System (CRS) program**
  - Entitles flood insurance policyholders to reductions on their premium
  - Increasingly important as NFIP transitions to actuary flood insurance rates and premiums expected to increase significantly
  - ***Tipton should update their floodplain ordinance and participate in the CRS program***

Table 110-1. CRS classes, credit points, and premium discounts.

CRS Class	Credit Points (cT)	Premium Reduction	
		In SFHA	Outside SFHA
1	4,500+	45%	10%
2	4,000–4,499	40%	10%
3	3,500–3,999	35%	10%
4	3,000–3,499	30%	10%
5	2,500–2,999	25%	10%
6	2,000–2,499	20%	10%
7	1,500–1,999	15%	5%
8	1,000–1,499	10%	5%
9	500–999	5%	5%
10	0–499	0	0

SFHA: Zones A, AE, A1–A30, V, V1–V30, AO, and AH

Outside the SFHA: Zones X, B, C, A99, AR, and D

Preferred Risk Policies are not eligible for CRS premium discounts because they already have premiums lower than other policies. Preferred Risk Policies are available only in B, C, and X Zones for properties that are shown to have a minimal risk of flood damage.

Some minus-rated policies may not be eligible for CRS premium discounts.

Premium discounts are subject to change.

Where do we start?

- Prevent any increase in flood vulnerability (steer new development to safer areas)
- Prepare for the next flood (flood response plan, education)
- Protect flood vulnerable structures (relocate/floodproof buildings/infrastructure)

Bottom Line

- **Enough is enough**
- **Need to change mindsets – balance structural and nonstructural (planning and policy-based) solutions**
- **Implications of climate change**
- **Prevent, Prepare, Protect!**




Call to Action

- **Start implementing the plan!**
  - Modify the City's comprehensive plan, floodplain ordinance, and other documents to reflect the recommended changes and facilitate their adoption by the City Council
  - Secure funding and develop a Flood Response Plan
  - Start conversation with FEMA & IDHS to secure funding for general structure buyouts and protection of critical facilities
  - Encourage and support the hospital to initiate design process for the recommended flood protection measures

Questions or Comments?

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