Risk Assessment & Mitigation Projects Meeting Agenda

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee

April 25, 2023
1:30 p.m.
East Peoria City Hall
401 West Washington Street, East Peoria

I. Welcome

II. Preliminary Risk Assessment Results

III. Risk Priority Index Exercise

IV. Mission Statement Review

V. Goals Review

VI. Prioritization Methodology Review

VII. Community Lifelines

VIII. Mitigation Action Tables

IX. What Happens Next?

Public Comment

Meeting Minutes

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee

January 31, 2023
1:30 p.m.
East Peoria City Hall
401 West Washington Street, East Peoria

Committee Members

American Red Cross
Creve Coeur, Village of
East Peoria, City of
East Peoria CHSD #309
EP!C
El Paso, City of
Eureka, City of
Germantown Hills, Village of
Minonk, City of
Morton, Village of
National Weather Service
Pekin Park District
Peoria County EMA
Tazewell County EMA
Tazewell County Farm Bureau
Tri-County Reg. Planning Commission
Washington, City of
WMBD TV
Women's Council of Realtors
Woodford County EMA
Woodford County Farm Bureau
American Environmental Corp.

Welcome and Introductions

On behalf of the Tri-County Regional Planning Commission, Ken Runkle and Callie Smith of American Environmental Corporation (AEC) welcomed attendees. Handout materials were distributed to each member. A link to a citizen questionnaire was provided to potential members via email as well. The questionnaires will help gauge residents and committee member understanding of the natural hazards that impact the County and also identifies communication preferences.

Ken began the meeting by sharing that the purpose of this Advisory Committee is to update the Tazewell and Woodford Counties Hazards Mitigation Plan and by providing background information on the planning grant and the planning process. The Tri-County Regional Planning Commission (RPC) applied for and received a planning grant from FEMA to update the hazard mitigation plans for the Counties. This grant is administered through the Illinois Emergency Management Agency (IEMA) and pays for 85% of the planning cost. The remaining 15% will be met through in-kind services. The goal of the grant is to obtain a FEMA-approved hazard mitigation plan. The process is expected to take about 12 to 15 months from start to finish.

What is Mitigation?

Ken explained that for the purpose of this process, mitigation is any sustained action that reduces the long-term risk to people and property from natural and man-made hazards and their impacts. Sustained actions can include projects and activities such as building a community safe room or establishing warming and cooling centers. Mitigation is one of

the phases of emergency management and is an important component in creating hazard-resistant communities.

What is a Multi-Hazard Mitigation Plan?

Ken then explained that a Multi-Hazard mitigation plan details the natural and man-made hazard events that have previously impacted a county and identifies activities and projects that reduce the risk to people and property from these hazards before an event occurs. A hazard mitigation plan is different from an Emergency Operations Plan/ Emergency Response Plan (EOP/ERP) because it identifies actions that can be taken before a disaster strikes whereas the EOP/ERP identifies how a county will respond during and immediately after an event occurs.

The natural and man-made hazards that will be included in the Plans are severe summer storms (including thunderstorms with damaging winds, hail, and lightning events); severe winter storms (including ice and snowstorms); floods (both flash flood and riverine floods); tornadoes; excessive heat; extreme cold; drought; earthquakes; landslides; mine subsidence; dam failures; levee failures; transportation, generation, and storage of hazardous substances; hazardous materials incidents; waste disposal; and remediation activities.

Why Update a Natural Hazards Mitigation Plan?

Since the early 1990s damages caused by weather extremes have risen substantially. In 2022 the U.S. experienced $162 billion in severe storm damages from 18 severe weather and natural hazard events. The losses experienced in 2022 were the 3rd highest only behind 2017 (Harvey, Irma, Maria, and California Wildfires) and 2005 (Katrina, Rita, & Wilma). In the last decade, the U.S. has experienced the top three years with the highest total number of billion-dollar events and two of the top three years with the highest total losses ever recorded. Consequently, the Federal Emergency Management Agency (FEMA) continues to encourage counties throughout the U.S. to prepare and update hazard mitigation plans because what they've found is that for every dollar spent on mitigation, $6 dollars can be reaped in savings.

Updating these plans provides several major benefits:

1. Access to federal mitigation assistance funds. Specific projects and activities will be developed through the planning process to help each participating jurisdiction reduce damages. By including these actions in these plans, the participating jurisdictions will remain or become eligible to receive state and federal funds to implement the actions.
2. Increased awareness of the impacts associated with natural hazards. Verifiable information about the natural hazards that occur in the two-county area will be gathered to help participants in municipal and county meetings make decisions about how to better protect citizens and property from storm damages.

The Planning Process

The goal of the Committee meetings is to update these plans to meet state and federal requirements so that they can be approved by IEMA and FEMA. The Planning Committee

is an integral part of the planning process and ensures that the Plans are tailored to the needs of the counties and participating jurisdictions.

A four meeting process has been developed to achieve this goal. Specific activities for the Committee meetings include:

1st Committee meeting	Orientation to the Planning Process Required Information Needed to Participate Begin discussing Mitigation Projects and Activities
2nd Committee meeting	Discuss the Risk Assessment Approve Mission Statement & Goals Participants Return Required Forms Discuss and approve mitigation strategy
3rd Committee meeting	Finish discussing Mitigation Projects and Activities Committee discusses approval/adoption of the Plans
4th Committee meeting (Public Forum)	Present the Plans for public review Committee helps answer questions from the public

Jurisdictions who wish to be part of the Plans must meet certain participation requirements that include:

- Participating in the planning meetings and public forum;
- Completing required forms;
- Coordinating with their constituents and the public; and
- Adopting the Plans once they are completed.

Information Needed from the Committee

As part of the update, Ken indicated that there is information that will be needed from each participating jurisdiction. The information provided will be used to meet FEMA plan requirements. He then talked about each of the forms that must be completed at the beginning of the planning process. These Include:

Critical Facilities. Completed lists of Critical Facilities will be used to identify facilities vulnerable to natural hazards and will be provided to IEMA and FEMA as a separate supplement. Copies of the Plans made available to the public will not include these lists for security reasons.

Capability Assessment: Each jurisdiction has a unique set of capabilities and resources available to accomplish hazard mitigation and reduce long-term vulnerabilities to hazard events. As part of the update of the plans, the existing capabilities of each jurisdiction need to be identified and described.

Shelter Surveys. Identifies locations designated as severe weather shelters within each jurisdiction including warming centers, cooling centers and community safe rooms.

Drinking Water Supply Worksheet: Information on the drinking water supplies that serve the participating communities needs to be identified to assist in assessing drought vulnerability.

Callie distributed each of these forms and Ken asked participants to complete and return them by the next meeting and to contact AEC if they had any questions.

Community Participation

Ken stressed the importance of attending each committee meeting and indicated that member participation helps the TCRPC meet the 15% match for this grant in addition to assuring that member jurisdictions are eligible for IEMA/FEMA funds. He indicated that tag-teaming and designating substitute representatives is permissible when other obligations arise. Ken pointed out that a designated substitute representative does not have be an official or employee of the jurisdiction.

Ken requested that each jurisdiction consider sharing meeting information with their boards, councils, etc. at regularly scheduled meetings and consider posting the press release or adding a calendar item to their web pages. He also asked jurisdictions who are on Facebook to consider posting about the Plans or sharing the Planning Commissions post on their pages.

Ken indicated that another opportunity to include the public in the process is to post the link to the Citizen Questionnaire on their web pages or Facebook pages. The more individuals who complete the survey, the better our understanding will be of the public's perception of the hazards that impact the County. Finally, he asked the participants to consider posting or making available at their offices the "Frequently Asked Questions" document in their meeting packet. It provides a quick summary of what the Plans are and why it's important to participate.

Severe Weather Events

Ken told the Committee that, while AEC will review multiple data sources, including NOAA, NWS, and state and federal databases, these sources don't always include every event nor do they always include damage information, especially dollar amounts. In many cases, individuals at the local level are our best resource for this kind of information.

He then asked Committee members to share their memories of hazard events that have occurred in the County including any damages to critical infrastructure and facilities.

Hazard events related include:

- Parson tornado in July 2004 (Woodford County)
- Washburn tornado on February 28, 2017 (Woodford County)
- Roanoke flooding in 2013 (Woodford County)
- Roanoke flash flooding in late September 2019 (Woodford County)
- Severe winter storm in February 2022 that included a 100-car pileup on I-39 (Woodford County)

Ken asked participants to identify any hazard events that have impacted their jurisdiction by completing the form titled, “Hazard Event Questionnaire”. The information provided will help supplement the information included in the risk assessment.

He also asked Committee members to please provide any storm damage photos they would be willing to share for inclusion in the Plans.

Critical Facilities Vulnerability Survey

As part of the Plan update, Ken indicated that vulnerable community assets need to be identified for the participating jurisdictions. He asked Committee members to complete a 2-page survey distributed to help identify each community’s most vulnerable assets as well as identify a list of key issues that clearly describe each community’s greatest vulnerabilities. This information will be used in the vulnerability analysis.

Mitigation Projects

Ken explained that mitigation actions include activities and projects that reduce the long-term risk to people and property from the natural and man-made hazards discussed in the risk assessment.

Status of Existing Projects

Callie distributed **“Status of Existing Mitigation Actions”** forms to each of the previously participating jurisdictions detailing the mitigation projects and activities included in the 2019 Plan. Ken explained that as part of the update process the status of these projects needs to be determined. He described how the form should be completed so that this information can be included in the updated Plans.

New Projects

The form titled **“Hazard Mitigation Projects”** was then distributed and Ken indicated this form should be used to submit new projects and activities for the updated Plans. To help the jurisdictions think about and assemble their lists, information was included in the handout materials.

Ken indicated individual mitigation project lists will be updated for each participating jurisdiction and that this is a list of projects each jurisdiction would like to see accomplished if funding becomes available. FEMA is trying to stimulate the implementation of mitigation projects and activities to reduce the extraordinary amount of money being expended on hazard event damages.

The projects and activities included in the Plans should be mitigation-related, not emergency preparedness, response, recovery, or maintenance. Mitigation projects can include studies, regulatory activities, structural and infrastructure projects, and information/education activities. He provided advice for completing the mitigation project list including providing a detailed description of the project, the jurisdiction responsible for the project and the time frame to complete the project.

MAC members were encouraged to contact AEC if questions arise before they return to the next MAC meeting.

Mission Statement & Goals

Copies of draft updated mission statement and mitigation goals were distributed in the meeting packet. Committee Members were asked to review these prior to the next meeting. The mitigation goals describe the objectives or end results the Committee would like to accomplish in terms of hazard and loss reduction/prevention. Every project included in the Plans should be aimed at one or more of the goals identified by this Committee. Specific goals related to each jurisdiction can be added to this list as well.

What Happens Next?

The risk assessment will be the main topic of the next committee meeting.

The second meeting of the Committee was scheduled for:

Tuesday, April 25, 2023
East Peoria City Hall
401 West Washington Street, East Peoria
1:30 P.M.

Ken asked Committee members to please review the "Tasks to be Completed" handout before the next meeting and indicated that AECs contact information could be found on the last page of the meeting handout if any questions come up. With no further questions the meeting was adjourned, and Ken thanked attendees for their participation.

PRELIMINARY NATURAL HAZARDS RISK ASSESSMENT RESULTS

Two-County area:

- 13 major federal disaster declarations
- 1,796 natural hazard events documented
  - 258 natural hazard events since 2018
- 8 fatalities and 208 injuries (29 events)
- $1.1 billion in property damages (265 events)
- ~$74.6 million in crop damages (20 events)

Tazewell County:

- 11 of 13 federal disaster declarations include Tazewell County
- 971 natural hazard events documented
  - 145 natural hazard events since 2018
- ~$1 billion in property damages (152 events)
- ~$45.3 million in crop damages (12 events)
- 7 fatalities and 189 injuries (18 events)

Woodford County:

- 11 of the 13 federal disaster declarations include Woodford County
- 825 natural hazard events documented
  - 113 natural hazard events since 2018
- ~$84.9 million in property damages (114 events)
- ~$29.4 million in crop damages (9 events)
- 1 fatality and 19 injuries (11 events)

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

- What's included in the definition of a severe storm?
  - **Thunderstorms** with wind gusts of 50 knots (58 mph) or greater (including straight-line winds)
  - **Hail** that is at least 1 inch in diameter (quarter-sized) or greater
  - **Lightning** strikes with verified damage

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Two-County area:

- 645 events
  - 98 events recorded since 2018
- ~$10.3 million in property damages (182 events)
- ~$1.2 million in crop damages (5 events)
- 17 injuries (6 events)

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Two-County area:

- IDOT Crash Data: Wet Road Surface Conditions (2017 – 2021)
  - 13.0% of roadway crashes
  - 7 fatalities & 593 injuries
- Highest Wind Speed: 83 knots (95 mph) countywide on June 29, 1998
- Largest Hail: 4.00 inches (~grapefruit sized) Secor on May 30, 2004

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Tazewell County:

- 399 events
  - 64 events recorded since 2018
- ~$7.2 million in property damages (104 events)
- ~$1.1 million in crop damages (4 events)
- 14 injuries (3 events)

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Tazewell County:

- IDOT Crash Data: Wet Road Surface Conditions (2017 – 2021)
  - 13.3% of roadway crashes
  - 6 fatalities & 492 injuries

Severe Weather Crash Data for Tazewell County

Year	Total # of Crashes	Presence of Wet Road Surface Conditions		
		# of Crashes	# of Injuries	# of Fatalities
2017	2,219	299	105	1
2018	2,361	329	98	0
2019	2,005	232	90	0
2020	1,960	258	84	2
2021	2,342	331	115	3
Total:	**10,887**	**1,449**	**492**	**6**

Source: Illinois Department of Transportation.

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Tazewell County:

- Highest Wind Speed: 83 knots (95 mph) countywide on June 29, 1998
- Largest Hail: 3.00 inches (~tea-cup sized) at Washington on May 28, 2003 & August 20, 2022

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Tazewell County:

Thunderstorms:

- 236 events since 1968
- $7,163,950 in property damages (100 events)
- $1,150,000 in crop damages (4 events)
- 14 injuries recorded (3 events)

Hail:

- 111 events since 1960
- No property/crop damages recorded
- No injuries/fatalities recorded

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Tazewell County:

Lightning:

- 4 events with recorded damages since 1991
- $115,050 in property damages (4 events)
- No crop damages recorded
- No injuries/fatalities recorded

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Woodford County:

- 246 events
  - 34 events recorded since 2018
- ~$3 million in property damages (78 events)
- ~$30,000 in crop damages (1 event)
- 3 injuries (3 events)

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Woodford County:

- IDOT Crash Data: Wet Road Surface Conditions (2017 – 2021)
  - 11.7% of roadway crashes
  - 1 fatality & 101 injuries

Severe Weather Crash Data for Woodford County

Year	Total # of Crashes	Presence of Wet Road Surface Conditions		
		# of Crashes	# of Injuries	# of Fatalities
2017	427	52	13	0
2018	510	58	22	1
2019	519	60	21	0
2020	470	43	26	0
2021	431	62	19	0
Total:	**2,357**	**275**	**101**	**1**

Source: Illinois Department of Transportation.

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Woodford County:

- Highest Wind Speed: 70 knots (81 mph) Roanoke on July 21, 2008
- Largest Hail: 4.00 inches (~grapefruit sized) Secor on May 30, 2004

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Woodford County:

Thunderstorms:

- 186 events since 1966
- $2,266,000 in property damages (72 events)
- $30,000 in crop damages (1 event)
- 2 injuries recorded (2 events)

Hail:

- 55 events since 1974
- $400,000 in property damages (2 events)
- No crop damages recorded
- No injuries/fatalities recorded

Severe Storms
Thunderstorms with Damaging Winds, Hail, & Lightning

Woodford County:

Lightning:

- 5 events with recorded damages since 2008
- $348,500 in property damages (4 events)
- No crop damages recorded
- 1 injury recorded (2010)

Severe Winter Storms
Snow, Ice & Extreme Cold

- **Severe Winter Storms**
  - **Blizzards** –strong winds (least 35 mph) accompanied by falling/blowing snow that reduces visibility to ¼ mile or less for 3 hours or more
  - **Heavy snow storms** – snowfall accumulations of 4 inches or more in 12 hours or less or 6 inches or more in 24 hours or less
  - **Ice storms** – substantial ice accumulations, generally ¼ inch or more

Severe Winter Storms & Extreme Cold

- **Extreme cold** – dangerously low temperatures and/or wind chill values

Severe Winter Storms & Extreme Cold

Two-County area:

- 279 severe winter storms (1950-2022)
  - 22 events recorded since 2018
- 86 extreme cold events (1995-2022)
  - 12 events recorded since 2018
- 2 major federal declarations (2006, 2011)
- ~$3.7 million in damages/emergency protective measures (11 events)
- 4 fatalities & 7 injuries recorded (9 events)

Severe Winter Storms & Extreme Cold

Two-County area:

- IDOT Crash Data: Wet Road Surface Conditions (2017 – 2021)
  - 9.8% of roadway crashes
  - 2 fatalities & 306 injuries
- At least 16 severe winter storms have occurred every decade since 1970
- Maximum *24-Hour Accumulation*:
  - 16.0 inches (January 1, 1999)

Severe Winter Storms & Extreme Cold

Two-County area:

- Coldest recorded temperature: -36ºF Congerville COOP Station - January 5, 1999

Coldest Days Recorded at Minonk NWS COOP Observer Station

	Date	Temperature		Date	Temperature
1	02/13/1905	-28°F	6	01/17/1977	-24°F
2	01/11/1982	-25°F	7	02/09/1899	-23°F
3	01/21/1984	-25°F	8	01/15/1927	-23°F
4	01/20/1985	-25°F	9	1/26/2019	-23°F
5	12/28/1924	-24°F	10	1/30/2019	-23°F

Source: Midwest Regional Climate Center cli-MATE

Severe Winter Storms & Extreme Cold

Tazewell County:

- 125 severe winter storms (1950-2022)
  - 11 events recorded since 2018
- 86 extreme cold events (1995-2022)
  - 12 events recorded since 2018
- 1 major federal declaration (2011)
- ~$1.9 million in damages/emergency protective measures (4 events)
- 3 fatalities & 3 injuries recorded (4 events)

Severe Winter Storms & Extreme Cold

Tazewell County:

- IDOT Crash Data: Wet Road Surface Conditions (2017 – 2021)
  - 9.2% of roadway crashes
  - 1 fatality & 245 injuries

Severe Winter Weather Crash Data for Tazewell County

Year	Total # of Crashes	Presence of Treacherous Road Conditions caused by Snow/Slush and Ice		
		# of Crashes	# of Injuries	# of Fatalities
2017	2,219	139	32	0
2018	2,361	271	75	0
2019	2,005	255	46	0
2020	1,960	158	51	1
2021	2,342	174	41	0
Total:	**10,887**	**997**	**245**	**1**

Source: Illinois Department of Transportation.

Severe Winter Storms & Extreme Cold

Tazewell County:

- At least 16 severe winter storms have occurred every decade since 1970
- Maximum *24-Hour Accumulation*:
  - 16.0 inches (January 1 & 2, 1999)

Severe Winter Storms & Extreme Cold

Woodford County:

- 154 severe winter storms (1950-2022)
  - 11 events recorded since 2018
- 86 extreme cold events (1995-2022)
  - 12 events recorded since 2018
- 2 major federal declaration (2006, 2011)
- ~$1.8 million in damages/emergency protective measures (5 events)
- 1 fatality & 4 injuries recorded (4 events)

Severe Winter Storms & Extreme Cold

Woodford County:

- IDOT Crash Data: Wet Road Surface Conditions (2017 – 2021)
  - 12.6% of roadway crashes
  - 1 fatality & 61 injuries

Severe Winter Weather Crash Data for Woodford County

Year	Total # of Crashes	Presence of Treacherous Road Conditions caused by Snow/Slush and Ice		
		# of Crashes	# of Injuries	# of Fatalities
2017	427	24	7	0
2018	510	88	18	0
2019	519	88	18	1
2020	470	50	7	0
2021	431	46	11	0
Total:	**2,357**	**296**	**61**	**1**

Source: Illinois Department of Transportation.

Severe Winter Storms & Extreme Cold

Woodford County:

- At least 17 severe winter storms have occurred every decade since 1970
- Maximum *24-Hour Accumulation*:
  - 14.5 inches (February 1 & 2, 2011)

Floods
General & Flash Floods

- What types of flooding impact the County?
  - **Riverine flooding** – water in a river or stream gradually rises and overflows its banks
  - **Shallow/inland flooding** – flat areas where there are no clearly defined channels and water cannot easily drain away
  - **Flash flooding** – a rapid rise of water along a stream or low-lying area

Floods
General & Flash Floods

Two-County area:

- 131 general flood events (1950-2022)
  - 14 events recorded since 2018
- 76 flash flood events (1990-2022)
  - 18 events recorded since 2018
- 7 major federal declarations
- ~$105.4 million in property damages (16 events)
- ~$8.3 million in crop damages (2 events)
- No injuries/fatalities recorded

Floods
General & Flash Floods

Tazewell County:

- 126 general flood events (1950-2022)
  - 13 events recorded since 2018
- 40 flash flood events (1990-2022)
  - 10 events recorded since 2018
- 6 major federal declarations
- ~$58.5 million in property damages (5 events)
- ~$8 million in crop damages (2 events)
- No injuries/fatalities recorded

Floods
General & Flash Floods

Woodford County:

- 130 general flood events (1950-2022)
  - 14 events recorded since 2018
- 36 flash flood events (1990-2022)
  - 8 events recorded since 2018
- 6 major federal declarations
- ~$49.5 million in property damages (11 events)
- ~$250,000 in crop damages (1 event)
- No injuries/fatalities recorded

Excessive Heat

- What defines excessive heat?

  Temperatures **10 degrees or more above the average high temperature** of a region **for several days to several weeks**

Excessive Heat

Two-County area:

- 118 verified events (1995-2022)
  - 29 events since 2018
- No damages or injuries/fatalities recorded
- Hottest recorded temperature: 111ºF
  Minonk COOP Station – July 14 & 15, 1936

Hottest Days Recorded at Minonk NWS COOP Observer Station

	Date	Temperature		Date	Temperature
1	07/14/1936	111°F	4	07/12/1936	110°F
2	07/15/1936	111°F	5	07/07/1936	108°F
3	07/11/1936	110°F	6	07/28/1916	107°F

Midwest Regional Climate Center cli-MATE

Tornadoes

- What is a Tornado?

  Violently rotating column of air, usually characterized by a twisting, funnel-shaped cloud **that extends from a thunderstorm to the ground**

- Tornadoes are rated using the Enhanced Fujita Scale – EF0 to EF5

Tornadoes

Fujita & Enhanced Fujita Tornado Measurement Scales

F-Scale Category	F-Scale Wind Speed (mph)	EF-Scale Category	EF-Scale Wind Speed (mph)	Description
F0	40 – 72	EF0	65 – 85	Light damage – some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; damage to sign boards
F1	73 – 112	EF1	86 – 110	Moderate damage – peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads
F2	113 – 157	EF2	111 – 135	Considerable damage – roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground
F3	158 – 207	EF3	136 – 165	Severe damage – roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown
F4	208 – 260	EF4	166 – 200	Devastating damage – well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated
F5	261 – 318	EF5	Over 200	Incredible damage – strong frame houses lifted off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 yards; trees debarked; incredible phenomena will occur

Tornadoes

Tornadoes

Two-County area:

- 115 events since 1950
  - 11 events since 2018
- 70% F0/EF0 or F1/EF1 rated tornadoes

Magnitude	Number	Magnitude	Number
F4	1	EF4	1
F3	4	EF3	2
F2	17	EF2	5
F1	22	EF1	5
F0	42	EF0	12
FU	0	EFU	4

Tornadoes

Two-County area:

- 3 major federal disaster declarations (1990, 2003 & 2013)
- ~$1 billion in property damages (48 events)
- ~$90,000 in crop damages (11 events)
- 3 fatalities & 184 injuries (12 events)

Tornadoes

Two-County area:

- Highest Recorded F-Scale Rating:
  F4 – July 13, 2004 (Woodford) &
  EF4 – November 17, 2013 (Tazewell)
- Longest Tornado: 21.1 miles long
  F3 – May 13, 1995 (Tazewell County)
- Widest Tornado: 880 yards wide
  F3 – May 13, 1995 &
  EF4 – November 17, 2013

Tornadoes

Tazewell County:

- 67 events since 1950
  - 6 events since 2018
- 70% F0/EF0 or F1/EF1 rated tornadoes

Magnitude	Number	Magnitude	Number
F4	0	EF4	1
F3	4	EF3	0
F2	9	EF2	4
F1	14	EF1	5
F0	24	EF0	4
FU	0	EFU	2

Tornadoes

Tazewell County:

- 3 major federal disaster declarations (1990, 2003 & 2013)
- $978.2 million in property damages (36 events)
- $75,500 in crop damages (5 events)
- 3 fatalities & 172 injuries (9 events)
- Highest Recorded F-Scale Rating:
  EF4 – November 17, 2013

Tornadoes

Tazewell County:

- Longest Tornado: 21.1 miles long
  F3 – May 13, 1995
- Widest Tornado: F3 – 880 yards wide
  F3 – May 13, 1995 &
  EF4 – November 17, 2013

Tornadoes

Woodford County:

- 48 events since 1950
  - 5 events since 2018
- 71% F0/EF0 or F1/EF1 rated tornadoes

Magnitude	Number	Magnitude	Number
F4	1	EF4	0
F3	0	EF3	2
F2	8	EF2	1
F1	8	EF1	0
F0	18	EF0	8
FU	0	EFU	2

Tornadoes

Woodford County:

- 2 major federal disaster declarations
  (2003 & 2013)
- ~$30.6 million in property damages
  (18 events)
- $14,250 in crop damages (6 events)
- 12 injuries (4 events)
- Highest Recorded F-Scale Rating:
  F4 – July 13, 2004

Tornadoes

Woodford County:

- Longest & Widest Tornado:
  EF3 – November 17, 2013
  20.7 miles long & 880 yards wide

Drought

- Drought - a **deficiency of precipitation over an extended period of time**, generally a season or more, **resulting in water shortages**

Drought

Two-County area:

- 6 major events since 1980
- Designated USDA Primary Natural Disaster Area for 2 drought events
- $65.1 million in crop damage (2012)
- Crop yield reductions were most severe for the 1988 drought
  - Corn yields were 50.7% to 58.9% lower
  - Soybean yields were 35.7% to 44.9% lower

Drought

Tazewell County:

- 6 major events since 1980
- County designated USDA Primary Natural Disaster Area for 2 drought events
- $35.9 million in crop damage (2012 – Corn)

Drought

Tazewell County:

Crop Yield Reductions (Percent)

Year	Corn	Soybean
1983	38.4%	18.2%
1988	50.7%	35.7%
2005	24.1%	1.9%
2011	-----	1.4%
2012	22.8%	10.1%
2013	-----	-----

Drought

Woodford County:

- 6 major events since 1980
- County designated USDA Primary Natural Disaster Area for 2 drought events
- $29.2 million in crop damage (2012 – Corn)

Drought

Woodford County:

Crop Yield Reductions (Percent)

Year	Corn	Soybean
1983	39.4%	10.3%
1988	58.9%	44.9%
2005	20.9%	5.6%
2011	-----	-----
2011	45.0%	23.1%
2012	-----	-----

Landslides

- What is a landslide?

  A landslide or slope failure is a **downward and outward movement of material** such as rock, soil, organic matter, debris or a combination of these **that occurs due to gravity**

- Landslide are classified by **slope movement** and **slope material**
  - rock slides, mudflows, debris/earth flows, etc.

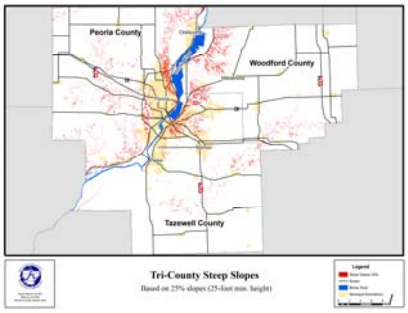
Landslides

Two-County area:

- 5 documented natural landslide events
  - 4 events in Tazewell County
  - 1 event in Woodford County
- ~$1.1 million in property damages (2 events in East Peoria)
- 1 fatality recorded (East Peoria)

Landslides

Two-County area:



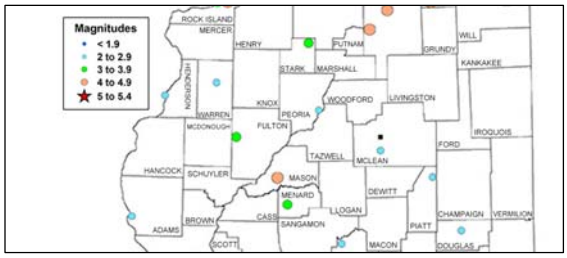
Earthquakes

- Earthquake - **sudden shaking of the ground caused when rocks**, forming the earth's crust, **slip or move past each other along a fault** (a fracture in the rocks)
- Severity is measured in terms of magnitude and intensity
  - Magnitude – Richter Scale
  - Intensity – Modified Mercalli Scale

Earthquakes

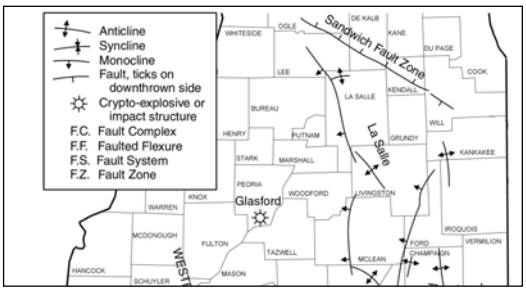
Comparison of Richter Scale and Modified Mercalli Intensity Scale		
Richter Scale	**Modified Mercalli Scale**	**Observations**
1.0 – 1.9	I	Felt by very few people; barely noticeable. No damage.
2.0 – 2.9	II	Felt by a few people, especially on the upper floors of buildings. No damage.
3.0 – 3.9	III	Noticeable indoors, especially on the upper floors of buildings, but may not be recognized as an earthquake. Standing cars may rock slightly; vibrations similar to the passing of a truck. No damage.
4.0	IV	Felt by many indoors and a few outdoors. Dishes, windows, and doors disturbed. Standing cars rocked noticeably. No damage.
4.1 – 4.9	V	Felt by nearly everyone. Small, unstable objects displaced or upset; some dishes and glassware broken. Negligible damage.
5.0 – 5.9	VI	Felt by everyone. Difficult to stand. Some heavy furniture moved. Weak plaster may fall and some masonry, such as chimneys, may be slightly damaged. Slight damage.
6.0	VII	Slight to moderate damage to well-built ordinary structures. Considerable damage to poorly-built structures. Some chimneys may break. Some walls may fall.
6.1 – 6.9	VIII	Considerable damage to ordinary buildings. Severe damage to poorly built buildings. Some walls collapse. Chimneys, monuments, factory stacks, columns fall.
7.0	IX	Severe structural damage in substantial buildings, with partial collapses. Buildings shifted off foundations. Ground cracks noticeable.
7.1 – 7.9	X	Most masonry and frame structures and their foundations destroyed. Some well-built wooden structures destroyed. Train tracks bent. Ground badly cracked. Landslides.
8.0	XI	Few, if any structures remain standing. Bridges destroyed. Wide cracks in ground. Train tracks bent greatly. Wholesale destruction.
> 8.0	XII	Total damage. Lines of sight and level are distorted. Waves seen on the ground. Objects thrown up into the air.

Earthquakes



- No earthquakes have originated in Tazewell or Woodford counties over the past 200 years

Earthquakes



- No known faults or geologic structures located in Tazewell or Woodford counties

Mine Subsidence

- What is mine subsidence?

  The **sinking or shifting of the ground's surface resulting from the collapse of an unground mine**
- Subsidence is possible in any area where minerals or ore have been undermined
  - Most mine subsidence in Illinois is related to coal mining

Mine Subsidence

Two-County area:

- 31 documented underground coal mines
  - 27 located in Tazewell County
  - 4 located in Woodford County

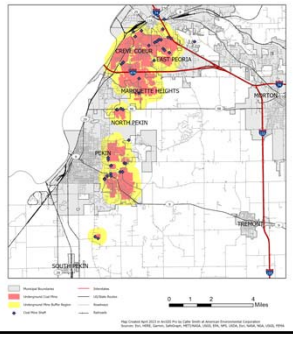
Mine Subsidence

Two-County area:

- 11,938 acres & 8,445 housing units are vulnerable to mine subsidence
  - 8,288 acres (2.0% of land area) & 7,539 housing units (14.3% of total housing units) in Tazewell County
  - 3,650 acres (1.1% of land area) & 906 housing units (6.8% of total housing units) in Woodford County

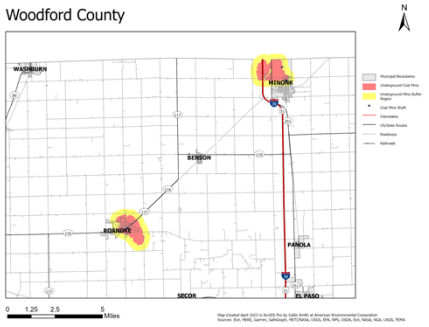
Mine Subsidence

Tazewell County:



Mine Subsidence

Woodford County:



Levees

- What is a levee?

  A levee is a **man-made structure constructed to contain, control or divert the flow of water** in order to provide **temporary flood protection**
- Levees fall into three categories
- Focus on major levees of significance
- 9 levees of significance in the County

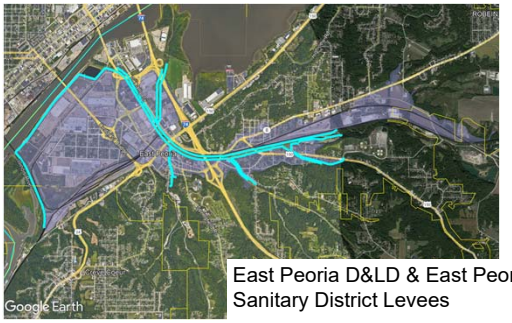
Levees

Tazewell County:

- East Peoria Sanitary District (EPSD) 4
- EP D&LD & EPSD – LDB Farm Creek/Cole Creek
- EPSD – Farm Creek LB/Dempsey Creek LB/ Kerfoot Creek RB
- EPSD – Farm Creek LB/Dempsey Creek RB
- EPSD – Farm Creek LB/Kerfoot Creek LB/ Cole Creek RB
- EPSD – Farm Creek RB/Overflow Channel LB
- EPSD – Farm Creek RB/Overflow Channel RB

Levees

Tazewell County:



East Peoria D&LD & East Peoria Sanitary District Levees

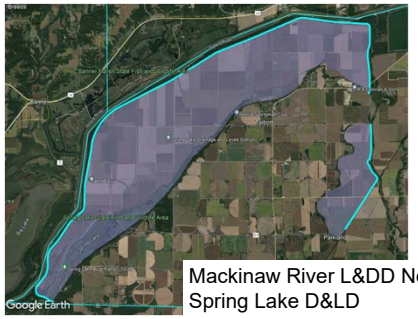
Levees

Tazewell County:

- Mackinaw River L&DD No. 1
- Spring Lake D&LD

Levees

Tazewell County:



Mackinaw River L&DD No. 1 & Spring Lake D&LD

Levees

Tazewell County:

East Peoria Sanitary District (EPSD) 4

- Locally constructed/Locally operated & maintained
- 0.5 miles long protecting 0.01 square miles
- 2 structures & 53 individuals within leveed area
- Protects $6.88 million in property

Levees

Tazewell County:

Levees

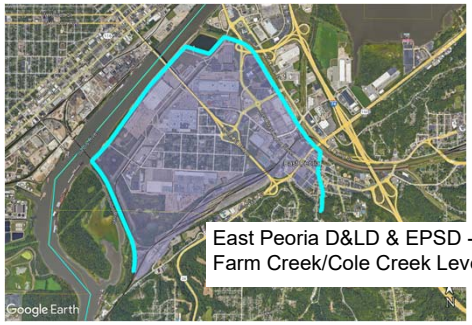
Tazewell County:

East Peoria D&LD & EPSD - LDB Farm Creek/ Cole Creek Levee

- Federally constructed/Locally operated & maintained
- 4.34 miles long protecting 1.54 square miles
- 422 structures & 4,205 individuals within leveed area
- Protects $323 million in property

Levees

Tazewell County:



East Peoria D&LD & EPSD - LDB Farm Creek/Cole Creek Levee

Levees

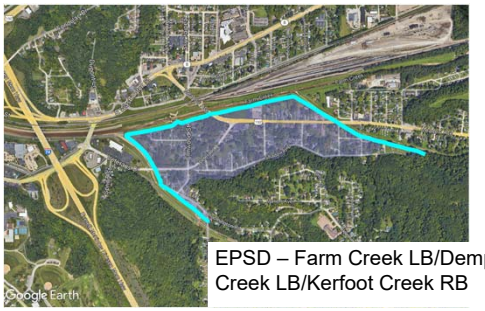
Tazewell County:

EPSD – Farm Creek LB/Dempsey Creek LB/ Kerfoot Creek RB

- Locally constructed/Locally operated & maintained
- 1.51 miles long protecting 0.14 square miles
- 207 structures & 339 individuals within leveed area
- Protects $51.7 million in property

Levees

Tazewell County:



EPSD – Farm Creek LB/Dempsey Creek LB/Kerfoot Creek RB

Levees

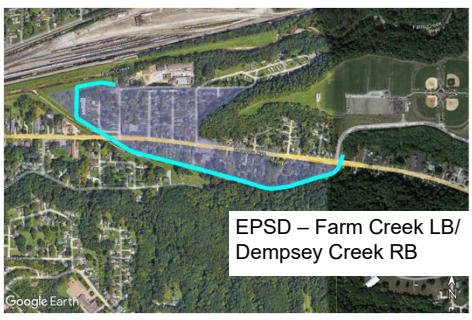
Tazewell County:

EPSD – Farm Creek LB/Dempsey Creek RB

- Federally constructed/Locally operated & maintained
- 1.16 miles long protecting 0.06 square miles
- No building/population or property protected information available

Levees

Tazewell County:



EPSD – Farm Creek LB/ Dempsey Creek RB

Levees

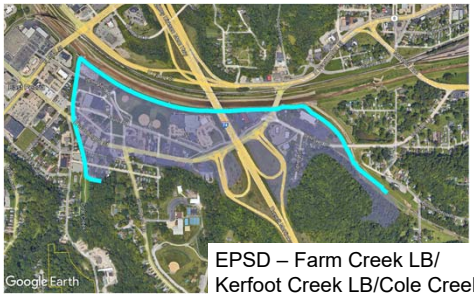
Tazewell County:

EPSD – Farm Creek LB/Kerfoot Creek LB/ Cole Creek RB

- Federally constructed/Locally operated & maintained
- 1.38 miles long protecting 0.14 square miles
- 103 structures & 713 individuals within leveed area
- Protects $39.9 million in property

Levees

Tazewell County:



EPSD – Farm Creek LB/
Kerfoot Creek LB/Cole Creek RB

Levees

Tazewell County:

EPSD – Farm Creek RB/Overflow Channel LB

- Federally constructed/Locally operated & maintained
- 1.38 miles long protecting 0.87 square miles
- 8 structures & 265 individuals within leveed area
- Protects $6.56 million in property

Levees

Tazewell County:

EPSD – Farm Creek RB/
Overflow Channel LB

Levees

Tazewell County:

EPSD – Farm Creek RB/Overflow Channel RB

- Federally constructed/Locally operated & maintained
- 4.36 miles long protecting 0.78 square miles
- 299 structures & 459 individuals within leveed area
- Protects $115 million in property

Levees

Tazewell County:

EPSD – Farm Creek RB/
Overflow Channel RB

Levees

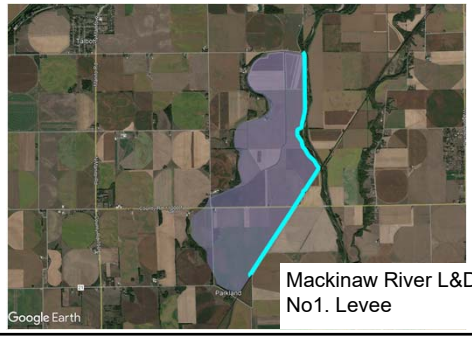
Tazewell County:

Mackinaw River L&DD No1. Levee

- Locally constructed/Locally operated & maintained
- 3.34 miles long protecting 2.56 square miles
- 6 structures & 7 individuals within leveed area
- Protects $115 million in property

Levees

Tazewell County:



Mackinaw River L&DD No1. Levee

Levees

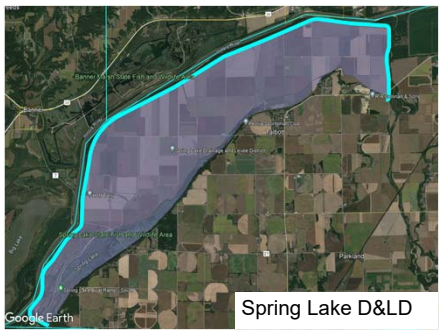
Tazewell County:

Spring Lake D&LD

- Federally constructed/Locally operated & maintained
- 16.02 miles long protecting 20.33 square miles
- 178 structures & 271 individuals within leveed area
- Protects $42.5 million in property

Levees

Tazewell County:



Spring Lake D&LD

Dams

- What is a dam?

  An **artificial barrier constructed** across a stream channel or a man-made basin **for the purpose of storing, controlling or diverting water**
- Dam Classification is based on the potential for **loss of life** and **damage to property** in the event of a dam failure and **height** and **impoundment/storage capacity** criteria
  - Classes: High, Significant, Low

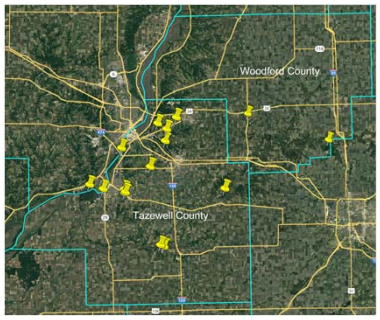
Dams

Two-County area:

- 53 classified dams in two-county area
  - 6 publicly-owned
  - 47 privately-owned
- Classes of Dams:
  - 6 – “High” Hazard
  - 11 – “Significant” Hazard
  - 36 – “Low” Hazard

Dams

Two-County area:



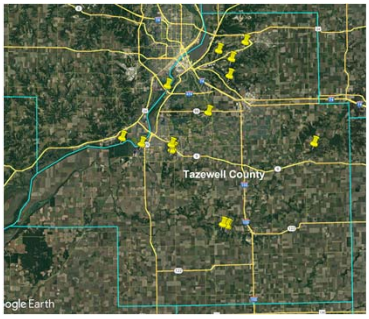
Dams

Tazewell County:

- 43 classified dams in the County
  - 4 publicly-owned
  - 39 privately-owned
- Classes of Dams:
  - 5 – "High" Hazard
  - 10 – "Significant" Hazard
  - 28 – "Low" Hazard
- No known dam failures recorded

Dams

Tazewell County:



Dams

Woodford County:

- 10 classified dams in the County
  - 2 publicly-owned
  - 10 privately-owned
- Classes of Dams:
  - 1 – "High" Hazard
  - 1 – "Significant" Hazard
  - 8 – "Low" Hazard
- No known dam failures recorded

Dams

Woodford County:

PRELIMINARY MAN-MADE HAZARDS RISK ASSESSMENT RESULTS

Man-Made Hazards

- Generation, transportation & storage/handling of hazardous substances
- Waste disposal
- Hazardous materials (hazmat) incidents
- Waste Remediation
- Hazardous substances include: **flammable, explosive, biological, chemical or physical material** that has the potential to **harm public health & environment**

Man-Made Hazards
Hazardous Substances – Generation & Storage/Handling

Two-County area:

Generation

- 20 facilities generate reportable quantities of hazardous substances

Storage/Handling

- 146 facilities store and/or handle hazardous substances
  - 65 facilities store and/or handle chemicals identified as “Extremely Hazardous Substances”

Man-Made Hazards
Hazardous Substances – Generation & Storage/Handling

Tazewell County:

Generation

- 16 facilities generate reportable quantities of hazardous substances

Storage/Handling

- 111 facilities store and/or handle hazardous substances
  - 49 facilities store and/or handle chemicals identified as “Extremely Hazardous Substances”

Man-Made Hazards
Hazardous Substances – Generation & Storage/Handling

Woodford County:

Generation

- 4 facilities generate reportable quantities of hazardous substances

Storage/Handling

- 35 facilities store and/or handle hazardous substances
  - 16 facilities store and/or handle chemicals identified as “Extremely Hazardous Substances”

Man-Made Hazards
Waste Disposal

Two-County area:

- 1 active landfill
- No facilities permitted to accept medical waste for disposal
- No commercial hazardous waste treatment or disposal facilities

Man-Made Hazards
Waste Disposal

Tazewell County:

- 1 active landfill (Tazewell County Landfill)
- No facilities permitted to accept medical waste for disposal
- No commercial hazardous waste treatment or disposal facilities

Man-Made Hazards
Waste Disposal

Woodford County:

- No active landfills
- No facilities permitted to accept medical waste for disposal
- No commercial hazardous waste treatment or disposal facilities

Man-Made Hazards
Hazardous Material Incidents

Two-County area:

What is a hazardous materials incident?

Any **accident/incident** involving the **release of hazardous materials**

- 148 hazardous materials incidents between 2012 and 2021
  - Approx. 28% involved transportation incidents/accidents
- Average of approx. 15 hazmat incidents occurred annually

Man-Made Hazards
Hazardous Material Incidents

Tazewell County:

- 103 hazardous materials incidents between 2012 and 2021
  - Approx. 20% involved transportation incidents/accidents
- Average of 10 hazardous materials incidents occurred annually

Man-Made Hazards
Hazardous Material Incidents

Woodford County:

- 45 hazardous materials incidents between 2012 and 2021
  - Approx. 44% involved transportation incidents/accidents
- Average of 4 to 5 hazardous materials incidents occurred annually

Man-Made Hazards
Hazardous Substances – Transportation

Two-County area:

Between 2012 and 2021 there were:

- 33 roadway accidents/incidents
- 2 rail accidents/incidents
- 6 Barge accidents/incidents

Man-Made Hazards
Hazardous Substances – Transportation

Tazewell County:

Between 2012 and 2021 there were:

- 13 roadway accidents/incidents
- 2 rail accidents/incidents
- 6 barge accidents/incidents

Man-Made Hazards
Hazardous Substances – Transportation

Woodford County:

Between 2012 and 2021 there were:

- 20 roadway accidents/incidents
- No rail accidents/incidents
- No barge accidents/incidents

Man-Made Hazards
Waste Remediation

Two-County area:

Waste remediation primarily handled through Superfund and Site Remediation Program

- No Superfund sites located within the two-county area
- 27 Illinois Site Remediation Program sites
- 377 Leaking Underground Storage Tank sites

Man-Made Hazards
Waste Remediation

Tazewell County:

- No Superfund sites located within the two-county area
- 24 Illinois Site Remediation Program sites
- 269 Leaking Underground Storage Tank sites

Man-Made Hazards
Waste Remediation

Woodford County:

- No Superfund sites located within the two-county area
- 3 Illinois Site Remediation Program sites
- 108 Leaking Underground Storage Tank sites

Mission Statement Review & Re-Evaluation

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee

Draft Mission Statement

Provided below is an updated mission statement based on the mission statement approved for the 2019 Plan update. This statement needs to be reviewed as part of the update process to ensure that it still appropriately describes the objectives of the Committee.

"The mission of the Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee is to prepare mitigation plans that document the risks associated with the natural and man-made hazards that impact the two-county area and identify projects and activities that mitigate the negative impacts of natural hazards on citizens, infrastructure, private property and critical facilities."

Purpose of the Committee

- Update the Plans to incorporate new participants and hazard data
- Identify new activities and projects that participating jurisdictions can pursue to protect lives and property before a natural or man-made hazard occurs.
- Encourage adoption of the Plan updates by the counties and participating jurisdictions.

Mitigation Goal Review & Re-Evaluation

Tazewell & Woodford Counties Multi-Jurisdictional Multi-Hazard Mitigation Advisory Committee

What are mitigation goals?

Mitigation goals describe the desired outcome(s) or end result that the Committee would like to accomplish in terms of hazard and loss reduction/prevention. These goals are aimed at reducing long-term vulnerabilities to natural and man-made hazards.

What goals should be included in the updated Plans?

Provided below are the mitigation goals included in the 2019 Plan. As part of the update process, the goals need to be reviewed to determine whether they are still relevant, if any revisions need to be made or new goals need to be added.

Goal 1: Educate people about the natural hazards they face and the ways they can protect themselves, their homes, and their businesses from those hazards.

Goal 2: Protect the lives, health, and safety of the people and animals in the County from the dangers of natural hazards.

Goal 3: Protect existing infrastructure and design new infrastructure (roads, bridges, utilities, water supplies, sanitary sewer systems, etc.) to be resilient to the impacts of natural hazards.

Goal 4: Incorporate natural hazard mitigation into community plans, regulations and activities.

Goal 5: Place a priority on protecting public services, including critical facilities, utilities, roads and schools.

Goal 6: Preserve and protect the rivers and floodplains in our County.

Goal 7: Ensure that new developments do not create new exposures to damage from natural hazards.

Goal 8: Protect historic, cultural, and natural resources from the effects of natural hazards.

Mitigation Actions Prioritization Methodology

What is a mitigation actions prioritization methodology?

A mitigation actions prioritization methodology describes the method used to prioritize the mitigation actions (projects and activities) identified by the participating jurisdictions. While this sounds elaborate, it isn't. The methodology simply outlines the approach used to classify each action. This methodology is a required element of the Plan's mitigation strategy.

Provided below is an updated version of the mitigation action prioritization methodology developed for the 2019 Plan. As part of the update process, this methodology needs to be reviewed to determine if any revisions need to be made.

While mitigation actions can be prioritized in a number of ways, this methodology is based on two key factors: frequency of the hazard and the degree of mitigation. It identifies which projects and activities have a greater likelihood of reducing the long-term vulnerabilities associated with the most frequently-occurring natural and man-made hazards.

Mitigation Actions Prioritization Methodology			
		Hazard	
		Most Frequent Hazards **(M)** (i.e., severe storms, severe winter storms, floods, excessive heat, extreme cold, tornadoes)	Less Frequent Hazards **(L)** (i.e., drought, landslides, levee failures, dam failures, earthquakes)
Mitigation Action	Mitigation Action with the Potential to Virtually Eliminate or Significantly Reduce Impacts **(H)**	**HM** mitigation action will virtually eliminate damages and/or significantly reduce the probability of fatalities and injuries from the most frequent hazards	**HL** mitigation action will virtually eliminate damages and/or significantly reduce the probability of fatalities and injuries from less frequent hazards
	Mitigation Action with the Potential to Reduce Impacts **(L)**	**LM** mitigation action has the potential to reduce damages, fatalities, and/or injuries from the most frequent hazards	**LL** mitigation action has the potential to reduce damages, fatalities, and/or injuries from the less frequent hazards

Which mitigation actions should be completed first?

While prioritizing the mitigation actions is useful and does provide the participants with additional information, it is important to keep in mind that the ***implementation of <u>any</u> of the mitigation actions identified is desirable*** regardless of which prioritization category an action falls under.

FEMA Community Lifelines

What are Community Lifelines?

Community Lifelines enable the continuous operation of critical government and business functions essential to human health and safety or economic security. FEMA has identified seven Community Lifelines that are the most fundamental services in the community that, when stabilized, enable all aspects of society to function. These seven Community Lifelines include: Safety & Security; Food, Water, Shelter; Health & Medical; Energy (Power & Fuel); Communications; Transportation; and Hazardous Materials. Provided below is a brief description of each Community Lifeline.

While the concept of Community Lifelines was developed to support emergency response and planning, FEMA is applying it to all phases of emergency management. Efforts to protect Community Lifelines and prevent and mitigate potential impacts to them is one of the focuses of FEMA's new Building Resilient Infrastructure & Communities (BRIC) grant program. Technical points are allocated to projects that mitigate risk to at least one of the seven Community Lifelines. Therefore, in the Mitigation Action Tables, we will identify whether the projects and activities will mitigate risk to any of the Community Lifelines to create a clear connection to the concept.

Safety & Security

Law Enforcement/Security, Fire, Search & Rescue, Government Services & Community Safety

Includes law enforcement and government services; as well as the associated assets that maintain communal security; provide search and rescue, evacuations, and firefighting capabilities; and promote responder safety.

Food, Water, Shelter

Food, Water, Shelter & Agriculture

Includes support systems such as water treatment, transmission, and distribution systems; wastewater collection and treatment systems; retail and food distribution networks; as well as sheltering and agriculture.

Health & Medical

Public Health, Medical Care, Patient Movement, Medical Supply Chain & Fatality Management

Includes infrastructure and service providers for medical care; public health; patient movement; fatality management; behavioral health; veterinary support; and health or medical supply chains.

FEMA Community Lifelines

Energy

Power Grid, Fuel

Includes service providers for electric power infrastructure, composed of generation, transmission, and distribution systems; as well as gas and liquid fuel processing, transportation, and delivery systems. Disruptions can have a limiting effect on the functionality of other Community Lifelines.

Communications

Infrastructure, Alerts, Warnings & Messages, 911 & Dispatch, Banking/Finance, Responder Communications

Includes infrastructure owners and operators of broadband internet, cellular networks, landline telephone, cable services, satellite communications services and broadcast networks (radio and television.) Services include elements such as alerts, warnings, and messages, as well as 911 and dispatch. Communications also includes accessibility of financial services.

Transportation

Highway/Roadway, Mass Transit, Railway, Aviation, Maritime

Includes multiple modes of transportation that often serve complementary functions and create redundancy which adds resilience in the overall network. Transportation infrastructure generally includes highway/roadways, mass transit, railway, aviation, maritime, pipeline and intermodal systems.

Hazardous Materials

Facilities, HAZMAT, Pollutants, Contaminants

Includes systems that mitigate threats to public health/welfare and the environment. This includes assessment of facilities that use, generate and store hazardous substances as well as specialized transportation assets and efforts to identify, contain, and remove incident debris, pollution, contaminants, oil, and other hazardous substances.

The following excerpts are from FEMA's *Community Lifelines Implementation Toolkit: Comprehensive information and resources for implementing lifelines during incident response*, Version 2.0, November 2019.

Community Lifeline Components

Multiple components and subcomponents establish the parameters of the lifeline; component-level assessment is required to determine the condition of each lifeline.

1. Safety and Security
- Law Enforcement/Security
- Fire Service
- Search and Rescue
- Government Service
- Community Safety

2. Food, Water, Shelter
- Food
- Water
- Shelter
- Agriculture

3. Health and Medical
- Medical Care
- Public Health
- Patient Movement
- Medical Supply Chain
- Fatality Management

4. Energy
- Power Grid
- Fuel

5. Communications
- Infrastructure
- Responder Communications
- Alerts, Warnings, and Messages
- Finance
- 911 and Dispatch

6. Transportation
- Highway/Roadway/Motor Vehicle
- Mass Transit
- Railway
- Aviation
- Maritime

7. Hazardous Material
- Facilities
- HAZMAT, Pollutants, Contaminants

ASSESSMENT	
Status	*"What?"*
Impact	*"So What?"*
Actions	*"Now What?"*
Limiting Factors	*"What's the Gap?"*
ETA to Green	*"When?"*

Safety and Security

Components and Subcomponents

Law Enforcement/Security

- Police Stations
- Law Enforcement
- Site Security
- Correctional Facilities

Fire Service

- Fire Stations
- Firefighting Resources

Search and Rescue

- Local Search and Rescue

Government Service

- Emergency Operation Centers
- Essential Government Functions
- Government Offices
- Schools
- Public Records
- Historic/Cultural Resources

Community Safety

- Flood Control
- Other Hazards
- Protective Actions

Food, Water, Shelter

Components and Subcomponents

Food

- Commercial Food Distribution
- Commercial Food Supply Chain
- Food Distribution Programs (e.g., Food Banks)

Water

- Drinking Water Utilities (intake, treatment, storage, and distribution)
- Wastewater Systems
- Commercial Water Supply Chain

Shelter

- Housing (e.g., homes, shelters)
- Commercial Facilities (e.g., hotels)

Agriculture

- Animals and Agriculture

Health and Medical

Components and Subcomponents

Medical Care

- Hospitals
- Dialysis
- Pharmacies
- Long-Term Care Facilities
- VA Health System
- Veterinary Services
- Home Care

Patient Movement

- Emergency Medical Services

Fatality Management

- Mortuary and Post-Mortuary Services

Public Health

- Epidemiological Surveillance
- Laboratory
- Clinical Guidance
- Assessment/Interventions/Treatments
- Human Services
- Behavioral Health

Medical Supply Chain

- Blood/Blood Products
- Manufacturing
  - Pharmaceutical
  - Device
  - Medical Gases
- Distribution
- Critical Clinical Research
- Sterilization
- Raw Materials

Energy

Components and Subcomponents

Power Grid

- Generation Systems
- Transmission Systems
- Distribution Systems

Fuel

- Refineries/ Fuel Processing
- Fuel Storage
- Pipelines
- Fuel Distribution (e.g., gas stations, fuel points)
- Off-shore Oil Platforms

Communications

Components and Subcomponents

Infrastructure

- Wireless
- Cable Systems and Wireline
- Broadcast (TV and Radio)
- Satellite
- Data Centers/Internet

Responder Communications

- LMR Networks

Alerts, Warnings, and Messages

- Local Alert/Warning Ability
- Access to IPAWS (WEA, EAS, NWR)
- NAWAS Terminals

Finance

- Banking Services
- Electronic Payment Processing

911 & Dispatch

- Public Safety Answering Points
- Dispatch

Transportation

Components and Subcomponents

Highway/Roadway/Motor Vehicle

- Roads
- Bridges

Mass Transit

- Bus
- Rail
- Ferry

Railway

- Freight
- Passenger

Aviation

- Commercial (e.g. cargo/passenger)
- General
- Military

Maritime

- Waterways
- Ports and Port Facilities

Hazardous Materials

Components and Subcomponents

Facilities

- Oil/HAZMAT Facilities (e.g. chemical, nuclear)
- Oil/HAZMAT/Toxic Incidents from Facilities

HAZMAT, Pollutants, Contaminants

- Oil/HAZMAT/Toxic Incidents from Non-Fixed Facilities
- Radiological or Nuclear Incidents

Mitigation Actions Table

Figure __
Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Community Lifeline(s) to be Mitigated	Type of Mitigation Activity/ Project	Size of Population Affected	Goal(s) Met	Reduce Effects of Hazard(s) on Buildings & Infrastructure		Organization / Department Responsible for Implementation & Administration	Time Frame to Complete Activity	Funding Source(s)	Cost/Benefit Analysis
							New	Existing				
	Design and construct a community safe room (tornado shelter) equipped with emergency backup generator and HVAC system which can also serve as a warming/cooling center for Village residents to establish a Shelter Community Lifeline essential to human health and safety.								President / Village Board	5 years		

Acronyms

Priority

HM	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the most frequent hazards
LM	Mitigation action with the potential to reduce impacts from the most frequent hazards
HL	Mitigation action with the potential to virtually eliminate or significantly reduce impacts from the less frequent hazards
LL	Mitigation action with the potential to reduce impacts from the less frequent hazards

Hazard(s) to be Mitigated:

DR	Drought	F	Flood
DF	Dam Failure	SS	Severe Storms
EC	Extreme Cold	SWS	Severe Winter Storm
EH	Excessive Heat	T	Tornado
EQ	Earthquake	WF	Wildfire

Type of Mitigation Activity:

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Community Lifelines to be Mitigated:

C	Communications	H&M	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Descriptions of Columns in Mitigation Actions Table

The following provides a brief description of the information that will be contained in each column of the Mitigation Action Prioritization Table.

Priority

Using the mitigation action prioritization methodology developed, each project or activity will be assigned to one of the four categories.

HM	Actions with the potential to virtually eliminate or significantly reduce impacts from the most significant hazards
LM	Actions with the potential to reduce impacts from the most significant hazards
HL	Actions with the potential to virtually eliminate or significantly reduce impacts from the less significant hazards
LL	Actions with the potential to reduce impacts from the less significant hazards

Activity/Project Description

Information in this column will be provided by each community and includes a description of each identified project and activity.

Hazard(s) to be Mitigated

Based on the activity/project description, a determination will be made about which hazard or hazards are being mitigated for. The following abbreviations will be used to identify the applicable hazards.

DF	Dam Failure	LF	Levee Failure
DR	Drought	MMH	Man-Made Hazard
EC	Extreme Cold	MS	Mine Subsidence
EH	Excessive Heat	SS	Severe Storms (Thunderstorms, Hail, Lightning)
EQ	Earthquake		
F	Flood	SWS	Severe Winter Storm
L	Landslide	T	Tornado

Community Lifeline(s) to be Mitigated

Based on the activity/project description, a determination will be made about whether the action will mitigate risk to any of the seven Community Lifelines. The following abbreviations will be used to identify the applicable Community Lifelines.

C	Communications	M&H	Health & Medical
E	Energy (Power & Fuel)	S&S	Safety & Security
FWS	Food, Water, Shelter	T	Transportation
HM	Hazardous Material		

Type of Mitigation Activity/Project

There are four primary types or categories of mitigation projects and activities. Based on the activity/project description, a determination will be made about which category each action falls into. The following abbreviations will be used for each category/type.

E&A	Education & Awareness	NSP	Natural Systems Protection
LP&R	Local Plans & Regulations	S&IP	Structure & Infrastructure Projects

Descriptions of Columns in Mitigation Actions Table

Size of Population Affected
For this column a general descriptor of small, medium or large will be used. These terms do not have specific definitions since they are relative to the size of the community that is being discussed. A “large” population affected in one municipality is different than a “large” population affected in another. These terms are only meant to give the reader a sense of the magnitude and are not meant as an exact measurement.

Goals
This column identifies the goal or goals that each activity/project fulfills.

Reduce Effects of Hazard(s) on Buildings & Infrastructure (New/Existing)
This column was included to address a FEMA requirement to identify whether the mitigation projects and activities proposed by each jurisdiction reduce the risk from natural hazards to existing building and infrastructure as well as limit any risk to new development and redevelopment. These columns will be filled in with a Yes, No or NA (Not Applicable).

Organization/Department Responsible for Implementation & Administration
Information in this column will be provided by each jurisdiction and identifies the position, office and/or department responsible for implementing and administering each activity/project identified. More than one organization/department may be identified.

Time Frame to Complete Activity
Information in this column will be provided by each jurisdiction and identifies a general time frame (i.e., 2 years, 5 years, etc.) in which participants would like to see the project/activity successfully completed. In many cases the time frame is dependent on obtaining funding. To allow for the unpredictability in securing funding, a time range (i.e., 2-4 years, 3-5 years, etc.) can be used.

Funding Source(s)
This column generally identifies how a project will be funded – including through grants, loans, municipal funds, etc. The funding source identified for each project/activity is the most likely source to be pursued.

Cost/Benefit Analysis
This column was included to address A FEMA requirement that each jurisdiction considered the benefits that would result from a project or activity versus the cost of the action. For this column the general descriptors of high, medium and low will be used.

These terms are not meant to translate into a specific dollar amount since the cost/benefit for any given community may depend, in part, on their size and fiscal situation. This analysis is only meant to give the reader a general sense of costs and benefits associated with an activity/project. A complete cost-benefit analysis is not required for this Plan. When a grant application is submitted for a project, a detailed cost/benefit analysis will be included at that time. The cost/benefit analysis does not prioritize a project. Just because a project has a low or limited benefit, does not mean it will not be funded.

Types of Mitigation Activity/Project

There are four primary types or categories of mitigation projects and activities according to FEMA. Based on the project/activity description, each action will be assigned to one or more of the categories identified below. These categories identify the type of mitigation action being undertaken.

Education & Awareness Programs (E&A)

Education & Awareness Programs include actions to inform and educate citizens, elected officials and property owners about hazards and the potential ways to mitigate them. Examples include:

- outreach/school programs
- brochures and handout materials
- become a StormReady community
- evacuation planning and drills
- volunteer activities (i.e., culvert cleanout days, initiatives to check in on the elderly/disabled during hazard events such as storms and extreme heat events, etc.)

Local Plans & Regulations (LP&R)

Local Plans & Regulations include actions that influence the way land and buildings are being developed and built. Examples include:

- stormwater management plans
- floodplain regulations
- capital improvement projects
- participation in the NFIP Community Rating System
- comprehensive plans
- local ordinances (i.e., building codes, etc.)

Natural System Protection (NSP)

Natural System Protection includes actions that minimize damage and losses and also preserve or restore natural systems. Examples include:

- sediment and erosion control
- stream restoration
- watershed management

Structure & Infrastructure Projects (S&IP)

Structure & Infrastructure Projects include actions that protect infrastructure and structures from a hazard or remove them from a hazard area. Examples include:

- acquisition and elevation of structures in flood prone areas
- burying utility lines to critical facilities
- construction of community safe rooms
- install “hardening” materials (i.e., impact resistant window film, hail resistant shingles/doors, etc.)
- detention/retention structures