Whiteside County Multi-Jurisdictional All Hazards Mitigation Plan

Participants

Coleta, Village of
Deer Grove, Village of
Erie, City of
Fulton, City of
Morrison, City of
Prophetstown, City of
Rock Falls, City of
Sterling, City of
Tampico, Village of
Whiteside, County of
Whiteside ROE

October 2015

The five year update of this Plan must be completed on or before February 8, 2021.

ACKNOWLEDGEMENTS

Developing the first All Hazards Mitigation Plan for Whiteside County and the participating municipalities involved input from many people. All of these contributions have helped to make this Plan the definitive source of information on natural hazards, their impacts, and the various options to eliminate or reduce these impacts on current and future generations. Information from government sources has been supplemented by photographs and weather data from personal collections.

Doug Buhler initiated the process to develop this Plan when he was the Whiteside County Emergency Services and Disaster Agency Coordinator. After retiring from this position, he continued his involvement and worked with his successor, Seth Janssen. Together their determination and professionalism were crucial in developing and completing this Plan.

The Whiteside County Multi-Jurisdictional All Hazards Mitigation Planning Committee was organized to represent the various jurisdictions and interests throughout the County. The Planning Committee's efforts produced a document which will be a valuable resource to all who use it.

Gathering information about severe weather events involved research and discussions with various individuals. Persons who had experienced flooding and other natural hazards in Whiteside County graciously provided their time and knowledge to answer questions. Bruce Franks, City of Prophetstown, and Barb King and Barry Dykhuizen, City of Morrison, provided photographs and support information. Stu Richter, County Planning & Zoning Administrator shared information not readily available and used his experience to help clarify matters. William Lukeheart, Village of Erie, also provided photographs of storm damage.

As this Plan is updated, we hope that future generations will continue to build on this document with more information and photographs.

Cover photographs were provided courtesy of the Village of Erie, the City of Morrison, the City of Prophetstown and thecity1.com.

From top to bottom and left to right:

- *2014 severe winter weather remnants – Erie*
- *October 30, 2014 Planning Committee meeting*
- *March 2008 flooding – Morrison Public Works Garage*
- *March 29, 1981 F4 tornado damage – Rock River Lumber and Grain Prophetstown*
- *March 29, 1981 F4 tornado – near Prophetstown*
- *August 25, 2014 thunderstorm with damaging winds – Morrison*

WHITESIDE COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

WHITESIDE COUNTY, ILLINOIS

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Researched and written for the Whiteside County Multi-Jurisdictional
All Hazards Mitigation Planning Committee
by Andrea J. Bostwick and Greg R. Michaud
Johnson, Depp & Quisenberry

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1.0 INTRODUCTION

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Each year natural hazards (i.e., severe thunderstorms, tornadoes, severe winter storms, flooding, etc.) cause damage to property and threaten the lives and health of the residents of Whiteside County. Since 1965, Whiteside County has had nine federally-declared disasters. **Figure 1** identifies each declaration including the year the disaster was declared and the type of natural hazard that triggered the declaration.

Figure 1
Federal Disaster Declarations for Whiteside County

Declaration #	Year	Type of Natural Hazard(s) Event
194	1965	flooding; severe storms
262	1969	flooding
373	1973	flooding; severe storms
438	1974	flooding; severe storms
997	1993	flooding
1368	2001	flooding
1771	2008	flooding; severe storms
1960	2011	severe winter storm
4116	2013	flooding; severe storms, straight-line winds

In addition, in the past decade alone, there have been 91 thunderstorms with damaging winds; 72 heavy rain events producing at least 1.50 inches of rain; 32 severe winter storms (snow and ice); 19 general flood and flash flood events; 16 severe storms with hail one inch in diameter or great; 5 extreme cold events; 4 lightning strike events; 3 droughts; 2 extreme heat events; 2 earthquakes felt by residents in the County; and 1 tornado.

While natural hazards cannot be avoided, their impacts can be reduced through effective hazard mitigation planning. This prevention-related concept of emergency management often receives the least amount of attention, yet it is one of the most important steps in creating a hazard-resistant community.

What is hazard mitigation planning?

Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural and man-made hazards. This process helps the County and participating jurisdictions reduce their risk from natural and man-made hazards by identifying vulnerabilities and developing mitigation actions to lessen and sometimes even eliminate the effects of a hazard. The results of this process are documented in an all hazards mitigation plan.

Why prepare an all hazards mitigation plan?

By preparing and adopting an all hazards mitigation plan, participating jurisdictions become eligible to apply for and receive federal hazard mitigation funds to implement mitigation actions

identified in the plan. These funds can help provide local government entities with the opportunity to complete mitigation projects that would not otherwise be financially possible.

The federal hazard mitigation funds are made available through the Disaster Mitigation Act of 2000, an amendment to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, which provides federal aid for mitigation projects, but only if the local government entity has a Federal Emergency Management Agency-approved hazard mitigation plan.

How is this plan different from other emergency plans?

An all hazards mitigation plan is aimed at identifying projects and activities that can be conducted prior to a natural or man-made disaster, unlike other emergency plans which provide direction on how to respond to a disaster after it occurs. This is the first time Whiteside County has prepared a plan that describes in detail actions that can be taken to help reduce or eliminate damages caused by specific types of natural and man-made hazards.

1.1 PARTICIPATING JURISDICTIONS

Recognizing the benefits that can be gained from preparing an all hazards mitigation plan, the Whiteside County Board passed a resolution on June 19, 2012 authorizing the development of the Whiteside County Multi-Jurisdictional Hazards Mitigation Plan (hereto referred to as the Plan). **Appendix A** contains a copy of the resolution. The County then invited all the local government entities within Whiteside County to participate. **Figure 2** identifies the participating jurisdictions that are represented in the Plan.

Figure 2
Participating Jurisdictions Represented in the Plan

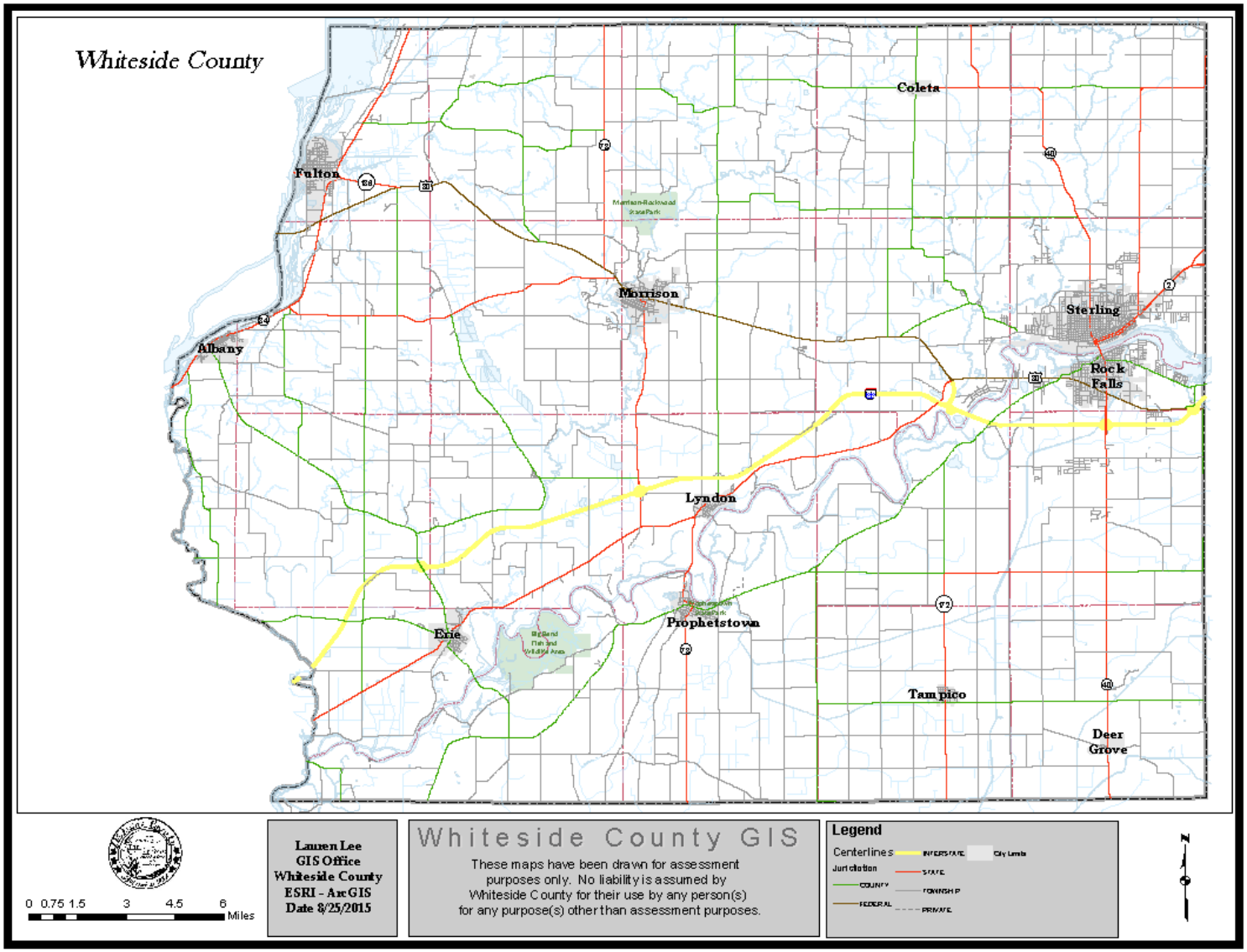
- Coleta, Village of
- Deer Grove, Village of
- Erie, Village of
- Fulton, City of
- Morrison, City of
- Prophetstown, City of
- Rock Falls, City of
- Sterling, City of
- Tampico, Village of
- Whiteside County ROE

1.2 DEMOGRAPHICS

Whiteside County is located in northwestern Illinois and covers approximately 697 square miles. **Figure 3** provides a location map of Whiteside County and the participating municipalities. The topography of the County is generally flat to gently sloping with bluffs along the Mississippi and Rock Rivers. The County is bounded to the north by Carroll and Ogle Counties, to the south by Henry and Bureau Counties, to the east by Lee and Ogle Counties and to the west by the Mississippi River. The county seat is located in Morrison.

Agriculture is a major economic enterprise in the County. According to the 2012 Census of Agriculture, there were 1,110 farms in Whiteside County occupying approximately 90% (403,242 acres) of the total land acreage in the County. The main crops include corn, soybeans wheat and hay while the major livestock includes hogs and cattle.

Figure 3
Location Map



The County ranks 5th in the State for vegetables harvested, all; and 8th for corn for grain and corn for silage. In terms of livestock, the County ranks 5th in the State for pullets for laying flock replacement, 7th for cattle and calves, 11th for layers and 14th for hogs and pigs. Whiteside County ranks in the top five Illinois counties for livestock cash receipts and in the top 10 for crop cash receipts.

Manufacturing in the County is primarily located in the Sterling/Rock Falls area as well as Morrison and Fulton where such items as electromagnetic coils, steel rod, steel chain, steel bearings, plastics, personal care appliances and promotional items are manufactured. The County also has active rock quarries and sand and gravel pits which provide materials for roads and building construction. Other important industries located in the County include hospital and healthcare services, retail trade, assembly and packaging and distribution.

Figure 4 provides demographic data on the County and each of the participating municipalities along with information on housing units and assessed values. The assessed values are for all residential structures and associated buildings (including farm homes and buildings associated with the main residence.) The assessed value of a residence in Whiteside County is approximately one-third of the market value.

Figure 4
Demographic Data by Participating Jurisdiction

Participating Jurisdiction	Population (2010)	Projected Population (2030)	Land Area (Sq. Miles) (2010)	Number of Housing Units (2010)	Housing Unit Density (Units/Sq. Mile) (Rounded Up)	Total Assessed Value of Housing Units (2013)
Whiteside County (unincorporated)	19,970	23,260	664.047	8,453	13	$230,821,627
Coleta	164	191	0.596	71	---	$1,385,484
Deer Grove	48	56	0.455	22	---	$332,775
Erie	1,602	1,866	1.443	678	470	$18,476,018
Fulton	3,481	4,054	2.274	1,700	748	$44,866,161
Morrison	4,188	4,878	2.463	1,870	760	$47,212,000
Prophetstown	2,080	2,423	1.371	908	663	$18,561,505
Rock Falls	9,266	10,792	3.655	4,123	1,129	$62,067,834
Sterling	15,370	17,902	5.709	6,947	1,217	$114,216,688
Tampico	790	920	0.388	317	---	$6,378,448

Sources: Brands, Robin, Whiteside County Supervisor of Assessments.
Illinos Department of Commerce and Economic Opportunity, Projection Summary by County.
U. S. Census Bureau, 2010 Census U.S. Gazetteer Files.
U.S. Census Bureau, American FactFinder.

1.3 LAND USE AND DEVELOPMENT TRENDS

Population growth and economic development are two major factors that trigger changes in land use. Whiteside County is largely rural with a population that experienced a decrease of 3.6% between 2000 and 2010. Since 1960, the County's population has experienced modest increases, except between 1980 and 1990 when the population decreased by 8.8%. Coleta, Erie, Prophetstown and Tampico all experienced small increases in their populations since 2000 while Morrison, Rock Falls and Sterling have all experience small decreases.

Land use in Whiteside County is primarily agricultural. As discussed in the previous section, approximately 90% of the land within the County is used as farmland. Agriculture is and will continue to be a major employment sector within the County for residents and a vital part of the County's economy.

There are no large-scale economic development initiatives underway in the County. Substantial changes in land use (from forested and agricultural land to residential, commercial and industrial) are not anticipated within the County in the immediate future. No sizeable increases in residential or commercial/industrial developments are expected within the next five years.

2.0 PLANNING PROCESS

2.0 PLANNING PROCESS

The planning process utilized to prepare the Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Plan (the Plan) involved the implementation of eight tasks. **Figure 5** provides a brief description of each task. These tasks were designed to ensure that the Plan complies with the requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act and Title 44 CFR §201.6.

Figure 5
Description of Planning Process

Tasks	Description
Task One: Organize	The Planning Committee was formed with broad representation and specific expertise to assist the County and the Consultant in preparing the Plan.
Task Two: Public Involvement	Early and ongoing public involvement activities were conducted throughout the Plan's development to ensure the public was given every opportunity to participate and provide input.
Task Three: Coordination	Agencies and organizations were contacted to identify plans and activities currently being implemented that impact or might potentially impact hazard mitigation activities.
Task Four: Risk Assessment	The Consultant identified and profiled the natural hazards that have impacted the County and conducted a vulnerability assessment to evaluate the risk to each participating jurisdiction. In addition, the top five man-made hazards identified by the Committee were profiled.
Task Five: Goal Setting	After reviewing existing plans and completing the risk assessment, the Consultant assisted the Planning Committee in establishing goals and objectives for the Plan.
Task Six: Mitigation Activities	The participating jurisdictions were asked to identify mitigation actions based on the results of the risk assessment. These actions were then analyzed, categorized and prioritized.
Task Seven: Draft Plan	The draft Plan summarized the results of Tasks One through Six. In addition, a section was added that describes the responsibilities to monitor, evaluate and update the Plan. The draft Plan was reviewed by the participants and a public forum was held to give the public an additional opportunity to provide input. Comments received were incorporated into the draft Plan submitted to the Illinois Emergency Management Agency (IEMA) and FEMA for review and approval.
Task Eight: Final Plan	Comments received from IEMA and FEMA were incorporated in to the final Plan. The final Plan was then submitted to the County and participating jurisdictions for adoption. The Plan will be reviewed periodically and updated every five years.

The Plan development was led at the staff level by Seth Janssen, the Whiteside County Emergency Services and Disaster Agency Coordinator. Johnson, Depp & Quisenberry, an environmental and engineering consulting firm, with experience in hazard mitigation, risk assessment and public involvement, was employed to guide the County and participating jurisdictions through the planning process.

Participation in the planning process, especially by the County and local government representatives, was crucial to the development of the Plan. To ensure that all participating jurisdictions took part in the planning process, participation requirements were established. Each participating jurisdiction agreed to satisfy the following requirements in order to be included in the Plan. All of the participating jurisdictions met the participation requirements.

- Attend at least two Planning Committee meetings.
- Submit a list of documents (i.e., plans, studies, reports, maps, etc.) relevant to the all hazard mitigation planning process.
- Identify and submit a list of critical infrastructure and facilities.
- Review the risk assessment and provide information on additional events and damages.
- Participate in the update of mitigation goals.
- Submit a list of mitigation actions.
- Review and comment on the draft Plan.
- Formally adopt the Plan.
- Where applicable, incorporate the updated Plan into existing planning efforts.
- Participate in the Plan maintenance.

2.1 PLANNING COMMITTEE

As previously mentioned, at the start of the planning process, the Whiteside County Multi-Jurisdictional All Hazards Mitigation Planning Committee was formed. The Planning Committee included representatives from each participating jurisdiction, as well as agriculture, education, emergency services (fire, law enforcement, ARES and RACES), healthcare, GIS, and planning and development.

Seth Janssen, Whiteside County ESDA Coordinator, welcomes participants to the October 30, 2014 Planning Committee meeting.

Figure 6 details the entities represented on the Planning Committee and the individuals who attended on their behalf. The Planning Committee was chaired by the Whiteside County Emergency Services and Disaster Agency (ESDA).

Additional technical expertise was provided by the staff at the Illinois Emergency Management Agency Hazard Mitigation Unit, the Illinois Department of Natural Resources Office of Water Resources, the Illinois Environmental Protection Agency, the Illinois State Water Survey, the Illinois State Geological Survey, and the University of Illinois.

Figure 6
(Sheet 1 of 2)
Whiteside County Planning Committee Member Attendance Record

Representing	Name	Title	7/17/2014	10/30/2014	3/5/2015	6/25/2015	10/1/2015
Amateur Radio Emergency Services (ARES)	Abbas, Dick	Radio Operator	X	X	X	X	
Amateur Radio Emergency Services (ARES)/RACES	Sherman, Lloyd	EC/DEC	X	X	X	X	X
Blackhawk Hills Regional Council	Wittenauer, Theresa	Executive Director		X	X	X	
CGH Medical Center	Wolford, Shirley	Emergency Coordinator		X			
CGH Medical Center	Venema, Ryan	EMS Chief	X	X	X	X	X
Coleta, Village of	Douglas, Sally	Village President		X		X	X
Deer Grove, Village of	Thompson, Al	Village President		X		X	
Erie, Village of	Lukehart, William	Police Chief	X	X			
Erie, Village of	Melton, James	Fire Department Trustee President	X	X			X
Farmers Insurance	VanderVinne, Angie	Owner	X				
Fulton, City of	Cannon, Ed	City Administrator		X			
Fulton, City of	Clark, Dan	Public Works Director		X			
Fulton, City of	Jackson, Allen	EOP Coordinator			X		
Fulton, City of	Russell, Larry	Mayor			X		
Fulton Fire Protection District	Renkes, Erik	Fire Fighter	X				
Fulton Fire Protection District	Van Dellen, Boyd	Deputy Fire Chief	X				
Johnson, Depp & Quisenberry	Bostwick, Andrea	Environmental Specialist	X	X	X	X	X
Johnson, Depp & Quisenberry	Michuad, Greg	Environmental Services Manager	X	X	X	X	X
Lee County - EMA	Lalley, Kevin	Director					X
Morrison, City of	Dykhuizen, Barry	City Administrator	X	X	X	X	X
Morrison, City of	Melton, Brian	Police Chief		X	X		
Morrison, City of	Nimmick, Butch	EMT - P/T			X		
Morrison, City of	Pannier, R. Everett	Mayor				X	
Morrison Community Hospital	Paulsen, Steve	EMS Director/Emergency Preparedness Coord.			X		
Ogle County - EMA	Richter, Tom	Coordinator					X
Prophetstown, City of	Franks, Bruce	Police Chief	X	X	X		X
Prophetstown, City of	Reynolds, Jerrod	Police Officer				X	
Prophetstown, City of	Strike, Brian	Public Works Director	X	X			
Public Representative	Buhler, Doug	---	X	X	X	X	X
Public Representative	Melton, James	---	X	X			X
Rock Falls, City of	Wescott, Bill	Mayor	X	X	X	X	X
Sauk Valley Media	Krabbenhoeft, Michael	Photographer					X
Sauk Valley Media	Pigee, Jermaine	Reporter					X
Sterling, City of	Powers, Rick	Superintendent of Public Works	X				
Sterling, City of	Shumard, Scott	City Manager	X	X	X	X	X
Sterling, City of	Smith, Kevin	Management Fellow	X	X	X		
Tampico, Village of	Hill, Bruce	Commissioner			X	X	X
Tampico, Village of	Hill, Kristine	Mayor	X	X	X		X
Tampico, Village of	Sigel, Mary Jo	Commissioner	X	X	X		
Tampico, Village of	Strike, Terry	Police Chief				X	
Twin City Joint Fire Command	Cook, Gary	Fire Chief	X	X	X	X	X
Whiteside County - Administrator's Office	Horn, Joel	Administrator	X	X	X	X	X
Whiteside County - Assessor	Brands, Robin	Supervisor of Assessments	X	X	X	X	X
Whiteside County - Board	Duffy, Jim	Chairman	X	X	X		X
Whiteside County - Clerk's Office	Nelson, Dana	Clerk	X				
Whiteside County - GIS	Lee, Lauren	Coordinator		X	X	X	X
Whiteside County - ESDA	Janssen, Seth	Coordinator	X	X	X	X	X

Figure 6
(Sheet 2 of 2)
Whiteside County Planning Committee Member Attendance Record

Representing	Name	Title	7/17/2014	10/30/2014	3/5/2015	6/25/2015	10/1/2015
Whiteside County - Health Department	Behrens, Jennifer	Student			X		
Whiteside County - Health Department	Fiorini, Beth	Administrator		X			X
Whiteside County - Health Department	Johnston, Gene	Director Environmental Health	X	X	X	X	
Whiteside County - Health Department	Widolff, Marcia	Director	X	X	X	X	
Whiteside County - Highway	Renner, Russ	County Engineer	X	X	X	X	X
Whiteside County - Planning & Zoning	Richter, E. Stuart	Administrator	X	X	X	X	X
Whiteside County - Sheriff's Office	Wilhelmi, Kelly	Sheriff	X				
Whiteside County - 911	Kovarik, Karl	Coordinator	X	X	X	X	
Whiteside County Farm Bureau	Abbott, Bill	Designated Representative	X	X		X	X
Whiteside County Regional Office of Education	Sondgeroth, Bob	Superintendent	X	X	X	X	
WIXN - Dixon	Hiatt-Glenn, Tamara	Reporter		X			
3F Forecasts/National Weather Service	Acker, Larry	Editor	X	X		X	X

Mission Statement

Over the course of the first two meetings, the Planning Committee developed a mission statement they felt best described their objectives for the Plan.

"The mission of the Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Plan Committee is to develop a mitigation plan that can reduce the negative impacts of natural hazards on citizens, infrastructure, private property and critical facilities."

Planning Committee Meetings

The Planning Committee met five times between July, 2014 and October, 2015. **Figure 6** identifies the representatives present at each meeting. **Appendices B** and **C** contain copies of the attendance sheets and meeting minutes for each meeting. The purpose of each meeting, including the topics discussed, is provided below.

Greg Michaud, Johnson, Depp & Quisenberry, describes the planning process at the July 17, 2014 Planning Committee meeting.

First Planning Committee Meeting – July 17, 2014

The purpose of this meeting was to explain the planning process to the Planning Committee members and give them a brief overview on what a natural hazards mitigation plan is and why one should be prepared. The Committee was given the option of including man-made hazards in the Plan and elected to include them. Drafts of the mission statement and mitigation goals were presented. Representatives for the County and the participating jurisdictions were asked to complete the forms entitled "List of Existing Planning Documents," "Critical Facilities" and "Severe Weather

Shelters" and return them at the next meeting. Copies of a hazard events questionnaire and citizen questionnaire were also distributed.

Second Planning Committee Meeting – May 14, 2014

At the second Planning Committee meeting the natural and man-made hazard risk assessment sections were presented for review. Committee members were asked to think about whether any critical facilities have been damaged by a natural hazard event within their jurisdiction. The Planning Committee continued their discussions on the mission statement and mitigation goals and finalized both.

Ideas for potential mitigation projects were presented. Representatives for the County and the participating jurisdictions were asked to complete the forms entitled "Critical Facilities Damaged by Natural Hazard Events" and "Hazard Mitigation Projects" and return them at the next meeting.

Third Planning Committee Meeting – March 5, 2015

The purpose of the third Planning Committee meeting was to review the mitigation actions identified by the participating jurisdictions and discuss the mitigation strategy. The mitigation strategy discussion focused on the project prioritization methodology and categories of mitigation actions. Portions of the vulnerability assessment were presented for review. All representatives were asked to complete a compensation questionnaire for use in administering the grant.

Fourth Planning Committee Meeting – June 25, 2015

At the fourth meeting the sections of the Plan focusing on the mitigation strategy and plan maintenance were presented for review. In addition, the mitigation action tables were completed for each participating jurisdiction and distributed for review. The tables listed all of the mitigations actions identified and prioritized them using the approved project prioritization methodology.

Fifth Planning Committee Meeting – October 1, 2015

The purpose of the fifth Planning Committee meeting was to provide the public an opportunity to provide comments on the draft Plan.

2.2 PUBLIC INVOLVEMENT

To engage the public in the planning process, a comprehensive public involvement strategy was developed. The strategy was structured to engage the public in a two-way dialogue, encouraging the exchange of information throughout the planning process. A mix of public involvement techniques and practices were utilized to:

- disseminate information;
- identify additional useful information about natural hazard occurrences and impacts;
- assure that interested residents would be involved throughout the Plan's development; and

- nurture ownership of the Plan, thus increasing the likelihood of adoption by the participating jurisdictions.

The dialogue with the public followed proven risk communication principles to help assure clarity and avoid overstating or understating the impacts posed by the natural and man-made hazards identified in the Plan. The following public involvement techniques and practices were applied to give the public an opportunity to access information and participate in the dialogue at their level of interest and availability.

Citizen Questionnaire

A citizen questionnaire was created to gather facts and gauge public perceptions about natural hazards. The questionnaire was made available at the offices of participating jurisdictions. A copy of the questionnaire is contained in **Appendix D**.

A total of 64 questionnaires were completed and returned to the Planning Committee. The questionnaires were filled out by residents of all the participating municipalities. These responses should provide useful information to decision makers as they deliberate how best to disseminate information about natural hazards and how residents can protect themselves and their property.

Additionally, these results provide an indication as to the types of projects that are most likely to receive public support. A review of the questionnaires revealed the following:

- While respondents felt that severe storms (thunderstorms, hail, lightning and heavy rain), severe winter storms and extreme heat were the most frequently encountered natural hazards in Whiteside County, the weather records compiled indicate that severe storms, severe winter storms and flooding are actually the most frequently encountered natural hazards.
- Electronic media (internet, television and radio) and materials distributed via fire and law enforcement departments were identified as the most effective means of disseminating information about natural hazards. Of the electronic media choices, the internet was recognized as the most favored means of dissemination followed by television. Newspapers and mailings also received strong support among respondents.
- Four (4) categories of mitigation projects and activities were felt to be most needed by respondents. The following identifies each category and provides the percentage of support received:
  - maintain roadway passage during snow storms and heavy rains (80.0%);
  - maintain power during storms by burying power lines, trimming trees and/or purchasing backup generators (75.0%);
  - install sirens and other alert systems (61.7%); and
  - retrofit critical infrastructure (public water supplies, schools, sewage treatment facilities, bridges, hospitals and other important services) to reduce potential damages (56.7%).

FAQ Fact Sheet

A "Frequently Asked Questions" fact sheet was created to explain what an all hazards mitigation plan is and briefly describe the planning process. The fact sheet was made available at the government offices of participating jurisdictions. A copy of the fact sheet is contained in **Appendix E**.

Press Releases

Press releases were prepared and submitted to local media outlets prior to each Planning Committee meeting. The releases announced the purpose of the meetings and how the public could become involved in the Plan's development. **Appendix F** contains a list of the media outlets that received the press releases while copies of the releases and news articles published can be found in **Appendix G**. No news articles were published for the October 30, 2014 meeting even though a release was issued.

Planning Committee Meetings

All of the meetings conducted by the Planning Committee were open to the public and publicized in advance to encourage public participation. At the end of each meeting, time was set aside for public comment. In addition, Committee members were available throughout the planning process to talk with residents and local government officials and were responsible for relaying any concerns and questions voiced by the public to the Planning Committee.

Public Forum

The final meeting of the Planning Committee, held on October 1, 2015, was conducted as an open-house public forum. The open-house format was chosen for this forum instead of a hearing to provide greater convenience for residents who wished to participate. Residents were able to come and go at any time during the forum, reducing conflicts with business, family, and social obligations.

At the forum, residents could review the draft Plan; meet with representatives from the County, the participating jurisdictions and the Consultant; ask any questions; and provide comments on the Plan. Individuals attending the public forum were provided with a two-page handout summarizing the planning process and a comment sheet that could be used to provide feedback on the draft Plan. **Appendices H** and **I** contain copies of these materials.

Public Comment Period

After the public forum, the draft Plan was made available for public review and comment through October 16, 2015 at the Whiteside County ESDA Office. Residents were encouraged to submit their comments electronically, by mail or through representatives of the Planning Committee.

Results of Public Involvement

The public involvement strategy implemented during the planning process created a dialogue among participants and interested residents, which resulted in many benefits, a few of which are highlighted below.

- *Discovered previously unidentified documentation about natural hazards*. Verifiable hazard event and damage information was obtained from participants that presents a

clearer assessment of the extent and magnitude of natural hazards that have impacted the County. This information included details and/or damage estimates for severe storms, lightning, and severe winter storms not available from state and federal databases.

- *Obtained critical facilities damage information*. Data collection surveys soliciting information about critical facilities damaged by severe storms and other natural hazards were used to supplement information obtained from government databases. This was the first time this information had been collected and was vital to the preparation of the vulnerability assessment.
- *Increased awareness of the impacts associated with natural hazard events within the County*. Understanding how mitigation actions can reduce risk to life and property helped generate over 135 specific potential mitigation projects and activities at the local level that had not been previously identified in any other planning process.

2.3 PARTICIPATION OPPORTUNITIES FOR INTERESTED PARTIES

Businesses, schools, not-for-profit organizations, neighboring counties, and other interested parties were provided multiple opportunities to participate in the planning process. Wide-reaching applications were combined with direct, person-to-person contacts to reach anyone who might have an interest or possess information which could be helpful in developing the Plan.

Business Community

Representatives from those segments of the business community who had the most interest in natural hazard mitigation were invited to serve on the Planning Committee. Agriculture and agribusiness are major economic enterprises in the County. Virtually every aspect of life in the County is affected by agriculture. Consequently, input was sought from the agricultural community which responded positively to being involved.

Schools

Bob Sondgeroth, the Regional Superintendent of Whiteside County served on the Planning Committee. He coordinated with the school districts in the County and worked with them in considering what types of mitigation projects and activities would be most beneficial for each district.

Not-For-Profit & Other Organizations

The EMS Chief and the Emergency Coordinator from CHM Medical Center in Sterling as well as the EMS Director/Emergency Preparedness Coordinator from Morrison Community Hospital in Morrison served on the Planning Committee. In addition, the Executive Director of the Blackhawk Hills Regional Council, a not-for-profit organization providing assistance with community planning and development, also served on the Planning Committee.

Individuals from Amateur Radio Emergency Service (ARES) and Radio Amateur Civil Emergency Service (RACES) also participated in the planning process.

Neighboring Counties

An announcement was sent to EMA/ESDA offices in all of the neighboring counties inviting participation in the mitigation planning process. **Appendix J** contains a copy of the invitation memos.

2.4 INCORPORATING EXISTING PLANNING DOCUMENTS

As part of the planning process, each participating jurisdiction was asked to identify and provide existing documents (plans, studies, reports and technical information) relevant to the Plan. **Figure 7** summarizes the availability of existing planning documents by participating jurisdiction. These documents were reviewed and incorporated into the Plan whenever applicable.

Figure 7
Existing Planning Documents by Participating Jurisdiction

Existing Planning Documents	Participating Jurisdiction									
	Whiteside County	Coleta	Deer Grove	Erie	Fulton	Morrison	Prophetstown	Rock Falls	Sterling	Tampico
Plans										
Comprehensive Plan	X					X		X	X	
Emergency Management Plan	X				X	X		X	X	
Land Use Plan	X					X		X	X	
Codes & Ordinances										
Building Codes				X		X	X	X	X	
Drainage Ordinances	X			X	X	X		X	X	
Historic Preservation Ordinance						X		X	X	X
Subdivision Ordinance(s)	X			X	X	X	X	X	X	X
Zoning Ordinances	X		X	X	X	X	X	X	X	X
Maps										
Existing Land Use Map	X					X		X	X	X
Infrastructure Map				X	X	X		X	X	X
Zoning Map	X		X	X	X	X	X	X	X	X
Flood-Related										
Flood Ordinance(s)	X		X	X	X	X	X	X	X	
Flood Insurance Rate Maps	X			X	X	X	X	X	X	
Repetitive Flood Loss List	X						X	X		
Elevation Certificates for Buildings	X			X		X	X	X		

3.0 RISK ASSESSMENT

3.0 RISK ASSESSMENT

Risk assessment is the process of evaluating the vulnerability of people, buildings and infrastructure to natural and man-made hazards in order to estimate the potential loss of life, personal injury, economic injury and property damage resulting from natural and man-made hazards. This section summarizes the results of the risk assessment conducted on the natural and man-made hazards that pose a threat to Whiteside County. The information contained in this section was gathered by evaluating local, state and federal records from the last 60 years.

This risk assessment identifies the natural and man-made hazards that pose a threat to the County and includes a profile of each which identifies past occurrences, the severity or extent of the hazard, and the likelihood of future occurrences. It also provides a vulnerability assessment which identifies the impacts to public health and property, evaluates the assets of the participating jurisdictions (i.e., residential buildings, critical facilities and infrastructure) and estimates the potential impacts each natural and man-made hazard would have on the health and safety of the residents as well as the buildings, critical facilities and infrastructure located within the County. Where applicable, the differences in vulnerability between participating jurisdictions are described.

One of the responsibilities of the Planning Committee was to decide which natural and man-made hazards to include in the Plan. Over the course of the first two Planning Committee meetings, the Planning Committee members discussed their experiences with natural and man-made hazard events and reviewed information about various natural and man-made hazards. After much discussion, they chose to include the following natural and man-made hazards in this Plan:

- severe storms (thunderstorms, hail, lighting & heavy rain)
- severe winter storms (snow, ice & extreme cold)
- flood
- tornadoes
- extreme heat
- drought
- earthquakes
- dams
- levees
- man-made hazards including:
  - hazardous substances (generation, transportation & storage/handling)
  - waste disposal
  - hazardous materials incidents
  - waste remediation
  - terrorism

The subsequent sections provide detailed information on each of the selected natural and man-made hazards. The sections are color coded and ordered by the frequency with which the natural hazard has previously occurred within the County, starting with severe storms. Each natural hazard section contains three subsections: identifying the hazard, profiling the hazard and assessing vulnerability.

3.1 SEVERE STORMS (THUNDERSTORMS, HAIL, LIGHTNING & HEAVY RAIN)

IDENTIFYING THE HAZARD

What is the definition of a severe storm?

The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) defines a "severe storm" as any thunderstorm that produces one or more of the following:

- winds with gust of 50 knots (58 mph) or greater;
- hail that is at least one inch in diameter (quarter size) or larger; and/or
- a tornado.

While severe storms are capable of producing deadly lightning and excessive rainfall that may lead to flash flooding, the NWS does not use either to define a severe storm. However, a discussion of both lightning and heavy rain is included in this section because they both capable of causing extensive damage. For the purposes of this report, tornadoes and flooding are categorized as separate hazards and are not discussed under severe storms.

What is a thunderstorm?

A thunderstorm is a rain shower accompanied by lightning and thunder. An average thunderstorm is approximately 15 miles in diameter, affecting a relatively small area when compared to winter storms or hurricanes, and lasts an average of 30 minutes. Thunderstorms can bring heavy rain, damaging winds, hail, lightning and tornadoes.

There are four basic types of thunderstorms: single-cell, multi-cell, squall line, and supercell. The following provides a brief description of each.

Single-cell Thunderstorm

Single cell storms are small, weak storms that only last about ½ hour to an hour and are not usually considered severe. They are typically driven by heating on a summer afternoon. Occasionally a single cell storm will become severe, but only briefly. When this happens, it is called a pulse severe storm.

Multi-cell Thunderstorm

Multi-cell storms are the most common type of thunderstorms. A multi-cell storm is organized in clusters of at least two to four short-lived cells. Each cell usually lasts 30 to 60 minutes while the system as whole may persist for many hours. Multi-cell storms may produce hail, strong winds, brief tornadoes, and/or flooding.

Squall Line

A Squall line is a group of storms arranged in a line, often accompanied by "squalls" of high wind and heavy rain. The line of storms can be continuous or there can be gaps and breaks in the line. Squall lines tend to pass quickly and can be hundreds of miles long but are typically only 10 to 20 miles wide. A "bow echo" is a radar signature of a squall line that "bows out" as winds fall behind the line and circulation develops on either end.

Supercell Thunderstorm

Supercell storms are long-lived (greater than one hour) and highly organized storms that feed off a rising current of air (an updraft). The main characteristic that sets a supercell storm apart from other thunderstorm types is the presence of rotation in the updraft. The rotating updraft of a supercell (called a mesocyclone when visible on radar) helps a supercell storm produce extreme weather events. Supercell storms are potentially the most dangerous storm type and have been observed to generate the vast majority of large and violet tornadoes, as well as downburst winds and large hail.

Despite their size, all thunderstorms are dangerous and capable of threatening life and property. Of the estimated 100,000 thunderstorms that occur each year in the United States, roughly 10% are classified as severe.

What kinds of damaging winds are produced by a thunderstorm?

Aside from tornadoes, thunderstorms can produce straight-line winds. A straight-line wind is defined as any wind produced by a thunderstorm that is not associated with rotation. There are several types of straight-line winds including downdrafts, downbursts, microbursts, gust fronts and derechos.

Damage from straight-line winds is more common than damage from tornadoes and accounts for most thunderstorm wind damage. Straight-line wind speeds can exceed 87 knots (100 mph), produce a damage pathway extending for hundreds of miles and can cause damage equivalent to a strong tornado.

The NWS measures a storm's wind speed in knots or nautical miles. A wind speed of one knot is equal to approximately 1.15 miles per hour. **Figure 8** shows conversions from knots to miles per hour for various wind speeds.

Figure 8
Wind Speed Conversions

Knots (kts)	Miles Per Hour (mph)	Knots (kts)	Miles Per Hour (mph)
50 kts	58 mph	60 kts	69 mph
52 kts	60 mph	65 kts	75 mph
55 kts	63 mph	70 kts	81 mph
58 kts	67 mph	80 kts	92 mph

What is hail?

Hail is precipitation in the form of spherical or irregular-shaped pellets of ice that occur within a thunderstorm when strong rising currents of air (updrafts) carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice.

Hailstones grow by colliding with supercooled water drops. The supercooled water drops freeze on contact with ice crystals, frozen rain drops, dust, etc. Thunderstorms with strong updrafts continue lifting the hailstones to the top of the cloud where it would encounter more supercooled

water and continue to grow. Eventually the hail becomes too heavy to be supported by the updraft and falls to the ground.

In the United States, hail causes more than $1 billion in damages to property and crops annually. Hail has been known to cause injuries, although it rarely causes fatalities or serious injuries.

How is the severity of a hail event measured?

The severity or magnitude of a hail event is measured in terms of the size (diameter) of the hailstones. The hail size is estimated by comparing it to known objects. **Figure 9** provides descriptions for various hail sizes.

Figure 9
Hail Size Descriptions

Hail Diameter (inches)	Description	Hail Diameter (inches)	Description
0.25 in.	pea	1.75 in.	golf ball
0.50 in.	marble/mothball	2.50 in.	tennis ball
0.75 in.	penny	2.75 in.	baseball
0.88 in.	nickel	3.00 in.	tea cup
1.00 in.	quarter	4.00 in.	grapefruit
1.50 in.	ping pong ball	4.50 in.	softball

Source: NOAA, National Severe Storm Laboratory.

Hail size can vary widely. Hailstones may be as small as 0.25 inches in diameter (pea-sized) or, under extreme circumstances, as large as 4.50 inches in diameter (softball-sized). Typically hail that is 1 inch in diameter (quarter-sized) or larger is considered severe.

The severity of a hail event can also be measured or rated using the TORRO Hailstorm Intensity Scale. This scale was developed in 1986 by the Tornado and Storm Research Organisation of the United Kingdom. It measures the intensity or damage potential of a hail event based on several factors including: maximum hailstone size, distribution, shape and texture, numbers, fall speed and strength of the accompanying winds.

The Hailstorm Intensity Scale identifies ten different categories of hail intensity, H0 through H10. **Figure 10** gives a brief description of each category. This scale is unique because it recognizes that, while the maximum hailstone size is the most important parameter relating to structural damage, size alone is insufficient to accurately categorize the intensity and damage potential of a hail event.

It should be noted that the typical damage impacts associated with each intensity category reflect the building materials predominately used in the United Kingdom. These descriptions may need to be modified for use in other countries to take into account the differences in building materials typically used (i.e., whether roofing materials are predominately shingle, slate or concrete, etc.).

Figure 10
TORRO Hailstorm Intensity Scale

Intensity Category		Typical Hail Diameter		Description	Typical Damage Impacts
		millimeters (approx.)*	inches (approx.)*		
H0	Hard Hail	5 mm	0.2”	pea	no damage
H1	Potentially Damaging	5-15 mm	0.2” – 0.6”	pea / mothball	slight general damage to plants, crops
H2	Significant	10-20 mm	0.4” – 0.8”	dime / penny	significant damage to fruit, crops, vegetation
H3	Severe	20-30 mm	0.8” – 1.2”	nickel / quarter	severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40 mm	1.0” – 1.6”	half dollar / ping pong ball	widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50 mm	1.2” – 2.0”	golf ball	wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60 mm	1.6” – 2.4”	golf ball / egg	bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-75 mm	2.0” – 3.0”	egg / tennis ball	severe roof damage, risk of serious injuries
H8	Destructive	60-90 mm	2.4” – 3.5”	tennis ball / tea cup	severe damage to aircraft bodywork
H9	Super Hailstorms	75-100 mm	3.0” – 4.0”	tea cup / grapefruit	extensive structural damage, risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	> 100 mm	> 4.0”	softball	extensive structural damage, risk of severe or even fatal injuries to persons caught in the open

* Approximate range since other factors (i.e., number and density of hailstones, hail fall speed and surface wind speed) affect severity.

Source: Tornado and Storm Research Organisation, TORRO Hailstorm Intensity Scale Table.

What is lightning?

Lightning, a component of all thunderstorms, is a visible electrical discharge that results from the buildup of charged particles within storm clouds. It can occur from cloud-to-ground, cloud-to-cloud, within a cloud or cloud-to-air. The air near a lightning strike is heated to approximately 50,000°F (hotter than the surface of the sun). The rapid heating and cooling of the air near the lightning strike causes a shock wave that produces thunder.

Lightning on average causes 60 fatalities and 300 injuries annually in the United States. Most fatalities and injuries occur when people are caught outdoors in the summer months. In addition, lightning can cause structure and forest fires. Many of the wildfires in the western United States and Alaska are started by lightning. According to the NWS lightning strikes cost more than $1 billion in insured losses each year.

Are alerts issued for severe storms?

Yes. The NWS Weather Forecast Office of the Quad Cities, Iowa/Illinois is responsible for issuing ***severe thunderstorm watches*** and ***warnings*** for Whiteside County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Watch.** A severe thunderstorm watch is issued when conditions are favorable for a severe thunderstorm to develop. The watch will tell individuals when and where a severe thunderstorm is likely to occur.
- **Warning.** A severe thunderstorm warning is issued when severe weather (i.e., hail 1 inch in diameter or greater and/or damaging winds of 58 miles or greater) has been reported by spotters or indicated by radar. Warnings indicate imminent danger to life and property for those who are in the path of the storm.

PROFILING THE HAZARD

When have severe storms occurred previously? What is the extent of these previous severe storms?

Figures 11, **12**, **13**, and **14**, located at the end of this section, summarize the previous occurrences as well as the extent or magnitude of severe storm events recorded in Whiteside County. The severe storm events are separated into four categories: thunderstorms with damaging winds, hail, lightning and heavy rain. Severe storms are the most frequently occurring natural hazard in Whiteside County.

Thunderstorms with Damaging Winds

NOAA's Storm Events Database and the NWS COOP data records documented 189 reported occurrences of thunderstorms with damaging winds in Whiteside County between 1962 and 2014. Of the 189 occurrences, 130 had reported wind speeds of 50 knots or greater. There were 59 occurrences, however, where the wind speed was not recorded.

The highest wind speed recorded in Whiteside County occurred in Erie on June 28, 1998 when winds reached 78 knots (90 mph) during a thunderstorm event. Thunderstorms with damaging winds have occurred in every participating municipality within the County on multiple occasions.

Severe Storms Fast Facts – Occurrences

Number of Thunderstorms with Damaging Winds (1962 – 2014): ***189***

Number of Severe Hail Events (1964 – 2014): ***49***

Number of Lightning Strikes (2003 – 2014): ***5***

Number of Heavy Rain Events (1993 – 2014): ***173***

Highest Recorded Wind Speed: ***78 knots (June 28, 1998)***

Largest Hail Recorded: ***2.00 inches (June 19, 1964)***

Most Likely Month for Thunderstorms with Damaging Winds to Occur: ***June***

Most Likely Month for Severe Hail to Occur: ***May***

Most Likely Month for Heavy Rain to Occur: ***August***

Most Likely Time for Thunderstorms with Damaging Winds to Occur: ***Afternoon/Early Evening***

Most Likely Time for Severe Hail to Occur: ***Afternoon/Early Evening***

Most Likely Time for Heavy Rain to Occur: ***Morning***

Figure 15 charts the reported occurrences of thunderstorms with damaging winds in Whiteside County by month. Of the 189 events, 149 (79%) took place in May, June, July and August making this the peak period for thunderstorms with damaging winds in Whiteside County. Of

those 149 events, 63 (42%) occurred during June, making this the peak month for thunderstorms with damaging winds.

Figure 15
Thunderstorms with Damaging Winds by Month
1962 – 2014

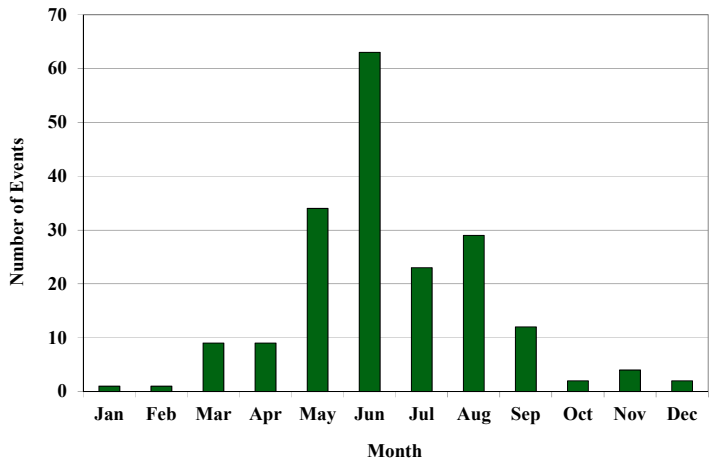
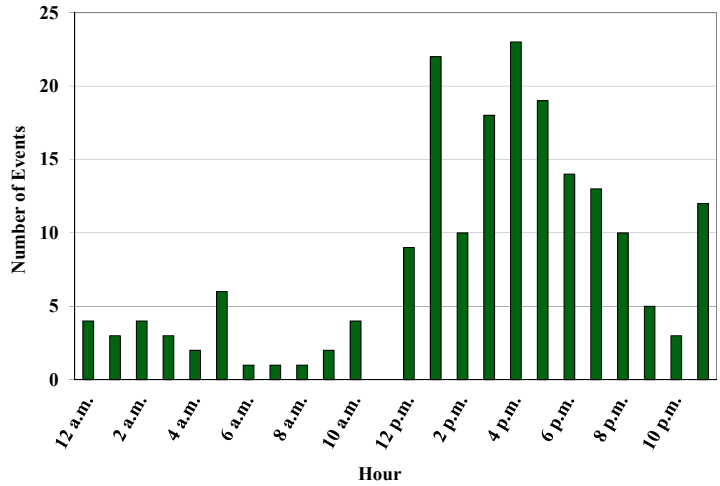


Figure 16 charts the reported occurrences of thunderstorms with damaging winds by hour. Approximately 84% of all thunderstorms with damaging winds occurred during the p.m. hours, with 106 of the events (67%) taking place between 1 p.m. and 7 p.m.

Figure 16
Thunderstorms with Damaging Winds by Hour
1962 – 2014



Hail

NOAA's Storm Events Database has documented 49 reported occurrences of severe storms with hail 1.00 inch in diameter or greater in Whiteside County between 1964 and 2014. Of the 49 occurrences, 20 produced hailstones 1.50 inches or larger in diameter.

The largest hail documented in Whiteside County measured 2.00 inches in diameter (slightly larger than a golf ball) and fell on June 19, 1964 near Lyndon. Hail 1.00 inch in diameter or greater has been *recorded* at least once in every participating municipality, with the exception of Deer Grove.

Figure 17 charts the reported occurrences of hail by month. Of the 49 occurrences, 34 (69%) took place in April, May and June making this the peak period for hail in Whiteside County. Of the 34 events, 19 (56%) occurred during May, making this the peak month for hail events.

Figure 17
Hail Events by Month
1964 – 2014

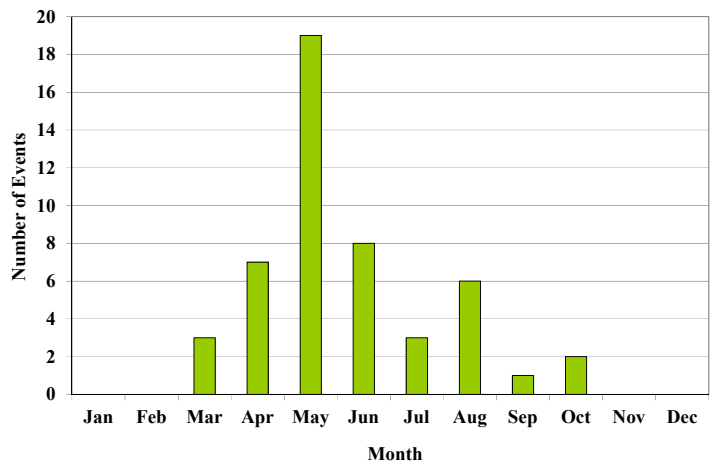
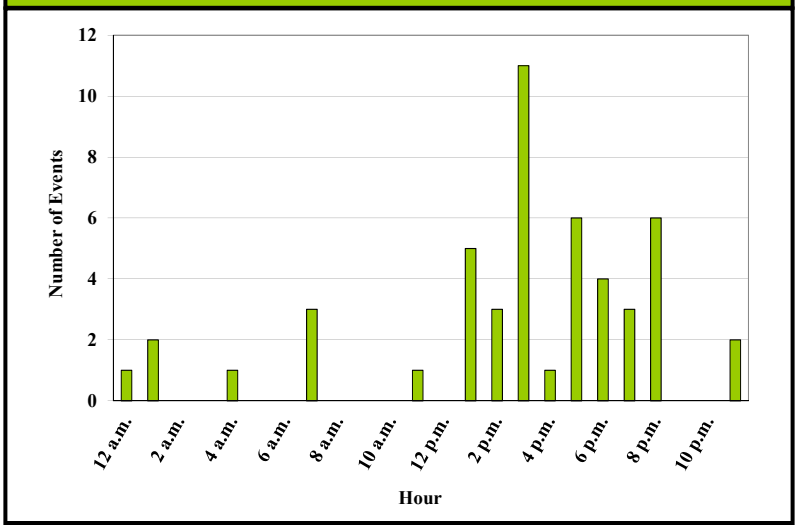


Figure 18 charts the reported occurrences of hail by hour. Approximately 84% of all the hail events occurred during the p.m. hours, with 31 of the events (77%) taking place between 3 p.m. and 9 p.m.

Lightning

While lightning strike events occur regularly across northern Illinois, NOAA's Storm Events Database has only five *recorded* occurrences of lightning strikes in Whiteside County between 2003 and 2014. This is almost certainly due to the rural nature of the County. Each of the five events took place in a different month from April through August. Four of the five events (80%) occurred during the p.m. hours.

Figure 18
Hail Events by Hour
1964 – 2014



Heavy Rain

NWS's COOP data records have documented 178 reported occurrences of heavy rain in Whiteside County between 1993 and 2014. Of the 178 occurrences, 31 events (17%) produced three inches or more of rain. Records indicate that flooding and/or flash flooding resulted from 16 of the 178 heavy rain events (9%).

Figure 19 charts the reported occurrences of heavy rain by month. Of the 178 events, 104 (58%) took place in May, June, July and August making this the peak period for heavy rain in Whiteside County. Of the 104 events, 31 (30%) occurred during August, making this the peak month for heavy rains. There were three events that spanned two months; however, for illustration purposes only the month when the event started is graphed.

Figure 20 charts the reported occurrences of heavy rain by hour. Of the 178 occurrences, start times were unavailable for 38 events. Of the remaining 140 events with recorded times, approximately 54% occurred during the p.m. hours. Thirty-seven of the events (49%) took place between 4 p.m. and 9 p.m.

What locations are affected by severe storms?

Severe storms affect the entire County. A single severe storm event will generally extend across the entire County and affect multiple locations. The *2013 Illinois Natural Hazard Mitigation Plan* prepared by the Illinois Emergency Management Agency (IEMA) classifies Whiteside County's hazard rating for severe storms as "severe." (IEMA's hazard rating system has five levels: low, guarded, elevated, high and severe.)

Figure 19
Heavy Rain Events by Month
1993 – 2014

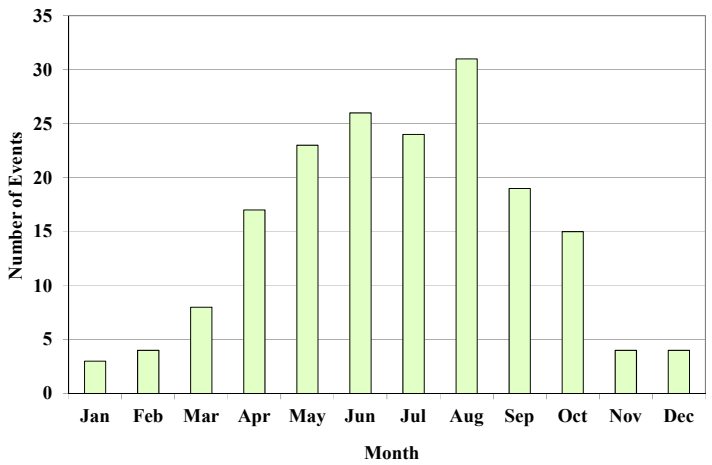
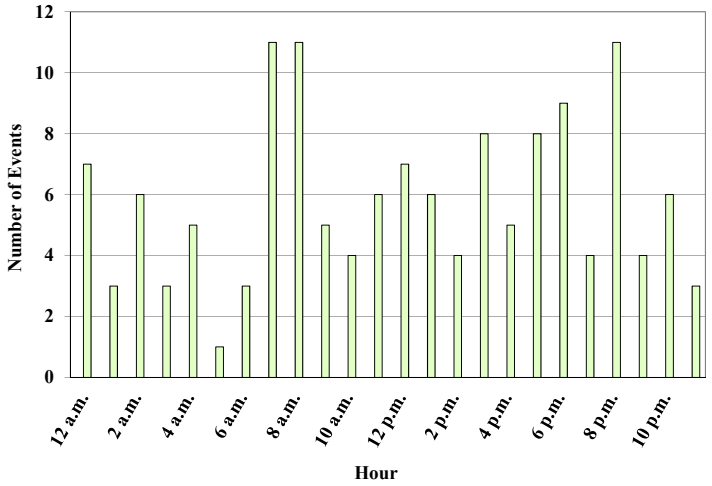


Figure 20
Heavy Rain Events by Hour
1993 – 2014



What is the probability of future severe storm events occurring?

Thunderstorms with Damaging Winds

Whiteside County has had 189 verified occurrences of thunderstorms with damaging winds between 1962 and 2014. With 189 occurrences over the past 53 years, Whiteside County should expect to experience at least three thunderstorms with damaging winds each year. There were 23 years over the last 53 years where multiple (three or more) thunderstorms with damaging winds

occurred. This indicates that the probability that multiple thunderstorms with damaging winds may occur during any given year within the County is 43%.

A thunderstorm with high winds blew down numerous trees across Morrison on August 25, 2014.

Photograph from thecity1

Hail

There have been 49 verified occurrences of hail one inch in diameter or greater between 1964 and 2014. With 49 occurrences over the past 51 years, the probability or likelihood of a severe hail event occurring in Whiteside County in any given year is 96%. There were 11 years over the last 51 years where two or more hail events occurred. This indicates that the probability that more than one severe storm with hail may occur during any given year within the County is 22%.

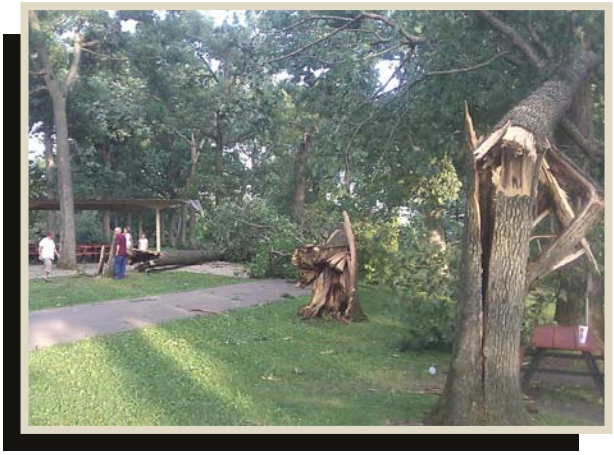
Heavy Rain

The County has experienced 178 heavy rain events producing at least 1.50 inches of rain between 1993 and 2014. With 178 occurrences over the past 22 years, the County should expect to experience at least eight heavy rain events each year. There were 19 years where four or more heavy rain events occurred. This indicates that the probability that multiple heavy rain events may occur during any given year within the County is 86%.

ASSESSING VULNERABILITY

Are the participating jurisdictions vulnerable to severe storms?

Yes. All of Whiteside County is vulnerable to the dangers presented by severe storms due to the topography of the region and its location in relation to the movement of weather fronts across northwestern Illinois. Since 2005, Whiteside County has experienced 91 thunderstorms with damaging winds, 77 heavy rain events producing at least 1.50 inches of rain, 16 severe storms with hail one inch in diameter or greater and four lightning strikes.



A thunderstorm with high winds caused damage to numerous trees in Sinnissippi Park in Sterling on July 11, 2011.

Photograph provided by Scott Schumard

Figure 21 details the number thunderstorms with damaging winds, hail events and lightning strikes that were recorded in or near each participating municipality. Aside from the NWS COOP observer locations (Fulton, Morrison, Prophetstown and Rock Falls), area specific information was unavailable for the heavy rain events.

Of the participating municipalities, Sterling, Morrison and Fulton have had more recorded occurrences of thunderstorms with damaging winds than any of the other municipalities while Morrison, Prophetstown and Sterling have had the greatest number of recorded hail events. The difference in the number of recorded events may be due in part to the size of the municipalities in addition to the fact that three of the four COOP observers for the NWS in Whiteside County are located in Fulton, Morrison and Prophetstown.

Figure 21
Verified Severe Storm Events by Participating Municipality

Participating Municipality	Number of Events		
	Thunderstorm & High Wind	Severe Hail	Lightning
Coleta	7	2	1
Deer Grove	2	1	0
Erie	21	2	0
Fulton	25	4	0
Morrison	27	9	1
Prophetstown	11	6	0
Rock Falls	23	4	1
Sterling	33	5	1
Tampico	7	3	0

Figure 22 details the number of thunderstorms with damaging winds and hail events that were recorded in or near unincorporated areas of Whiteside County. No data was available on lightning strikes in the unincorporated areas and area specific information was unavailable for a majority of the heavy rain events.

Figure 22
Verified Severe Storm Events in Unincorporated Whiteside County

Unincorporated Area	Number of Events		Unincorporated Area	Number of Events	
	Thunderstorm & High Wind	Severe Hail		Thunderstorm & High Wind	Severe Hail
Como	2	0	Morrison-Rockwood SP	1	2
East Clinton	4	0	Penrose	1	0
Emerson	2	1	Round Grove	1	1
Fenton	2	2	Spring Hill	0	1
Galt	2	0	Unionville	1	0
Garden Plain	4	1	Ustick	6	1
Malvern	2	0	Whiteside Co. Airport	4	0

What impacts resulted from the recorded severe storms?

Severe storms as a whole have caused estimated $1,320,645 in property damages and $93,000 in crop damages. The following provides a breakdown of impacts by category.

While severe summer storms frequently occur in Whiteside County, the number of injuries and fatalities is very low. The hospitals in Morrison and Sterling, as well as hospitals in Clinton, Iowa, Dixon (Lee County), Princeton (Bureau County), Geneseo (Henry County) and the Quad

Cities area (Rock Island County), are equipped to provide care to persons injured during a severe storm. Consequently, the risk or vulnerability to public health and safety from severe storms is low.

Thunderstorms with Damaging Winds

Data obtained from NOAA's Storm Events Database and Planning Committee member records indicates that between 1962 and 2014, 57 of the 189 thunderstorms with damaging winds caused $1,041,645 in property damage and $23,000 in crop damage. Damage information was either unavailable or none was recorded for the remaining 132 reported occurrences.

Included in the property damage figures provide above, is $266,000 in property damage sustained in Morrison on August 25, 2014. The City of Morrison was able to provide news articles from this event that provide detailed information on the damages sustained. To view copies of these articles, see **Appendix K**.

NOAA's Storm Events Database documented four injuries as a result of three separate thunderstorms with damaging winds. The first event occurred on February 11, 1999 when a student was injured when strong winds tore a portion of the roof off a high school. The second event occurred on September 13, 2005 when a tree was blown onto a moving vehicle injuring the driver. The third event occurred on June 18, 2010 when winds blew a semi-trailer onto its side on Interstate 88. The driver and passenger suffered minor injuries.

Severe Storms Fast Facts – Impacts/Risk

Thunderstorms with Damaging Winds Impacts
- Total Property Damage: ***$1,041,645***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***$23,000***
- Injuries: ***4***
- Fatalities: ***0***

Severe Hail Impacts
- Total Property Damage: ***$59,000***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: $***70,000***

Lightning Strike Impacts
- Total Property Damage: ***$245,000***
- Infrastructure/Critical Facilities Damage*: ***$25,000***
- Total Crop Damage: ***n/a***
- Injuries: ***1***
- Fatalities: ***0***

Heavy Rain Impacts
- Total Property Damage: ***n/a***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***n/a***

Severe Storms Risk/Vulnerability to:
- Public Health & Safety: ***Low***
- Buildings/Infrastructure/Critical Facilities: ***Medium/High***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

Hail

Data obtained from NOAA's Storm Events Database indicates that between 1964 and 2014, seven of the 49 hail events caused $59,000 in property damage and $70,000 in crop damage. Damage information was either unavailable or none was recorded for the remaining 42 reported occurrences. No injuries or fatalities were reported as a result of any of the hail events.

Lightning

Data obtained from NOAA's Storm Events Database and Planning Committee member records indicates that between 2000 and 2014, three lightning strike events caused $245,000 in property damage. Included in the property damage figures provided above is $25,000 in verified

infrastructure and critical facilities damage sustained by the Whiteside County Public Health Department building in Rock Falls. The building was struck by lightning and the phone system was damaged sometime around 2000 according to the Public Health Administrator. Since an exact date could not be provided for the event, it was not included in Figure 13.

NOAA's Storm Events Database documented one injury as a result of an August 20, 2010 lightning strike event in Morrison. A 12 year old boy was struck by lightning at the Southside Elementary School.

Heavy Rain

Damage information was either unavailable or none was recorded for any of the reported occurrences of heavy rain. In addition, no injuries or fatalities were reported as a result of any these events.

What other impacts can result from severe storms?

In Whiteside County, the greatest risk to health and safety from severe storms is vehicle accidents. Hazardous driving conditions resulting from severe storms (i.e., wet pavement, poor visibility, high winds, etc.) can contribute to accidents that result in injuries and fatalities. Traffic accident data assembled by the Illinois Department of Transportation from 2008 through 2012 indicates that wet road surface conditions were present for 9.0% to 11.7% of all crashes recorded annually in the County.

While other circumstances cause wet road surface conditions (i.e., melting snow, condensation, light showers, etc.), law enforcement officials agree that hazardous driving conditions caused by severe storms add to the number of crashes. **Figure 23** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when wet road surface conditions were present.

Figure 23
Severe Weather Crash Data for Whiteside County

Year	Total # of Crashes	Presence of Wet Road Surface Conditions		
		# of Crashes	# of Injuries	# of Fatalities
2008	1,627	191	63	0
2009	1,195	139	55	1
2010	1,160	121	57	0
2011	1,122	117	33	1
2012	1,042	94	37	1
Total:	**6,146**	**662**	**245**	**3**

Source: Illinois Department of Transportation.

Are existing buildings, infrastructure and critical facilities vulnerable to severe storms?

Yes. All existing buildings, infrastructure and critical facilities located in Whiteside County and the participating municipalities are vulnerable to damage from severe storms. Structural damage to buildings is a relatively common occurrence with severe storms. Damage to roofs, siding, awnings and windows can occur from hail, flying and falling debris and high winds. Lightning strikes can damage electrical components and equipment (i.e., appliances, computers etc.) and

can cause fires that consume buildings. If the roof is compromised or windows are broken, rain can cause additional damage to the structure and contents of a building.

Infrastructure and critical facilities tend to be just as vulnerable to severe storm damage as buildings. The infrastructure and critical facilities that are the most vulnerable to severe storms are related to power distribution and communications. High winds, lightning and flying and falling debris have the potential to cause damage to communication and power lines; power substations; transformers and poles; and communication antennas and towers.

The damage inflicted by severe storms often leads to disruptions in communication and creates power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service. Power outages and disruptions in communications can impair vital services, particularly when backup power generators are not available. Most of the participating municipalities acknowledged the need for emergency backup generators to allow continued operation of critical facilities such as municipal buildings, police and fire stations, heating and cooling centers, storm shelters and lift stations.

A large elm tree was uprooted and fell onto an above ground swimming pool in Morrison during the thunderstorm with high winds that took place on August 25, 2014.

Photograph from thecity1

In addition to affecting power distribution and communications, debris and flooding from severe storms can block state and local roads hampering travel. When transportation is disrupted, emergency and medical services are delayed, rescue efforts are hindered and government services can be affected.

Based on the frequency with which severe storms occur in Whiteside County, the amount of property damage previously reported and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe storms is medium to high.

Are future buildings, infrastructure and critical facilities vulnerable to severe storms?

Yes and No. While five of the participating municipalities have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe storms, the County and four other municipalities do not. In addition, infrastructure such as new communication and power lines will continue to be vulnerable to severe storms as long as they are located above ground. High winds, lightning and flying and falling debris can disrupt power and communication. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

What are the potential dollar losses to vulnerable structures from severe storms?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe storms. With only 67 of the 422 recorded events listing property

damage numbers for all categories of severe storms, there is no way to accurately estimate future potential dollar losses. Since all existing structures within Whiteside County are vulnerable to damage, it is highly probable that there will be future dollar losses from severe storms.

Figure 11
(Sheet 1 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/7/1962	8:20 p.m.	Rock Falls	n/a	n/a	n/a	n/a	n/a	
6/19/1964	4:45 p.m.	Como^ Rock Falls^ Sterling^	56 kts	n/a	n/a	n/a	n/a	
3/21/1966	3:41 p.m.	Rock Falls	n/a	n/a	n/a	n/a	n/a	
5/23/1966	5:40 p.m.	Rock Falls	n/a	n/a	n/a	n/a	n/a	
7/11/1966	12:15 a.m.	Albany^	n/a	n/a	n/a	n/a	n/a	
1/24/1967	6:05 p.m.	Rock Falls	68 kts	n/a	n/a	n/a	n/a	
6/17/1970	1:15 p.m.	Rock Falls	62 kts	n/a	n/a	n/a	n/a	
7/2/1970	3:00 p.m.	Rock Ralls	n/a	n/a	n/a	n/a	n/a	
6/19/1972	4:50 p.m.	Lyndon^	50 kts	n/a	n/a	n/a	n/a	
5/27/1973	12:30 p.m.	Erie^	n/a	n/a	n/a	n/a	n/a	
3/4/1974	3:45 a.m.	Prophetstown	n/a	n/a	n/a	n/a	n/a	
4/3/1974	3:30 p.m.	Morrison	52 kts	n/a	n/a	n/a	n/a	
5/13/1974	10:30 p.m.	Emerson^ Galt^ Sterling^	n/a	n/a	n/a	n/a	n/a	
5/21/1974	4:30 p.m.	Morrison^	n/a	n/a	n/a	n/a	n/a	
6/14/1974	3:15 p.m.	Albany	n/a	n/a	n/a	n/a	n/a	
6/14/1974	3:30 p.m.	Erie	n/a	n/a	n/a	n/a	n/a	
6/14/1974	3:45 p.m.	Morrison	n/a	n/a	n/a	n/a	n/a	
6/14/1974	4:00 p.m.	Sterling	52 kts	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 2 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/20/1974	5:10 p.m.	Erie^	n/a	n/a	n/a	n/a	n/a	
6/20/1974	5:25 p.m.	Emerson^ Galt^ Sterling^	n/a	n/a	n/a	n/a	n/a	
6/22/1974	7:10 a.m.	Erie	n/a	n/a	n/a	n/a	n/a	
6/22/1974	8:10 a.m.	Rock Falls	n/a	n/a	n/a	n/a	n/a	
5/14/1975	5:20 p.m.	Sterling	52 kts	n/a	n/a	n/a	n/a	
5/20/1975	6:25 p.m.	Morrison	65 kts	n/a	n/a	n/a	n/a	
7/23/1975	4:45 p.m.	Morrison Prophetstown	52 kts	n/a	n/a	n/a	n/a	
4/15/1976	4:20 p.m.	Rock Falls Sterling	61 kts	n/a	n/a	n/a	n/a	
6/12/1976	11:10 p.m.	Sterling	52 kts	n/a	n/a	n/a	n/a	
5/20/1977	3:55 p.m.	Prophetstown	n/a	n/a	n/a	n/a	n/a	
7/26/1978	10:50 a.m.	Penrose^	n/a	n/a	n/a	n/a	n/a	
4/4/1981	1:15 a.m.	Morrison	n/a	n/a	n/a	n/a	n/a	
12/27/1982	9:15 p.m.	Erie	n/a	n/a	n/a	n/a	n/a	
12/27/1982	11:50 p.m.	Morrison Erie	n/a	n/a	n/a	n/a	n/a	
3/6/1983	5:00 p.m.	Prophetstown	n/a	n/a	n/a	n/a	n/a	
7/2/1983	4:55 a.m.	Lyndon^	n/a	n/a	n/a	n/a	n/a	
7/2/1983	6:10 p.m.	Sterling	n/a	n/a	n/a	n/a	n/a	
7/23/1983	2:00 a.m.	Lyndon^	n/a	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 3 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
9/5/1983	11:30 p.m.	Tampico	n/a	n/a	n/a	n/a	n/a	
9/6/1983	12:00 a.m.	Tampico	n/a	n/a	n/a	n/a	n/a	
7/8/1986	6:15 p.m.	Lyndon[A]	65 kts	n/a	n/a	n/a	n/a	
9/11/1986	12:30 a.m.	Sterling	52 kts	n/a	n/a	n/a	n/a	
5/20/1987	5:30 p.m.	Lyndon[A]	70 kts	n/a	n/a	n/a	n/a	
8/3/1987	2:00 p.m.	Morrison	n/a	n/a	n/a	n/a	n/a	
8/16/1987	6:15 p.m.	Lyndon[A]	n/a	n/a	n/a	n/a	n/a	
3/24/1988	9:16 p.m.	Erie[A]	n/a	n/a	n/a	n/a	n/a	
3/24/1988	9:30 p.m.	Sterling[A]	n/a	n/a	n/a	n/a	n/a	
6/17/1990	2:15 a.m.	Erie	n/a	n/a	n/a	n/a	n/a	
6/28/1990	4:00 p.m.	Erie	n/a	n/a	n/a	n/a	n/a	
9/12/1991	5:40 p.m.	Fenton	n/a	n/a	n/a	n/a	n/a	
9/12/1991	6:07 p.m.	Rock Falls	n/a	n/a	n/a	n/a	n/a	
11/29/1991	11:55 p.m.	Sterling	n/a	n/a	n/a	n/a	n/a	
7/2/1992	12:19 p.m.	Fulton	n/a	n/a	n/a	n/a	n/a	
5/10/1993	3:50 p.m.	Erie	n/a	0	0	$5,000	n/a	winds flattened a barn, overturned a picnic table, moved a car 30 feet and blasted paint off the side of a house
6/26/1994	3:05 p.m.	Lyndon[A]	n/a	n/a	n/a	$500	n/a	a tree was blown down just north of the Village
7/19/1994	1:34 p.m.	Fulton	n/a	n/a	n/a	n/a	n/a	
4/18/1995	9:10 a.m.	Garden Plain	n/a	n/a	n/a	n/a	n/a	
5/9/1995	5:24 p.m.	Fulton	n/a	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$5,500**	**$0**	

[A] Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 4 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/9/1995	5:30 p.m.	Garden Plain	n/a	n/a	n/a	n/a	n/a	
6/7/1995	7:30 p.m.	Sterling	n/a	n/a	n/a	n/a	n/a	numerous tree limbs were blown down
8/9/1995	4:43 p.m.	Morrison	60 kts	n/a	n/a	$2,000	n/a	
6/23/1996	7:45 p.m.	Coleta	52kts	n/a	n/a	$50,000	n/a	committee member indicated that winds damaged buildings and removed roofs
10/29/1996	4:00 p.m.	Erie	60 kts	n/a	n/a	n/a	n/a	winds caused tree damage and power outages
10/29/1996	4:04 p.m.	Erie	60 kts	n/a	n/a	n/a	n/a	winds downed trees
4/5/1997	3:40 p.m.	Prophetstown	70 kts	n/a	n/a	n/a	n/a	winds partially blew a roof off a building and downed trees
4/5/1997	3:45 p.m.	Rock Falls	52 kts	n/a	n/a	n/a	n/a	winds downed trees
3/27/1998	7:25 p.m.	Fulton	52 kts	n/a	n/a	n/a	n/a	winds downed trees and power liens causing numerous power outages across the City
5/12/1998	8:43 p.m.	Tampico[^]	n/a	n/a	n/a	n/a	n/a	a tree fell onto power lines producing a brief power outage in the southeast portion of the County
5/15/1998	7:30 p.m.	Lyndon	56 kts	n/a	n/a	n/a	n/a	winds downed tree limbs which resulted in light damage in the Village
5/28/1998	8:25 p.m.	Sterling[^]	n/a	n/a	n/a	$1,000	n/a	winds downed trees and limbs in the northeast portion of the County
6/28/1998	1:15 a.m.	Albany East Clinton Fulton	n/a	n/a	n/a	$4,000	n/a	winds downed trees and damaged a power transformer resulting in power outages across the western portion of the County
Subtotal:				**0**	**0**	**$57,000**	**$0**	

[^] Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 5 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/28/1998	1:30 a.m.	Erie	78 kts	n/a	n/a	n/a	n/a	
11/10/1998	5:15 a.m.	Sterling	56 kts	n/a	n/a	n/a	n/a	
2/11/1999	2:02 p.m.	Sterling Whiteside Co. Airport	58 kts	1	0	$28,000	n/a	a student was injured when strong winds tore a portion of roof off a high school
5/12/1999	4:25 p.m.	Fulton	n/a	n/a	n/a	$100	n/a	winds downed large tree limbs
5/16/1999	11:10 p.m.	Fulton	n/a	n/a	n/a	$500	n/a	winds downed trees
5/16/1999	11:45 p.m.	Fulton	n/a	n/a	n/a	$500	n/a	winds downed trees
5/16/1999	11:50 p.m.	Tampico	n/a	n/a	n/a	$5,000	n/a	winds caused plaster to fall inside a home and heavily damaged a garage
6/1/1999	5:05 p.m.	Prophetstown	52 kts	n/a	n/a	n/a	n/a	a few small trees were downed
6/1/1999	5:18 p.m.	Morrison^	56 kts	n/a	n/a	n/a	n/a	several large trees, roughly 4 to 6 feet in diameter, were blown down along with power lines approx. 1 mile south of the City
7/21/1999	6:45 p.m.	countywide	n/a	n/a	n/a	$15,000	n/a	- throughout the County winds downed trees and power lines which blocked several roads *Prophetstown area* - winds blew the roofs off some cabins - some mobile homes along the Rock River sustained wind damage *Rock Falls area* - winds damaged the Montmorency School south of the City
Subtotal:				**1**	**0**	**$49,100**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 6 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/13/2000	4:10 p.m.	Erie[A]	n/a	n/a	n/a	$2,000	n/a	severe winds toppled power poles, lines and several trees over portions of the County
6/13/2000	4:20 p.m.	Lyndon[A]	n/a	n/a	n/a	$1,000	n/a	
8/6/2000	2:25 p.m.	Erie	58 kts	n/a	n/a	$2,000	n/a	tree limbs were knocked down
8/6/2000	2:35 p.m.	Morrison	n/a	n/a	n/a	$5,000	n/a	winds downed numerous trees and tree limbs
8/6/2000	2:40 p.m.	Tampico	n/a	n/a	n/a	$5,000	n/a	winds downed numerous trees and tree limbs
9/11/2000	12:50 p.m.	countywide	52 kts	n/a	n/a	n/a	n/a	several trees and tree limbs were down throughout the County
9/11/2000	7:35 p.m.	Fulton Morrison	55 kts	n/a	n/a	$2,000	n/a	numerous trees and tree limbs downed
9/11/2000	7:55 p.m.	Fulton	52 kts	n/a	n/a	n/a	n/a	winds blew down a large tree
5/10/2001	8:20 p.m.	Fulton	n/a	n/a	n/a	$10,000	n/a	- strong winds downed 3 large trees and numerous tree limbs and power lines - a small greenhouse was blown over
5/22/2001	1:10 p.m.	Fulton	n/a	n/a	n/a	$200	n/a	large tree was blow down on Chase Rd.
7/8/2002	8:08 p.m.	Sterling	61 kts	n/a	n/a	n/a	n/a	numerous tree limbs and several power liens were blown down
7/8/2002	8:20 p.m.	Prophetstown[A]	61 kts	n/a	n/a	n/a	n/a	trees were blown down on IL Rte. 78 approx. 1 ¼ mile south of the City
7/20/2002	4:43 p.m.	Albany	52 kts	n/a	n/a	n/a	n/a	
8/12/2002	7:00 p.m.	Fulton[A]	52 kts	n/a	n/a	n/a	n/a	trees were blown down near Penrose and Union Grove Roads
Subtotal:				**0**	**0**	**$27,200**	**$0**	

[A] Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 7 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
7/20/2003	11:50 p.m.	Coleta	61 kts	n/a	n/a	$100,000	$10,000	winds downed the radio tower at the fire station
7/27/2003	10:25 a.m.	Prophetstown	52 kts	n/a	n/a	$25,000	$5,000	winds downed trees
8/20/2003	5:35 p.m.	Fulton	50 kts	n/a	n/a	$5,000	n/a	- blew down 6 inch diameter limbs - gravel blown off the road
8/20/2003	6:05 p.m.	Albany East Clinton Fulton	50 kts	n/a	n/a	$10,000	n/a	winds blew tree limbs down on power lines
8/3/2004	7:05 p.m.	countywide	57 kts	n/a	n/a	$10,000	$5,000	sporadic damage consisting of mainly of trees and power lines down occurred across the northern portion of the County from Garden Plain to Morrison to north of Sterling
3/30/2005	2:36 p.m.	Fulton^	58 kts	n/a	n/a	$1,000	n/a	
6/30/2005	2:12 a.m.	Albany	61 kts	n/a	n/a	$20,000	n/a	- winds downed large limbs and power lines - a business had several broken windows - a tree fell on a house causing moderate damage
6/30/2005	2:18 a.m.	Fulton	65 kts	n/a	n/a	$20,000	n/a	- cars and homes sustained damage when winds downed 3 large trees and numerous power lines - singles were pulled off 2 houses
Subtotal:				**0**	**0**	**$191,000**	**$20,000**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 8 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
9/13/2005	4:03 p.m.	countywide	52 kts	n/a	n/a	$20,000	n/a	numerous trees and power lines were felled from Albany to Coleta
9/13/2005	4:25 p.m.	Coleta	52 kts	1	0	n/a	n/a	a tree was blown onto a moving vehicle injuring the driver
9/13/2005	4:32 p.m.	Sterling	52 kts	n/a	n/a	n/a	n/a	
3/12/2006	8:20 p.m.	Erie	52 kts	n/a	n/a	$1,000	n/a	winds downed power lines
3/12/2006	9:30 p.m.	Garden Plain^	57 kts	n/a	n/a	$25,000	n/a	15 power poles snapped at ground level on Frog Pond Road
5/24/2006	6:00 p.m.	Morrison	52 kts	n/a	n/a	n/a	$1,000	
5/27/2006	2:05 p.m.	Prophetstown	52 kts	n/a	n/a	$500	n/a	tree down with numerous leaves and small branches down as well
5/27/2006	2:16 p.m.	Lyndon^	57 kts	n/a	n/a	$3,000	$1,000	transformers blown south of Interstate 88 and IL Rte. 78 interchange
5/27/2006	2:43 p.m.	Sterling^	52 kts	n/a	n/a	n/a	n/a	high tension power line downed east of the City
5/27/2006	3:17 p.m.	Sterling	50 kts	n/a	n/a	n/a	n/a	
7/19/2006	12:35 p.m.	Albany	57 kts	n/a	n/a	$4,000	n/a	winds blew trees down
7/19/2006	12:40 p.m.	Albany^ East Clinton Fulton	57 kts	n/a	n/a	$12,000	n/a	*Albany area* - trees down on Ebson Rd. north of the turnoff for Garden Plain Rd. *Fulton* - downed trees - facades of several buildings damaged
Subtotal:				**1**	**0**	**$65,500**	**$2,000**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 9 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
7/19/2006	1:10 p.m.	Morrison	57 kts	n/a	n/a	$5,000	n/a	winds blew down trees, limbs and power lines with many of the limbs 6 inches in diameter and some greater than 10 inches in diameter
8/10/2006	5:58 a.m.	Albany[^]	52 kts	n/a	n/a	$2,000	n/a	braches and limbs were blown down on Kennedy Rd.
8/10/2006	6:20 a.m.	Coleta[^] Sterling	52 kts	n/a	n/a	$8,000	n/a	*Coleta/Sterling area (north)* - numerous 2 to 12 inch diameter limbs down along IL Rte. 40 to the Sterling city limits *Sterling* - numerous 3 to 5 inch diameter limbs down on the northwest side of the city
6/1/2007	1:30 p.m.	Erie[^]	61 kts	n/a	n/a	$10,000	$1,000	just southeast of the Village: - some grain bins were blown off of their foundations into each other - a pole building was destroyed - some power poles and large tree limbs were blown down - a portion of a corn field was flattened
6/7/2007	8:50 p.m.	Sterling[^]	61 kts	n/a	n/a	n/a	n/a	many trees and power lines were blown down just northeast of the City
6/7/2007	9:52 p.m.	Sterling	61 kts	n/a	n/a	n/a	n/a	many trees and power lines were blown down throughout the City
Subtotal:				**0**	**0**	**$25,000**	**$1,000**	

[^] Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 10 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/7/2007	10:00 p.m.	Round Grove[^]	56 kts	n/a	n/a	n/a	n/a	the roof of a house located at the intersection of Round Grove and Hazel Roads was damaged
8/7/2007	11:20 p.m.	Prophetstown	61 kts	n/a	n/a	n/a	n/a	winds blew down two trees and some tree limbs
8/23/2007	12:45 p.m.	Albany East Clinton Fulton	56 kts	n/a	n/a	n/a	n/a	winds blew down a tree in Albany and another in Fulton
5/25/2008	11:36 p.m.	Rock Falls[^]	56 kts	n/a	n/a	$10,000	n/a	6 miles south of the City: - winds blew down some trees and damaged a building - some livestock were also reported missing
6/6/2008	3:30 a.m.	Fulton	52 kts	n/a	n/a	$10,000	n/a	- tree branches were downed throughout the City - falling limbs broke some power lines causing a power outage
6/6/2008	3:45 a.m.	Morrison	52 kts	n/a	n/a	$10,000	n/a	- tree branches were downed throughout the City - falling limbs broke some power lines causing a power outage
6/7/2008	1:49 p.m.	Morrison	52 kts	n/a	n/a	n/a	n/a	winds blew down a tree limb onto a house
6/7/2008	1:55 p.m.	Prophetstown	52 kts	n/a	n/a	n/a	n/a	wind blew down a tree limb across a street
Subtotal:				**0**	**0**	**$30,000**	**$0**	

[^] Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 11 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/8/2008	9:47 a.m.	Coleta[^]	59 kts	n/a	n/a	n/a	n/a	
6/8/2008	10:05 a.m.	Sterling	56 kts	n/a	n/a	$15,000	n/a	- blew down several tree limbs that were over 6 inches in diameter on the west side of the City - some branches broke power lines and cable television lines
6/12/2008	10:35 p.m.	Sterling Rock Falls Whiteside Co. Airport	56 kts	n/a	n/a	n/a	n/a	
6/15/2008	5:00 a.m.	Morrison	52 kts	n/a	n/a	n/a	n/a	- COOP observer indicated that winds blew down one 3 foot diameter tree across N. Orange St. and one 3 foot diameter tree across E. Park St. - other branches were also blown down
8/4/2008	5:33 p.m.	Sterling[^]	56 kts	n/a	n/a	n/a	n/a	winds blew down some large tree limbs, 8 inches in diameter, across some roads 2 to 5 miles northeast of the City
8/4/2008	6:10 p.m.	Rock Falls[^]	61 kts	n/a	n/a	$5,000	n/a	winds blew down several 8 to 12 inch diameter trees and telephone poles across Thome Rd. 4 miles south of the City
Subtotal:				**0**	**0**	**$20,000**	**$0**	

[^] Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 12 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/19/2009	5:09 p.m.	Erie Morrison	61 kts	n/a	n/a	$25,000	n/a	*Erie* - winds blew down several 8 to 10 inch diameter branches *Morrison* - winds blew down some trees and power lines
6/19/2009	5:15 p.m.	Erie	61 kts	n/a	n/a	$25,000	n/a	- winds blew down several tree limbs and power lines - some limbs were blocking a road
6/19/2009	5:22 p.m.	Rock Falls	61 kts	n/a	n/a	n/a	n/a	winds blew down some trees
6/27/2009	4:35 p.m.	Fulton^	52 kts	n/a	n/a	n/a	n/a	winds blew down some tree limbs 6 to 7 inches in diameter 2 miles northeast of the City
6/27/2009	4:45 p.m.	Ustick^	52 kts	n/a	n/a	n/a	n/a	
6/27/2009	5:15 p.m.	Sterling	61 kts	n/a	n/a	$25,000	n/a	- winds blew down a large tree at Avenue J and 6th St. - trees snapped some power lines and blocked the road - several other smaller branches were also blown down
4/5/2010	7:35 p.m.	Ustick^	61 kts	n/a	n/a	$25,000	n/a	1 ¼ mile east of Ustick: - winds blew down some trees and branches - some vehicles were damaged by fallen branches - a power outage was observed
Subtotal:				**0**	**0**	**$100,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 13 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
4/5/2010	7:55 p.m.	Coleta^	61 kts	n/a	n/a	n/a	n/a	winds blew down a tree 2 to 3 foot in diameter and 30 to 40 feet tall across a road approx. 4 miles west of the Village
6/18/2010	12:55 p.m.	Ustick^	52 kts	n/a	n/a	n/a	n/a	some small branches were blown down about 2 miles west of Ustick
6/18/2010	1:15 p.m.	Rock Falls	61 kts	n/a	n/a	$30,000	n/a	part of the roof was torn off a steel warehouse at a trucking company
6/18/2010	1:18 p.m.	Rock Falls^	65 kts	2	0	$25,000	n/a	- winds blew a semi trailer carrying pretzels onto its side on westbound Interstate 88 approx. 3 miles east of the City - the driver and passenger suffered minor injuries
6/18/2010	1:30 p.m.	Rock Falls	65 kts	n/a	n/a	$15,000	n/a	- wind blew the roof off of a mobile home on Harbor Ave. - winds blew down a 4 to 5 inch diameter tree limb onto a gas station - widespread tree debris was observed
6/18/2010	1:39 p.m.	Sterling	52 kts	n/a	n/a	n/a	n/a	winds blew down some large tree limbs
6/18/2010	6:30 p.m.	Fulton	56 kts	n/a	n/a	n/a	n/a	winds blew down some large tree limbs
6/18/2010	6:52 p.m.	Albany^	52 kts	n/a	n/a	n/a	n/a	
6/18/2010	7:49 p.m.	Rock Falls	56 kts	n/a	n/a	$5,000	n/a	- winds blew down several tree limbs - a power outage was observed in half of the City
Subtotal:				**2**	**0**	**$75,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 14 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/18/2010	8:00 p.m.	Morrison	n/a	n/a	n/a	n/a	n/a	COOP observer indicated that winds blew down trees up to 18 inches in diameter
6/23/2010	4:20 p.m.	Morrison-Rockwood State Park	52 kts	n/a	n/a	$5,000	n/a	winds blew down some power lines north of Morrison
8/20/2010	1:05 p.m.	Ustick	52 kts	n/a	n/a	n/a	n/a	
8/20/2010	1:10 p.m.	Morrison	70 kts	n/a	n/a	$10,000	n/a	- several trees and braches were blown down in the area - a utility pole was blown down along Prairie Center Rd. - US Rte. 30 was closed for a while due to tree removal operations
9/21/2010	3:30 p.m.	Deer Grove	52 kts	n/a	n/a	n/a	n/a	
11/22/2010	2:28 p.m.	Rock Falls[^]	65 kts	n/a	n/a	n/a	n/a	trees and power lines were blown down on Dixon Rd.
5/22/2011	5:00 p.m.	Morrison[^]	61 kts	n/a	n/a	$100,000	n/a	- winds blew a new machine shed over at a farm on Creamery Rd. – the doors of the shed hadn't been attached yet - shed fell onto a tractor and semi-truck that were inside
5/29/2011	10:13 a.m.	Erie	52 kts	n/a	n/a	n/a	n/a	
6/15/2011	7:12 p.m.	Erie[^]	52 kts	n/a	n/a	$1,000	n/a	winds snapped a power pole along Mohawk Rd. about 6 miles northwest of the Village
Subtotal:				**0**	**0**	**$116,000**	**$0**	

[^] Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 15 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
7/11/2011	5:50 a.m.	Como^	52 kts	n/a	n/a	n/a	n/a	
7/11/2011	5:53 a.m.	Rock Falls Sterling	61 kts	n/a	n/a	n/a	n/a	- reports of trees and large limbs down on power lines in the City near Sinnissippi Park - a number of Whiteside County residents were left without power
7/24/2011	4:04 a.m.	Albany^	52 kts	n/a	n/a	n/a	n/a	- winds blew down some branches about 5 miles south of the Village - a road was partially blocked by the branches
6/29/2012	6:27 p.m.	Fenton^	52 kts	n/a	n/a	n/a	n/a	
7/7/2012	4:40 p.m.	Sterling	52 kts	n/a	n/a	n/a	n/a	- several large diameter tree limbs were blown down on the northwest side of the City - power outages were also reported
8/4/2012	12:57 p.m.	Albany	50 kts	n/a	n/a	n/a	n/a	trained spotter reported 3 inch diameter tree limbs down
8/4/2012	1:05 p.m.	Garden Plain^	70 kts	n/a	n/a	n/a	n/a	
8/4/2012	1:09 p.m.	Ustick^ Malvern^	61 kts	n/a	n/a	n/a	n/a	*Ustick area* - winds blew down 3 inch diameter branches 2 miles west of the area *Malvern area* - winds blew down several large limbs 2 miles west of the area
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 16 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
8/4/2012	1:15 p.m.	Malvern[^]	61 kts	n/a	n/a	n/a	n/a	winds blew down a huge oak tree along with numerous large tree limbs 4 to 6 inches in diameter approx. 1 mile southwest of the area
8/4/2012	1:25 p.m.	Sterling	52 kts	n/a	n/a	n/a	n/a	a few large diameter tree limbs blew down
4/10/2013	5:10 a.m.	Whiteside Co. Airport	58 kts	n/a	n/a	n/a	n/a	
5/19/2013	6:49 p.m.	Ustick[^]	52 kts	n/a	n/a	n/a	n/a	
5/19/2013	5:55 p.m.	Sterling	50 kts	n/a	n/a	n/a	n/a	
5/19/2013	7:30 p.m.	Morrison	50 kts	n/a	n/a	n/a	n/a	trained spotter reported several 5 inch diameter limbs down
5/30/2013	4:40 p.m.	Morrison	50 kts	n/a	n/a	n/a	n/a	winds blew down an 8 inch diameter tree limb
5/30/2013	4:50 p.m.	Deer Grove[^]	52 kts	n/a	n/a	n/a	n/a	a large tree was partially blown over
6/24/2013	3:15 p.m.	Tampico	70 kts	n/a	n/a	$14,345	n/a	- winds blew down power lines and trees and tree limbs - Committee member indicated that the there was some damage to homes - cleanup/damage to Village infrastructure was estimated at $4,345 for this event
6/24/2013	3:20 p.m.	Tampico	50 kts	n/a	n/a	n/a	n/a	winds blew down 2.5 inch diameter tree branches
6/24/2013	3:27 p.m.	Rock Falls	52 kts	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$14,345**	**$0**	

[^] Thunderstorm with damaging winds verified in the vicinity of this location(s).

Figure 11
(Sheet 17 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/24/2013	3:31 p.m.	Sterling	61 kts	n/a	n/a	n/a	n/a	
6/24/2013	3:35 p.m.	Rock Falls	52 kts	n/a	n/a	n/a	n/a	fire department reported a large tree down on a house
8/30/2013	8:45 p.m.	Unionville	51 kts	n/a	n/a	n/a	n/a	winds knocked 1 to 2 inch diameter limbs off of trees in the area
11/17/2013	12:15 p.m.	Whiteside Co. Airport	69 kts	n/a	n/a	n/a	n/a	
6/29/2014	11:14 p.m.	Fulton	63 kts	n/a	n/a	n/a	n/a	
6/29/2014	11:45 p.m.	Fulton Morrison	60 kts	n/a	n/a	n/a	n/a	*Fulton* - tree were blown down throughout the City - minor structural damage occurred to several buildings - a dumpster was blown away
6/30/2014	12:00 a.m.	Coleta	50 kts	n/a	n/a	n/a	n/a	trained spotter reported 6 tree limbs down that were 4 to 5 inches in diameter approx. 3 miles southeast of the Village
8/25/2014	1:01 p.m.	Fulton	52 kts	n/a	n/a	n/a	n/a	
8/25/2014	1:15 p.m.	Morrison	65 kts	n/a	n/a	$1,000	n/a	winds blew down an 8 inch diameter tree limb onto a house
8/25/2014	1:20 p.m.	Morrison	65 kts	n/a	n/a	$265,000	n/a	- winds blew down numerous trees across the City - some trees fell on power lines and residences
Subtotal:				**0**	**0**	**$266,000**	**$0**	

Figure 11
(Sheet 18 of 18)
Severe Storms – Thunderstorms with Damaging Winds Reported in Whiteside County
1962 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
8/25/2014	1:30 p.m.	Sterling	52 kts	n/a	n/a	n/a	n/a	winds blew down tree limbs
8/25/2014	1:35 p.m.	Rock Falls	56 kts	n/a	n/a	n/a	n/a	- winds blew down several tree limbs - power outages were observed
Subtotal:				**0**	**0**	**$0**	**$0**	
GRAND TOTAL:				**4**	**0**	**$1,041,645**	**$23,000**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Sources: Whiteside County Multi-Jurisdictional All Hazards Mitigation Planning Committee group discussion on July 17, 2014.
Whiteside County Multi-Jurisdictional All Hazards Mitigation Planning Committee Member responses to Whiteside County Natural Hazard Events Questionnaire.
NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, COOP Data / Record of Climatological Observations.
NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Events Database.

Figure 12
(Sheet 1 of 3)
Severe Storms – Hail Events Reported in Whiteside County
1964 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/19/1964	6:45 p.m.	Lyndon^	2.00 in.	n/a	n/a	n/a	n/a	
5/7/1965	3:15 p.m.	Fulton^	1.00 in.	n/a	n/a	n/a	n/a	
6/1/1971	8:20 p.m.	Fulton^	1.75 in.	n/a	n/a	n/a	n/a	
9/17/1972	2:12 p.m.	Rock Falls	1.75 in.	n/a	n/a	n/a	n/a	
4/3/1974	3:30 p.m.	Morrison	1.00 in.	n/a	n/a	n/a	n/a	
5/16/1974	5:35 p.m.	Erie	1.00 in.	n/a	n/a	n/a	n/a	
5/16/1974	6:23 p.m.	Sterling	1.75 in.	n/a	n/a	n/a	n/a	
6/14/1974	7:35 p.m.	Tampico	1.75 in.	n/a	n/a	n/a	n/a	
6/20/1974	5:25 p.m.	Emerson^	1.00 in.	n/a	n/a	n/a	n/a	
8/4/1977	1:05 a.m.	Morrison	1.00 in.	n/a	n/a	n/a	n/a	
8/9/1980	11:00 p.m.	Prophetstown	1.75 in.	n/a	n/a	n/a	n/a	
8/9/1980	11:15 p.m.	Morrison	1.75 in.	n/a	n/a	n/a	n/a	
4/13/1981	3:05 p.m.	Fenton	1.50 in.	n/a	n/a	n/a	n/a	
4/25/1986	6:30 p.m.	Sterling	1.00 in.	n/a	n/a	n/a	n/a	
5/31/1987	6:30 p.m.	Lyndon^	1.00 in.	n/a	n/a	n/a	n/a	
3/27/1991	1:30 p.m.	Deer Grove^	1.75 in.	n/a	n/a	n/a	n/a	
6/17/1992	11:55 a.m.	Morrison-Rockwood State Park	1.75 in.	n/a	n/a	n/a	n/a	
8/23/1993	3:35 p.m.	Morrison	1.75 in.	n/a	n/a	n/a	n/a	
8/23/1993	4:05 p.m.	Morrison	1.75 in.	n/a	n/a	$5,000	$50,000	
4/25/1994	8:00 p.m.	Coleta^	1.00 in.	n/a	n/a	n/a	n/a	- up to 1 inch size hail was reported between Coleta and Milledgeville - no crop damage was reported
Subtotal:				**0**	**0**	**$5,000**	**$50,000**	

^ Hail event verified in the vicinity of this location(s).

Figure 12
(Sheet 2 of 3)
Severe Storms – Hail Events Reported in Whiteside County
1964 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/26/1994	2:58 p.m.	Lyndon	1.50 in.	n/a	n/a	n/a	n/a	
7/19/1994	1:50 p.m.	Morrison	1.00 in.	n/a	n/a	n/a	n/a	
4/10/1995	12:42 a.m.	Fulton	1.00 in.	n/a	n/a	n/a	n/a	
5/9/1995	5:24 p.m.	Fulton	1.75 in.	n/a	n/a	n/a	n/a	
5/9/1995	5:30 p.m.	Garden Plain	1.00 in.	n/a	n/a	n/a	n/a	
5/11/2000	7:16 a.m.	Erie	1.75 in.	n/a	n/a	n/a	n/a	
5/11/2000	7:21 a.m.	Prophetstown	1.75 in.	n/a	n/a	n/a	n/a	
5/11/2000	7:24 a.m.	Prophetstown	1.75 in.	n/a	n/a	n/a	n/a	
5/31/2000	3:50 p.m.	Morrison	1.00 in.	n/a	n/a	n/a	n/a	
5/31/2000	3:57 p.m.	Morrison	1.75 in.	n/a	n/a	n/a	n/a	
7/72003	7:13 p.m.	Coleta[A]	1.00 in.	n/a	n/a	$20,000	$10,000	damaged occurred on Tampico Rd.
7/11/2003	5:40 p.m.	Rock Falls[A]	1.00 in.	n/a	n/a	$20,000	$5,000	thunderstorms produced 1 inch hail at Oppold Marina Park just west of the Whiteside/Lee County Line
5/31/2004	3:06 p.m.	Sterling[A]	1.00 in.	n/a	n/a	n/a	$2,000	
3/12/2006	8:20 p.m.	Morrison-Rockwood State Park	1.00 in.	n/a	n/a	$3,000	n/a	
3/12/2006	8:48 p.m.	Coleta	1.00 in.	n/a	n/a	$3,000	n/a	
5/27/2006	1:50 p.m.	Fenton[A]	1.00 in.	n/a	n/a	$2,000	$2,000	
5/27/2006	2:16 p.m.	Prophetstown Lyndon[A]	1.00 in.	n/a	n/a	$6,000	$1,000	
Subtotal:				**0**	**0**	**$54,000**	**$20,000**	

[A] Hail event verified in the vicinity of this location(s).

Figure 12
(Sheet 3 of 3)
Severe Storms – Hail Events Reported in Whiteside County
1964 – 2014

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
10/2/2006	8:05 p.m.	Rock Falls	1.00 in.	n/a	n/a	n/a	n/a	
10/2/2006	8:26 p.m.	Sterling	1.25 in.	n/a	n/a	n/a	n/a	
5/13/2008	3:25 p.m.	Prophetstown	1.00 in.	n/a	n/a	n/a	n/a	
5/13/2008	3:30 p.m.	Prophetstown	1.00 in.	n/a	n/a	n/a	n/a	
5/13/2008	3:42 p.m.	Sterling	1.00 in.	n/a	n/a	n/a	n/a	hail fell for 6 minutes
4/4/2010	5:20 p.m.	Morrison	1.75 in.	n/a	n/a	n/a	n/a	
4/5/2010	7:35 p.m.	Ustick[A]	1.00 in.	n/a	n/a	n/a	n/a	
5/22/2011	3:42 p.m.	Rock Falls	1.00 in.	n/a	n/a	n/a	n/a	
5/24/2011	1:45 p.m.	Spring Hill[A]	1.75 in.	n/a	n/a	n/a	n/a	hail storm lasted about 20 minutes
6/9/2011	1:24 a.m.	Tampico[A]	1.00 in.	n/a	n/a	n/a	n/a	
6/9/2011	4:54 a.m.	Tampico	1.25 in.	n/a	n/a	n/a	n/a	
8/8/2011	1:23 p.m.	Round Grove[A]	1.00 in.	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	
GRAND TOTAL:				**0**	**0**	**$59,000**	**$70,000**	

[A] Hail event verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Events Database.

Figure 13
Severe Storms – Lightning Events Reported in Whiteside County
2003 – 2014

Date(s)	Start Time	Location(s)	Injuries	Fatalities	Property Damage	Crop Damage	Description
7/8/2003	11:45 a.m.	Sterling	n/a	n/a	$20,000	n/a	lightning struck a tree and a large branch fell on a house
5/19/2005	2:34 p.m.	Rock Falls	0	0	$200,000	n/a	- lightning struck the chimney of the Montmorency School while students were being dismissed but there were no injuries - the chimney was toppled by a wrecking company that evening for safety reasons - lightning strike damaged not only the chimney but part of the roof and a boiler
4/5/2010	7:55 p.m.	Coleta^	n/a	n/a	n/a	n/a	lightning strike damaged a house approx. 4 miles west of Coleta
6/18/2010	6:52 p.m.	Albany^	n/a	n/a	n/a	n/a	a few lightning strikes caused some damage
8/20/2010	12:58 p.m.	Morrison	1	0	n/a	n/a	a 12 year old boy was struck by lightning at the Southside Elementary School
GRAND TOTAL:			**1**	**0**	**$220,000**	**$0**	

Source: NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Events Database.

Figure 14
(Sheet 1 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
3/22/1993 thru 3/23/1993	n/a	Fulton Morrison Rock Falls	1.53 – 1.50 in.	n/a	n/a	n/a	- COOP observers measured: • 1.53 inches at Fulton L&D • 1.50 inches at Morrison • 1.50 inches at Rock Falls
4/8/1993 thru 4/9/1993	n/a	Rock Falls	1.45 in.	n/a	n/a	n/a	COOP observer measured 1.45 inches at Rock Falls
4/14/1993 thru 4/16/1993	6:30 p.m.	Fulton Morrison Rock Falls	2.57 – 2.03 in.	n/a	n/a	n/a	- COOP observers measured: • 1.57 inches at Rock Falls • 2.27 inches at Morrison • 2.03 inches at Fulton L&D
6/8/1993 thru 6/9/1993	12:00 a.m.	Fulton Morrison Rock Falls	4.19 – 3.05 in.	n/a	n/a	n/a	- COOP observers measured: • 4.19 inches at Morrison • 3.99 inches at Rock Falls • 3.05 inches at Fulton L&D
6/18/1993 thru 6/19/1993	6:00 p.m.	Fulton Morrison	1.65 – 1.64 in.	n/a	n/a	n/a	- COOP observers measured: • 1.65 inches at Fulton L&D • 1.64 inches at Morrison
7/17/1993 thru 7/18/1993	9:00 a.m.	Fulton	1.83 in.	n/a	n/a	n/a	COOP observer measured 1.83 inches at Fulton L&D
8/9/1993 thru 8/10/1993	10:30 a.m.	Fulton Morrison Rock Falls	1.56 – 1.32 in.	n/a	n/a	n/a	- COOP observers measured: • 1.56 inches at Fulton L&D • 1.45 inches at Morrison • 1.32 inches at Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 2 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
8/30/1993 thru 8/31/1993	n/a	Fulton Morrison Rock Falls	1.60 – 1.23 in.	n/a	n/a	n/a	- COOP observers measured: • 1.60 inches at Rock Falls • 1.29 inches at Fulton L&D • 1.23 inches at Morrison
9/13/1993 thru 9/14/1993	7:00 a.m.	Fulton Morrison Rock Falls	3.00 – 1.72 in.	n/a	n/a	n/a	- COOP observers measured: • 3.00 inches at Fulton L&D • 1.74 inches at Morrison • 1.72 inches at Rock Falls
9/25/1993 thru 9/26/1993	7:00 a.m.	Fulton Morrison Rock Falls	2.50 – 1.68 in.	n/a	n/a	n/a	- COOP observers measured: • 2.50 inches at Fulton L&D • 1.71 inches at Rock Falls • 1.68 inches at Morrison
2/20/1994	n/a	Morrison Rock Falls	1.49 – 1.14 in.	n/a	n/a	n/a	- COOP observers measured: • 1.49 inches at Rock Falls • 1.14 inches at Morrison
6/19/1994 thru 6/20/1994	n/a	Fulton Morrison	1.78 – 1.68 in.	n/a	n/a	n/a	- COOP observers measured: • 1.78 inches at Fulton L&D • 1.68 inches at Morrison
6/23/1994 thru 6/24/1994	n/a	Morrison Rock Falls	3.53 – 2.24 in.	n/a	n/a	n/a	- COOP observers measured: • 3.53 inches at Morrison • 2.24 inches at Rock Falls
6/26/1994	3:05 p.m.	Lyndon Morrison^ Rock Falls^ Sterling^	4.00 – 3.50 in.	n/a	n/a	n/a	Chicago Doppler Radar estimated 3.50 to 4.00 inches of rain between Morrison and Sterling over a 3 hour period.
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 3 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
7/19/1994	n/a	Fulton Morrison Rock Falls	2.23 – 1.43 in.	n/a	n/a	n/a	- COOP observers measured: • 2.23 inches at Morrison • 1.61 inches at Fulton L&D • 1.43 inches at Rock Falls - some street flooding was reported in Morrison after a reported 1.7 inches of rain fell in about one hour's time
8/18/1994 thru 8/19/1994	6:00 a.m.	Fulton Morrison Rock Falls	2.50 – 1.47 in.	n/a	n/a	n/a	- COOP observers measured: • 2.50 inches at Fulton L&D • 2.07 inches at Morrison • 1.47 inches at Rock Falls
9/23/1994 thru 9/25/1994	n/a	Fulton Morrison Rock Falls	2.00 – 1.29 in.	n/a	n/a	n/a	- COOP observers measured: • 2.00 inches at Fulton L&D • 1.40 inches at Rock Falls • 1.29 inches at Morrison
11/5/1994	10:00 a.m.	Fulton Morrison Rock Falls	3.00 – 1.76 in.	n/a	n/a	n/a	- COOP observers measured: • 3.00 inches at Rock Falls • 2.23 inches at Fulton L&D • 1.76 inches at Morrison
4/9/1995	1:00 a.m.	Fulton Morrison Prophetstown Rock Falls	1.54 – 1.35 in.	n/a	n/a	n/a	- COOP observers measured: • 1.54 inches at Morrison • 1.46 inches at Prophetstown • 1.41 inches at Rock Falls • 1.35 inches at Fulton L&D
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 4 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
4/10/1995 thru 4/11/1995	11:00 a.m.	Fulton Morrison Prophetstown Rock Falls	2.04 – 1.44 in.	n/a	n/a	n/a	- COOP observers measured: • 2.04 inches at Rock Falls • 1.83 inches at Prophetstown • 1.58 inches at Fulton L&D • 1.44 inches at Morrison
4/25/1995 thru 4/27/1995	8:00 p.m.	Fulton Morrison Prophetstown Rock Falls	2.24 – 2.03 in.	n/a	n/a	n/a	- COOP observers measured: • 2.24 inches at Morrison • 2.19 inches at Rock Falls • 2.12 inches at Fulton L&D • 2.03 inches at Prophetstown
5/7/1995 thru 5/9/1995	10:00 p.m.	Fulton Morrison Prophetstown Rock Falls	3.57 – 2.49 in.	n/a	n/a	n/a	- COOP observers measured: • 3.57 inches at Rock Falls • 3.38 inches at Fulton L&D • 3.28 inches at Morrison • 2.49 inches at Prophetstown
5/22/1995 thru 5/24/1995	8:00 p.m.	Fulton Morrison Prophetstown Rock Falls	2.23 – 1.68 in.	n/a	n/a	n/a	- COOP observers measured: • 2.23 inches at Prophetstown • 1.81 inches at Fulton L&D • 1.69 inches at Morrison • 1.68 inches at Rock Falls
7/4/1995 thru 7/5/1995	6:00 p.m.	Fulton Morrison Prophetstown Rock Falls	2.19 – 1.61 in.	n/a	n/a	n/a	- COOP observers measured: • 2.19 inches at Morrison • 2.10 inches at Fulton L&D • 2.00 inches at Prophetstown • 1.61 inches at Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 5 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
8/8/1995 thru 8/9/1995	n/a	Fulton Prophetstown Rock Falls	2.78 – 1.39 in.	n/a	n/a	n/a	- COOP observers measured: • 2.78 inches at Rock Falls • 1.59 inches at Fulton L&D • 1.39 inches at Prophetstown
8/15/1995	n/a	Fulton Morrison Rock Falls	2.54 – 1.24 in.	n/a	n/a	n/a	- COOP observers measured: • 2.54 inches at Morrison • 1.61 inches at Fulton L&D • 1.24 inches at Rock Falls
5/9/1996 thru 5/10/1996	2:00 a.m.	Fulton Morrison Prophetstown Rock Falls	3.49 – 3.13 in.	n/a	n/a	n/a	- COOP observers measured: • 3.49 inches at Morrison • 3.41 inches at Rock Falls • 3.28 inches at Prophetstown • 3.13 inches at Fulton L&D
5/19/1996 thru 5/20/1996	11:00 p.m.	Fulton Morrison Prophetstown Rock Falls	2.93 – 1.68 in.	n/a	n/a	n/a	- COOP observers measured: • 2.93 inches at Morrison • 2.32 inches at Rock Falls • 170 inches at Fulton L&D • 1.68 inches at Prophetstown
5/24/1996 thru 5/28/1996	8:00 a.m.	Fulton Morrison Prophetstown Rock Falls	4.54 – 2.90 in.	n/a	n/a	n/a	- COOP observers measured: • 4.54 inches at Fulton L&D • 3.62 inches at Rock Falls • 3.49 inches at Morrison • 2.90 inches at Prophetstown
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 6 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
6/2/1996	n/a	Rock Falls	1.77 in.	n/a	n/a	n/a	COOP observer measured 1.77 inches at Rock Falls
6/17/1996 thru 6/18/1996	n/a	Fulton Rock Falls	2.05 – 1.07 in.	n/a	n/a	n/a	- COOP observers measured: • 2.05 inches at Rock Falls • 1.07 inches at Fulton L&D
7/16/1996 thru 7/17/1996	n/a	Fulton Morrison Prophetstown Rock Falls	4.20 – 1.72 in.	n/a	n/a	n/a	- COOP observers measured: • 4.20 inches at Rock Falls • 3.85 inches at Morrison • 3.21 inches at Prophetstown • 1.72 inches at Fulton L&D
8/5/1996	3:00 p.m.	Morrison Prophetstown Rock Falls	2.26 – 1.11 in.	n/a	n/a	n/a	- COOP observers measured: • 2.26 inches at Rock Falls • 1.16 inches at Prophetstown • 1.11 inches at Morrison
8/22/1996 thru 8/23/1996	8:00 p.m.	Morrison Prophetstown Rock Falls	1.63 – 1.00 in.	n/a	n/a	n/a	- COOP observers measured: • 1.63 inches at Prophetstown • 1.48 inches at Rock Falls • 1.00 inches at Morrison
9/26/1996 thru 9/27/1996	n/a	Rock Falls	1.79 in.	n/a	n/a	n/a	COOP observer measured 1.79 inches at Rock Falls
10/16/1996 thru 10/17/1996	1:00 a.m.	Fulton Morrison Prophetstown Rock Falls	2.45 – 1.42 in.	n/a	n/a	n/a	- COOP observers measured: • 2.45 inches at Prophetstown • 1.71 inches at Morrison • 1.48 inches at Fulton L&D • 1.42 inches at Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 7 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
10/29/1996	7:30 a.m.	Fulton Morrison Rock Falls	1.60 – 1.21 in.	n/a	n/a	n/a	- COOP observers measured: • 1.60 inches at Morrison • 1.59 inches at Fulton L&D • 1.21 inches at Rock Falls
2/20/1997 thru 2/21/1997	1:00 p.m.	countywide	2.27 – 1.94 in.	n/a	n/a	n/a	- COOP observers measured: • 2.27 inches at Prophetstown • 2.10 inches at Morrison • 2.00inches at Rock Falls • 1.94 inches at Fulton L&D - COOP observer at Prophetstown noted that there was local flooding and river flooding - Heavy rains fell on soils that were still partially frozen and on rivers and streams running high from snowmelt causing flooding along almost every river and stream
5/7/1997 thru 5/8/1997	8:00 a.m.	Fulton Morrison Prophetstown Rock Falls	1.80 – 1.45 in.	n/a	n/a	n/a	- COOP observers measured: • 1.80 inches at Fulton L&D • 1.80 inches at Morrison • 1.45 inches at Prophetstown • 1.45 inches at Rock Falls
7/20/1997 thru 7/21/1997	n/a	Fulton Morrison Prophetstown Rock Falls	2.73 – 1.10 in.	n/a	n/a	n/a	- COOP observers measured: • 2.73 inches at Morrison • 1.45 inches at Rock Falls • 1.27 inches at Fulton L&D • 1.10 inches at Prophetstown
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 8 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
8/14/1997 thru 8/15/1997	9:30 p.m.	Fulton Prophetstown	1.80 – 1.30 in.	n/a	n/a	n/a	- COOP observers measured: • 1.80 inches at Prophetstown • 1.30 inches at Fulton L&D
8/16/1997 thru 8/17/1997	8:00 p.m.	Morrison Prophetstown Rock Falls	2.04 – 1.41 in.	n/a	n/a	n/a	- COOP observers measured: • 2.04 inches at Prophetstown • 1.56 inches at Morrison • 1.41 inches at Rock Falls
2/26/1998 thru 2/27/1998	7:30 a.m.	Fulton Morrison Prophetstown	1.46 – 1.01 in.	n/a	n/a	n/a	- COOP observers measured: • 1.46 inches at Fulton L&D • 1.17 inches at Morrison • 1.01 inches at Prophetstown
3/31/1998 thru 4/1/1998	7:00 a.m.	Fulton Morrison Prophetstown Rock Falls	3.27 – 1.57 in.	n/a	n/a	n/a	- COOP observers measured: • 3.27 inches at Fulton L&D • 3.00 inches at Morrison • 2.30 inches at Rock Falls • 1.57 inches at Prophetstown
4/7/1998 thru 4/9/1998	12:00 p.m.	Fulton Morrison Prophetstown Rock Falls	2.05 – 1.24 in.	n/a	n/a	n/a	- COOP observers measured: • 2.05 inches at Fulton L&D • 1.54 inches at Morrison • 1.34 inches at Prophetstown • 1.24 inches at Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 9 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
6/8/1998 thru 6/9/1998	10:00 a.m.	Fulton Morrison Prophetstown Rock Falls	1.50 – 1.19 in.	n/a	n/a	n/a	- COOP observers measured: • 1.50 inches at Rock Falls • 1.42 inches at Morrison • 1.35 inches at Fulton L&D • 1.19 inches at Prophetstown
6/28/1998	9:00 a.m.	Fulton Morrison Rock Falls	1.60 – 1.13 in.	n/a	n/a	n/a	- COOP observers measured: • 1.60 inches at Fulton L&D • 1.47 inches at Morrison • 1.13 inches at Rock Falls
8/4/1998 thru 8/5/1998	11:00 a.m.	Prophetstown Rock Falls	2.67 – 1.91 in.	n/a	n/a	n/a	- COOP observers measured: • 2.67 inches at Prophetstown • 1.91 inches at Rock Falls - COOP observer at Prophetstown noted that they received 2.10 inches of rain in 40 minutes
8/28/1998	12:00 a.m.	Fulton Morrison Prophetstown Rock Falls	1.50 – 1.00 in.	n/a	n/a	n/a	- COOP observers measured: • 1.50 inches at Morrison • 1.17 inches at Prophetstown • 1.09 inches at Fulton L&D • 1.00 inches at Rock Falls
9/13/1998 thru 9/14/1998	8:00 p.m.	Fulton Morrison Prophetstown Rock Falls	2.88 – 1.91 in.	n/a	n/a	n/a	- COOP observers measured: • 2.88 inches at Morrison • 2.35 inches at Fulton L&D • 2.24 inches at Prophetstown • 1.91 inches at Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 10 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
10/5/1998	2:30 a.m.	Morrison Prophetstown Rock Falls	1.85 – 1.12 in.	n/a	n/a	n/a	- COOP observers measured: • 1.85 inches at Prophetstown • 1.67 inches at Rock Falls • 1.12 inches at Morrison
10/17/1998 thru 10/18/1998	9:00 a.m.	countywide	4.25 – 2.75 in.	n/a	n/a	n/a	- COOP observers measured: • 4.25 inches at Rock Falls • 4.24 inches at Prophetstown • 3.38 inches at Morrison • 2.75 inches at Fulton L&D - Heavy rains caused area rivers and streams to rise rapidly causing countywide flash flooding
11/9/1998 thru 11/10/1998	8:00 p.m.	Fulton Morrison Prophetstown Rock Falls	2.11 – 1.60 in.	n/a	n/a	n/a	- COOP observers measured: • 2.11 inches at Rock Falls • 2.07 inches at Morrison • 1.77 inches at Prophetstown • 1.60 inches at Fulton L&D
4/15/1999 thru 4/16/1999	9:00 a.m.	Fulton Morrison Prophetstown Rock Falls	1.74 – 1.34 in.	n/a	n/a	n/a	- COOP observers measured: • 1.74 inches at Morrison • 1.69 inches at Prophetstown • 1.60 inches at Rock Falls • 1.34 inches at Fulton L&D
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 11 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
4/22/1999 thru 4/23/1999	n/a	Fulton Morrison Prophetstown Rock Falls	2.87 – 1.86 in.	n/a	n/a	n/a	- COOP observers measured: • 2.87 inches at Fulton L&D • 2.76 inches at Rock Falls • 2.52 inches at Morrison • 1.86 inches at Prophetstown
5/13/1999	7:00 a.m.	Fulton Morrison Prophetstown Rock Falls	2.55 – 1.44 in.	n/a	n/a	n/a	- COOP observers measured: • 2.55 inches at Fulton L&D • 1.96 inches at Morrison • 1.81 inches at Prophetstown • 1.41 inches at Rock Falls
6/2/1999	n/a	Morrison Prophetstown Rock Falls	1.87 – 1.15 in.	n/a	n/a	n/a	- COOP observers measured: • 1.87 inches at Morrison • 1.54 inches at Prophetstown • 1.15 inches at Rock Falls
7/1/1999	12:00 a.m.	Fulton Morrison	1.88 – 1.30 in.	n/a	n/a	n/a	- COOP observers measured: • 1.88 inches at Morrison • 1.30 inches at Fulton L&D
7/28/1999	4:00 a.m.	Fulton	1.50 in.	n/a	n/a	n/a	COOP observer measured 1.50 inches at Fulton L&D
8/23/1999 thru 8/24/1999	2:00 p.m.	Fulton Morrison Prophetstown Rock Falls	1.96 – 1.05 in.	n/a	n/a	n/a	- COOP observers measured: • 1.96 inches at Rock Falls • 1.93 inches at Prophetstown • 1.26 inches at Morrison • 1.05 inches at Fulton L&D
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 12 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
9/26/1999 thru 9/28/1999	n/a	Fulton Morrison Prophetstown Rock Falls	4.83 – 2.63 in.	n/a	n/a	n/a	- COOP observers measured: • 4.83 inches at Prophetstown • 4.76inches at Rock Falls • 3.72 inches at Morrison • 2.63 inches at Fulton L&D
10/3/1999 thru 10/4/1999	n/a	Morrison	1.60 in.	n/a	n/a	n/a	COOP observer measured 1.60 inches at Morrison
4/19/2000 thru 4/21/2000	n/a	Fulton Morrison Prophetstown Rock Falls	3.97 – 2.20 in.	n/a	n/a	n/a	- COOP observers measured: • 3.97 inches at Rock Falls • 3.20 inches at Prophetstown • 2.44 inches at Fulton L&D • 2.20 inches at Morrison
5/9/2000	n/a	Morrison Rock Falls	2.03 – 1.05 in.	n/a	n/a	n/a	- COOP observers measured: • 2.03 inches at Rock Falls • 1.05 inches at Morrison
5/18/2000 thru 5/19/2000	1:00 p.m.	Morrison Prophetstown Rock Falls	1.59 – 1.50 in.	n/a	n/a	n/a	- COOP observers measured: • 1.59 inches at Prophetstown • 1.57 inches at Rock Falls • 1.50 inches at Morrison
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 13 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
5/30/2000 thru 6/1/2000	6:00 p.m.	countywide	4.80 – 1.21 in.	n/a	n/a	n/a	- COOP observers measured: • 4.80 inches at Fulton L&D • 3.22 inches at Morrison • 2.74 inches at Rock Falls • 1.21 inches at Prophetstown - Multiple rain events left soils very saturated and the additional heavy rain during the late afternoon and evening of the 31st caused several creeks and streams to flood
6/11/2000 thru 6/14/2000	n/a	countywide	4.29 – 3.00 in.	n/a	n/a	n/a	- COOP observers measured: • 4.29 inches at Morrison • 3.71inches at Fulton L&D • 3.37 inches at Rock Falls • 3.00 inches at Prophetstown - Heavy rain falling on already saturated ground on the 13th resulted in urban and small stream flooding in a few areas within the County
6/23/2000 thru 6/24/2000	12:00 p.m.	Fulton Morrison Prophetstown Rock Falls	3.47 – 2.70 in.	n/a	n/a	n/a	- COOP observers measured: • 3.47 inches at Rock Falls • 3.30 inches at Prophetstown • 3.12 inches at Morrison • 2.70inches at Fulton L&D
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 14 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
7/2/2000 thru 7/3/2000	10:00 p.m.	Fulton Morrison Prophetstown Rock Falls	2.30 – 1.10 in.	n/a	n/a	n/a	- COOP observers measured: • 2.30 inches at Prophetstown • 1.65 inches at Rock Falls • 1.21 inches at Morrison • 1.10 inches at Fulton L&D
8/6/2000 thru 8/7/2000	n/a	Rock Falls	1.54 in.	n/a	n/a	n/a	COOP observer measured 1.54 inches at Rock Falls
9/23/2000	7:30 a.m.	Fulton Morrison Prophetstown Rock Falls	1.50 – 1.25 in.	n/a	n/a	n/a	- COOP observers measured: • 1.50 inches at Morrison • 1.49 inches at Fulton L&D • 1.28 inches at Rock Falls • 1.25 inches at Prophetstown
1/29/2001	5:00 a.m.	Morrison Prophetstown Rock Falls	1.50 – 1.35 in.	n/a	n/a	n/a	- COOP observers measured: • 1.50 inches at Morrison • 1.45 inches at Rock Falls • 1.35` inches at Prophetstown
2/8/2001 thru 2/9/2001	11:00 a.m.	Fulton Morrison Prophetstown Rock Falls	2.57 – 1.26 in.	n/a	n/a	n/a	- COOP observers measured: • 2.57 inches at Fulton L&D • 1.80 inches at Morrison • 1.50 inches at Prophetstown • 1.26 inches at Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 15 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
5/3/2001 thru 5/4/2001	5:00 p.m.	Fulton Morrison Prophetstown	2.00 – 1.02 in.	n/a	n/a	n/a	- COOP observers measured: • 2.00 inches at Fulton L&D • 1.05 inches at Morrison • 1.02 inches at Prophetstown
7/3/2001	2:00 a.m.	Morrison Prophetstown	2.00 – 1.40 in.	n/a	n/a	n/a	- COOP observers measured: • 2.00 inches at Morrison • 1.40 inches at Prophetstown
7/18/2001	8:30 a.m.	Morrison	2.80 in.	n/a	n/a	n/a	COOP observer measured 2.80 inches at Morrison
7/21/2001	n/a	Sterling	2.92 in.	n/a	n/a	n/a	A trained weather spotter reported 2.92 inches of rain fell in 2 hours causing ditches to fill up and water to pond on streets
8/1/2001 thru 8/2/2001	10:00 p.m.	Morrison Rock Falls	1.77 – 1.07 in.	n/a	n/a	n/a	- COOP observers measured: • 1.77 inches at Rock Falls • 1.07 inches at Morrison
9/6/2001 thru 9/7/2001	n/a	Prophetstown Rock Falls	1.65 – 1.46 in.	n/a	n/a	n/a	- COOP observers measured: • 1.65 inches at Prophetstown • 1.46 inches at Rock Falls
9/9/2001	6:30 a.m.	Morrison Prophetstown Rock Falls	1.57 – 1.16 in.	n/a	n/a	n/a	- COOP observers measured: • 1.57 inches at Rock Falls • 1.29 inches at Prophetstown • 1.16 inches at Morrison
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 16 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
9/18/2001 thru 9/19/2001	5:00 p.m.	Fulton Morrison Prophetstown Rock Falls	2.36 – 1.41 in.	n/a	n/a	n/a	- COOP observers measured: • 2.36 inches at Fulton L&D • 1.72 inches at Morrison • 1.59 inches at Rock Falls • 1.41 inches at Prophetstown
10/11/2001	n/a	Fulton	1.78 in.	n/a	n/a	n/a	COOP observer measured 1.78 inches at Fulton L&D
10/22/2001	5:30 p.m.	Fulton Morrison Prophetstown Rock Falls	3.55 – 1.63 in.	n/a	n/a	n/a	- COOP observers measured: • 3.55 inches at Prophetstown • 2.37 inches at Fulton L&D • 2.35 inches at Rock Falls • 1.63 inches at Morrison
4/7/2002 thru 4/8/2002	4:00 a.m.	Fulton Morrison Prophetstown Rock Falls	2.22 – 1.61 in.	n/a	n/a	n/a	- COOP observers measured: • 2.22 inches at Rock Falls • 2.19 inches at Prophetstown • 2.05 inches at Morrison • 1.61 inches at Fulton L&D
5/11/2002	7:00 a.m.	Fulton Morrison Prophetstown Rock Falls	2.34 – 1.23 in.	n/a	n/a	n/a	- COOP observers measured: • 2.34 inches at Prophetstown • 2.29 inches at Rock Falls • 1.68 inches at Morrison • 1.23 inches at Fulton L&D
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 17 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
6/3/2002 thru 6/4/2002	6:30 p.m.	Fulton Morrison Prophetstown Rock Falls Ustick^	6.06 – 3.60 in.	n/a	n/a	n/a	- COOP observers measured: • 6.06 inches at Morrison • 5.88 inches at Rock Falls • 3.87 inches at Prophetstown • 3.60 inches at Fulton L&D - Heavy rain resulted in widespread and significant flash flooding and river flooding, especially in and around Fulton and Morrison
8/5/2002	10:00 p.m.	Morrison Prophetstown	1.75 – 1.61 in.	n/a	n/a	n/a	- COOP observers measured: • 1.75 inches at Morrison • 1.61 inches at Prophetstown
8/12/2002 thru 8/13/2002	7:00 p.m.	Morrison Prophetstown Rock Falls	2.11 – 1.95 in.	n/a	n/a	n/a	- COOP observers measured: • 2.11 inches at Morrison • 2.09 inches at Rock Falls • 1.61 inches at Prophetstown
8/21/2002 thru 8/22/2002	10:00 p.m.	Morrison Prophetstown Rock Falls	2.68 – 1.74 in.	n/a	n/a	n/a	- COOP observers measured: • 2.68 inches at Morrison • 2.06 inches at Rock Falls • 1.74 inches at Prophetstown
5/4/2003 thru 5/5/2003	1:00 p.m.	Fulton Morrison Prophetstown Rock Falls	1.87 – 1.28 in.	n/a	n/a	n/a	- COOP observers measured: • 1.87 inches at Morrison • 1.38 inches at Rock Falls • 1.30 inches at Fulton L&D • 1.28 inches at Prophetstown
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 18 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
7/7/2003 thru 7/9/2003	n/a	Morrison Rock Falls	3.01 – 2.14 in.	n/a	n/a	n/a	- COOP observers measured: • 3.01 inches at Rock Falls • 2.14 inches at Morrison
7/20/2003	2:00 p.m.	Morrison Rock Falls	1.48 – 1.15 in.	n/a	n/a	n/a	- COOP observers measured: • 1.48 inches at Rock Falls • 1.15 inches at Morrison
9/12/2003 thru 9/14/2003	6:30 p.m.	Fulton Morrison Prophetstown Rock Falls	3.07 – 1.29 in.	n/a	n/a	n/a	- COOP observers measured: • 3.07 inches at Fulton L&D • 1.92 inches at Morrison • 1.57 inches at Prophetstown • 1.29 inches at Rock Falls
11/1/2003 thru 11/3/2003	4:00 p.m.	Fulton Morrison Prophetstown Rock Falls	1.73 – 1.32 in.	n/a	n/a	n/a	- COOP observers measured: • 1.73 inches at Morrison • 1.71 inches at Rock Falls • 1.66 inches at Prophetstown • 1.32 inches at Fulton L&D
12/9/2003 thru 12/10/2003	8:00 a.m.	Fulton Morrison Prophetstown	2.85 – 1.85 in.	n/a	n/a	n/a	- COOP observers measured: • 2.85 inches at Prophetstown • 2.40 inches at Morrison • 1.85 inches at Fulton L&D
6/21/2004	3:00 a.m.	Fulton	1.67 in.	n/a	n/a	n/a	COOP observer measured 1.67 inches at Fulton L&D
7/9/2004	10:30 a.m.	Morrison	1.80 in.	n/a	n/a	n/a	COOP observer measured 1.80 inches at Morrison
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 19 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
10/22/2004 thru 10/23/2004	11:00 a.m.	Fulton Morrison Prophetstown	1.67 in.	n/a	n/a	n/a	- COOP observers measured: • 2.20 inches at Morrison • 1.90 inches at Prophetstown • 1.33 inches at Fulton L&D
8/11/2005 thru 8/12/2005	n/a	Fulton Morrison Prophetstown Rock Falls^	2.20 – 1.52 in.	n/a	n/a	n/a	- COOP observers measured: • 2.20 inches at Prophetstown • 2.11 inches at Morrison • 1.98 inches 3 miles northeast of Rock Falls • 1.52 inches at Fulton L&D
8/18/2005 thru 8/19/2005	8:10 a.m.	Fulton Morrison Prophetstown Rock Falls^	2.19 – 1.21 in.	n/a	n/a	n/a	- COOP observers measured: • 2.19 inches at Morrison • 2.19 inches 3 miles northeast of Rock Falls • 1.32 inches at Prophetstown • 1.21 inches at Fulton L&D - Water was observed ponding on some streets in Sterling
9/24/2005 thru 9/25/2005	8:00 p.m.	Fulton Morrison Rock Falls^	1.76 – 1.25 in.	n/a	n/a	n/a	- COOP observers measured: • 1.76 inches 3 miles northeast of Rock Falls • 1.37 inches at Morrison • 1.25 inches at Fulton L&D
1/28/2006	8:30 a.m.	Morrison Prophetstown Rock Falls^	2.04 – 1.74 in.	n/a	n/a	n/a	- COOP observers measured: • 2.04 inches at Prophetstown • 2.02 inches at Morrison • 1.74 inches 3 miles northeast of Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 20 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
3/12/2006 thru 3/13/2006	4:00 a.m.	countywide	2.25 – 1.17 in.	n/a	n/a	n/a	- COOP observers measured: • 2.25 inches at Morrison • 1.86 inches 3 miles northeast of Rock Falls • 1.72 inches at Prophetstown • 1.17 inches at Fulton L&D - locally heavy rains led to flash flooding in Prophetstown where minor flooding of lower streets was observed
4/2/2006 thru 4/3/2006	5:00 p.m.	Fulton Morrison Prophetstown	1.50 – 1.07 in.	n/a	n/a	n/a	- COOP observers measured: • 1.50 inches at Morrison • 1.08 inches at Prophetstown • 1.07 inches at Fulton L&D
5/27/2006	n/a	Prophetstown	1.75 in.	n/a	n/a	n/a	COOP observer measured 1.75 inches at Prophetstown
7/20/2006	n/a	Prophetstown Rock Falls^	1.70 – 1.20 in.	n/a	n/a	n/a	- COOP observers measured: • 1.70 inches 3 miles northeast of Rock Falls • 1.20 inches at Prophetstown
8/2/2006 thru 8/3/2006	11:00 p.m.	Morrison Prophetstown	1.70 – 1.10 in.	n/a	n/a	n/a	- COOP observers measured: • 1.70 inches at Morrison • 1.10 inches at Prophetstown
9/9/2006 thru 9/11/2006	6:00 p.m.	Morrison Prophetstown Rock Falls^	1.79 – 1.54 in.	n/a	n/a	n/a	- COOP observers measured: • 1.79 inches at Prophetstown • 1.73 inches at Morrison • 1.54 inches 3 miles northeast of Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 21 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
12/20/2006 thru 12/21/2006	12:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	1.75 – 1.18 in.	n/a	n/a	n/a	- COOP observers measured: • 1.75 inches at Morrison • 1.40 inches at Prophetstown • 1.36 inches 3 miles northeast of Rock Falls • 1.18 inches at Fulton L&D
3/22/2007	11:00 a.m.	Morrison Prophetstown Rock Falls^	1.50 – 1.20 in.	n/a	n/a	n/a	- COOP observers measured: • 1.50 inches at Prophetstown • 1.20 inches at Morrison • 1.20 inches 3 miles northeast of Rock Falls
4/24/2007 thru 4/25/2007	3:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	2.10 – 1.16 in.	n/a	n/a	n/a	- COOP observers measured: • 2.10 inches 3 miles northeast of Rock Falls • 1.57 inches at Prophetstown • 1.30 inches at Morrison • 1.16 inches at Fulton L&D
5/26/2007	n/a	Prophetstown Rock Falls^	1.50 – 1.04 in.	n/a	n/a	n/a	- COOP observers measured: • 1.50 inches at Prophetstown • 1.04 inches 3 miles northeast of Rock Falls
6/1/2007	3:30 p.m.	Fulton Morrison Prophetstown Rock Falls^	1.74 – 1.05 in.	n/a	n/a	n/a	- COOP observers measured: • 1.74 inches 3 miles northeast of Rock Falls • 1.25 inches at Prophetstown • 1.29 inches at Fulton L&D • 1.05 inches at Morrison - COOP observer at Prophetstown reported that 1.10 inches of rain fell in 20 minutes on the afternoon of the 1st
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 22 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
6/21/2007 thru 6/23/2007	4:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	3.35 – 1.11 in.	n/a	n/a	n/a	- COOP observers measured: • 3.35 inches at Prophetstown • 2.80 inches at Morrison • 1.69 inches 3 miles northeast of Rock Falls • 1.11 inches at Fulton L&D
7/3/2007 thru 7/4/2007	8:00 p.m.	Fulton Morrison Prophetstown	2.22 – 1.80 in.	n/a	n/a	n/a	- COOP observers measured: • 2.22 inches at Prophetstown • 2.02 inches at Fulton L&D • 1.80 inches at Morrison
7/9/2007	6:00 a.m.	Fulton Rock Falls^	1.51 – 1.42 in.	n/a	n/a	n/a	- COOP observers measured: • 1.51 inches at Fulton L&D • 1.42 inches 3 miles northeast of Rock Falls
7/17/2007	2:00 a.m.	Morrison Prophetstown Rock Falls^	2.76 – 1.33 in.	n/a	n/a	n/a	- COOP observers measured: • 2.76 inches 3 miles northeast of Rock Falls • 2.52 inches at Morrison • 1.33 inches at Prophetstown
8/7/2007	n/a	Prophetstown	2.15 in.	n/a	n/a	n/a	• COOP observer measured 2.15 inches at Prophetstown
7/22/2007 thru 7/23/2007	n/a	countywide	4.08 – 3.10 in.	n/a	n/a	n/a	- COOP observers measured: • 4.08 inches 3 miles northeast of Rock Falls • 3.71 inches at Prophetstown • 3.10 inches at Morrison - Several rounds of heavy rains resulted in some river flooding
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 23 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
5/10/2008 thru 5/11/2008	4:00 p.m.	Morrison Prophetstown Rock Falls^	2.05 – 1.52 in.	n/a	n/a	n/a	- COOP observers measured: • 2.05 inches at Prophetstown • 1.72 inches 3 miles northeast of Rock Falls • 1.52 inches at Morrison
5/26/2008	12:00 a.m.	Fulton Morrison Prophetstown Rock Falls^	2.88 – 1.45 in.	n/a	n/a	n/a	- COOP observers measured: • 2.88 inches 3 miles northeast of Rock Falls • 2.05 inches at Morrison • 1.70 inches at Prophetstown • 1.45 inches at Fulton L&D
6/3/2008	7:00 a.m.	Morrison Prophetstown Rock Falls^	1.52 – 1.03 in.	n/a	n/a	n/a	- COOP observers measured: • 1.52 inches at Prophetstown • 1.21 inches at Morrison • 1.03 inches 3 miles northeast of Rock Falls
6/12/2008 thru 6/13/2008	4:00 p.m.	countywide	2.83 – 1.42 in.	n/a	n/a	n/a	- COOP observers measured: • 2.83 inches at Fulton L&D • 1.43 inches at Prophetstown • 1.42 inches at Morrison - 1 to 5 inches of heavy rains fell from the 12th through midday on the 13th causing flashed
6/14/2008 thru 6/15/2008	3:00 p.m.	Fulton	1.47 in.	n/a	n/a	n/a	COOP observer measured 1.47 inches at Fulton L&D
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 24 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
7/7/2008	3:00 p.m.	Fulton Rock Falls^	1.52 – 1.48 in.	n/a	n/a	n/a	- COOP observers measured: • 1.52 inches at Fulton L&D • 1.48 inches 3 miles northeast of Rock Falls
9/3/2008 thru 9/4/2008	3:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	1.86 – 1.09 in.	n/a	n/a	n/a	- COOP observers measured: • 1.86 inches at Prophetstown • 1.72 inches at Morrison • 1.48 inches 3 miles northeast of Rock Falls • 1.09 inches at Fulton L&D
9/12/2008 thru 9/14/2008	12:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	5.69 – 1.86 in.	n/a	n/a	n/a	- COOP observers measured: • 5.69 inches at Prophetstown • 4.70 inches 3 miles northeast of Rock Falls • 4.52 inches at Morrison • 1.86 inches at Fulton L&D
10/8/2008	8:00 a.m.	Fulton Morrison Prophetstown	1.57 – 1.03 in.	n/a	n/a	n/a	- COOP observers measured: • 1.57 inches at Fulton L&D • 1.10 inches at Prophetstown • 1.03 inches at Morrison
3/7/2009 thru 3/8/2009	3:00 a.m.	Fulton Morrison Prophetstown Rock Falls^	3.10 – 1.80 in.	n/a	n/a	n/a	- COOP observers measured: • 3.10 inches at Morrison • 2.94 inches at Prophetstown • 2.85 inches 3 miles northeast of Rock Falls • 1.80 inches at Fulton L&D
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 25 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
3/24/2009 thru 3/25/2009	3:00 a.m.	Fulton Morrison Prophetstown Rock Falls^	2.52 – 1.96 in.	n/a	n/a	n/a	- COOP observers measured: • 2.52 inches at Prophetstown • 2.45 inches at Morrison • 2.12 inches 3 miles northeast of Rock Falls • 1.96 inches at Fulton L&D
4/19/2009 thru 4/20/2009	8:00 p.m.	Morrison Prophetstown Rock Falls^	2.10 – 1.35 in.	n/a	n/a	n/a	- COOP observers measured: • 2.10 inches at Prophetstown • 1.90 inches 3 miles northeast of Rock Falls • 1.35 inches at Morrison
4/25/2009 thru 4/26/2009	9:00 p.m.	Morrison Rock Falls^	1.51 – 1.20 in.	n/a	n/a	n/a	- COOP observers measured: • 1.51 inches at Morrison • 1.20 inches 3 miles northeast of Rock Falls
4/29/2009 thru 4/30/2009	11:00 p.m.	Morrison Prophetstown	1.89 – 1.05 in.	n/a	n/a	n/a	- COOP observers measured: • 1.89 inches at Morrison • 1.05 inches 3 miles northeast of Rock Falls
6/7/2009 thru 6/8/2009	8:00 a.m.	Morrison Prophetstown Rock Falls^	1.80 – 1.10 in.	n/a	n/a	n/a	- COOP observers measured: • 1.80 inches at Morrison • 1.49 inches 3 miles northeast of Rock Falls • 1.10 inches at Prophetstown
7/21/2009 thru 7/22/2009	5:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	1.60 – 1.33 in.	n/a	n/a	n/a	- COOP observers measured: • 1.60 inches at Prophetstown • 1.54 inches at Morrison • 1.34 inches at Fulton L&D • 1.33 inches 3 miles northeast of Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 26 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
7/24/2009	6:00 p.m.	Morrison Prophetstown Rock Falls^	1.57 – 1.37 in.	n/a	n/a	n/a	- COOP observers measured: • 1.57 inches 3 miles northeast of Rock Falls • 1.53 inches at Morrison • 1.37 inches at Prophetstown - Heavy rains resulted in flash flooding in Sterling where IL Rte. 40 was closed for a time due to water over the highway
8/7/2009 thru 8/8/2009	3:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	1.93 – 1.44 in.	n/a	n/a	n/a	- COOP observers measured: • 1.93 inches at Prophetstown • 1.60 inches at Morrison • 1.54 inches 3 miles northeast of Rock Falls • 1.44 inches at Fulton L&D
8/19/2009 thru 8/20/2009	12:00 p.m.	Morrison Rock Falls^	1.58 – 1.01 in.	n/a	n/a	n/a	- COOP observers measured: • 1.58 inches at Morrison • 1.01 inches 3 miles northeast of Rock Falls
8/25/2009 thru 8/27/2009	2:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	3.68 – 1.61 in.	n/a	n/a	n/a	- COOP observers measured: • 3.68 inches 3 miles northeast of Rock Falls • 2.67 inches at Morrison • 2.27 inches at Prophetstown • 1.61 inches at Fulton L&D
10/1/2009 thru 10/3/2009	9:00 a.m.	Fulton Morrison Prophetstown Rock Falls^	1.62 – 1.23 in.	n/a	n/a	n/a	- COOP observers measured: • 1.62 inches at Morrison • 1.49 inches 3 miles northeast of Rock Falls • 1.27 inches at Fulton L&D • 1.23 inches at Prophetstown
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 27 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
10/15/2009 thru 10/16/2009	7:00 p.m.	Fulton	2.35 in.	n/a	n/a	n/a	COOP observer measured 2.35 inches at Fulton L&D
1022/2009 thru 10/23/2009	4:00 a.m.	Fulton Morrison Prophetstown Rock Falls^	2.44 – 1.28 in.	n/a	n/a	n/a	- COOP observers measured: • 2.44 inches at Morrison • 2.08 inches 3 miles northeast of Rock Falls • 1.99 inches at Prophetstown • 1.28 inches at Fulton L&D
12/23/2009 thru 12/24/2009	7:00 a.m.	Morrison Prophetstown Rock Falls^	2.46 – 1.50 in.	n/a	n/a	n/a	- COOP observers measured: • 2.46 inches 3 miles northeast of Rock Falls • 1.92 inches at Morrison • 1.50 inches at Prophetstown
1/23/2010 thru 1/24/2010	12:00 p.m.	Fulton	2.25 in.	n/a	n/a	n/a	COOP observer measured 2.25 inches at Fulton L&D
5/10/2010 thru 5/11/2010	6:00 p.m.	Fulton Morrison Prophetstown	1.45 – k 1.02 in.	n/a	n/a	n/a	- COOP observers measured: • 1.45 inches at Morrison • 1.12 inches at Fulton L&D • 1.02 inches at Prophetstown
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 28 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
5/12/2010 thru 5/13/2010	9:00 p.m.	Fulton Morrison Prophetstown Rock Falls^ Sterling	3.25 – 1.38 in.	n/a	n/a	n/a	- COOP observers measured: o 3.25 inches 3 miles northeast of Rock Falls o 2.12 inches at Fulton L&D o 1.94 inches at Prophetstown o 1.38 inches at Morrison - Several rounds of showers and thunderstorms resulted in flash flooding across the southeastern portion of the County. Several residences in the Sterling and Rock Falls area reported basement flooding.
6/18/2010 thru 6/19/2010	8:00 p.m.	countywide	1.51 – 1.02 in.	n/a	n/a	n/a	- COOP observers measured: • 1.51 inches 3 miles northeast of Rock Falls • 1.27 inches at Morrison • 1.02 inches at Fulton L&D - Torrential rains resulted in widespread flash flooding across the area
6/23/2010	1:00 a.m.	Morrison Rock Falls Sterling	2.16 – 1.74 in.	n/a	n/a	n/a	- COOP observers measured: • 2.16 inches 3 miles northeast of Rock Falls • 1.74 inches at Morrison - Heavy rains resulted flash flooding including some streets in rock Falls where water was up to a foot deep in places
7/23/2010 thru 7/24/2010	2:00 a.m.	Fulton Morrison Prophetstown Rock Falls^	1.92 – 1.37 in.	n/a	n/a	n/a	- COOP observers measured: • 1.92 inches at Fulton L&D • 1.37 inches 3 miles northeast of Rock Falls • 1.20 inches at Morrison
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 29 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
8/8/2010	4:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	2.80 – 1.57 in.	n/a	n/a	n/a	- COOP observers measured: • 2.80 inches at Morrison • 1.82 inches 3 miles northeast of Rock Falls • 1.63 inches at Fulton L&D • 1.57 inches at Prophetstown
8/13/2010 thru 8/14/2010	7:00 a.m.	Prophetstown Rock Falls^	1.82 – 1.12 in.	n/a	n/a	n/a	- COOP observers measured: • 1.82 inches 3 miles northeast of Rock Falls • 1.12 inches at Prophetstown
9/1/2010	12:00 a.m.	Fulton Prophetstown	1.62 – 1.15 in.	n/a	n/a	n/a	- COOP observers measured: • 1.62 inches at Fulton L&D • 1.15 inches at Prophetstown
3/20/2011 thru 3/21/2011	1:00 p.m.	Fulton	2.46 in.	n/a	n/a	n/a	COOP observers measured 2.46 inches at Fulton L&D
5/25/2011 thru 5/26/2011	n/a	Morrison Prophetstown Rock Falls^	2.78 – 1.37 in.	n/a	n/a	n/a	- COOP observers measured: • 2.78 inches at Prophetstown • 2.03 inches 3 miles northeast of Rock Falls • 1.37 inches at Morrison
5/30/2011	n/a	Morrison Prophetstown Rock Falls^	1.59 – 1.28 in.	n/a	n/a	n/a	- COOP observers measured: • 1.59 inches at Morrison • 1.54 inches at Prophetstown • 1.28 inches 3 miles northeast of Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 30 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
6/9/2011 thru 6/10/2011	n/a	Morrison Prophetstown Rock Falls^ Sterling	2.89 – 2.57 in.	n/a	n/a	n/a	- COOP observers measured: • 2.89 inches 3 miles northeast of Rock Falls • 2.71 inches at Morrison • 2.57 inches at Prophetstown - Torrential rains resulted in flash flooding in Sterling and Rock Falls. Several streets in Rock Falls had flood waters that were 2 to 4 feet deep.
7/23/2011 thru 7/24/2011	n/a	Morrison Prophetstown Rock Falls^	5.78 – 2.75 in.	n/a	n/a	n/a	- COOP observers measured: • 5.78 inches at Morrison • 4.49 inches 3 miles northeast of Rock Falls • 2.75 inches at Prophetstown
8/8/2011	5:00 p.m.	Rock Falls^	1.50 in.	n/a	n/a	n/a	COOP observer measured 1.50 inches 3 miles northeast of Rock Falls
8/23/2011	8:00 a.m.	Fulton Morrison Prophetstown Rock Falls^	1.77 – 1.22 in.	n/a	n/a	n/a	- COOP observers measured: • 1.77 inches at Prophetstown • 1.69 inches at Morrison • 1.43 inches 3 miles northeast of Rock Falls • 1.22 inches at Fulton L&D
9/3/2011	8:00 a.m.	Fulton Morrison Prophetstown Rock Falls^	2.66 – 1.21 in.	n/a	n/a	n/a	- COOP observers measured: • 2.66 inches at Fulton L&D • 2.18 inches at Morrison • 1.90 inches at Prophetstown • 1.21 inches 3 miles northeast of Rock Falls
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 31 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
11/7/2011 thru 11/9/2011	10:00 p.m.	Fulton Morrison Rock Falls^	2.49 – 1.02 in.	n/a	n/a	n/a	- COOP observers measured: • 2.49 inches at Morrison • 2.21 inches 3 miles northeast of Rock Falls • 1.02 inches at Fulton L&D
12/13/2011 thru 12/14/2011	5:00 p.m.	Morrison Prophetstown Rock Falls^	1.45 – 1.02 in.	n/a	n/a	n/a	- COOP observers measured: • 1.45 inches Prophetstown • 1.35 inches 3 miles northeast of Rock Falls • 1.02 inches at Morrison
4/14/2012 thru 4/15/2012	1:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	3.58 – 1.77 in.	n/a	n/a	n/a	- COOP observers measured: • 3.58 inches at Fulton L&D • 2.46 inches at Prophetstown • 1.99 inches at Morrison • 1.77 inches 3 miles northeast of Rock Falls
6/30/2012	n/a	Prophetstown	1.70 in.	n/a	n/a	n/a	COOP observers measured 1.70 inches at Prophetstown
8/4/2012	1:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	2.55 – 1.50 in.	n/a	n/a	n/a	- COOP observers measured: • 2.55 inches at Prophetstown • 1.50 inches 3 miles northeast of Rock Falls • 1.48 inches at Morrison • 1.40 inches at Fulton L&D - Thunderstorms produced heavy rains - A trained spotter reported 1.30 inches near Fulton and 1.50 inches at Rock Falls in 30 minutes
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 32 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
8/26/2012	12:00 p.m.	Fulton Morrison Prophetstown	1.78 – 1.18 in.	n/a	n/a	n/a	- COOP observers measured: • 1.78 inches at Fulton L&D • 1.25 inches at Prophetstown • 1.18 inches at Morrison
10/12/2012 thru 10/14/2012	9:00 p.m.	Morrison Prophetstown Rock Falls^	1.70 – 1.00 in.	n/a	n/a	n/a	- COOP observers measured: • 1.70 inches 3 miles northeast of Rock Falls • 1.33 inches at Prophetstown • 1.00 inches at Morrison
3/9/2013 thru 3/11/2013	12:00 a.m.	Morrison Prophetstown	1.60 – 1.33 in.	n/a	n/a	n/a	- COOP observers measured: • 1.60 inches at Prophetstown • 1.33 inches at Morrison
4/17/2013 thru 4/18/2013	8:00 a.m.	Fulton Morrison Prophetstown Rock Falls^	4.12 – 3.00 in.	n/a	n/a	n/a	- COOP observers measured: • 4.12 inches 3 miles northeast of Rock Falls • 4.09 inches at Morrison • 3.90 inches at Prophetstown • 3.00 inches at Fulton L&D - Heavy rains fell across northwest Illinois resulting major river flooding on several area tributaries as well as parts of the Mississippi River
5/3/2013	4:00 a.m.	Fulton Morrison Prophetstown	1.55 – 1.07 in.	n/a	n/a	n/a	- COOP observers measured: • 1.55 inches at Prophetstown • 1.35 inches at Morrison • 1.07 inches at Fulton L&D
Subtotal:				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Figure 14
(Sheet 33 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
5/12/2014	7:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	2.30 1.03 in.	n/a	n/a	n/a	- COOP observers measured: • 2.30 inches at Prophetstown • 1.70 inches 3 miles northeast of Rock Falls • 1.32 inches at Morrison • 1.03 inches at Fulton L&D
6/18/2014 thru 6/20/2014	7:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	6.64 – 3.16 in.	n/a	n/a	n/a	- COOP observers measured: • 6.64 inches 3 miles northeast of Rock Falls • 3.63 inches at Prophetstown • 3.48 inches at Morrison • 3.16 inches at Fulton L&D
6/30/2014 thru 7/1/2014	12:00 a.m.	Fulton Morrison Prophetstown Rock Falls^	4.94 – 2.04 in.	n/a	n/a	n/a	- COOP observers measured: • 4.94 inches at Prophetstown • 2.96 inches 3 miles northeast of Rock Falls • 2.93 inches at Morrison • 2.04 inches at Fulton L&D - Heavy rains resulted in flash flooding in Rock Falls where the water came up to car doors on some streets
8/25/2014	2:00 p.m.	Fulton L&D Morrison Rock Falls^	1.62 – 1.06 in.	n/a	n/a	n/a	- COOP observers measured: • 1.62 inches at Morrison • 1.37 inches at Fulton L&D • 1.06 inches 3 miles northeast of Rock Falls - COOP observer a Morrison noted that the rain only lasted 30 mines but caused massive damage to area including bringing down dozens of trees and power lines
Subtotal:				**0**	**0**	**$0**	

Figure 14
(Sheet 34 of 34)
Severe Storms – Heavy Rain Events Reported in Whiteside County
1993 – 2014

Date(s)	Start Time	Location(s)	Magnitude (inches)	Injuries	Fatalities	Property Damage	Description
9/4/2014	2:00 a.m.	Morrison Prophetstown Rock Falls^	2.59 – 1.55 in.	n/a	n/a	n/a	- COOP observers measured: • 2.59 inches 3 miles northeast of Rock Falls • 1.73 inches at Prophetstown • 1.55 inches at Morrison - Heavy rains resulted in flash flooding in Sterling where the water came up to car doors on downtown streets
9/9/2014 thru 9/10/2014	8:00 p.m.	Fulton Morrison Prophetstown Rock Falls^	2.13 – 1.47 in.	n/a	n/a	n/a	- COOP observers measured: • 2.13 inches at Morrison • 1.86 inches at Fulton L&D • 1.74 inches at Prophetstown • 1.47 inches 3 miles northeast of Rock Falls
10/2/2014 thru 10/3/2014	5:00 p.m.	Morrison Prophetstown Rock Falls^	1.87 – 1.21 in.	n/a	n/a	n/a	- COOP observers measured: • 1.87 inches at Prophetstown • 1.52 inches 3 miles northeast of Rock Falls • 1.21 inches at Morrison
10/13/2014 thru 10/14/2014	11:00 a.m.	Morrison Prophetstown	2.07 – 1.01 in.	n/a	n/a	n/a	- COOP observers measured: • 2.07 inches at Morrison • 1.01 inches at Prophetstown
Subtotal:				**0**	**0**	**$0**	
GRAND TOTAL				**0**	**0**	**$0**	

^ Heavy rain event verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, COOP Data / Record of Climatological Observations.
NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Events Database.

3.2 SEVERE WINTER STORMS & EXTREME COLD

IDENTIFYING THE HAZARD

What is the definition of a severe winter storm?

A severe winter storm can range from moderate snow over a few hours to significant accumulations of sleet and/or ice to blizzard conditions with blinding wind-driven snow that last several days. The amount of snow or ice, air temperature, wind speed and event duration all influence the severity and type of severe winter storm that results. In general there are three types of severe winter storms: blizzards, heavy snow storms and ice storms. The following provides a brief description of each type.

- **Blizzards.** Blizzards are characterized by strong winds of at least 35 miles per hour and are accompanied by considerable falling and/or blowing snow that reduces visibility to ¼ mile or less for at least three hours. Blizzards are the most dangerous of all winter storms.
- **Heavy Snow Storms.** A heavy snow storm occurs when a winter storm produces snowfall accumulations of four inches or more in 12 hours or less or six inches or more in 24 hours or less.
- **Ice Storms.** An ice storm occurs when substantial accumulations of ice, generally ¼ inch or more, build up on the ground, trees and utility lines as a result of freezing rain.

While extreme cold (i.e., dangerously low temperatures and wind chill values) often accompanies or is left in the wake of a severe winter storm, the National Weather Service (NWS) does not use it to define a severe winter storm. However, a discussion of extreme cold is included in this section since it has the ability to cause property damage, injuries and even fatalities (whether or not it is accompanied by freezing rain, ice or snow).

What is snow?

Snow is precipitation in the form of ice crystals. These ice crystals are formed directly from the freezing of water vapor in wintertime clouds. As the ice crystals fall toward the ground, they cling to each other creating snowflakes. Snow will only fall if the temperature remains at or below 32°F from the cloud base to the ground.

What is sleet?

Sleet is precipitation in the form of ice pellets. These ice pellets are composed of frozen or partially frozen rain drops or refrozen partially melted snowflakes. Sleet typically forms in winter storms when snowflakes partially melt while falling through a thin layer of warm air. The partially melted snowflakes then refreeze and form ice pellets as they fall through the colder air mass closer to the ground. Sleet usually bounces after hitting the ground or other hard surfaces and does not stick to objects.

What is freezing rain?

Freezing rain is precipitation that falls in the form of a liquid (i.e., rain drops), but freezes into a glaze of ice upon contact with the ground or other hard surfaces. This occurs when snowflakes

descend into a warmer layer of air and melt completely. When the rain drops that result from this melting fall through another thin layer of freezing air just above the surface they become "supercooled", but they do not have time to refreeze before reaching the ground. However, because the rain drops are "supercooled", they instantly refreeze upon contact with anything that is at or below 32°F (i.e., the ground, trees, utility lines, etc.).

What is the wind chill?

The wind chill, or wind chill factor, is a measure of the rate of heat loss from exposed skin resulting from the combined effects of wind and temperature. As the wind increases, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature.

The unit of measurement used to describe the wind chill factor is known as the wind chill temperature. The wind chill temperature is calculated using a formula. **Figure 24** identifies the formula and calculates the wind chill temperatures for certain air temperatures and wind speeds.

Figure 24
Wind Chill Chart

Wind (mph)	Temperature (°F)																	
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

Source: NOAA, National Weather Service.

As an example, if the air temperature is 5°F and the wind speed is 20 miles per hour, then the wind chill temperature would be -15°F. The wind chill temperature is only defined for air temperatures at or below 50°F and wind speeds above three miles per hour. In addition, the wind chill temperature does not take into consideration the effects of bright sunlight which may increase the wind chill temperature by 10°F to 18°F.

Use of the current Wind Chill Temperature (WCT) index was implemented by the NWS on November 1, 2001. The new WCT index was designed to more accurately calculate how cold air feels on human skin. The new index uses advances in science, technology and computer modeling to provide an accurate, understandable and useful formula for calculating the dangers from winter winds and freezing temperatures. The former index was based on research done in 1945 by Antarctic researchers Siple and Passel.

Exposure to extreme wind chills can be life threatening. As wind chills edge toward -19°F and below, there is an increased likelihood that exposure will lead to individuals developing cold-related illnesses.

What cold-related illnesses are associated with severe winter storms?

Frostbite and hypothermia are both cold-related illnesses that can result when individuals are exposed to dangerously low temperatures and wind chills during severe winter storms and extreme cold events. The following provides a brief description of the symptoms associated with each.

- **Frostbite.** During exposure to extremely cold weather the body reduces circulation to the extremities (i.e., feet, hands, nose, cheeks, ears, etc.) in order to maintain its core temperature. If the extremities are exposed, then this reduction in circulation coupled with the cold temperatures can cause the tissue to freeze.

  Frostbite is characterized by a loss of feeling and a white or pale appearance. At a wind chill of -19°F, exposed skin can freeze in as little as 30 minutes. Seek medical attention immediately if frostbite is suspected. It can permanently damage tissue and in severe cases can lead to amputation.

- **Hypothermia.** Hypothermia occurs when the body's temperature begins to fall because it is losing heat faster than it can produce it. If an individual's body temperature falls below 95°F, then hypothermia has set in and immediate medical attention should be sought.

  Hypothermia is characterized by uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and exhaustion. Left untreated, hypothermia will lead to death. Hypothermia occurs most commonly at very cold temperatures, but can occur at cool temperatures (above 40°F) if an individual isn't properly clothed or becomes chilled.

Are alerts issued for severe winter storms?

Yes. The National Weather Service Weather Forecast Office of the Quad Cities, Iowa/Illinois is responsible for issuing ***winter storm watches*** and ***warnings*** for Whiteside County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Watch.** Winter storm watches are issued when a significant winter storm may affect the area within 18 to 72 hours. A watch will often be issued when there is still uncertainty about the path and strength of a developing winter storm.

- **Advisories.** Winter advisories are issued for lesser winter weather events that will most likely cause significant inconvenience, but should not be life-threatening if caution is

exercised. The following advisories will be issued when an event is occurring, is imminent or has a high probability of occurring.

- **Winter Weather Advisory.** A winter weather advisory is issued for:
  - three to five inches of snow;
  - snow with strong winds that reduce visibility to less than ½ mile and cause considerable blowing and drifting; or
  - sleet accumulations of less than ½ inch.
- **Freezing Rain Advisory.** A freezing rain advisory is issued when freezing rain/drizzle is anticipated and ice accumulations will be less than ¼ inch.
- **Wind Chill Advisory.** A wind chill advisory is issued when the wind chill values are expected to be between -20°F and -29°F for a period of time.

➢ **Warnings.** Winter weather warnings are issued for severe winter weather events that can be life threatening. The following warnings will be issued when an event is imminent or already occurring.

- **Winter Storm Warning.** A winter storm warning is issued for:
  - six inches to eight inches of snow in 12 hours;
  - eight inches or more of snow within 24 hours; or
  - ½ inch or more of sleet accumulations is expected.
- **Blizzard Warning.** A blizzard warning is issued when sustained winds or frequent gusts of 35 mph or more are accompanied by falling/blowing/drifting snow that frequently reduces visibility to less than ¼ mile for three hours or more.
- **Ice Storm Warning.** An ice storm warning is issued when ¼ inch or more of ice accumulations is expected.
- **Wind Chill Warning.** A wind chill warning is issued when wind chill values are expected to be -30°F or below for a period of time.

In borderline situations (advisory versus warning), if the wind will cause widespread difficulty in keeping the roads cleared, a warning will be issued.

PROFILING THE HAZARD

When have severe winter storms and extreme cold occurred previously? What is the extent of these previous severe winter storms and extreme cold events?

Figures 25 and **26**, located at the end of this section, summarize the previous occurrences as well as the extent or magnitude of severe winter storms (snow & ice) and extreme cold events recorded in Whiteside County.

Severe Winter Storms & Extreme Cold Events
Fast Facts – Occurrences

Number of Severe Winter Storms Reported (1950 – 2014): ***140***
Number of Extreme Cold Events Reported (1996 – 2014): ***11***
Maximum One-Day Snow Accumulation: ***18.75 inches (Feb. 1, 2011)***
Coldest Temperature Recorded in the County: ***-30°F (Feb. 13, 1905)***
Most Likely Month for Severe Winter Storms to Occur: ***December***
Most Likely Month for Extreme Cold Events to Occur: ***January***
Most Likely Time for Severe Winter Storms to Occur: ***Evening***

Severe Winter Storms

NOAA's Storm Events Database, NWS's COOP Data records, the Illinois State Water Survey, and Planning Committee member records were used to document 140 reported occurrences of severe winter storms (snow, ice and/or a combination of both) in Whiteside County between 1950 and 2014. Of the 140 occurrences, 97 were heavy snow storms or blizzards, 41 were a combination of freezing rain, sleet, ice and snow and two were ice storms. Since 1995, at least one severe winter storm has occurred every year in Whiteside County.

Figure 27 charts the reported occurrences of severe winter storms by month. Of the 140 events, 83 (59%) took place in December and January. Of these 83 events, 48 (58%) occurred during December, making this the peak month for severe winter storms. There were four events that spanned two months; however for illustration purposes only the month when the event started is graphed.

Figure 27
Severe Winter Storms by Month
1950 – 2014

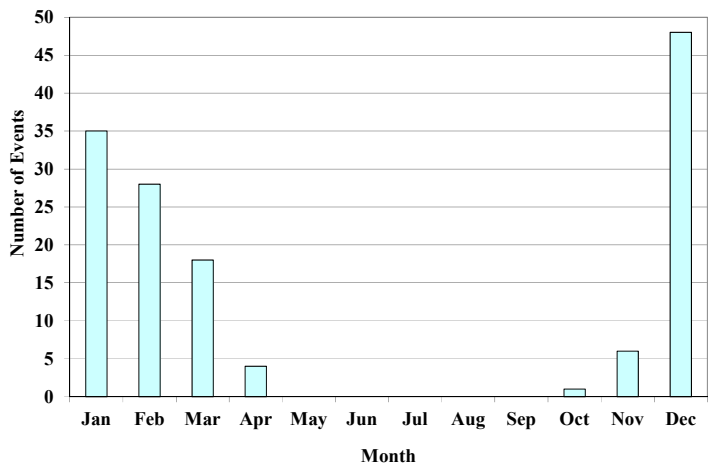
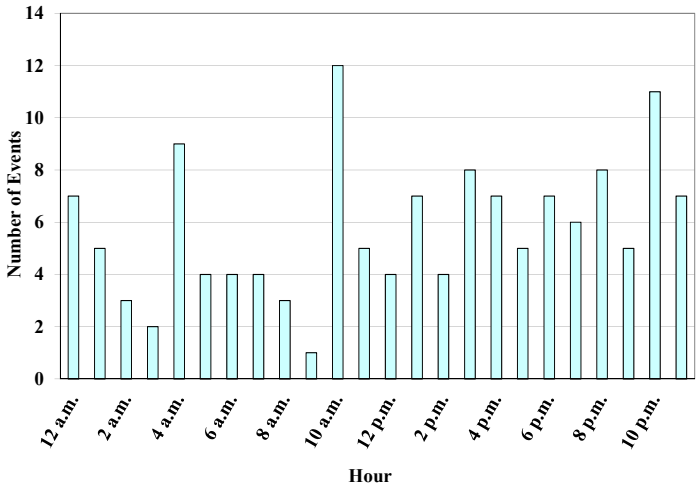


Figure 28 charts the reported occurrences of severe winter storms by hour. Of the 140 occurrences, start times were unavailable for two events. Of the remaining 138 severe winter storm events with recorded times, approximately 57% began during the p.m. hours, with 44 (57%) beginning between 6 p.m. and 12 a.m.

According to the NWS's COOP data records, the maximum one-day snow accumulation total recorded over the last 65 years in Whiteside County was 18.75 inches which occurred at Morrison on February 1, 2011. The heaviest seasonal snowfall on record for Whiteside County is 69.0 inches which occurred during the winter of 1978-1979 while the second heaviest seasonal snowfall on record is 66.7 inches which occurred during the winter of 1959-1960.

Figure 28
Severe Winter Storms by Hour
1950 – 2014



Extreme Cold

NOAA's Storm Events Database was used to document 11 occurrences of extreme cold (dangerously low temperatures and wind chill values) in Whiteside County between 1996 and 2014. Of the 11 occurrences, four followed a recorded severe winter storm. Seven of the 11 events (64%) took place in January. Six of the 11 events began during the p.m. hours.

According to the Midwestern Regional Climate Center and the National Weather Service COOP records from 1895 through 2003, the coldest temperature recorded in Whiteside County was -30°F at Morrison on February 13, 1905.

What locations are affected by severe winter storms and extreme cold?

Severe winter storms and extreme cold affect the entire County. All communities in Whiteside County have been affected by severe winter storms and extreme cold. Severe winter storms and extreme cold generally extend across the entire County and affect multiple locations. The *2013 Illinois Natural Hazard Mitigation Plan* prepared by IEMA classifies the Whiteside County's hazard rating for severe winter storms as "high."

Do any of the participating municipalities have designated warming centers?

Yes. Four of the nine participating municipalities have designated warming centers. A "designated" warming center is identified as any facility that has been *formally* identified by the municipality (through emergency planning, resolution, Memorandum of Agreement, etc.) as a location available for use by residents during severe winter storms and extreme cold events. **Figure 29** identifies the location of each warming center by jurisdiction. The County is also served by one state-designated warming center located at the Illinois Department of Human Services office, 2605 Woodlawn Road in Sterling.

Figure 29
Designated Warming Centers by Participating Municipality

Name/Address	Name/Address
Coleta	*Rock Falls*
United Methodist Church, 112 N. Main St.	Community Building, 601 W. 10th St.
Deer Grove	Fire Station, 1013 7th Ave.
---	Library, 1007 7th Ave.
Erie	Area Churches as needed on a rotating basis
Fire Station, 809 9th Ave.	*Sterling*
Fulton	Duis Center, 211 East St. Mary's Rd.
---	Westwood Sports complex, 1900 Westwood Dr.
Morrison	Sterling High School, 1608 4th Ave.
---	Challand Middle School, 1700 6th Ave.
Prophetstown	Lincoln Elementary School, 1601 E. 6th St.
---	*Tampico*

What is the probability of future severe winter storms and extreme cold events occurring?

Severe Winter Storms

Whiteside County has had 140 verified occurrences of severe winter storms between 1950 and 2014. With 140 occurrences over the past 65 years, Whiteside County should expect at least two severe winter storm each year. There were 42 years over the past 65 years where two or more severe winter storms occurred. This indicates that the probability that more than one severe winter storm may occur during any given year within the County is 65%.

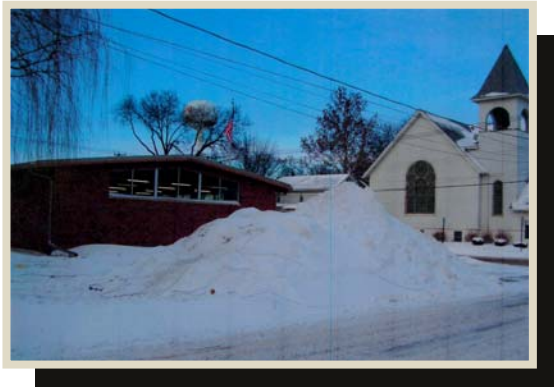
Extreme Cold

Given the limited amount of data available for extreme cold events, it is difficult to establish a precise probability; however, Whiteside County should expect to experience extreme cold events again in the future.

ASSESSING VULNERABILITY

Are the participating jurisdictions vulnerable to severe winter storms and extreme cold?

Yes. All of Whiteside County, including the participating municipalities, is vulnerable to the dangers presented by severe winter storms and extreme cold. Severe winter storms are among the most frequently occurring natural hazards in Illinois. Since 2005, Whiteside County has experienced 32 severe winter storms and five extreme cold events. Severe winter storms have immobilized portions of the County, blocking roads; downing power lines, trees and branches; causing power outages and property damage; and contributing to vehicle accidents. In addition, the County and municipalities must budget for snow removal and de-icing of roads and bridges as well



A large snow pile developed next to the library in Erie as the result of several winter weather events in 2014.

Photograph courtesy of William Lukehart

as for roadway repairs.

What impacts resulted from the recorded severe winter storms and extreme cold?

The following summarize the impacts of severe winter storms and extreme cold events recorded in Whiteside County.

While severe winter storms and extreme cold occur regularly in Whiteside County, the number of injuries and fatalities is very low. Even taking into consideration the potential for hazardous driving conditions, snow-removal related injuries and power outages that could leave individuals vulnerable to hypothermia, the risk to public health and safety from severe winter storms is seen as relatively low.

Severe Winter Storms & Extreme Cold Events
Fast Facts – Impacts/Risk

Severe Winter Storm (Snow & Ice) Impacts
- Total Property Damage: ***$75,400***^
- Infrastructure/Critical Facilities Damage*: ***$45,400***
- Injuries: ***0***
- Fatalities: ***0***

Extreme Cold Impacts
- Total Property Damage: ***n/a***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Injuries: ***0***
- Fatalities: ***0***

Severe Winter Storm Risk/Vulnerability to:
- Public Health & Safety: ***Low***
- Buildings/Infrastructure/Critical Facilities: ***Medium***

^ Included in the property damage total is $30,000 for the January 5, 2005 heavy snow event which represent losses sustained by four counties (including Whiteside County). A detailed breakdown by county was not available.

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

Severe Winter Storms

Data obtained from NOAA's Storm Events Database and Planning Committee member records indicates that between 1950 and 2014, a total of $75,400 in property damages was sustained as a result of two specific severe winter storms ($61,400) and one winter weather season ($14,000). Included in the property damage total is $30,000 for the January 5, 2005 heavy snow event which represents losses sustained in four counties (including Whiteside County). A detailed breakdown of the damages by county was unavailable. Property damage information was either unavailable or none was recorded for the remaining 138 reported occurrences of severe winter storms.

In comparison, the State of Illinois has averaged an estimated $102 million annually in property damage losses from severe winter storms since 1950, ranking severe winter storms second only to flooding in terms of economic loss. While behind floods in terms of the amount of property damage caused, severe winter storms have a greater ability to immobilize larger areas, with rural areas being particularly vulnerable.

Included in the total property damage figure provided above is $45,400 in verified infrastructure and critical facilities damage sustained by the County Highway Department, the County Public Health Department and the Village of Tampico as the result of one winter storm event and one winter weather season. The following provides a brief description by jurisdiction.

Whiteside County Highway Department

- The County spent approximately $30,000 on emergency protective measures, including snow removal, as a result of the February 2011 blizzard. This event was part of a federally-declared disaster.

Whiteside County Public Health Department

- The Health Department spent $10,000 to fix cracks and breaks in its parking lot at the Rock Falls location following the 2013-2014 winter weather season.

Tampico

- The Village spent $1,400 on emergency protective measures, including snow removal, as a result of the February 2011 blizzard. This event was part of a federally-declared disaster.
- During the 2013-2014 winter weather season the Village spent approximately $4,000 to fix frozen water lines, remove snow and repair miscellaneous damages.

No injuries or fatalities were reported as a result of any of the recorded severe winter storms.

Extreme Cold

Damage information was either unavailable or none was recorded for any of the reported extreme cold events. In addition, no injuries or fatalities were reported.

Committee members did indicate that during the 2013-2014 winter weather season, extreme cold and repeated snow events led some of the area schools to use as many as nine snow days. The last time that the schools used all of their snow days was during the 1978-1979 winter weather season.

What other impacts can result from severe winter storms?

In Whiteside County, vehicle accidents are the largest risk to health and safety from severe winter storms. Hazardous driving conditions (i.e., reduced visibility, icing road conditions, strong winds, etc.) contribute to the increase in accidents that result in injuries and fatalities. A majority of all severe winter storm injuries result from vehicle accidents.

Plows work to keep the roads clear in Sterling during a severe winter storm which blanketed the area with 5 to 6 inches of snow on December 22, 2013.

Photograph courtesy of Scott Schumard

Traffic accident data assembled by the Illinois Department of Transportation from 2008 through 2012 indicates that treacherous road conditions caused by snow and ice were present for 10.7% to 25.1% of all crashes recorded annually in the County. **Figure 30** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when treacherous road conditions caused by snow and ice were present.

Persons who are outdoors during and immediately following severe winter storms and extreme cold events can experience other health and safety problems. Frostbite to hands, feet, ears and nose and hypothermia are common injuries. Treacherous walking conditions also lead to falls which can result in serious injuries, including fractures and broken bones, especially in the elderly. Over exertion from shoveling driveways and walks can lead to life-threatening conditions such as heart attacks in middle-aged and older adults who are susceptible.

Figure 30
Severe Winter Weather Crash Data for Whiteside County

Year	Total # of Crashes	Presence of Treacherous Road Conditions caused by Snow and Ice		
		# of Crashes	# of Injuries	# of Fatalities
2008	1,627	409	93	3
2009	1,195	213	50	0
2010	1,160	163	41	0
2011	1,122	155	42	0
2012	1,042	112	29	0
Total:	**6,146**	**1,052**	**255**	**3**

Source: Illinois Department of Transportation.

Are existing buildings, infrastructure and critical facilities vulnerable to severe winter storms and extreme cold?

Yes. All existing buildings, infrastructure and critical facilities located in Whiteside County and the participating municipalities are vulnerable to damage from severe winter storms and extreme cold. The following summarize the vulnerabilities by severe winter storms and extreme cold events .

Based on the frequency with which severe winter storms and extreme cold events occur in Whiteside County, the amount of property damage previously reported and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe winter storms is medium.

Road crews work to clear the roads in Sterling after the February 2, 2011 blizzard.

Photograph courtesy of Scott Schumard

Severe Winter Storm

Structural damage to buildings caused by severe winter storms (snow and ice) is very rare, but can occur particularly to flat rooftops. Information gathered from Whiteside County residents indicates that snow and ice accumulations on communication and power lines as well as key roads presents the greatest vulnerability to infrastructure and critical facilities within the County. Snow and ice accumulations on lines

often lead to disruptions in communications and create power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service.

In addition to affecting communication and power lines, snow and ice accumulations on state and local roads hampers travel and can cause dangerous driving conditions. Blowing and drifting snow can lead to road closures and increases the risk of automobile accidents. Even small accumulations of ice can be extremely dangerous to motorists since bridges and overpasses freeze before other surfaces.

When transportation is disrupted, schools close, emergency and medical services are delayed, some businesses close and government services can be affected. When a severe winter storm hits there is also an increase in cost to the County and municipalities for snow removal and de-icing. Road resurfacing and pothole repairs are additional costs incurred each year as a result of severe winter storms. Following the 2013-2014 winter weather season, the State gave Whiteside County $361,098 in transportation funds to fill potholes and address other damage caused by the brutal winter.

Extreme Cold

Extreme cold events can also have a detrimental impact on buildings, infrastructure and critical facilities. Pipes and water mains are especially susceptible to freezing during extreme cold events. This freezing can lead to cracks or ruptures in the pipes in buildings as well as in buried service lines and mains. As a result, flooding can occur as well as disruptions in service. Since most buried service lines and water mains are located under local streets and roads, fixing a break requires portions of the street or road to be blocked off, excavated and eventually repaired. These activities can be costly and must be carried out under less than ideal working conditions.

Are future buildings, infrastructure and critical facilities vulnerable to severe winter storms and extreme cold?

Yes and No. While five of the participating municipalities have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe winter storms and extreme cold, the County and four other municipalities do not.

Infrastructure such as new communication and power lines will continue to be vulnerable to severe winter storms, especially to ice accumulations, as long as they are located above ground. Rural areas of Whiteside County have experienced extended periods without power due to severe winter storms. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas. In terms of new roads and bridges, there is very little that can be done to reduce or eliminate their vulnerability to severe winter storms.

What are the potential dollar losses to vulnerable structures from severe winter storms and extreme cold?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe winter storms and extreme cold events. With only two of the 151 recorded events listing property damage numbers for severe winter storms and extreme cold, there is no way to accurately estimate future potential dollar losses. Since all existing structures

within Whiteside County are vulnerable to damage, it is likely that there will be future dollar losses from severe winter storms and extreme cold.

Figure 25
(Sheet 1 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/6/1950 thru 12/7/1950	n/a	Heavy Snow	- COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Fulton L&D measured 2.9 inches of snow	n/a	n/a	n/a
3/11/1951 thru 3/13/1951	10:00 p.m.	Winter Storm	- COOP observer at Morrison measured 7.0 inches of snow - COOP observer at Fulton L&D measured 6.0 inches of snow and indicated the presence of snow, sleet and rain	n/a	n/a	n/a
12/13/1951 thru 12/14/1951	11:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 10 inches of snow, the largest one-day maximum total recorded for December at this location - COOP observer at Fulton L&D measured 8 inches of snow	n/a	n/a	n/a
12/17/1951 thru 12/18/1951	8:00 a.m.	Heavy Snow	- COOP observers at Fulton L&D and Morrison measured 6.0 inches of snow respectively	n/a	n/a	n/a
3/3/1952 thru 3/4/1952	3:00 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 8.0 inches of snow, the largest one-day maximum total recorded for March at this location - COOP observer at Morrison measured 5.0 inches of snow	n/a	n/a	n/a
2/25/1954	8:00 a.m.	Heavy Snow	- COOP observer at Fulton L&D measured 6.0 inches of snow - COOP observer at Morrison measured 4.7 inches of snow	n/a	n/a	n/a
3/29/1954	1:30 a.m.	Heavy Snow	- COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Fulton L&D measured 4.5 inches of snow	n/a	n/a	n/a
12/29/1954	10:30 a.m.	Heavy Snow	- COOP observers at Fulton L&D and Morrison measured 8.5 inches of snow respectively	n/a	n/a	n/a
3/21/1955 thru 3/22/1955	5:30 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 6.0 inches of snow - COOP observer at Morrison measured 4.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 2 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/9/1957	10:30 a.m.	Heavy Snow	- COOP observer at Fulton L&D measured 8.5 inches of snow - COOP observer at Morrison measured 6.5 inches of snow	n/a	n/a	n/a
12/30/1957 thru 12/31/1957	8:30 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 7.5 inches of snow - COOP observer at Morrison measured 5.5 inches of snow	n/a	n/a	n/a
1/19/1958 thru 1/21/1958	6:00 a.m.	Heavy Snow	- COOP observer at Fulton L&D measured 12.3 inches of snow - COOP observer at Morrison measured 10.0 inches of snow	n/a	n/a	n/a
12/7/1958 thru 12/8/1958	8:00 a.m.	Heavy Snow	- COOP observers at Fulton L&D and Morrison measured 6.5 inches of snow respectively	n/a	n/a	n/a
1/20/1959 thru 1/21/1959	3:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 8.0 inches of snow - COOP observer at Fulton L&D measured 7.5 inches of snow	n/a	n/a	n/a
2/4/1959 thru 2/6/1959	10:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 7.0 inches of snow - COOP observer at Fulton L&D measured 4.6 inches of snow	n/a	n/a	n/a
11/12/1959 thru 11/14/1959	7:00 a.m.	Winter Storm	- COOP observer at Fulton L&D measured 7.5 inches of snow with 6.0 inches recorded on the 13th making it the largest one-day maximum total recorded for November at this location. The observer also indicated that there was drizzle with this storm. - COOP observer at Morrison measured 5.5 inches of snow	n/a	n/a	n/a
12/22/1959 thru 12/23/1959	1:30 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 9.0 inches of snow - COOP observer at Morrison measured 8.5 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 3 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
2/9/1960 thru 2/10/1960	11:00 a.m.	Heavy Snow	- COOP observer at Fulton L&D measured 12 inches of snow with 10.0 inches recorded on the 10th making it the largest one-day maximum total recorded for February at this location - COOP observer at Morrison measured 8.0 inches of snow	n/a	n/a	n/a
2/20/1960 thru 2/21/1960	6:00 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 8.0 inches of snow - COOP observer at Morrison measured 6.0 inches of snow	n/a	n/a	n/a
3/15/1960 thru 3/17/1960	11:00 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 7.0 inches of snow - COOP observer at Morrison measured 5.2 inches of snow	n/a	n/a	n/a
12/19/1960 thru 12/20/1960	1:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Fulton L&D measured 5.0 inches of snow	n/a	n/a	n/a
12/22/1961 thru 12/23/1961	5:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 7.5 inches of snow - COOP observer at Fulton L&D measured 4.0 inches of snow	n/a	n/a	n/a
1/5/1962 thru 1/6/1962	9:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Fulton L&D measured 3.5 inches of snow	n/a	n/a	n/a
2/17/1962 thru 2/19/1962	2:30 p.m.	Winter Storm	- COOP observer at Morrison measured 6.5 inches of snow and indicated the presence of sleet and light rain - COOP observer at Fulton L&D measured 5.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 4 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
3/4/1964 thru 3/5/1964	4:00 p.m.	Winter Storm	- COOP observer at Morrison measured 7.0 inches of snow and indicated the presence of rain and thunder - COOP observer at Fulton L&D measured 2.0 inches of snow and indicated the presence of light rain, rain and sleet	n/a	n/a	n/a
3/4/1965 thru 3/5/1965	2:00 a.m.	Winter Storm	- COOP observer at Morrison measured 6.4 inches of snow - COOP observer at Fulton L&D measured 4.0 inches of snow and indicated the presence of drizzle and rain	n/a	n/a	n/a
3/16/1965 thru 3/17/1965	11:00 p.m.	Winter Storm	- COOP observer at Fulton L&D measured 6.0 inches of snow and indicated the presence of rain and sleet and winds with gusts of 35 to 40 mph out of the west-southwest in the evening - COOP observer at Morrison measured 4.0 inches of snow	n/a	n/a	n/a
1/12/1966 thru 1/13/1966	6:30 a.m.	Winter Storm	- COOP observer at Fulton L&D measured 9.0 inches of snow and indicated the presence of sleet and rain - COOP observer at Morrison measured 8.5 inches of snow	n/a	n/a	n/a
12/27/1966 thru 12/28/1966	6:30 p.m.	Winter Storm	- COOP observer at Fulton L&D measured 7.0 inches of snow and indicated the presence of some hail at 3:00 a.m. on the 28th - COOP observer at Morrison measured 6.5 inches of snow and indicated the presence of sleet and rain	n/a	n/a	n/a
2/1/1967	9:30 a.m.	Winter Storm	- COOP observer at Fulton L&D measured 5.5 inches of snow and indicated the present of sleet - COOP observer at Morrison measured 5.0 inches of snow and indicated the presence of freezing rain	n/a	n/a	n/a
3/19/1967 thru 3/20/1967	2:30 p.m.	Winter Storm	- COOP observer at Morrison measured 7.0 inches of snow - COOP observer at Fulton L&D measured 6.0 inches of snow and indicated the presence of rain and drizzle	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 5 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
10/26/1967 thru 10/27/1967	5:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 5.5 inches of snow, the largest one-day maximum total recorded for October at this location	n/a	n/a	n/a
12/6/1969 thru 12/7/1969	9:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 5.5 inches of snow - COOP observer at Fulton L&D measured 3.0 inches of snow	n/a	n/a	n/a
12/22/1969 thru 12/23/1969	4:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 8.0 inches of snow - COOP observer at Fulton L&D measured 5.0 inches of snow - Both COOP observers noted that the snow was drifting	n/a	n/a	n/a
4/1/1970	5:30 a.m.	Heavy Snow	- COOP observer at Morrison measured 7.0 inches of snow	n/a	n/a	n/a
1/3/1971 thru 1/4/1971	5:30 a.m.	Winter Storm	- COOP observer at Morrison measured 13.5 inches of snow, the largest one-day maximum total recorded in January for this location - COOP observer at Fulton L&D measured 13.0 inches of snow and indicated the presence of rain and drizzle	n/a	n/a	n/a
2/1/1972 thru 2/3/1972	7:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 5.5 inches of snow - COOP observer at Fulton L&D measured 5.0 inches of snow	n/a	n/a	n/a
3/29/1972	12:00 a.m.	Heavy Snow	- COOP observer at Morrison measured 8.5 inches of snow - COOP observer at Fulton L&D measured 6.5 inches of snow	n/a	n/a	n/a
12/9/1972 thru 12/10/1972	11:30 a.m.	Heavy Snow	- COOP observer at Morrison measured 5.5 inches of snow - COOP observer at Fulton L&D measured 5.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 6 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/9/1974 thru 1/11/1974	3:30 p.m.	Heavy Snow	- COOP observer at Morrison measured 9.0 inches of snow - COOP observer at Fulton L&D measured 3.5 inches of snow	n/a	n/a	n/a
11/29/1974 thru 11/30/1974	12:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 6.2 inches of snow, with 6.0 inches recorded on the 30th making it the largest one-day maximum total recorded for November at this location - COOP observer at Fulton L&D measured 5.0 inches of snow	n/a	n/a	n/a
2/23/1975 thru 2/24/1975	6:30 p.m.	Heavy Snow	- COOP observer at Morrison measured 6.6 inches of snow - COOP observer at Fulton L&D measured 5.5 inches of snow	n/a	n/a	n/a
4/2/1975	12:00 a.m.	Winter Storm	- COOP observer at Morrison measured 6.5 inches of snow - COOP observer at Fulton L&D measured 5.5 inches of snow and indicated the presence of glaze ice and rain	n/a	n/a	n/a
12/19/1977 thru 12/21/1977	4:00 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 11.5 inches of snow - COOP observer at Morrison measured 8.2 inches of snow and indicated that there was drifting snow	n/a	n/a	n/a
12/31/1977 thru 1/1/1978	3:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Fulton L&D measured 5.0 inches of snow	n/a	n/a	n/a
11/30/1978 thru 12/1/1978	1:00 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 10.5 inches of snow - COOP observer at Morrison measured 10.3 inches	n/a	n/a	n/a
12/6/1978 thru 12/7/1978	7:00 a.m.	Heavy Snow	- COOP observer at Morrison measured 5.8 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 7 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/29/1978 thru 1/1/1979	6:00 p.m.	Winter Storm	- COOP observer at Morrison measured 14.0 inches of snow and indicated the presence of ice pellets - COOP observer at Fulton L&D measured 12.5 inches of snow	n/a	n/a	n/a
1/11/1979 thru 1/14/1979	3:00 p.m.	Winter Storm	- COOP observer at Morrison measured 17.0 inches of snow and indicated the presence of glaze ice - COOP observer at Fulton L&D measured 13.3 inches of snow - Committee Members indicated that the storm closed schools and some roads for approx. 5 days. In some areas the fire trucks could not get out so snow mobiles were used to deliver medication and check on individuals.	n/a	n/a	n/a
2/4/1980 thru 2/6/1980	10:00 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 7.0 inches of snow - COOP observer at Morrison measured 4.5 inches of snow	n/a	n/a	n/a
2/25/1980	12:00 a.m.	Heavy Snow	- COOP observer at Fulton L&D measured 6.0 inches of snow - COOP observer at Morrison measured 3.0 inches of snow	n/a	n/a	n/a
2/9/1981 thru 2/11/1981	10:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 8.0 inches of snow	n/a	n/a	n/a
1/3/1982 thru 1/4/1982	8:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 8.0 inches of snow and indicated the presence of ice pellets and glaze ice	n/a	n/a	n/a
4/5/1982	2:00 a.m.	Heavy Snow	- COOP observer at Morrison measured 7.0 inches of snow - COOP observer at Fulton L&D measured 5.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 8 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
3/19/1983 thru 3/21/1983	10:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 5.5 inches of snow	n/a	n/a	n/a
12/20/1983 thru 12/23/1983	12:00 a.m.	Heavy Snow	- COOP observer at Morrison measured 7.0 inches of snow	n/a	n/a	n/a
1/29/1984 thru 1/30/1984	4:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 7.0 inches of snow	n/a	n/a	n/a
3/17/1984 thru 3/18/1984	12:00 a.m.	Winter Storm	- COOP observer at Morrison measured 6.0 inches of snow and indicated the presence of ice pellets	n/a	n/a	n/a
12/31/1984 thru 1/1/1985	7:00 a.m.	Winter Storm	- COOP observer at Morrison measured 13.0 inches of snow - COOP observer at Fulton L&D measured 10.0 inches of snow, the largest one-day maximum total recorded for December at this location - COOP observer at Rock Falls measured 8.0 inches of snow and indicated the presence of damaging winds	n/a	n/a	n/a
2/10/1985 thru 2/11/1985	6:00 p.m.	Winter Storm	- COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Rock Falls measured 5.0 inches of snow and indicated the presence of damaging winds	n/a	n/a	n/a
2/6/1986 thru 2/7/1986	2:30 p.m.	Heavy Snow	- COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Rock Falls measured 5.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 9 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/14/1987 thru 12/16/1987	9:30 p.m.	Winter Storm	- COOP observer at Rock Falls measured 12.0 inches of snow and indicated the presence of ice pellets, glaze ice, thunder, hail and damaging winds - COOP observer at Fulton L&D measured 11.25 inches of snow and indicated the presence of thunder - COOP observer at Morrison measured 11.0 inches of snow	n/a	n/a	n/a
2/9/1988 thru 2/11/1988	10:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Rock Falls measured 5.0 inches of snow	n/a	n/a	n/a
1/25/1990 thru 1/26/1990	12:00 a.m.	Heavy Snow	- COOP observer at Morrison measured 6.0 inches of snow	n/a	n/a	n/a
2/14/1990 thru 2/15/1990	10:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 10.0 inches of snow, the largest one-day maximum total recorded for February at this location	n/a	n/a	n/a
12/2/1990 thru 12/4/1990	8:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 10.0 inches of snow - COOP observer at Rock Falls measured 6.0 inches of snow	n/a	n/a	n/a
1/4/1991 thru 1/5/1991	10:00 p.m.	Winter Storm	- COOP observers at Morrison and Rock Falls measured 6.0 inches of snow respectively - COOP observer at Rock Falls also indicated light drizzle after 8:00 a.m. on the 5th	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 10 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
3/12/1991 thru 3/13/1991	7:00 a.m.	Winter Storm	- COOP observer at Morrison measured 10.0 inches of snow, the largest one-day maximum total recorded for March at this location - COOP observer at Rock Falls measured 8.0 inches of snow and indicated the presence of ice pellets, glaze ice, thunder and damaging winds on the 13th	n/a	n/a	n/a
12/2/1991 thru 12/3/1991	10:30 a.m.	Heavy Snow	- COOP observer at Rock Falls measured 7.0 inches of snow - COOP observer at Morrison measured 5.0 inches of snow - COOP observer at Fulton L&D measured 5.0 inches of snow	n/a	n/a	n/a
1/24/1992 thru 1/25/1992	9:00 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 6.0 inches of snow - COOP observer at Morrison measured 5.0 inches of snow - COOP observer at Rock Falls measured 5.0 inches of snow	n/a	n/a	n/a
12/10/1992	n/a	Heavy Snow	- COOP observer at Morrison measured 8.0 inches of snow - COOP observer at Rock Falls measured 7.5 inches of snow	n/a	n/a	n/a
2/22/1994 thru 2/24/1994	4:30 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 7.0 inches of snow - COOP observer at Morrison measured 7.0 inches of snow - COOP observer at Rock Falls measured 6.5 inches of snow	n/a	n/a	n/a
2/25/1994	4:00 a.m.	Winter Storm	- COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Rock Falls measured 6.0 inches of snow and indicated the presence of high winds that caused drifting - Committee Member records indicated that blizzard like conditions combined with ice jams along the Rock River closed IL Rte. 78 making travel difficult between Prophetstown and Morrison	n/a	n/a	n/a
12/6/1994	11:00 a.m.	Winter Storm	- first storm of the season brought 6 to 10 inches of snow to the area - COOP observer at Rock Falls measured 6.5 inches of snow - COOP observer at Morrison measured 6.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 11 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/18/1995 thru 1/19/1995	6:00 p.m.	Heavy Snow	- 10 to 15 inches of snow fell across the region - strong northwest winds of 20 to 30 mph with gusts to 40 mph caused blowing and drifting and reduced visibility during the late morning and afternoon of the 19th - COOP observer at Fulton L&D measured 14.5 inches of snow, the largest one-day maximum total recorded for January at this location - COOP observer at Morrison measured 13.0 inches of snow - COOP observer at Prophetstown measured 11.8 inches of snow and indicated the presence of blizzard conditions and blowing and drifting - COOP observer at Rock Falls measured 10.0 inches of snow	n/a	n/a	n/a
11/10/1995	4:00 a.m.	Winter Storm	- freezing rain, sleet and 1 to 6 inches of snow - icy roads and winds gusting to 30 and 40 mph caused several accidents - hazardous travel conditions postponed high school semifinal football games across the area - COOP observer at Morrison measured 2.0 inches of snow and indicated there was thunder - COOP observer at Prophetstown measured 1.6 inches of snow and also indicated there was thunder	n/a	n/a	n/a
11/27/1995	4:00 a.m.	Winter Storm	- sleet and 4 to 7 inches of snow - conditions prompted widespread early school closures - roads were slick causing numerous accidents - COOP observer at Morrison measured 4.0 inches of snow and indicated the presence of glaze ice - COOP observer at Rock Falls measured 2.5 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 12 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/18/1996	4:30 a.m.	Winter Storm	- 1 to 3 inches of freezing rain, sleet and snow - most schools canceled classes or dismissed early - conditions created icy roads and disrupted electrical power - many had trouble getting into their cars due to doors and door locks being iced over - COOP observers at Fulton L&D and Morrison measured 1.0 inches of snow	n/a	n/a	n/a
1/26/1996 thru 1/27/1996	4:00 a.m.	Winter Storm	- 1 to 3 inches of rain, sleet and snow - significant travel problems occurred due to a layer of glaze ice covered by snow - 20 to 30 mph winds caused blowing and drifting and limited visibilities - COOP observer at Fulton L&D measured 3.5 inches of snow - COOP observer at Morrison measured 3.0 inches of snow and indicated the presence of ice pellets - COOP observer at Prophetstown measured 2.2 inches of snow - COOP observer at Rock Falls measured 1.5 inches of snow	n/a	n/a	n/a
1/9/1997 thru 1/10/1997	4:00 a.m.	Winter Storm	- 3 to 5 inches of snow fell across the area - numerous accidents were reported - COOP observer at Morrison measured 6.0 inches of snow and indicated the presence of ice pellets - COOP observer at Rock Falls measured 5.0 inches of snow - COOP observer at Prophetstown measured 4.9 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 13 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/15/1997 thru 1/17/1997	4:00 a.m.	Winter Storm	- 3 to 7 inches of snow fell across the region - winds averaged 20 to 25 mph with gusts to 45 mph and subzero temperatures produced dangerous wind chills - schools were closed for 3 days due to icy roads, snow fall and considerable blowing and drifting - drifting snow in rural areas closed state routes and major highways through much of the weekend - no mail was delivered in some areas on the 17th or 18th due to closed roads - numerous accidents occurred across the area with the most serious calls occurring on the 17th - COOP observer at Rock Falls measured 6.5 inches of snow - COOP observer at Prophetstown measured 6.3 inches of snow - COOP observer at Morrison measured 5.0 inches of snow and indicated the presence of ice pellets	n/a	n/a	n/a
1/24/1997	4:00 a.m.	Winter Storm	- freezing drizzle and sleet coated streets and highways followed by 2 to 4 inches of snow - the wintry mix caused very slick roads and exterior surfaces - over 100 vehicle accidents were reported across southeast Iowa and northwestern Illinois - COOP observer at Morrison measured 5.2 inches of snow and indicated the presence of ice pellets - COOP observer at Prophetstown measured 4.1 inches of snow - COOP observer at Rock Falls measured 3.0 inches of snow	n/a	n/a	n/a
2/3/1997 thru 2/4/1997	8:00 p.m.	Winter Storm	- wintery mix of rain, freezing rain and 2 to 5 inches of heavy wet snow fell across the area - slick roads caused school delays and numerous accidents - COOP observers in Morrison and Prophetstown indicated the presence of fog, ice pellets, glaze ice and thunder	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 14 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
4/10/1997 thru 4/12/1997	1:00 p.m.	Heavy Snow	- COOP observer at Morrison measured 8.5 inches of snow - COOP observer at Fulton L&D measured 7.0 inches of snow - COOP observer at Prophetstown measured 4.2 inches of snow - COOP observer at Rock Falls measured 3.5 inches of snow	n/a	n/a	n/a
11/14/1997 thru 11/15/1997	11:00 p.m.	Winter Storm	- 3 to 6 inches of snow with a narrow band of heavier snow - COOP observer at Morrison measured 8.0 inches of snow - COOP observer at Rock Falls measured 6.0 inches of snow - COOP observer at Prophetstown measured 5.0 inches of snow	n/a	n/a	n/a
12/24/1997	11:00 a.m.	Heavy Snow	- 3 to 6 inches of snow across the area - conditions caused greatly reduced visibilities, slick roads and numerous accidents - COOP observer at Prophetstown measured 6.5 inches of snow - COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Rock Falls measured 6.0 inches of snow	n/a	n/a	n/a
1/8/1998	10:00 a.m.	Winter Storm	- 2 to 4 inches with swaths of heavier snow - numerous accidents were reported due to the snow - several schools sent students home early - COOP observer at Rock Falls measured 6.0 inches of snow - COOP observer at Prophetstown measured 3.1 inches of snow - COOP observer at Morrison measured 3.0 inches of snow	n/a	n/a	n/a
1/20/1998 thru 1/21/1998	11:00 p.m.	Winter Storm	- 2 to 4 inches of snow with isolated heavier amounts - COOP observer at Morrison measured 7.0 inches of snow - COOP observer at Rock Falls measured 7.0 inches of snow - COOP observer at Fulton L&D measured 6.0 inches of snow - COOP observer at Prophetstown measured 4.5 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 15 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/1/1999 thru 1/3/1999	5:17 a.m.	Winter Storm	- 8 to 12 inches of snow across the region - blowing and drifting was a big problem, with roads and highways quickly becoming snow-packed - many businesses were closed over the weekend and postal service was hindered in many rural locations - schools were closed several extra days to allow snow to be removed from streets, sidewalks and parking lots - COOP observer at Morrison measured 13.0 inches of snow - COOP observer at Prophetstown measured 13.0 inches of snow - COOP observer at Rock Falls measured 11.5 inches of snow	n/a	n/a	n/a
3/5/1999	3:00 p.m.	Winter Storm	- 3 to 5 inches of heavy wet snow with isolated areas receiving 6 inches with lightning and thunder accompanying the snow - large snowflake size and intense snowfall rates resulted in poor visibility and rapid accumulation on mainly grassy and elevated surfaces - roads were reported as slushy with slick spots in many areas - numerous traffic accidents were reported - COOP observer at Rock Falls measured 5.0 inches of snow - COOP observer at Morrison measured 4.0 inches of snow - COOP observer at Prophetstown measured 3.5 inches of snow	n/a	n/a	n/a
3/8/1999	4:00 p.m.	Winter Storm	- 6 to 8 inches of snow across the area - winds of 20 to 30 mph with gusts to 40 mph created blowing and drifting of snow with visibility near zero at times making snow removal difficult - conditions forced early closing of many area schools and businesses - law enforcement dealt with accidents ranging from fenderbenders to jackknifed semis, though no serious injuries were reported - COOP observer at Rock Falls measured 8.0 inches of snow - COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Prophetstown measured 4.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 16 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/16/1999 thru 12/17/1999	7:00 p.m.	Winter Storm	- freezing drizzle and 1 to 3 inches of snow blanketed the region - numerous accidents were reported - COOP observer at Morrison measured 1.5 inches of snow	n/a	n/a	n/a
12/19/1999 thru 12/20/1999	3:00 p.m.	Winter Storm	- freezing rain and drizzle mixed with around 1 inch of snow - strong north winds produced some blowing and drifting of snow - conditions caused dangerously cold wind chill values between -15°F and -30°F - COOP observers at Morrison and Rock Falls measured 1.0 inches of snow	n/a	n/a	n/a
1/19/2000	10:00 a.m.	Winter Storm	- 4 to 8 inches of snow fell across the region - strong north winds gusting to 40 mph produced widespread blowing and drifting of snow, making travel very treacherous - winds combined with falling temperatures to produce dangerously cold wind chill values between -20°F and -30°F - numerous accidents were reported - conditions forced the early closure of many area businesses and schools - COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Prophetstown measured 6.0 inches of snow - COOP observer at Rock Falls measured 5.5 inches of snow	n/a	n/a	n/a
1/29/2000 thru 1/30/2000	3:00 p.m.	Winter Storm	- 3 to 6 inches of snow across the area - roads were slick and hazardous, with numerous reports of accidents - COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Rock Falls measured 5.0 inches of snow - COOP observer at Prophetstown measured 4.5 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 17 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
2/17/2000 thru 2/18/2000	7:00 p.m.	Winter Storm	- 5 to 10 inches of snow blanketed the area - conditions forced the cancellation of many schools and businesses - numerous minor vehicle accidents or fenderbenders were reported - COOP observer at Rock Falls measured 12.0 inches of snow - COOP observer at Prophetstown measured 11.4 inches of snow - COOP observer at Morrison measured 10.0 inches of snow	n/a	n/a	n/a
12/7/2000	4:00 a.m.	Winter Storm	- freezing rain, sleet and snow - slick conditions caused numerous accidents across the area, especially on lesser-traveled roads	n/a	n/a	n/a
12/10/2000 thru 12/11/2000	10:00 p.m.	Winter Storm	- 8 to 11 inches of snow were common across northwest Illinois - strong low pressure center produced wind gusts up to 40 mph which created near blizzard conditions and drifted many area roads shut - temperatures dropped into the single digits Monday night into Tuesday, producing dangerously cold wind chills between -20°F and -40°F - hospitals across the region treated many people suffering from hypothermia, chest pains and injuries from falling on the ice - many area schools were closed both Monday and Tuesday and many businesses closed early on Monday - COOP observer at Rock Falls measured 8.0 inches of snow - COOP observer at Prophetstown measured 7.5 inches of snow - COOP observer at Morrison measured 6.5 inches of snow	n/a	n/a	n/a
12/15/2000 thru 12/16/2000	1:00 p.m.	Ice Storm	- mix of freezing rain, sleet and some snow with significant ice accumulations up to ½ inch - ice roads made for very dangerous driving conditions and numerous reports of accidents and cars in ditches	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 18 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/28/2000 thru 12/29/2000	10:00 a.m.	Heavy Snow	- 4 to 6 inches of snow were common across northwest Illinois - area law enforcement handled numerous weather-related accidents across the area - COOP observer at Rock Falls measured 6.0 inches of snow - COOP observer at Morrison measured 5.0 inches of snow - COOP observer at Prophetstown measured 4.4 inches of snow	n/a	n/a	n/a
1/28/2001 thru 1/29/2001	10:00 a.m.	Ice Storm	- sleet, 1 to 3 inches of snow, freezing rain and 1 to 2 inches of rain - falling temperatures caused slush and ponded water to re-freeze on roads which created very hazardous travel conditions, mainly on secondary and rural gravel roads - COOP observer at Rock Falls measured 2.25 inches of snow - COOP observer at Morrison measured 1.5 inches of snow - COOP observer at Prophetstown measured 1.4 inches of snow	n/a	n/a	n/a
2/23/2001 thru 2/24/2001	10:30 p.m.	Winter Storm	- widespread freezing rain, sleet and some snow - all areas had ice accumulations, with the heaviest occurring north of US Rte. 30 where amounts ranged from ¼ to 1 inch - travel was quite treacherous and numerous accidents were reported - COOP observer for Prophetstown indicated there was ½ inch of ice as well as the presence of ice pellets	n/a	n/a	n/a
1/30/2002 thru 1/31/2002	5:00 a.m.	Winter Storm	- freezing rain, sleet and 7 to 11 inches of snow - conditions caused many schools to close and many activities were either cancelled or postponed - COOP observer at Fulton L&D measured 9.0 inches of snow - COOP observer at Rock Falls measured 8.0 inches of snow - COOP observer at Prophetstown measured 7.5 inches of snow - COOP observer at Morrison measured 6.5 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 19 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
3/1/2002 thru 3/3/2002	5:00 p.m.	Winter Storm	- 3 to 8 inches of snow - strong northwest winds caused blowing and drifting snow and sent wind chill values plummeting into the single digits and below zero - many events were postponed or cancelled - COOP observer at Prophetstown measured 7.7 inches of snow - COOP observer at Morrison measured 7.0 inches of snow - COOP observer at Rock Falls measured 3.0 inches of snow	n/a	n/a	n/a
1/28/2003	10:00 a.m.	Winter Storm	- freezing rain, sleet, 2 to 5 inches of snow and light ice accumulations of up to 1/8 inch - roads became slick and hazardous with numerous accident reported - COOP observer at Morrison measured 3.5 inches of snow - COOP observer at Prophetstown measured 2.5 inches of snow	n/a	n/a	n/a
2/14/2003 thru 2/15/2003	4:00 p.m.	Winter Storm	- freezing rain, sleet and 4 to 8 inches of snow - winds of 20 to 30 mph produced considerable blowing and drifting snow which greatly reduced visibilities in open areas - COOP observer at Morrison measured 4.0 inches of snow - COOP observer at Prophetstown measured 2.8 inches of snow	n/a	n/a	n/a
3/4/2003 thru 3/5/2003	1:00 p.m.	Winter Storm	- 3 to 7 inches of snow across the area - COOP observer at Morrison measured 9.0 inches of snow - COOP observer at Prophetstown measured 6.9 inches of snow	n/a	n/a	n/a
1/3/2004 thru 1/4/2004	7:00 p.m.	Heavy Snow	- COOP observer at Prophetstown measured 6.0 inches of snow - COOP observer at Morrison measured 4.5 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 20 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/5/2005 thru 1/6/2005	6:00 p.m.	Heavy Snow	- approx. 10 inches of snow were common in a band that stretched as far south as US 30 - winds were generally 10 to 20 mph with some gusts in the 20 to 25 mph range - COOP observer at Fulton L&D measured 10.0 inches of snow - COOP observer at Morrison measured 10.0 inches of snow - COOP observer at Prophetstown measured 8.2 inches of snow	n/a	n/a	$30,000†
2/8/20005 thru 2/10/2005	9:00 p.m.	Heavy Snow	- COOP observer at Fulton L&D measured 12.0 inches of snow	n/a	n/a	n/a
12/8/2005	3:00 a.m.	Winter Storm	- 3 to 6 inches of snow - conditions resulted in numerous traffic accidents - schools either dismissed early or cancelled school altogether - COOP observer at Prophetstown measured 6.7 inches of snow - COOP observer at Morrison measured 4.75 inches of snow - COOP observer at Fulton L&D measured 4.0 inches of snow	n/a	n/a	n/a
12/1/2006	12:45 a.m.	Winter Storm	- freezing rain, sleet and 6 to 12 inches of snow across the County - COOP observer 3 miles northeast of Rock Falls measured 11.0 inches of snow - COOP observer at Prophetstown measured 8.5 inches of snow - COOP observer at Morrison measured 8.0 inches of snow - COOP observer at Fulton L&D measured 5.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$30,000†**

† Property damage totaling $30,000 for the January 5, 2005 heavy snow event represents losses sustained in 4 counties (including Whiteside County.) A breakdown by county was not available.

Figure 25
(Sheet 21 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
2/13/2007	2:15 a.m.	Winter Storm	- 3 to 8 inches of snow - strong winds gusting to over 40 mph caused considerable blowing and drifting, especially in areas where the heaviest snow fell - some roads were drifted shut or were impassable - COOP observer at Prophetstown measured 7.0 inches of snow - COOP observer at Morrison measured 4.75 inches of snow	n/a	n/a	n/a
2/24/2007 thru 2/25/2007	11:00 a.m.	Ice Storm	- ice accumulations of around 1 inch were common, with some reports of near 2 inches and accumulations of up to 7 inches of snow - east winds gusting over 50 mph created blizzard conditions - strong winds combined with the heavy ice accumulations brought down numerous tree branches and power lines along with several thousand power poles - widespread power outages occurred - shelters were opened to accommodate those without power - whole trees came crashing down from the weight of the ice - COOP observer at Morrison measured 4.75 inches of snow and indicated the presence of freezing rain, sleet, rain and snow - COOP observer at Prophetstown measured 3.0 inches of snow and also indicated the presence of freezing rain, sleet, rain and snow	n/a	n/a	n/a
12/1/2007	10:15 a.m.	Ice Storm	- significant accumulations of sleet, ¼ to ¾ inches ice accumulation - ice accumulations combined with winds gusting 30 to 40 mph knocked down some branches and trees causing scattered power outages - law enforcement reported many cars that slid into ditches - trained spotter in Fulton reported ice accumulations of ½ inch - COOP observer at Fulton L&D measured ¼ inch ice and 1.0 inch of snow - COOP observer at Morrison indicated there was freezing rain	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 22 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/11/2007	1:00 a.m.	Ice Storm	- freezing rain, sleet and snow with ice accumulations of ¼ to 1 inch - ice knocked down some trees and branches, with scattered power outages reported - COOP observer at Fulton L&D measured ½ inch ice and ½ inch of snow - COOP observers at Morrison and Prophetstown both indicated there was freezing rain	n/a	n/a	n/a
12/15/2007	1:30 a.m.	Heavy Snow	- 2 to 4 inches of snow with isolated accumulations of around 5 inches - trained spotter measured 5.8 inches of snow 6 miles north of Sterling - COOP observer at Fulton L&D measured 4.0 inches of snow - COOP observer at Morrison measured 3.0 inches of snow - COOP observer at Prophetstown measured 3.0 inches of snow	n/a	n/a	n/a
12/22/2007 thru 12/23/2007	8:00 p.m.	Winter Storm	- freezing rain, sleet, ice accumulations of up to ¼ inch and approx. 4 inches of snow - west winds gusted to 50 mph which led to considerable blowing and drifting with near blizzard conditions - many roads were closed especially in areas where the heaviest snow fell - COOP observer at Fulton L&D measured ¼ inch ice and 3.0 inches of snow - COOP observer at Prophetstown measured 3.0 inches of snow - COOP observer at Morrison measured 2.0 inches of snow and indicated the presence of freezing rain	n/a	n/a	n/a
12/28/2007	6:15 a.m.	Heavy Snow	- 3 to 6 inches of snow with a band of 6 to 7 inches from the Quad Cities to Freeport - COOP observer at Fulton L&D measured 6.0 inches of snow - COOP observer at Morrison measured 6.0 inches of snow - COOP observer at Prophetstown measured 5.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 23 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/21/2008 thru 1/22/2008	1:45 a.m.	Winter Storm	- 3 to 9 inches of snow fell in the area - COOP observer at Morrison measured 9.0 inches of snow - COOP observer at Fulton L&D measured 6.0 inches of snow - COOP observer at Prophetstown measured 6.0 inches of snow	n/a	n/a	n/a
1/31/2008 thru 2/1/2008	12:45 p.m.	Winter Storm	- 2 to 5 inches of snow - COOP observer at Fulton L&D measured 6.0 inches of snow - COOP observer at Morrison measured 4.0 inches of snow - COOP observer at Prophetstown measured 4.0 inches of snow	n/a	n/a	n/a
2/5/2008 thru 2/6/2008	7:00 p.m.	Winter Storm	- 10 to 15 inches of snow - schools were closed - many cars were stuck in the deep snow or slid into ditches - COOP observer at Fulton L&D measured 11.0 inches of snow - COOP observer at Morrison measured 10.5 inches of snow - COOP observer at Prophetstown measured 8.0 inches of snow	n/a	n/a	n/a
12/18/2008 thru 12/19/2008	8:30 p.m.	Winter Storm	- 2 to 4 inches of sleet and up to ½ inch ice accumulations - COOP observer at Fulton L&D indicated there was freezing rain to snow and measured 3.0 inches - COOP observer at Morrison measured 2.0 inches of snow and indicated the presence of snow, freezing rain and sleet - COOP observer at Prophetstown measured 2.0 inches of snow	n/a	n/a	n/a
1/13/2009 thru 1/14/2009	8:30 p.m.	Heavy Snow	- 6 to 8 inches of snow across the region - trained spotter measured 6.5 inches of snow 2 miles northeast of Fulton - COOP observer 3 miles northeast of Rock Falls measured 6.5 inches of snow - COOP observer at Prophetstown measured 5.5 inches of snow - COOP observer at Morrison measured 5.0 inches of snow - COOP observer at Fulton L&D measured 4.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 24 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/8/2009 thru 12/9/2009	1:50 a.m.	Winter Storm	- 4 to 10 inches of snow, blizzard conditions and bitterly cold temperatures - band of freezing rain from Burlington, IA to Sterling coated trees and power line with up to 0.3 inch of ice - conditions caused scattered power outages and downed some tree branches - numerous accidents and vehicles sliding into ditches were reported across the region - many schools and businesses were also closed - trained spotter at Sterling reported 8.5 inches of snow and 0.3 inches of ice accumulation - COOP observer at Prophetstown measured 8.0 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 7.4 inches of snow - COOP observer at Morrison measured 5.75 inches of snow - COOP observer at Fulton L&D measured 5.0 inches of snow	n/a	n/a	n/a
12/23/2009	10:00 a.m.	Ice Storm	- ice accumulations of ¼ to ⅓ inch - scattered power outages and some broken tree branches were reported as winds gusted to 35 mph - trained spotter near Sterling measured ½ inch ice accumulation	n/a	n/a	n/a
12/25/2009 thru 12/27/2009	2:00 p.m.	Heavy Snow	- 3 to 8 inches of snow - trained spotter near Coleta measured 5.5 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 6.0 inches of snow - COOP observer at Morrison measured 4.25 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 25 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/6/2010 thru 1/7/2010	8:45 p.m.	Winter Storm	- 6 to 9 inches of snow - trained spotter measured 7.8 inches of snow at Rock Falls and 7.0 inches near Morrison - COOP observer at Fulton L&D measured 7.0 inches of snow - COOP observer at Prophetstown measured 7.0 inches of snow - COOP observer at Morrison measured 6.25 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 3.0 inches of snow	n/a	n/a	n/a
2/8/2010 thru 2/9/2010	1:00 a.m.	Winter Storm	- 5 to 9 inches of snow - COOP observer at Fulton L&D measured 6.0 inches of snow - COOP observer at Prophetstown measured 5.5 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 3.6 inches of snow - COOP observer at Morrison measured 3.0 inches of snow	n/a	n/a	n/a
12/3/2010 thru 12/4/2010	5:20 p.m.	Winter Storm	- snowfall amounts of at least 6 inches - numerous accidents and cars in the ditches due to the snowfall - trained spotter at Rock Falls measured 7.8 inches of snow - COOP observer at Prophetstown measured 9.0 inches of snow - COOP observer at Morrison measured 7.5 inches of snow - COOP observer at Fulton L&D measured 6.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 26 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/11/2010 thru 12/12/2010	11:00 p.m.	Blizzard	- snowfall amounts generally only in the 1 to 4 inch range - strong winds gusting to 40 to 50 mph generated blizzard conditions in some locations - roads were impassable and drifts several feet high which stranded some motorists - COOP observer at Fulton L&D measured 4.0 inches of snow and ½ inch of ice accumulations - COOP observer at Prophetstown measured 2.0 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 2.0 inches of snow - COOP observer at Morrison measured 1.0 inch of snow	n/a	n/a	n/a
12/20/2010 thru 12/21/2010	10:00 a.m.	Winter Storm	- 2 to 5 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 6.0 inches of snow - COOP observer at Morrison measured 5.0 inches of snow - COOP observer at Prophetstown measured 4.0 inches of snow - COOP observer at Fulton L&D measured 3.0 inches of snow	n/a	n/a	n/a
12/23/2010 thru 12/25/2010	10:00 p.m.	Winter Storm	- snowfall amounts were at least 5 inches in many locations - trained spotter 4 miles northeast of Fulton measured 7.0 inches of snow - COOP observer at Fulton L&D measured 8.0 inches of snow - COOP observer at Prophetstown measured 6.0 inches of snow - COOP observer at Morrison measured 5.0 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 5.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 27 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/17/2011	3:00 a.m.	Winter Storm	- 3 to 6 inches of snow - south winds gusting to around 35 mph produced considerable drifting - COOP observer at Morrison measured 7.5 inches of snow - COOP observer at Fulton L&D measured 4.0 inches of snow - COOP observer at Prophetstown measured 3.0 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 3.0 inches of snow	n/a	n/a	n/a
2/1/2011 thru 2/2/2011	12:00 p.m.	Blizzard	- 10 to 20 inches of snow with drifts as high as 7 feet - blizzard conditions were widespread with visibilities new zero in heavy snow and winds gusting to over 50 to 60 mph - temperatures were in the teens - most roads, including interstates, were closed with numerous vehicles struck in drifts or sliding into ditches, but no major accidents reported - many people became stranded - many schools and events were cancelled or closed for a couple of days, as it took crews a while to open up rural roads and even side streets - COOP observer at Fulton L&D measured 19.0 inches of snow - COOP observer at Morrison measured 18.75 inches of snow - COOP observer at Prophetstown measured 17.0 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 15.0 inches of snow - Committee Members from Tampico identified $1,400 in emergency cleanup costs - The County Highway Engineer identified approximately $30,000 in emergency protective measures, including snow removal, as a result of this storm - This event was part of federally-declared disaster (Declaration #1960)	n/a	n/a	$31,400
Subtotal:				**0**	**0**	**$31,400**

Figure 25
(Sheet 28 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/20/2012	12:00 p.m.	Blizzard	- rain and snow - northwest winds 25 to 25 mph with gusts as high as 60 mph - trained spotter 1 mile west-northwest of Morrison measured 3.5 inches of snow - COOP observer at Prophetstown measured 4.0 inches of snow - COOP observer at Morrison measured 3.0 inches of snow	n/a	n/a	n/a
2/26/2013 thru 2/27/2013	10:45 a.m.	Winter Storm	- snowfall amounts of 5 to 10 inches with isolated higher amounts - wind gusts were in the 30 to 35 mph range producing some blowing and drifting - some power outages were noted - trained spotter at Fulton measured 6.8 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 8.7 inches of snow - COOP observer at Prophetstown measured 7.0 inches of snow - COOP observer at Morrison measured 4.0 inches of snow	n/a	n/a	n/a
3/4/2013 thru 3/5/2013	11:00 p.m.	Winter Storm	- 6 to 8 inches of snow - strong northwest winds of 15 to 25 mph caused significant blowing snow across the region - snowfall reports ranged from 4.6 inches at Erie to 6.3 inches 2 miles northeast of Fulton to 6.5 inches 1 mile north-northwest of Morrison - COOP observer at Prophetstown measured 8.0 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 6.8 inches of snow - COOP observer at Morrison measured 5.5 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 25
(Sheet 29 of 29)
Severe Winter Storm Events Reported in Whiteside County
1950 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/21/2013 thru 12/22/2013	7:00 p.m.	Winter Storm	- 5 to 6 inches of snow across the region - trained spotter near Fulton measured 5.5 inches of snow - COOP observer 3 miles northeast of Rock Falls measured 4.7 inches of snow - COOP observer at Morrison measured 4.5 inches of snow - COOP observer at Prophetstown measured 4.0 inches of snow	n/a	n/a	n/a
1/18/2014	6:00 a.m.	Winter Storm	- 4 to 6 inches of snow - snowfall reports ranged from 4.0 inches 1 mile west-northwest of Morrison to 6.0 inches in Sterling and 3 miles east-northeast of Rock Falls - COOP observer 3 miles northeast of Rock Falls measured 6.0 inches of snow - COOP observer at Morrison measured 3.0inches of snow - COOP observer at Prophetstown measured 3.0 inches of snow	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

GRAND TOTAL	**0**	**0**	**$61,400†**

† Included in the total is $30,000 in property damages sustained during the January 5, 2005 heavy snow event and represents losses sustained in 4 counties (including Whiteside County.) A breakdown by county was not available.

Sources: Whiteside County Multi-Jurisdictional All Hazards Mitigation Planning Committee group discussion on July 17, 2014.
Whiteside County Multi-Jurisdictional All Hazards Mitigation Planning Committee Member responses to Whiteside County Natural Hazard Events Questionnaire.
NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, COOP Data / Record of Climatological Observations.
NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Events Database.

Figure 26
(Sheet 1 of 3)
Extreme Cold Events Reported in Whiteside County
1996 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/30/1996 thru 2/4/1996	8:00 p.m.	Extreme Cold	- all-time record low temperatures occurred at many locations – record lows ranged from -25°F to -32°F with highs reaching only -10°F to -15°F - conditions caused insulator failures that left thousands without power	n/a	n/a	n/a
1/10/1997 thru 1/12/1997	4:00 a.m.	Extreme Windchill	- extreme windchills followed a winter storm that took place on the 9th and 10th - strong winds and temperatures in the single digits (above and below zero) caused many schools to close on the 10th	n/a	n/a	n/a
1/17/1997 thru 1/19/1997	4:00 a.m.	Extreme Windchill	- extreme windchills followed a winter storm that took place between the 15th and 17th - temperatures ranging in the single digits (above and below zero) combined with winds which ranged from 20 to 25 mph with gusts to 45 mph to produce extreme windchills	n/a	n/a	n/a
12/16/2000 thru 12/17/2000	2:00 p.m.	Extreme Windchill	- a powerful arctic cold front swept through the area following an ice storm that took place on the 15th and 16th - low temperatures combined with strong northwest winds gusting to 35 mph buffeted the area - wind chill values dipped to -25°F to -40°F by the evening of the 16th and dropped to -30°F to -50°F early on the 17th	n/a	n/a	n/a
12/21/2000 thru 12/22/2000	4:00 a.m.	Extreme Windchill	- a strong northwest wind on the back side of a low pressure system brought bitterly cold arctic area into the region - high temperatures of -5°F to -10°F combined with winds gusting up to 40 mph to produce wind chills as low as -40°F to -50°F - area hospitals treated numerous patients for frostbite as well as for falls, chest pains from shoveling and snow blower injuries - weather prompted the closing of many area schools	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 26
(Sheet 2 of 3)
Extreme Cold Events Reported in Whiteside County
1996 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
12/23/2000 thru 12/24/2000	10:00 p.m.	Extreme Windchill	- frigid arctic air combined with a blustery northwest wind up to 20 mph to produce dangerous wind chill values of -25°F to -45°F - actual temperatures fell to between -5°F to -10°F during the overnight hours	n/a	n/a	n/a
2/2/2007 thru 2/5/2007	4:00 a.m.	Extreme Cold / Windchill	- daytime temperatures to struggle to reach the single digits and teens (above zero) - nighttime temperatures dropped to -15°F to -20°F - wind chill advisories and/or warnings were in effect for much of this time for dangerous wind chill values of -20°F to -40°F	n/a	n/a	n/a
1/24/2008	5:00 a.m.	Extreme Cold / Windchill	- arctic air invaded portions of northwest Illinois causing temperatures to dip into the -15°F to -20°F range - wind chill readings fell to -30°F to -35°F - some schools delayed the start of classes until later in the morning	n/a	n/a	n/a
1/14/2009 thru 1/16/2009	10:00 p.m.	Extreme Cold / Windchill	- a strong surge of arctic air accompanied a heavy snow event that took place on the 13th and 14th - actual temperatures were as low as -20°F to -40°F - wind chill values ranged from -30°F to -50°F	n/a	n/a	n/a
1/5/2014 thru 1/7/2014	12:00 p.m.	Extreme Cold / Windchill	- bitterly cold arctic air caused temperatures to remain below zero across the region - strong northerly winds of 15 to 25 mph combined with low temperatures to produce wind chill readings of -30°F to -50°F - conditions led to widespread closings of schools on the 6th and 7th	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**

Figure 26
(Sheet 3 of 3)
Extreme Cold Events Reported in Whiteside County
1996 – 2014

Date(s)	Start Time	Event Type	Magnitude	Injuries	Fatalities	Property Damages
1/22/2014 thru 1/24/2014	6:00 p.m.	Extreme Cold / Windchill	- strong artic air mass in the wake of a powerful cold front led to low temperatures ranging from -5°F to -9°F - winds of 20 to 30 mph with gusts as high as 35 mph combined with low temperatures produced dangerously cold wind chill values below -30°F	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**
GRAND TOTAL:				**0**	**0**	**$0**

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Events Database.

3.3 FLOOD

IDENTIFYING THE HAZARD

What is the definition of a flood?

The Federal Emergency Management Agency (FEMA) defines a "flood" as a general or temporary condition where two or more acres of normally dry land or two or more properties are inundated by:

- overflow of inland or tidal waters;
- unusual and rapid accumulation or runoff of surface waters from any source;
- mudflows; or
- a sudden collapse or subsidence of shoreline land.

The severity of a flooding event is determined by a combination of topography and physiography, ground cover, precipitation and weather patterns and recent soil moisture conditions. On average, flooding causes more than $5 billion in damages each year in the United States. Floods cause utility damage and outages, infrastructure damage (both to transportation and communication systems), structural damage to buildings, crop loss, decreased land values and impede travel.

What types of flooding occur in Whiteside County?

There are two main types of flooding that affect Whiteside County: general flooding and flash flooding. General flooding can be broken down into two categories: riverine flooding and shallow flooding. The following provides a brief description of each type.

General Flooding – Riverine Flooding

Riverine flooding occurs when the water in a river or stream gradually rises and results in the waterway overflowing its banks. This type of flooding affects low lying areas near rivers, streams, lakes and reservoirs and generally occurs when:

- persistent storm systems enter the area and remain for extended periods of time,
- winter and spring rains combine with melting snow to fill river basins with more water than the river or stream can handle,
- ice jams create natural dams which block normal water flow, and
- torrential rains from tropical systems make landfall.

General Flooding – Shallow Flooding

Shallow flooding occurs in flat areas where there are no clearly defined channels (i.e., rivers and streams) and water cannot easily drain away. There two main types of shallow flooding: sheet flow and ponding. If the surface runoff cannot find a channel, it may flow out over a large area at a somewhat uniform depth in what's called sheet flow. In other cases the runoff may collect in depressions and low-lying areas where it cannot drain out, creating a ponding effect. Ponding floodwaters do not move or flow away, they remain in the temporary ponds until the water can infiltrate the soil, evaporate or are pumped out.

Flash Floods

Flash flooding occurs when there is a rapid rise of water along a stream or low-lying area. This type of flooding generally occurs within six hours of a significant rain event and is usually produced when heavy localized precipitation falls over an area in a short amount of time. Considered the most dangerous type of flood event, flash floods happen quickly with little or no warning. Typically, there is no time for the excess water to soak into the ground nor are the storm sewers able to handle the shear volume of water. As a result, streams overflow their banks and low-lying (such as underpasses, basements etc.) areas can rapidly fill with water.

Flash floods are very strong and can tear out trees, destroy buildings and bridges and scour out new channels. Flash flood-producing rains can also weaken soil and trigger mud slides that damage homes, roads and property. A vehicle caught in swiftly moving water can be swept away in a matter of seconds. Twelve inches of water can float a car or small SUV and 18 inches of eater can carry away large vehicles.

What is a base flood?

A base flood refers to any flood having a 1% chance of occurring in any given year. It is also known as the 100-year flood or the one percent annual chance flood. The base flood is the national standard used by the National Flood Insurance Program (NFIP) and the State of Illinois for the purposes of requiring the purchase of flood insurance and regulating new development.

Many individuals misinterpret the term "100-year flood". This term is used to describe the risk of future flooding; it does not mean that it will occur once every 100 years. Statistically speaking, a 100-year flood has a 1/100 (1%) chance of occurring in any given year. In reality, a 100-year flood could occur two times in the same year or two years in a row, especially if there are other contributing factors such as unusual changes in weather conditions, stream channelizations or changes in land use (i.e., open space land developed for housing or paved parking lots). It is also possible not to have a 100-year flood event over the course of 100 years.

While the base flood is the standard most commonly used for floodplain management and regulatory purposes in the United States, the 500-year flood is the national standard for protecting critical facilities, such as hospitals and power plants. A 500-year flood has a 1/500 (0.2%) chance of occurring in any given year.

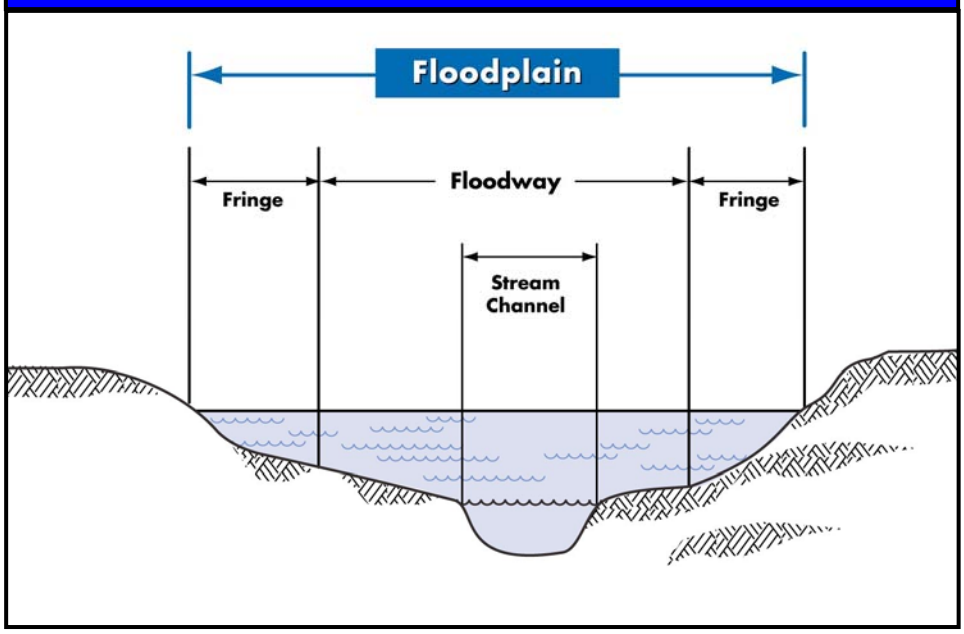
What is a floodplain?

The general definition of a floodplain is any land area susceptible to being inundated or flooded by water from any source (i.e., river, stream, lake, estuary, etc.). This general definition differs slightly from the regulatory definition of a floodplain.

A regulatory or base floodplain is defined as the land area that is covered by the floodwaters of the base flood. This land area is subject to a 1% chance of flooding in any given year. The base floodplain is also known as the 100-year floodplain or a Special Flood Hazard Area (SFHA). It is this second definition that is generally most familiar to people and the one that is used by the NFIP and the State of Illinois.

A base floodplain is divided into two parts: the floodway and the flood fringe. **Figure 31** illustrates the various components of a base floodplain.

Figure 31
Floodplain Illustration



Source: Illinois Department of Natural Resources, Quick Guide to Floodplain Management.

The floodway is the channel of a river or stream and the adjacent floodplain that is required to store and convey the base flood without increasing the water surface elevation. Typically the floodway is the most hazardous portion of the floodplain because it carries the bulk of the base flood downstream and is usually the area where water is deepest and is moving the fastest. Floodplain regulations prohibit construction within the floodway that results in an increase in the floodwater's depth and velocity.

The flood fringe is the remaining area of the base floodplain, outside of the floodway, that is subject to shallow inundation and low velocity flows. In general, the flood fringe plays a relatively insignificant role in storing and discharging floodwaters. The flood fringe can be quite wide on large streams and quite small or nonexistent on small streams. Development within the flood fringe is typically allowed via permit if it will not significantly increase the floodwater's depth or velocity and the development is elevated above or otherwise protected to the base flood elevation.

What is a Special Flood Hazard Area?

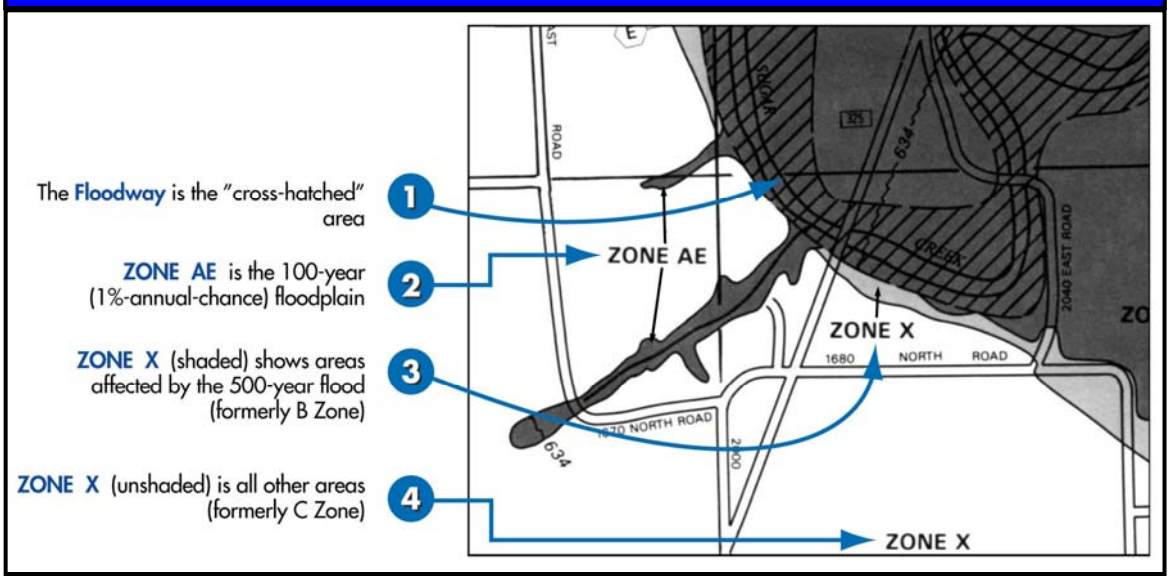
A Special Flood Hazard Area (SFHA) is the base floodplain. As discussed previously, this is the land area that is covered by the floodwaters of the base flood and has a 1% chance of flooding in any given year. The term SFHA is most commonly used when referring to the based floodplain on the Flood Insurance Rate Maps (FIRM) produced by FEMA. The SFHA is the area where floodplain regulations must be enforced by a community as a condition of participation in the NFIP and the area where mandatory flood insurance purchase requirements apply. Special Flood

Hazard Areas are delineated on the FIRMs and may be designated as Zones A, AE, A1-30, AO, AH, AR, and A99 depending on the amount of flood data available, the severity of the flood hazard or the age of the flood map.

What are Flood Insurance Rate Maps?

Flood Insurance Rate Maps (FIRMs) are maps that identify both the Special Flood Hazard Areas and the risk premium zones applicable to a community. These maps are produced by FEMA in association with the NFIP for floodplain management and insurance purposes. Digital versions of these maps are referred to as DFIRMs. **Figure 32** shows an example of a FIRM.

Figure 32
Example of a Flood Insurance Rate Map (FIRM)



Source: Illinois Department of Natural Resources, Quick Guide to Floodplain Management.

A FIRM will generally shows a community's base flood elevations, flood zones and floodplain boundaries. The information presented on a FIRM is based on historic, meteorological, hydrologic and hydraulic data as well as open-space conditions, flood-control projects and development. ***These maps only define flooding that occurs when a creek or river becomes overwhelmed. They do not define overland flooding that occurs when an area receives extraordinarily intense rainfall and storm sewers and roadside ditches are unable to handle the surface runoff.***

What are flood zones?

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk and type of flooding. These zones are depicted on a community's FIRM. The following provides a brief description of each flood zone.

- **Zone A.** Zone A, also known as the Special Flood Hazard Area (SFHA) or base floodplain, is defined as the floodplain area that has a 1% chance of flooding in any given year. There are multiple Zone A designations, including Zones A, AO, AH, A1-30, AE, AR or A99. Land areas located within Zone A are at a high risk for flooding.

During a 30 year period, the length of many mortgages, there is at least a 1 in 4 chance that a base flood will occur in a SFHA. All home and business owners in SFHAs with mortgages from federally regulated or insured lenders are required to purchase flood insurance.

- **Zone X (shaded).** Zone X (shaded), formerly known as Zone B, is defined as the floodplain area between the limits of the base flood (Zone A) and the 500-year flood. Land areas located within Zone X (shaded) are affected by the 500-year flood and are considered at a moderate risk for flooding.

  Zone X (shaded) is also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, shallow flooding areas with average depths of less than one foot or drainage areas less than one square mile. While flood insurance is not federally required in Zone X (shaded), it is recommended for all property owners and renters.

- **Zone X (unshaded).** Zone X (unshaded), formerly known as Zone C, is defined as all other land areas outside of Zone A and Zone X (shaded). Land areas located in Zone X (unshaded) are considered to have a low or minimal risk of flooding. While flood insurance is not federally required in Zone X (unshaded), it is recommended for all property owners and renters.

What is a Repetitive Loss Structure or Property?

FEMA defines a "repetitive loss structure" as a National Flood Insurance Program-insured structure that has received two or more flood insurance claim payments of more than $1,000 each within any 10-year period since 1978. These structures/properties account for approximately one-fourth of all National Flood Insurance Program (NFIP) insurance claim payments since 1978.

Currently, repetitive loss properties make up 1.3% of all policies, but are expected to account for 15% to 20% of future losses. These structures not only increase the NFIP's annual losses, they drain funds needed to prepare for catastrophic events. As a result, FEMA and the NFIP are working with states and local governments to mitigate these properties.

What is floodplain management?

Floodplain management is the administration of an overall community program of corrective and preventative measures to reduce flood damage. These measures take a variety of forms and generally include zoning, subdivision or building requirements, special-purpose floodplain ordinances, flood control projects, education and planning. Where floodplain development is permitted, floodplain management provides a framework that minimizes the risk to life and property from floods by maintaining a floodplain's natural function. Floodplain management is a key component of the National Flood Insurance Program.

What is the National Flood Insurance Program?

The National Flood Insurance Program (NFIP) is a federal program, administered by FEMA, that:

- mitigates future flood losses nationwide through community-enforced building and zoning ordinances; and

- provides access to affordable, federally-backed insurance protection against losses from flooding to property owners in participating communities.

It is designed to provide an insurance alternative to disaster assistance to meet escalating costs of repairing damage to buildings and their contents due to flooding. The U.S. Congress established the NFIP on August 1, 1968 with the passage of the National Flood Insurance Act of 1968. This Program has been broadened and modified several times over the years, most recently with the passage of the Flood Insurance Reform Act of 2004.

Prior to the creation of the NFIP, the national response to flood disasters was generally limited to constructing flood-control projects such as dams, levees, sea-walls, etc. and providing disaster relief to flood victims. While flood-control projects were able to initially reduce losses, their gains were offset by unwise and uncontrolled development practices within floodplains. In light of the continued increase in flood losses and the escalating costs of disaster relief to taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for protection.

Participation in the NFIP is voluntary and based on an agreement between local communities and the federal government. If a community agrees to adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in a Special Flood Hazard Area (base floodplain), then the government will make flood insurance available within the community as a financial protection against flood losses.

If a community chooses not to participate in the NFIP or a participating community decides not to adopt new floodplain management regulations or amend its existing regulations to reference new flood hazard data provided by FEMA, then the following sanctions will apply.

- Property owners will not be able to purchase NFIP flood insurance policies and existing policies will not be renewed.
- Federal disaster assistance will not be provided to repair or reconstruct insurable buildings located in identified flood hazard areas for presidentially-declared disasters that occur as a result of flooding.
- Federal mortgage insurance and loan guarantees, such as those written by the Federal Housing Administration and the Department of Veteran Affairs, will not be provided for acquisition or construction purposes within an identified flood hazard areas. Federally-insured or regulated lending institutions, such as banks and credit unions, are allowed to make conventional loans for insurable buildings in identified flood hazard areas of non-participating communities. However, the lender must notify applicants that the property is in an identified flood hazard area and that it is not eligible for federal disaster assistance.
- Federal grants or loans for development will not be available in identified flood hazard areas under programs administered by federal agencies such as the Environmental Protection Agency, Small Business Administration and the Department of Housing and Urban Development.

What is the NFIP's Community Rating System?

The NFIP's Community Rating System (CRS) is a voluntary program developed by FEMA to provide incentives (in the form of flood insurance premium discounts) for NFIP participating communities that have gone beyond the minimum NFIP floodplain management requirements to develop extra measures to provide protection from flooding. CRS discounts on flood insurance premiums range from 5% up to 45%. Those discounts provide an incentive for new flood protection activities that can help save lives and property in the event of a flood.

Are alerts issued for flooding?

Yes. The National Weather Service Weather Forecast Office of the Quad Cities, Iowa/Illinois is responsible for issuing ***flood watches*** and ***warnings*** for Whiteside County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Flood Advisory**. A flood advisory is issued when a specific weather event may cause nuisance flooding that could cause significant inconvenience, but should not be life-threatening if caution is exercised.
- **Flood Watch.** A flood watch is issued when conditions are favorable for flooding to develop in or close to the watch area. It does not mean that flooding is imminent, just that individuals need to be alert and prepared.
- **Flood Warning.** A flood warning is issued when flooding is imminent or already happening. Warnings indicate imminent danger to life and property for those who are in the area of the flooding.
- **Flash Flood Warning**. A flash flood warning is issued when flash flooding is in progress, imminent or highly likely. Individuals in flood prone areas should move immediately to high ground since flash floods can develop within minutes to hours. As with flood warnings, flash flood warnings indicate imminent danger to life and property for those who are in the area of the flash flooding.

PROFILING THE HAZARD

When has flooding occurred previously? What is the extent of these previous floods?

Figures 33 and **34**, located at the end of this section, summarize the previous occurrences as well as the extent or magnitude of the flood events recorded in Whiteside County. The flood events are separated into two categories: general (riverine and shallow/overland) and flash floods.

Flood Fast Facts – Occurrences

Number of General Floods Reported:(1965 – 2014): ***25***

Number of Flash Floods Reported (1997 – 2014): ***19***

Most Likely Month for General Floods to Occur: ***April***

Most Likely Month for Flash Floods to Occur: ***June***

Most Likely Time for General Floods to Occur: ***Early Evening***

Most Likely Time for Flash Floods to Occur: ***Afternoon***

General Floods

NOAA's Storm Events Database; NWS's COOP and storm data records; Illinois State Water Survey; and Illinois Department of Natural Resources, Office of Water Resources records have documented 25 reported occurrences of general flooding in Whiteside County between 1965 and 2014.

Included in 25 general flood events are several historic Mississippi River floods. Based on historical gage data from the river gages at Fulton Lock and Dam 13 and Camanche, Iowa, the record setting Mississippi River flood in this area occurred in 1965. On April 28, 1965 the Mississippi River crested at 25.03 feet at Fulton Lock and Dam 13, more than five feet above major flood stage and at 24.65 feet at Camanche, Iowa, more than four feet above major flood stage. The second and third highest crests at both locations occurred during 2001 and 1993, respectively.

Flash Floods

NOAA's Storm Events Database and NWS's COOP data records documented 21 reported occurrences of flash flooding in Whiteside County between 1997 and 2014.

Figure 35 charts the reported occurrences of flooding by month. Of the 25 general and flood events, 17 (68%) began or took place in April, May and June. Of these 17 events, eight (47%) began or occurred in April, making this the peak month for general flooding. There were three events that spanned more than one month; however, for illustration purposes only the month when the event started is graphed.

In comparisons, 15 (71%) of the 21 flash flooding events took place in June and July. Of these 15 events, 11 took place in June, making this the peak month for flash flooding in Whiteside County. There was one event that spanned more than one month; however, for illustration purposes only the month when the event started is graphed.

Figure 35
Flood Events by Month

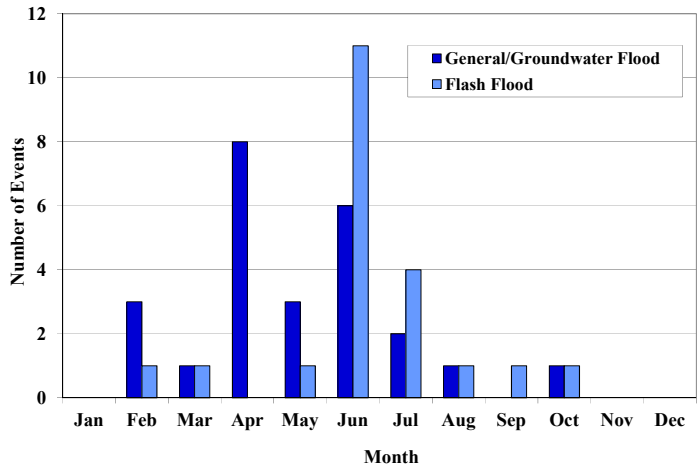
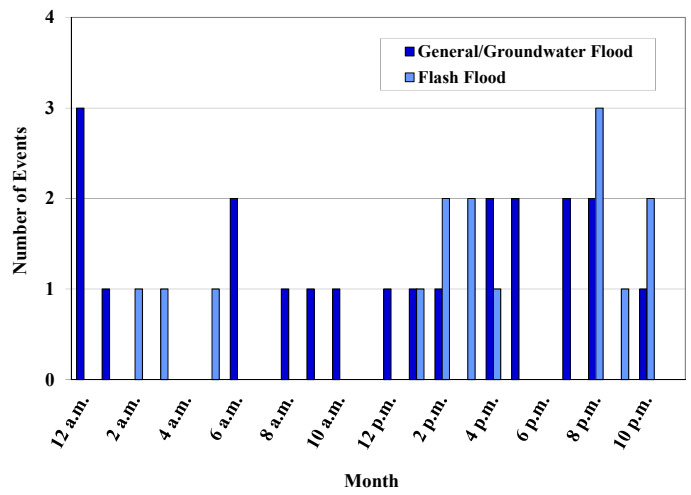


Figure 36 charts the reported occurrences of flooding by hour. Of the 25 general flood events and 21 flash flood events, start times were unavailable for four and six events respectively. Of the remaining general flood events with recorded times, approximately 57% began during the p.m. hours. In comparison, of the remaining flash flood events with recorded times, approximately 80%, began during the p.m. hours.

Figure 36
Flood Events by Hour



What locations are affected by floods?

While specific locations are affected by general flooding, many areas of the County can be impacted by overland and flash flooding because of the topography and high water table of the area. Approximately 21.1% of the area in Whiteside County is designated as being within the base floodplain and susceptible to riverine floods. The *2013 Illinois Natural Hazard Mitigation Plan* by IEMA classifies Whiteside County's hazard rating for floods as "elevated."

Figure 37 identifies the floodplains in Whiteside County. This figure is based on the DFIRMs for Whiteside County that became effective February 18, 2011. While a large portion of the area prone to riverine flooding is in the unincorporated portions of the County, Deer Grove, Erie, Fulton, Morrison, Prophetstown, Rock Falls and Sterling are also susceptible to riverine flooding because of their proximity to floodplains. To view the DFIRMs for the participating municipalities, see **Appendix L**.

Heavy rains caused streets flooding in Sterling on April 17, 2013.

Photograph courtesy of Scott Schumard

Figure 37
Floodplain Areas in Whiteside County

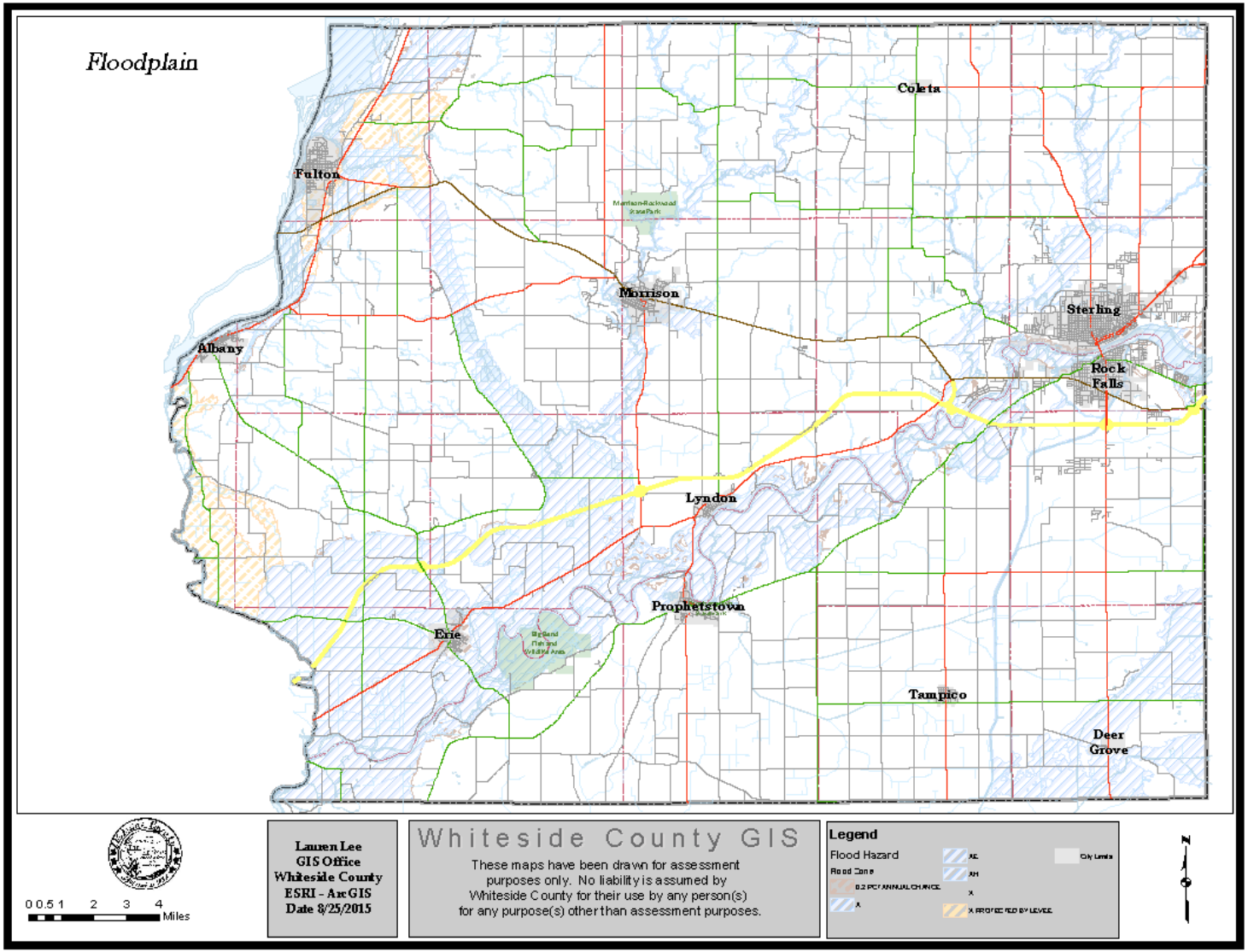


Figure 38 identifies the bodies of water by participating jurisdictions that are known to cause flooding or have the potential to flood. Water bodies with Special Flood Hazard Areas are identified in bold.

Figure 38
Bodies of Water Subject to Flooding in Whiteside County

Participating Jurisdiction	Water Bodies
Coleta	Spring Creek; Little Spring Creek
Deer Grove	---
Erie	**Lake Erie**
Fulton	**Mississippi River; Cattail Slough**
Morrison	**French Creek; Rock Creek**
Prophetstown	**Cook Creek; Rock River**
Rock Falls	**Hennepin Feeder Canal; Rock River**
Sterling	**East Branch Elkhorn Creek; Rock River**
Tampico	**---**
Unincorporated Whiteside County	Baker's Drainage Ditch; Big Slough Ditch; Branch Ditch; **Buffalo Creek**; **Cattail Creek**; **Cattail Slough**; Cedar Creek; **Coon Creek**; County Ditch #1; County Ditch #2; **Deer Creek**; Dennison Ditch; **Elkhorn Creek**; **Ellsworth Creek**; Erickson Ditch; **French Creek**; **Green River**; Goose Creek; **Hackberry Slough**; Hadaway Slough; **Hennepin Canal**; **Hennepin Feeder Canal**; Howland Creek; **Johnson Creek**; **Jordan Creek**; **Lake Carlton**; **Lake Erie**; **Little Rock Creek**; **Little Spring Creek**; **Lynn Creek**; Main Ditch; **Meredosia Ditch**; **Meredosia Slough**; **Mineral Spring Creek**; **Mississippi River**; **Otter Creek**; **Portland Creek**; **Ramsey Slough**; Red Oak Ditch; **Rock Creek**; **Rock River**; **Sinnissippi Lake**; **Skunk Creek**; Smith Ditch; **Spring Creek (2)**; **Spring Slough**; South Fork Ditch; **Sugar Creek**; **Union Special Ditch**; **Walker Slough**; Wild Creek; **Winnebago Main Ditch**

Source: FEMA DFIRMs.

What jurisdictions within the County take part in the NFIP?

Of the jurisdictions that are participating in the mitigation planning process, Whiteside County, Erie, Fulton, Morrison, Prophetstown, Rock Falls and Sterling all participate in the NFIP. **Figure 39** provides information about each jurisdiction's participation in the NFIP, including the date each participant joined and the year of the most recently adopted floodplain zoning ordinance.

Coleta and Tampico have no identified flood hazard boundaries within their corporate limits and are not required to participate. At this time Deer Grove is not a participant of the NFIP. Since the current effective DFIRMs identify Special Flood Hazard Areas within Deer Grove's corporate limits, it is presently sanctioned by the Program.

While not participants in this mitigation planning process, Albany and Lyndon also take part in the NFIP. **Figure 39** provides information on their NFIP participation.

What is the probability of future flood events occurring?

General Floods

Whiteside County has had 25 verified occurrences of general flooding between 1965 and 2014. With 25 occurrences over the past 50 years, the probability or likelihood of a general flood event

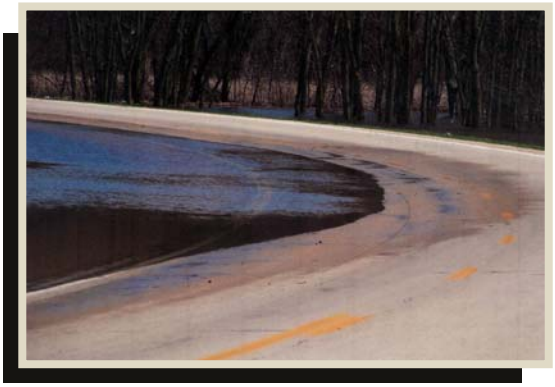
occurring in Whiteside County in any given year is 50%. There was six years over the past 50 years where two or more general flood events occurred. This indicates that the probability that more than one general flood event may occur during any given year within the County is 12%.

Figure 39
NFIP Participants

Jurisdiction	Participation Date	Current Effective FIRM Date	CRS Participation	Most Recently Adopted Floodplain Zoning Ordinance
Whiteside County	02/19/1986	02/18/2011	No	2010
Albany	06/15/1981	02/18/2011	No	2011
Erie	02/15/1985	02/18/2011	No	2011
Fulton	05/17/1982	02/18/2011	No	2011
Lyndon	03/01/1984	02/18/2011	No	2011
Morrison	09/30/1988	02/18/2011	No	2010
Prophetstown	08/01/1986	02/18/2011	No	2011
Rock Falls	09/01/1986	02/18/2011	No	2010
Sterling	10/05/1984	02/18/2011	No	2011

Source: FEMA, Community Status Book.

However, the gaps in flood data between 1965 and 1993 cause a distortion in both these probabilities. If only the events recorded between 1993 and 2014 are analyzed, then there have been 21 verified occurrences of general flooding. With 21 events in 22 years, the probability or likelihood of a general flood event occurring in Whiteside County in any given year is 95%. There were six years over the past 22 years where two or more flood events occurred. This indicates that the probability that more than one flood event may occur during any given year within the County is 27%.



Heavy rains caused the Rock River to flood and covered portions of Erie Road south of Erie in April, 2013.

Photograph courtesy of William Lukehart

A probability based on 22 years of data may not be as accurate as a probability based on 50 years of data. However, a probability based on the 1993-2014 data may provide a more reliable representation of the threat the County faces from general flooding than a probability calculated from a longer time frame with gaps.

Flash Floods

There have been 21 verified occurrences of flash flooding between 1997 and 2014. With 21 occurrences over the past 18 years, Whiteside County should expect at least one flash flood event each year. There were four years over the past 18 years where two or more flash flood events occurred. This indicates that the probability that more than one flash flood event may occur during any given year within the County is 22%.

ASSESSING VULNERABILITY

Several factors including topography, precipitation and an abundance of rivers and streams make Illinois especially vulnerable to flooding. Since the 1940s, Illinois climate records show an increase in heavy precipitation which has led to increased flood peaks on Illinois rivers.

Are the participating jurisdictions vulnerable to flooding?

Yes. Whiteside County, including the participating municipalities, is vulnerable to the dangers presented by flooding. Precipitation levels, a seasonal high water table, and topography that includes the Mississippi River, Rock River and their associated watersheds are all factors that cumulatively make virtually the entire County susceptible to some form of flooding. Flooding occurs along the floodplains of all the rivers and streams within the County as well as outside of the floodplains in low-lying areas where drainage problems occur due to culvert or drainage ditches that need improvement or proper maintenance.

Figure 40 details the number of *recorded* flash flood events by participating jurisdiction. With the exception of one event, all of the general flood events either impacted the entire County or a large portion of it and were not location specific.

Figure 40
Verified Flash Flood Events by Participating Jurisdiction

Participating Municipality	Number	Year
Coleta	0	---
Deer Grove	0	---
Erie	0	---
Fulton	2	2002, 2009*
Morrison	4	1994*, 2002*, 2002, 2002
Prophetstown	1	2006*
Rock Falls	3	2010*, 2011*, 2014*
Sterling	4	2001*, 2009*, 2010*, 2011*, 2014*, 2014*
Tampico	0	---
countywide	4	1998, 2008, 2009, 2010
southern portion of the County	1	1999
southeastern portion of the County	1	2010

* Flash flood verified within the municipality.

Vulnerability to flooding can change depending on several factors, including land use. As land used primarily for agricultural and open space purposes is converted for residential and commercial/industrial uses, the number of buildings and impervious surfaces (i.e., parking lots, roads, sidewalks, etc.) increases. As the number of buildings and impervious surfaces increases, so too does the potential for flash flooding. Rather than infiltrating the ground slowly, rain and snowmelt that falls on impervious surfaces runs off and fills ditches and storm drains quickly creating drainage problems and flooding.

As described in Section 1.3, substantial changes in land use (from forested, open and agricultural land to residential, commercial and industrial) are not anticipated within the County in the immediate future. No substantial increases in residential or commercial/industrial developments are expected within the next five years.

What impacts resulted from the recorded floods?

Floods as a whole have caused an estimated $1.5 million in property damages. The following provides a breakdown of impacts by category.

In comparison, the State of Illinois averages four fatalities per year and an estimated $257 million annually in property damage losses, making flooding the single most financially damaging natural hazard in Illinois. While both general floods and flash floods occur on a fairly regular basis within the County, the number of injuries and fatalities is relatively low. Consequently, the risk or vulnerability to public health and safety from *general floods* is seen as low. However, nearly half of the recorded flood events are a result of flash flooding. Since there is very little warning associated with flash flooding, the risk to public health and safety from *flash floods* is elevated to medium.

Flood Fast Facts – Impacts/Risk

General Flood Impacts
- Total Property Damage: ***$1,350,000***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Flash Flood Impacts
- Total Property Damage: ***$150,000***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Flood Risk/Vulnerability to:
- Public Health & Safety – General Flooding: ***Low***
- Public Health & Safety – Flash Flooding: ***Medium***
- Buildings/Infrastructure/Critical Facilities: ***Medium/High***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

General Floods

The data obtained from NOAA's Storm Events Database indicates that between 1965 and 2014, three of the 25 general flood events caused $1,350,000 in property damage. Damage information was either unavailable or none was recorded for the remaining 22 reported occurrences. No injuries or fatalities were reported as a result of any of the recorded events.

Moderate to heavy rain during March, 2008 caused Rock Creek to overflow its banks and flood a portion of the Public Works Garage in Morrison.

Photograph courtesy of Barry Dykhuizen

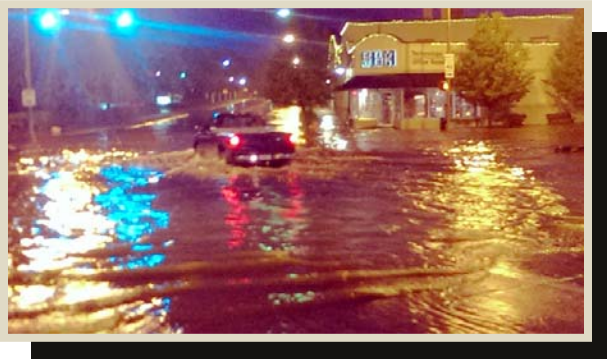
Flash Floods

The data obtained from NOAA's Storm Events Database indicates that between 1997 and 2014, two of the 21 flash flood events caused $150,000 in property damage. Damage information was either unavailable or none was recorded for the remaining 19 reported occurrences. No injuries or fatalities were reported as a result of any of the recorded events.

What other impacts can result from flooding?

One of the primary threats from flooding is drowning. Nearly half of all flash flood fatalities occur in vehicles as they are swept downstream. Most of these fatalities take place when people drive into flooded roadway dips and low drainage areas. It only takes two feet of water to carry away most vehicles.

Floodwaters also pose biological and chemical risks to public health. Flooding can force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological contaminants into buildings and basements and onto streets and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew, which can pose a health hazard, especially for small children, the elderly and those with specific allergies.



Heavy rains fell on August 4, 2014 causing streets to flood in downtown Sterling.

Photograph courtesy of Scott Schumard

Flooding can also cause chemical contaminants such as gasoline and oil to enter the floodwaters if underground storage tanks or pipelines crack and begin leaking during a flood event. Depending on the time of year, floodwaters also may carry away agricultural chemicals that have been applied to farm fields.

Structural damage, such as cracks forming in foundation, can also result from flooding. In most cases, however, the structural damage sustained during a flood occurs to the flooring, drywall and wood framing. In addition to structural damage, a flood can also cause serious damage to a building's content.

Are there any repetitive loss structures/properties within Whiteside County?

Yes. According to information obtained from IDNR's Statewide Floodplain Programs Manager and the Whiteside County Planning & Zoning Administrator, there are nine repetitive flood loss properties located in or near Albany, Erie, Fulton and Rock Falls. As described previously, FEMA defines a "repetitive loss structure" as an NFIP-insured structure that has received two or more flood insurance claim payments of more than $1,000 each within any 10-year period since 1978.

Figure 41 identifies the repetitive flood loss properties by participating jurisdiction and provides the total flood insurance claim payments. The exact location and/or addresses of the insured properties are not included in this Plan to protect the owners' privacy. According to IDNR, there have been 20 flood insurance claim payments totaling $261,572 for the nine repetitive flood loss structures/properties.

Are existing buildings, infrastructure and critical facilities vulnerable to flooding?

Yes. **Figure 42** identifies the number of existing residential structures by participating jurisdiction located within a base floodplain. These counts were prepared by the consultant using the effective DFIRMs and aerial mapping. It should be noted that there are several municipalities that are impacted by base floodplains of surface water bodies located outside of their corporate limits.

Figure 41
Repetitive Flood Loss Properties

Participating Jurisdiction	Structure Type	Number of Flood Insurance Claim Payments	Total Flood Insurance Claim Payments
Albany	Single Family	2	$45,482.75
Erie	Single Family	3	$13,312.90
Fulton	Single Family	2	$18,220.19
Fulton	Single Family	3	$52,312.92
Fulton	Single Family	2	$23,128.60
Fulton	Single Family	2	$29,103.87
Fulton	Single Family	2	$37,852.12
Fulton	Single Family	2	$29,135.72
Rock Falls	Single Family	2	$13,022.67
Total:		**20**	**$261,571.74**

Source: Osman, Paul, Statewide Floodplain Programs/National Flood Insurance Program Manager, Illinois Department of Natural Resources, Office of Water Resources.

Figure 42
Existing Residential Structures Located within a Base Floodplain

Participating Jurisdiction	Number of Residential Structures	Participating Jurisdiction	Number of Residential Structures
Coleta	0	Prophetstown	0
Deer Grove	4	Rock Falls	1
Erie	32	Sterling	10
Fulton	0	Tampico	0
Morrison	2	Unincorp. Whiteside Co.	575

Source: FEMA DFIRMs

Aside from key roads and bridges and buried power and communication lines, Erie, Fulton, Morrison, Prophetstown and Sterling all have specific infrastructure/critical facilities located within or adjacent to a floodplain. The following provides a brief description of each.

- *Erie*: Genesis Health Group – Erie Family Practice is located in the Rock River base floodplain while the Erie Middle School and High School are both located in the 500 year floodplain of the Rock River.

- *Fulton:* The City's wastewater treatment plant, City Hall and the Fulton Fire Protection District are all located in the 500 year floodplain of the Mississippi River and are protected by the Fulton Local Flood Control Protection Project.
- *Morrison*: There are three parks in Morrison that have land located within a base floodplain: Waterworks Park (Rock Creek floodplain) , French Park (French Creek floodplain) and the Morrison Sports Complex (French Creek floodplain).
- *Prophetstown*: Prophetstown State Park is located in the Rock River base floodplain.
- *Sterling*: The City's wastewater treatment plant is located in the Elkhorn Creek base floodplain.

Figure 43 identifies the number of existing businesses by participating jurisdiction located within a base floodplain. These counts were also prepared by the consultant using the current DFIRMs and aerial mapping.

Figure 43
Existing Businesses Located within a Base Floodplain

Participating Jurisdiction	Number of Businesses	Participating Jurisdiction	Number of Businesses
Coleta	0	Prophetstown	1
Deer Grove	1	Rock Falls	0
Erie	6	Sterling	1
Fulton	0	Tampico	0
Morrison	7	Unincorp. Whiteside Co.	33

Source: FEMA DFIRMs

While 21.1% of the land area in Whiteside County lies within the base floodplain and is susceptible to riverine flooding, almost the entire County is vulnerable to flash flooding. As a result, a majority of the buildings, infrastructure and critical facilities that may be impacted by flooding are located outside of the base floodplain and are not easily identifiable.

The risk or vulnerability of existing buildings, infrastructure and critical facilities to all forms of flooding is considered to be medium to high based on: (a) the frequency and severity of recorded flood events within the County; (b) the County's proximity to two major rivers; (c) the fact that most of the County is vulnerable to flash flooding and (d) a majority of the buildings, infrastructure and critical facilities that may be impacted are located outside of the base floodplain.

Are future buildings, infrastructure and critical facilities vulnerable to flooding?

The answer to this question depends on the type of flooding being discussed.

Riverine Flooding

In terms of riverine flooding, the vulnerability of future buildings, infrastructure and critical facilities located within NFIP-participating jurisdictions (Whiteside County, Erie, Fulton, Morrison, Prophetstown, Rock Fall, and Sterling) is low as long as the existing floodplain ordinances are enforced. Enforcement of the floodplain ordinance is the mechanism that ensures

that new structures either are not built in flood-prone areas or are elevated or protected to the base flood elevation.

At the time this Plan was prepared, the effective DFIRM for Deer Grove identifed Special Flood Hazard Areas within the Village's municipal limits; however the Village is not a participant in the NFIP. As a result, future structures built in or near the base floodplain will be vulnerable to riverine flooding.

Flash Flooding

In terms of flash flooding, all future buildings, infrastructure and critical facilities are still vulnerable depending on the amount of precipitation that is received, the topography and any land use changes undertaken within the participating jurisdictions.

What are the potential dollar losses to vulnerable structures from flooding?

An estimate of the potential dollar losses to vulnerable *residential structures* located within the *participating municipalities* can be calculated if several assumptions are made. These assumptions represent a probable scenario based on the reported occurrences of flooding in Whiteside County.

The purpose of providing an estimate is to help residents and municipal officials make informed decisions about how they can better protect themselves and their communities. These estimates are meant to provide a ***general idea*** of the magnitude of the potential damage that could occur from a flood event in each of the municipalities.

Assumptions

To calculate the overall potential dollar losses to vulnerable residential structures from a flood, a set of decisions/assumptions must be made regarding:

- type of flood event;
- scope of the flood event;
- number of potentially-damaged housing units;
- value of the potentially-damaged housing units; and
- percent damage sustained by the potentially-damaged housing units (i.e., damage scenario.)

The following provides a detailed discussion of each decision/assumption.

Assumption #1

A riverine flood event will impact vulnerable residential structures within each municipality.

Type of Flood Event. The first step towards calculating the potential dollar losses to vulnerable residential structures is to determine the type of flood event that will be used for this scenario. While riverine and flash flood events have occurred with similar frequency, riverine floods have resulted in the greatest amount of recorded damages in the County. In addition, identifying residential structures vulnerable to flash flooding is problematic because most are located outside of the base floodplain and the number of structures impacted can change with each event depending on the amount of precipitation received, the topography and the land use of the area.

Therefore, a riverine flood event will be used since it is (a) relatively easy to identify vulnerable residential structures within each municipality (i.e., those structures located within the base floodplain or Special Flood Hazard Areas of any river, stream or creek); and (b) the number of structures impacted is generally the same from event to event.

Scope of the Flood Event. To establish the number of vulnerable residential structures or potentially-damaged housing units, the scope of the riverine flood event within each municipality must first be determined. In this scenario, the scope refers to the number of rivers, streams and creeks that overflow their banks and the degree of flooding experienced along base floodplains for each river, stream and creek.

Assumption #2

All base floodplains within a municipality will flood and experience the same degree of flooding.

Generally speaking, a riverine flood event only affects one or two rivers or streams at a time depending on the cause of the event (i.e., precipitation, snow melt, ice jam, etc.) and usually does not produce the same degree of flooding along the entire length of the river or stream. However, for this scenario, it was decided that:

- all rivers, streams and creeks with base floodplains would overflow their banks, and
- the base floodplains of each river, stream and/or creek located within the corporate limits of each municipality would experience the same degree of flooding.

This assumption results in the following conditions for each municipality:

- Coleta and Tampico would not experience any residential flooding since there are no river, stream or creek base floodplains located in their municipal limits;
- *Deer Grove*: The Green River and Winnebago Ditch would overflow their banks and flood a small portion along the northern and southern edges of the Village;
- *Erie*: The Rock River would overflow its banks and flood a portion of the Village;
- *Fulton*: Cattail Slough and the Mississippi River would overflow their banks and flood a small portion of the City;
- *Morrison:* French Creek and Rock Creek would overflow their banks and flood the western and southern edges of the city;
- *Prophetstown:* Coon Creek and the Rock River would overflow their banks and flood the northern edge of the City;
- *Rock Falls:* The Hennepin Feeder Canal and Rock River would overflow their banks and flood a small portion of the City; and
- *Sterling:* East Branch Elkhorn Creek and Rock River would overflow would overflow their banks and flood a small portion of the City.

Number of Potentially-Damaged Housing Units. Since this scenario assumes that a riverine flood will impact all of the base floodplains within a municipality, the number of potentially-damaged housing units can be determined by counting the number of existing residential structures located within the base floodplain(s) in each municipality. These counts were prepared by the consultant.

Assumption #3

The number of existing residential structures located within the base floodplain(s) in each municipality will be used to determine the number of potentially-damaged housing units.

The following municipalities have existing residential buildings located within base floodplain(s) of their communities:

- Deer Grove has 4 residential structures located in the Green River base floodplain;
- Erie has 32 residential structures located in the Rock River base floodplain;
- Morrison has a total of 2 residential structures located in base floodplains – 1 located in the French Creek base floodplain and 1 located in the Rock Creek base floodplain;
- Rock Falls has 1 residential structure located in the Hennepin Feeder Canal base floodplain; and
- Sterling has 10 residential structures located in the East Branch Elkhorn Creek base floodplain.

There are no existing residential structures located within the base floodplains in Fulton or Prophetstown.

Value of Potentially-Damaged Housing Units. Now that the number of potentially-damaged housing units has been determined, the monetary value of the units must be calculated. Typically when damage estimates are prepared after a natural disaster such as a flood, they are based on the market value of the structure. Since it would be impractical to determine the individual market value of each potentially-damaged housing unit, the average market value for a residential structure in each municipality will be used to calculate the potential dollar losses.

Assumption #4

The average market value for a residential structure in each municipality will be used to determine the value of potentially-damaged housing units.

To determine the average market value, the average assessed value must first be calculated. The average assessed value is determined by taking the total assessed value of residential buildings within a municipality and dividing that number by the total number of housing units in the municipality. **Figure 44** provides a sample calculation. The total assessed value is based on 2013 tax assessment information provided by the Whiteside County Supervisor of Assessments.

Figure 44 Calculation of Average Assessed Value
Total Assessed Value of Residential Buildings ÷ Total Housing Units = Average Assessed Value (Rounded to the Nearest Penny) Coleta: $1,385,484 ÷ 71 housing units = $19,513.86

To determine the average market value, the average assessed value is multiplied by three (the assessed value of a structure in Whiteside County is approximately one-third of the market value). **Figure 45** provides the average assessed value and average market value for each participating municipality.

Figure 45
Average Market Value of Housing Units

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2013)	Total Housing Units (2010)	Average Assessed Value (Raw)	Average Market Value (Raw)	Average Market Value (Rounded)
Coleta	$1,385,484	71	$19,513.85915	$58,541.57745	$58,542
Deer Grove	$332,775	22	$15,126.13636	$45,378.40908	$45,378
Erie	$18,476,018	678	$27,250.76401	$81,752.29203	$81,752
Fulton	$44,866,161	1,700	$26,391.85941	$79,175.57823	$79,176
Morrison	$47,212,000	1,870	$25,247.05882	$75,741.17646	$75,741
Prophetstown	$18,561,505	908	$20,442.18612	$61,326.55836	$61,327
Rock Falls	$62,067,834	4,123	$15,054.04657	$45,162.13971	$45,162
Sterling	$114,216,688	6,947	$16,441.15273	$49,323.45819	$49,323
Tampico	$6,378,448	317	$20,121.28707	$60,363.86121	$60,364

Source: Brands, Robin, Whiteside County Supervisor of Assessments.

Assumption #5

The potentially-damaged housing units are one or two story homes with basements and the flood depth is two feet.

Structural Damage = 20%
Content Damage = 30%

Damage Scenario. The final decision that must be made to calculate potential dollar losses is to determine the percent damage sustained by the structure and the structure's contents during the flood event. In order to determine the percent damage using FEMA's flood loss estimation tables, assumptions must be made regarding (a) the type of residential structure flooded (i.e., manufactured home, one story home without a basement, one or two story home with a basement, etc.) and (b) the flood depth.

For this scenario it is assumed that the potentially-damaged housing units are one or two story homes with basements and the flood depth is two feet. With these assumptions the expected percent damage sustained by the ***structure*** is estimated to be 20% and the expected percent damage sustained by the structure's ***contents*** is estimated to be 30%.

Calculations

Now that all of the decisions/assumptions have been made, the potential dollar losses can be calculated. First the potential dollar losses to the ***structure*** of the potentially-damaged housing units must be determined. This is done by taking the average market value for a residential structure and multiplying that by the percent damage to get the average structural damage per unit. Next the average structural damage per unit is multiplied by the number of potentially-damaged housing units. **Figure 46** provides a sample calculation.

Next the potential dollar losses to the ***content*** of the potentially-damaged housing units must be determined. Based on FEMA guidance, the value of a residential housing unit's content is approximately 50% of its market value. Therefore, start by taking one-half the average market value for a residential structure and multiply that by the percent damage to get the average

content damage per unit. Next the average content damage per unit is multiplied by the number of potentially-damaged housing units. **Figure 47** provides a sample calculation.

Figure 46
***Structure* – Potential Dollar Loss Calculations**

Average Market Value Per Housing Unit x Percent Damage = Average Structural Damage

Deer Grove: $45,378 x 20% = $9,075.60 per unit

Average Structural Damage x Number of Potentially-Damaged Housing Units = Potential Dollar Losses – Structure
(Rounded to the Nearest Penny)

Deer Grove: $9,075.60 per unit x 4 housing units = $36,302.40

Figure 47
***Content* – Potential Dollar Loss Calculations**

½ (Average Market Value Per Housing Unit) x Percent Damage = Average Content Damage

Deer Grove: ½ ($45,378) x 30% = $6,806.70 per unit

Average Content Damage x Number of Potentially-Damaged Housing Units = Potential Dollar Losses – Content
(Rounded to the Nearest Penny)

Deer Grove: $6,806.70 per unit x 4 housing units = $27,226.80

Finally the ***total potential dollar losses*** may be calculated by adding together the potential dollar losses to the structure and the content. **Figure 48** provides a breakdown of the total potential dollar losses by municipality.

Figure 48
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Riverine Flood Event

Participating Jurisdiction	Average Market Value (2013)	Potentially-Damaged Housing Units	Potential Dollar Losses		Total Potential Dollar Losses (Rounded to the Nearest Dollar)
			Structure	Content	
Coleta	$58,542	0	$ 0	$ 0	$ 0
Deer Grove	$45,378	4	$36,302.40	$27,226.80	$63,529
Erie	$81,752	32	$523,212.80	$392,409.60	$915,622
Fulton	$79,176	0	$ 0	$ 0	$ 0
Morrison	$75,741	2	$30,296.40	$22,722.30	$53,019
Prophetstown	$61,327	0	$ 0	$ 0	$ 0
Rock Falls	$45,162	1	$9,032.40	$6,774.30	$15,807
Sterling	$49,323	10	$98,646.00	$73,984.50	$172,631
Tampico	$30,364	0	$ 0	$ 0	$ 0

This assessment illustrates the potential residential dollar losses that should be considered when municipalities are deciding which mitigation projects to pursue. Potential dollar losses caused by riverine flooding to vulnerable residences within the participating municipalities would be expected to range from $15,000 to $915,000. There are four participating municipalities in this scenario who do not have any residences considered vulnerable to riverine flooding.

Vulnerability of Businesses and Infrastructure/Critical Facilities

The calculations presented above are meant to provide the reader with a sense of the scope or magnitude of a large riverine flood event in dollars. These calculations do not include the physical damages sustained by businesses or other infrastructure and critical facilities.

In terms of businesses, the impacts from a flood event can be physical and/or monetary. Monetary impacts can include loss of sales revenue either through temporary closure or loss of critical services (i.e., power, drinking water and sewer). Depending on the magnitude of the flood event, the damage sustained by infrastructure and critical facilities can be extensive in nature and expensive to repair. As a result, the cumulative monetary impacts to businesses and infrastructure can exceed the cumulative monetary impacts to residences. While average dollar amounts cannot be supplied for these items at this time, they should be taken into account when discussing the overall impacts that a large-scale riverine flood event could have on the participating jurisdictions.

Five of the nine municipalities have businesses located in the base floodplain and vulnerable to a riverine flood event. In terms of specific infrastructure vulnerability, Sterling's wastewater treatment facility is located within the base floodplain of Elkhorn Creek. The potential dollar loss to relocate the wastewater treatment facility would be several million dollars.

Erie's Middle School and High School are both located in the 500 year floodplain of the Rock River and have the potential to be impacted by flooding. Fulton's wastewater treatment plant, City Hall and the Fulton Fire Protection District are all located in the 500 year floodplain of the Mississippi River. While these critical facilities are protected by the Fulton Local Flood Control Protection Project, if a failure of the any part of the project were to occur in the Fulton area then these facilities could be potentially impacted by flooding.

No other above-ground infrastructure within the participating jurisdictions, other than key roads and bridges, were identified as being vulnerable to riverine flooding.

Considerations

While the potential dollar loss scenario was only for a riverine flood event, the participating jurisdictions should be aware and consider the impacts that can result from flash flood events. Whiteside County has experienced multiple events over the last 18 years as have adjoining and nearby counties. The damages from several flash flood events in the past few years in nearby counties have been substantial. These events illustrate the need for officials to consider the overall monetary impacts of all forms of flooding on their communities. All participants should carefully consider the types of activities and projects that can be taken to minimize their vulnerability.

Figure 33
(Sheet 1 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
4/25/1965	n/a	western portion of the county	- Heavy rain fell across much of the northern Mississippi River region in early to mid April. The rain, coupled with snow melt and frozen ground led to flooding of many rivers. - This event was part of a federally-declared disaster (Declaration #194). - The Mississippi River crested on April 28, 1965 at 25.03 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at 24.65 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2]. This is the flood of record at both gages. - Mississippi River flood damages according to a US Department of Interior Geological Survey: • Johnson Creek and Cattail drainage districts' levees were breached during this event, flooding more than 9,000 acres. • Fulton was completely surrounded and engulfed by the floodwaters. • Damages were estimated at approx. $1.7 million and more than 2,000 persons were forced to evacuate their homes. *NARRATIVE CONTINUED ON NEXT SHEET*	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

Figure 33
(Sheet 2 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
4/25/1965	n/a	western portion of the county	*NARRATIVE CONTINUED FROM PREVIOUS SHEET* • At Albany hundreds of volunteers worked against tremendous odds and successfully reinforced a 12 mile section of Meredosia Dike and the pumping station. Had the dike failed 19,000 acres of farmland and neighboring communities would have been flooded.	---	---	---	---
4/16/1969 thru 5/6/1969	n/a	western portion of the county	- Spring snowmelt from heavy snow cover across the upper Mississippi basin brought significant flooding to portions of the Mississippi River. - This event was part of a federally-declared disaster (Declaration #262). - The Mississippi River crested on April 26, 1969 at approx. 21.40 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at approx. 21.53 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2]. This is the 4th highest crest at the L&D #13 gage and the 6th highest at the Camanche gage.	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

Figure 33
(Sheet 3 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
4/26/1973	n/a	western portion of the county	- A series of late winter-early spring storms in March and April resulted in the extensive flooding of rivers and waterways. - This event was part of a federally-declared disaster (Declaration #373). - The Mississippi River crested on March 25, 1973 at 19.95 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at 20.63 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2]. This is the 8th highest crest at the L&D #13 gage and the 10th highest crest at the Camanche gage. - The Rock River crested on April 21, 1973 at 15.66 feet at the river gage attached to the left bank 1 mile upstream from Como[3]. This is the 5th highest crest at this gage.	n/a	n/a	n/a	n/a
6/10/1974	n/a	countywide	- Heavy rains in mid to late May caused flooding along many rivers and small streams in northern Illinois, including the Rock River. - This event was part of a federally-declared disaster (Declaration #438). - 5,000 acres of land in Whiteside and Rock Island counties were inundated when the Rock River overflowed its banks	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

[3] Flood stage at the gage upstream of Como is 10.0 feet, moderate flood stage is 11.0 feet and major flood stage is 12.0 feet.

Figure 33
(Sheet 4 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
6/23/1993 thru 7/31/1993	12:00 p.m.	countywide	- Heavy rainfall through the spring and summer and the occurrence of this precipitation on a more or less continuous basis caused the Mississippi River and Rock Rivers to overflow their banks. - This event was part of a federally-declared disaster (Declaration #997). - The Mississippi River crested on July 8, 1993 at 22.17 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at 22.98 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2]. This is the 3rd highest crest at the L&D #13 gage and at the Camanche gage. - The Rock River crested on March 25, 1993 at 12.72 feet at the river gage attached to the left bank 1 mile upstream from Como[3]. *NARRATIVE CONTINUED ON NEXT SHEET*	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

[3] Flood stage at the gage upstream of Como is 10.0 feet, moderate flood stage is 11.0 feet and major flood stage is 12.0 feet.

Figure 33
(Sheet 5 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
6/23/1993 thru 7/31/1993	12:00 p.m.	countywide	*NARRATIVE CONTINUED FROM PREVIOUS SHEET* - Mississippi River flood damages according to the Illinois Department of Natural Resources Office of Water Resources: • Johnson Creek D&LD closed its flood gates and had to pump due to intense local rain storms. • Cattail Drainage District had approx. 1,500 acres flooded due to heavy interior rains. • Fulton had to pump treated sewage over the levee and also had difficulty handling the interior rain storms. • Three residences and two businesses were damaged in Albany. Sewage overflow was pumped to the river. • IL Rte. 84 was closed from June 30 to July 16. • At the Meredosia D&LD heavy interior rains caused some damage to crops.	---	---	---	---
Subtotal:				**0**	**0**	**$0**	**$0**

Figure 33
(Sheet 6 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
2/20/1997 thru 2/24/1997	4:00 p.m.	countywide	- 2 to 4 inches of heavy rain fell on soils that were still partially frozen and area rivers and streams were running high from snowmelt. Nearly every stream and river went out of its banks, leaving standing water for several days afterward. The single largest impact was felt along the Rock River. • COOP observers at Prophetstown, Morrison, Rock Falls and Fulton L&D measured 2.27 inches, 2.10 inches, 2.00 inches and 1.97 inches of rain respectively - Whiteside County was declared a state disaster area. - The Rock River crested on February 22, 1997 at 13.3 feet at the river gage attached to the left bank 1 mile upstream from Como[3]. The was the 9th highest crest at this gage. - Flooding came with large ice jams and despite massive sand-bagging efforts water broke through a 200 foot section of a railroad trestle and flooded Erie. 200 to 250 persons had to be evacuated.	n/a	n/a	$600,000	n/a
Subtotal:				**0**	**0**	**$600,000**	**$0**

[3] Flood stage at the gage upstream of Como is 10.0 feet, moderate flood stage is 11.0 feet and major flood stage is 12.0 feet.

Figure 33
(Sheet 7 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
4/8/1997 thru 4/30/1997	6:00 a.m.	western portion of the county	- Spring snowmelt from very heavy snow cover across the upper Mississippi basin brought significant flooding to portions of the Mississippi River. - The Mississippi River crested on April 19, 1997 at 20.72 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at 21.58 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2]. This is the 7th highest crest at the L&D #13 gage and the 5th highest crest at the Camanche gage. - Economic impacts were significant; however, because initial forecasts were quite good most of the cost of the flood was due to preventative measures rather than flood repairs or replacement. - Commerce was impacted with barge navigation on the Mississippi River and train travel along the river suspended for up to two weeks.	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

Figure 33
(Sheet 8 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
5/31/2000	5:15 p.m.	Morrison	- Multiple rain events over a 36 hour period left soils very saturated. Additional heavy rain during the late afternoon and evening of the 31st sent several creeks and streams out of their banks, including Rock Creek. • COOP observer at Morrison measured 3.22 inches of rain for the 31st.	n/a	n/a	n/a	n/a
5/31/2000	7:00 p.m.	countywide	- Multiple rain events over a 36 hour period left soils very saturated. Additional heavy rain during the late afternoon and evening of the 31st sent several creeks and streams out of their banks, including Rock Creek. • COOP observers at Fulton L&D, Morrison, Rock Falls and Prophetstown measured 4.80 inches, 3.22 inches, 2.74 inches and 1.22 inches of rain for the 31st. - Several road were washed out in the area.	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

Figure 33
(Sheet 9 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
6/2/2000 thru 6/28/2000	8:30 a.m.	countywide	- A series of heavy rain events within the first few weeks of the month turned minor to moderate flooding to major flooding along the Rock River. Much of northwest Illinois averaged 2 to 4 inches above normal on rainfall. - Whiteside County was declared a state disaster area. - The Rock River crested on June 15, 2000 at 13.12 feet at the river gage attached to the left bank 1 mile upstream from Como[3]. The was the 10th highest crest at this gage. - An earthen levee break near Erie on June 14th resulted in sandbagging activities.	n/a	n/a	n/a	n/a
6/13/2000	4:10 p.m.	countywide	- Heavy rain falling on already saturated ground resulted in urban and small stream flooding in a few areas • COOP observers at Morrison, Fulton L&D, Rock Falls, and Prophetstown measured 1.93 inches, 1.64 inches, 1.60 inches and 1.43 inches of rain respectively.	n/a	n/a	n/a	n/a
2/24/2001	9:00 a.m.	countywide	- Rain, heavy at times, fell on frozen ground and quickly ran off causing numerous reports of street and small stream flooding. Rain fall amounts of 1 to 1.5 inches were common. Flooding occurred along the Rock River. • COOP observers at Rock Falls, Morrison, Prophetstown and Fulton L&D measured 1.41 inches, 1.36 inches, 1.36 inches and 1.24 inches of rain respectively.	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[3] Flood stage at the gage upstream of Como is 10.0 feet, moderate flood stage is 11.0 feet and major flood stage is 12.0 feet.

Figure 33
(Sheet 10 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
2/25/2001 thru 2/28/2001	10:45 p.m.	countywide	- River and streams rose abruptly in response to precipitation as well as river and stream ice action. - From February 25th through early March, ice jams formed, broke and reformed on the Rock River, help force occasional rapid local water level rises that were higher than any rises recorded by official gaging stations. - Due to the Rock River's sometimes rapid local rises during this event, some of the damage was more extensive than normal since some people didn't have the preparation time they would usually have with warm-season river flooding.	n/a	n/a	n/a	n/a
4/14/2001 thru 5/30/2001	5:00 p.m.	western portion of the county	- A series of heavy rain events in April and May coupled with warm temperatures resulted in rapid snow melt in the upper Mississippi River basin and produced near record flooding over counties bordering the Mississippi River. - This event was part of a federally-declared disaster (Declaration #1368). - The Mississippi River crested on April 24, 2001 at 23.31 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at 23.62 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2]. This is the 2nd highest crest at the L&D #13 gage and at the Camanche gage. *NARRATIVE CONTINUED ON NEXT SHEET*	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

Figure 33
(Sheet 11 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
4/14/2001 thru 5/30/2001	5:00 p.m.	western portion of the county	*NARRATIVE CONTINUED FROM PREVIOUS SHEET* - Strong winds accompanying some of the storms forced water over sandbag dykes and levees causing additional damage.	---	---	---	--
5/20/2003 thru 5/28/2003	1:03 a.m.	western portion of the county	- A series of heavy rain events occurred over the first 10 days of the month. Area rivers responded with the Mississippi River going above flood stage around the 20th. Most of the flooding was minor.	n/a	n/a	n/a	n/a
6/1/2004 thru 6/30/2004	12:00 a.m.	countywide	- Heavy rain at the end of May coupled with light precipitation in June caused minor flooding along area rivers and streams. - The Mississippi River crested on June 21, 2004 at 16.76 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton and on June 22, 2004 at 18.08 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa.	n/a	n/a	n/a	n/a
8/24/2007 thru 8/30/2007	10:18 a.m.	countywide	- Several rounds of heavy rains over the course of a week resulted in some river sites to not only reach flood stage, but surpass the major flood stage level. - The Rock River crested on August 26, 2007 at 12.08 feet at the river gage attached to the left bank 1 mile upstream from Como[3].	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

[3] Flood stage at the gage upstream of Como is 10.0 feet, moderate flood stage is 11.0 feet and major flood stage is 12.0 feet.

Figure 33
(Sheet 12 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
4/1/2008 thru 4/30/2008	12:00 a.m.	western portion of the county	- A series of moderate to record high rainfall events caused flooding that affected the Mississippi River a well as many of its tributaries. - The Mississippi River crested on April 29, 2008 at approx. 18.59 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at approx. 20.18 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2].	n/a	n/a	n/a	n/a
6/1/2008 thru 6/30/2008	12:00 a.m.	western portion of the county	- Persistent heavy rain from late May into early June resulted in flooding along the Mississippi River as well as its tributaries. - This event was part of a federally-declared disaster (Declaration #1771). - The Mississippi River crested on June 16, 2008 at 19.05 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at 21.16 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2]. This is the 10th highest crest at the L&D #13 gage and the 8th highest crest at the Camanche gage. - The Rock River crested on June 16, 2008 at 11.08 feet at the river gage attached to the left bank 1 mile upstream from Como[3].	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

[3] Flood stage at the gage upstream of Como is 10.0 feet, moderate flood stage is 11.0 feet and major flood stage is 12.0 feet.

Figure 33
(Sheet 13 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
7/24/2010 thru 7/27/2010	7:00 p.m.	countywide	- Heavy rains during the fourth week of July resulted in flooding along the Rock River. - The Rock River crested on July 26, 2010 at approx. 12.82 feet at the river gage attached to the left bank 1 mile upstream from Como[3].	n/a	n/a	$500,000	n/a
10/2/2010 thru 10/13/2010	1:20 p.m.	western portion of the county	- Runoff from very heavy rains that fell in southern and eastern Minnesota and western Wisconsin at the end of September caused minor to moderate flooding along the Mississippi River. - The Mississippi River crested on October 5, 2010 at 17.66 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at approx. 18.9 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2].	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$500,000**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

[3] Flood stage at the gage upstream of Como is 10.0 feet, moderate flood stage is 11.0 feet and major flood stage is 12.0 feet.

Figure 33
(Sheet 14 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
4/18/2011 thru 4/25/2011	6:00 a.m.	western portion of the county	- Water from snow melt in the upper Midwest moved south through the Mississippi basin causing major flooding along the Mississippi River. - The Mississippi River crested on April 21, 2011 at 21.06 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at 21.93 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2]. This is the 6th highest crest at the L&D #13 gage and the 4th highest crest at the Camanche gage.	n/a	n/a	$250,000	n/a
Subtotal:				**0**	**0**	**$250,000**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

Figure 33
(Sheet 15 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
4/18/2013 thru 4/22/2013	2:40 p.m.	countywide	- 3 to 7 inches of heavy rains fell across eastern Iowa and northwest Illinois on the 17th and 18th resulting in major river flooding on several area tributaries as well as parts of the Mississippi River during the last part of the month. • COOP observers at or near Rock Falls, Morrison, Prophetstown and Fulton L&D measured 4.12 inches, 4.09 inches, 3.90 inches and 3.00 inches or rain respectively. - The Mississippi River crested on April 20, 2013 at approx. 16.88 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at approx. 18.75 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2]. - The Rock River crested on April 20, 2013 at approx. 13.17 feet at the river gage attached to the left bank 1 mile upstream from Como[3].	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[1] Flood stage at the Fulton L&D #13 gage is 16.0 feet, moderate flood state is 18.0 feet and major flood stage is 20.0 feet. At 16.8 feet damage begins in unprotected areas of Fulton; at 18.0 feet the L&D is closed; and water above 23.3 feet will overtop the lock wall.

[2] Flood stage at the Camanche gage location is 17.0 feet, moderate flood stage is 18.5 feet and major flood stage is 20.5 feet. At 20.0 feet water affects several homes in Albany; at 21.4 feet water affects IL Rte. 84 and at 24.0 feet water affects the grain elevator on IL Rte. 84.

[3] Flood stage at the gage upstream of Como is 10.0 feet, moderate flood stage is 11.0 feet and major flood stage is 12.0 feet.

Figure 33
(Sheet 16 of 16)
General Flood Events Reported in Whiteside County
1965 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
3/13/2014 thru 3/18/2014	8:23 p.m.	countywide	- Temperatures warming into the 50s caused large break-up ice jams to form on the Rock River which resulted in major flooding. - The Rock River crested on March 16, 2014 at 13.19 feet at the river gage attached to the left bank 1 mile upstream from Como[3].	n/a	n/a	n/a	n/a
7/2/2014 thru 7/5/2014	8:25 p.m.	western portion of the county	- Heavy rains that fell across the Upper Midwest during the last two weeks of June caused moderate flooding along Mississippi River in early July. - The Mississippi River crested on July 3, 2014 at approx. 19.32 feet at Lock and Dam (L&D) #13 Tailwater gage just north of Fulton[1] and at approx. 20.92 feet at the river gage attached to the right bank at the end of Eighth Ave. in Camanche, Iowa[2]. This is the 9th highest crest at the L&D #13 gage and at the Camanche gage.	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

GRAND TOTAL:	**0**	**0**	**$1,350,000**	**$0**

[3] Flood stage at the gage upstream of Como is 10.0 feet, moderate flood stage is 11.0 feet and major flood stage is 12.0 feet.

Sources: National Weather Service Weather Forecast Office Quad Cities IL/IA.
National Weather Service Weather Forecast Office LA Crosse, WI.
NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Data Publications.
NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Events Database.
NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, COOP Data / Record of Climatological Observations.
Illinois Department of Natural Resources, Office of Water Resources.
U.S. Army Corps of Engineers, RiverGages.com, Data Mining.
U.S. Geological Survey.

Figure 34
(Sheet 1 of 6)
Flash Flood Events Reported in Whiteside County
1997 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
7/19/1994	2:50 p.m.	Morrison	- Heavy rain caused some street flooding after a reported 1.7 inches of rain fell in about an hour. • COOP observer at Morrison measured 2.23 inches	n/a	n/a	n/a	n/a
10/17/1998 thru 10/18/1998	3:48 p.m.	countywide	- 2 to 6 inches of rain fell throughout the day causing area rivers and creeks to rise rapidly. COOP observers measured: • 4.25 inches at Rock Falls • 4.24 inches at Prophetstown • 3.38 inches at Morrison • 2.75 inches at Fulton L&D - The Rock River went up several feet bringing the river near flood stage in several communities. - A number of automobile accidents occurred throughout the area, but no serious injuries were reported.	n/a	n/a	n/a	n/a
2/1/1999	1:05 p.m.	southern portion of the county	- Unusually warm weather in late January caused an early snow melt along the Rock River. As the river rose an ice jam developed along a tight bend in the river and forced water over portions of IL Rte. 78 between Prophetstown and Lyndon.	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

^ Flash flood event verified in the vicinity of this location(s).

Figure 34
(Sheet 2 of 6)
Flash Flood Events Reported in Whiteside County
1997 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
7/21/2001	n/a	Sterling	- A trained spotter reported that 2.92 inches of rain fell in 2 hours, filling ditches and ponding on streets.	n/a	n/a	n/a	n/a
6/3/2002	9:00 p.m.	Morrison	- Heavy rain resulted in widespread and significant flash flooding and river flooding. • COOP observer at Morrison measured 6.06 inches of rain within 24 hours starting at 6:30 p.m. on the 3rd and lasting through 2:00 p.m. on the 4th. - In Morrison several streets had water up to the curbs.	n/a	n/a	n/a	n/a
6/3/2002	10:00 p.m.	Morrison[^]	- Heavy rain resulted in widespread and significant flash flooding and river flooding. • COOP observer at Morrison measured 6.06 inches of rain within 24 hours starting at 6:30 p.m. on the 3rd and lasting through 2:00 p.m. on the 4th. - Approx. 2 miles east of Morrison a train bridge at Lyndon Rd. buckled due to high water.	n/a	n/a	n/a	n/a
6/4/2002	3:25 a.m.	Morrison[^]	- Heavy rain resulted in widespread and significant flash flooding and river flooding. • COOP observer at Morrison measured 6.06 inches of rain within 24 hours starting at 6:30 p.m. on the 3rd and lasting through 2:00 p.m. on the 4th. - East of Morrison the heavy rains caused a mudslide which closed portions of US Rte. 30.	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

[^] Flash flood event verified in the vicinity of this location(s).

Figure 34
(Sheet 3 of 6)
Flash Flood Events Reported in Whiteside County
1997 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
6/4/2002	2:33 p.m.	Fulton^	- Heavy rain resulted in widespread and significant flash flooding and river flooding. • COOP observer at Fulton L&D measured 3.60 inches of rain between the 3rd and 4th. - 6 homes were affected by flood waters due to breaks in a levee on Otter Creek.	n/a	n/a	n/a	n/a
6/4/2002	3:00 p.m.	Ustick^	- Heavy rain resulted in widespread and significant flash flooding and river flooding. • COOP observer at Morrison measured 6.06 inches of rain within 24 hours starting at 6:30 p.m. on the 3rd and lasting through 2:00 p.m. on the 4th. - Spring Valley Rd. north of Ustick was closed.	n/a	n/a	n/a	n/a
3/12/2006	n/a	Prophetstown	- Locally heavy rainfall led to flash flooding. • COOP observer at Prophetstown measured 1.67 inches of rain. - Minor flooding of lower streets was observed within the City.	n/a	n/a	n/a	n/a
6/12/2008	n/a	countywide	- 1 to 5 inches of heavy rain fell from the 12th through midday on the 13th causing flash flooding. COOP observers measured: • 2.83 inches at Fulton L&D • 1.43 inches at Prophetstown • 1.42 inches at Morrison • 0.94 inches 3 miles northeast of Rock Falls	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**

^ Flash flood event verified in the vicinity of this location(s).

Figure 34
(Sheet 4 of 6)
Flash Flood Events Reported in Whiteside County
1997 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
6/19/2009	n/a	countywide	- ¾ to 3 inches of rain fell within an hour or two causing flash flooding. COOP observers measured: • 1.38 inches 3 miles northeast of Rock Falls • 0.96 inches at Prophetstown • 0.92 inches at Morrison • 0.76 inches at Fulton L&D	n/a	n/a	n/a	n/a
7/24/2009	8:40 p.m.	Sterling	- Heavy rains resulted in flash flooding within the City. • COOP observer 3 miles northeast of Rock Falls measured 1.57 inches of rain - IL Rte. 40 in the City was closed for a time due to water over the highway.	n/a	n/a	n/a	n/a
7/27/2009 thru 7/28/2009	10:24 p.m.	Fulton	- Heavy rains resulted in flash flooding of some intersections within the City.	n/a	n/a	n/a	n/a
5/13/2010	2:00 a.m.	southeastern portion of the county	- Several rounds of showers and thunderstorms moved across the area producing widespread torrential rains that resulted in flash flooding. The southeast half of the County received 3 to 4 inches of rain during the early morning hours. • COOP observer 3 miles northeast of Rock Falls measured 3.25 inches of rain. - Several residences in the Sterling and Rock Falls areas reported flooded basements.	n/a	n/a	$50,000	n/a
Subtotal:				**0**	**0**	**$50,000**	**$0**

^ Flash flood event verified in the vicinity of this location(s).

Figure 34
(Sheet 5 of 6)
Flash Flood Events Reported in Whiteside County
1997 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
6/18/2010	n/a	countywide	- Torrential rains resulted in widespread flash flooding across the area. COOP observers measured: • 1.51 inches 3 miles northeast of Rock Falls • 1.27 inches at Morrison • 1.02 inches at Fulton L&D	n/a	n/a	n/a	n/a
6/23/2010	4:18 p.m.	Rock Falls Sterling	- 1 to 2 inches of heavy rain resulted in flash flooding . • COOP observer 3 miles northeast of Rock Falls measured 2.16 inches of rain - Some streets in Rock Falls flooded. The water was up to a foot deep in places.	n/a	n/a	n/a	n/a
6/9/2011	5:40 a.m.	Rock Falls Sterling	- Strong storms produced torrential rains which resulted in flash flooding . • COOP observer 3 miles northeast of Rock Falls measured 2.89 inches of rain - Several streets in Rock Falls experienced flooding. The waters were 2 to 4 feet deep in some areas.	n/a	n/a	$100,000	n/a
6/30/2014 thru 7/1/2014	8:00 p.m.	Rock Falls	- Heavy rains resulted in flash flooding in the City. • COOP observer 3 miles northeast of Rock Falls measured 2.96 inches of rain - A trained spotter reported street flooding with water up to car doors.	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$100,000**	**$0**

^ Flash flood event verified in the vicinity of this location(s).

Figure 34
(Sheet 6 of 6)
Flash Flood Events Reported in Whiteside County
1997 – 2014

Date(s)	Start Time	Location(s)	Magnitude	Injuries	Fatalities	Property Damages	Crop Damages
8/4/2014	8:15 p.m.	Sterling	- Heavy rains resulted in flash flooding in the City • COOP observer 3 miles northeast of Rock Falls measured 0.96 inches of rain and noted that streets in downtown Sterling experienced flooding - Committee member records confirmed the flooding and provided photographs of the flooding downtown	n/a	n/a	n/a	n/a
9/4/2014	n/a	Sterling	- Heavy rains resulted in flash flooding of some streets in the City • COOP observer 3 miles northeast of Rock Falls measured 2.53inches of rain - Committee member records indicate that Miller Rd. flooded due to heavy rains	n/a	n/a	n/a	n/a
Subtotal:				**0**	**0**	**$0**	**$0**
GRAND TOTAL:				**0**	**0**	**$150,000**	**$0**

^ Flash flood event verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, COOP Data / Record of Climatological Observations.
NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Events Database.

3.4 TORNADOES

IDENTIFYING THE HAZARD

What is the definition of a tornado?

A tornado is a violently rotating column of air, usually characterized by a twisting, funnel-shaped cloud, that extends from the cloud formation of a thunderstorm to the ground. The strongest tornadoes have rotating wind speeds of more than 250 miles per hour and can create damage paths in excess of one mile wide and 50 miles long.

Not all tornadoes have a visible funnel cloud. Some may appear nearly transparent until dust and debris are picked up or a cloud forms within the funnel. Generally, tornadoes move from southwest to northeast, but they have been known to travel in any direction, even backtracking. The average forward speed of a tornado is 30 mile per hour, but this may vary from nearly stationary to 70 miles per hour.

About 1,200 tornadoes hit the United States yearly. The destruction caused by a tornado may range from light to catastrophic depending on the intensity, size and duration of the storm. Tornadoes cause crop and property damage, power outages, environmental degradation, injuries and fatalities. Torndoes are known to blow off roofs, move cars and tractor trailers and demolish homes. Typically tornadoes cause the greatest damage to structures of light construction, such as residential homes. On average, tornadoes cause 70 facilities and 1,500 injuries in the United States annually.

How are tornadoes rated?

Originally tornadoes were rated using the Fujita Scale (F-Scale), which related the degree of damage caused by a tornado to the intensity of the tornado's wind speed. The Scale identified six categories of damage, F0 through F5. **Figure 49** gives a brief description of each category.

Use of the original Fujita Scale was discontinued on February 1, 2007 in favor of the Enhanced Fujita Scale. The original scale had several flaws including basing a tornado's intensity and damages on wind speeds that were never scientifically tested and proven. It also did not take into consideration that a multitude of factors (i.e. structure construction, wind direction and duration, flying debris, etc.) affect the damage caused by a tornado. In addition, the process of rating the damage itself was based on the judgment of the damage assessor. In many cases, meteorologists and engineers highly experienced in damage survey techniques often came up with different F-scale ratings for the same damage.

The Enhanced Fujita Scale (EF-Scale) was created to remedy the flaws in the original scale. It continues to use the F0 through F5 categories, but it classifies the level of damage (one through eight) as calibrated by engineers and meteorologists to 28 different types of damage indicators (mainly various building types, towers/poles and trees.) The wind speeds assigned to each category are estimates, not measurements, based on the damage assessment. **Figure 49** identifies the Enhanced Fujita Scale.

Figure 49
Fujita & Enhanced Fujita Tornado Measurement Scales

F-Scale		EF-Scale		Description
Category	Wind Speed (mph)	Category	Wind Speed (mph)	
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

Source: National Oceanic and Atmospheric Administration, Storm Prediction Center.

The idea behind the EF-Scale is that a tornado scale needs to take into account the typical strengths and weaknesses of different types of construction, instead of applying a "one size fits all" approach. This is due to the fact that the same wind speed can cause different degrees of damage to different kinds of structures. In a real life application, the degree of damage to each of the 28 indicators can be mapped together to create a comprehensive damage analysis. As with the original scale, the EF-Scale rates the tornado as a whole based on the most intense damage within the tornado's path.

While the EF-Scale is currently in use, ***the historical data presented in this report is based on the original F-Scale***. None of the tornadoes rated before February 1, 2007 will be re-evaluated using the EF-Scale.

Are alerts issued for tornadoes?

Yes. The National Weather Service Weather Forecast Office of the Quad Cities, Iowa/Illinois is responsible for issuing ***tornado watches*** and ***warnings*** for Whiteside County depending on the weather conditions. The following provides a brief description of each type of alert.

- **Watch.** A tornado watch is issued when conditions are favorable for tornadoes and severe thunderstorms to develop. It does not mean that a tornado is imminent, just that individuals need to be alert and prepared.

- **Warning.** A tornado warning is issued when a tornado has been spotted or indicated by radar. Warnings indicate imminent danger to life and property for those who are in the path of the tornado. Individuals should see shelter immediately.

PROFILING THE HAZARD

When have tornadoes occurred previously? What is the extent of these previous tornadoes?

Figure 50, located at the end of this section, summarizes the previous occurrences as well as the extent or magnitude of tornado events recorded in Whiteside County. NOAA's Storm Events Database has documented 19 occurrences of tornadoes in Whiteside County between 1950 and 2014. In comparison, there have been 2,199 tornadoes statewide between 1950 and 2012.

Tornado Fast Facts – Occurrences

Number of Tornadoes Reported (1950 – 2014): ***19***

Highest F-Scale Rating Recorded: ***F4***

Most Likely Month for Tornadoes to Occur: ***May***

Most Likely Time for Tornadoes to Occur: ***Afternoon/ Early Evening***

Average Length of a Tornado: ***0.94 miles***

Average Width of a Tornado: ***63 yards***

Average Damage Pathway of a Tornado: ***0.03 sq. mi.***

Longest Tornado Path in the County: ***5.1 miles (March 29, 1981)***

Widest Tornado Path in the County: ***300 yards (March 21, 1966)***

Figure 51 charts the reported occurrences of tornadoes by magnitude. Of the 19 occurrences, one was classified as an F4 tornado, one was classified as an F3 tornado, two were classified as F2 tornadoes, five were classified as F1 tornadoes, nine were classified as F0 tornadoes, and one was classified as an EF0 tornado.

Figure 51
Tornadoes by Magnitude
1950 – 2014

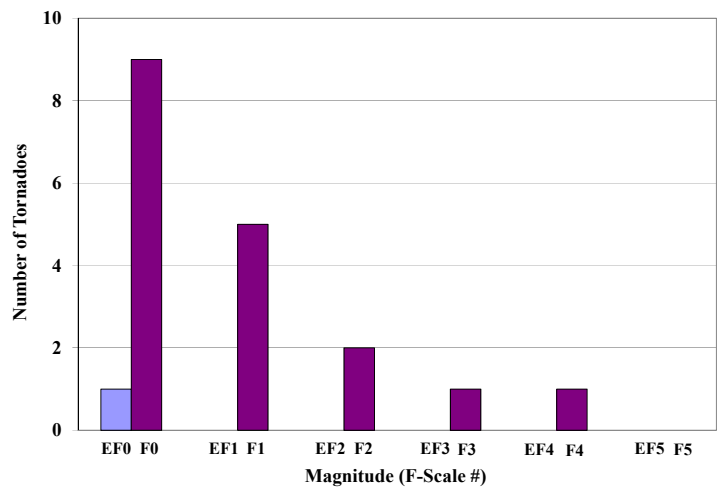


Figure 52 charts the reported tornadoes by month. Of the 19 events, 11 (58%) took place in May and June making this the peak period for tornadoes in Whiteside County. Of those 11 events, seven (64%) occurred during May making this the peak month for tornadoes. In comparison, 1,457 of the 2,199 tornadoes (66%) recorded in Illinois since 1950 took place in April, May and June.

Figure 52
Tornadoes by Month
1950 – 2014

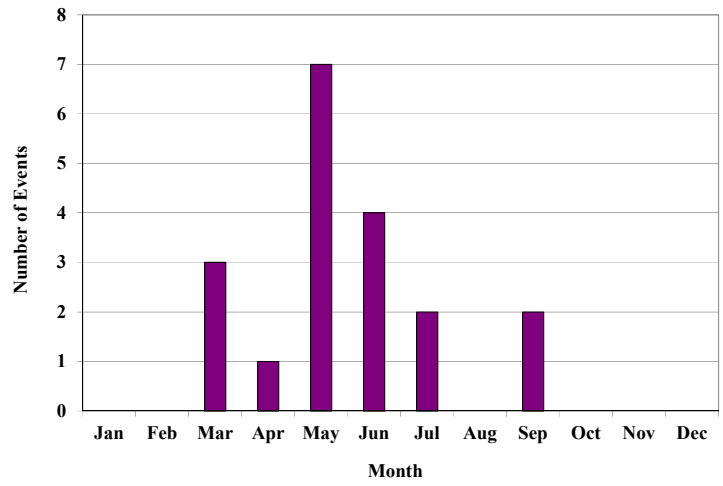
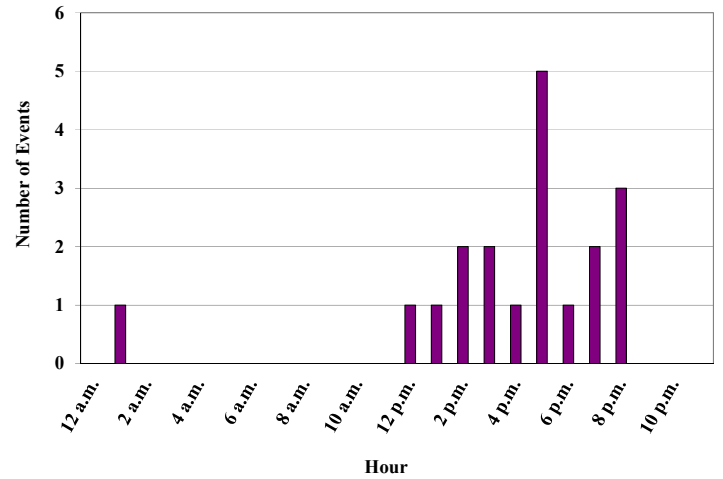


Figure 53 charts the reported tornadoes by hour. Approximately 95% of all tornadoes occurred during the p.m. hours, with 14 of the events (78%) taking place between 3 p.m. and 9 p.m. In comparison, more than half of all Illinois tornadoes occur between 3 p.m. and 7 p.m.

Figure 53
Tornadoes by Hour
1950 – 2014



The tornadoes that have impacted Whiteside County have varied from 0.1 miles to 5.1 miles in length and from 10 yards to 300 yards in width. The average length of a tornado in Whiteside County is 0.94 miles and the average width is 63 yards (0.035 miles).

Figures 54 shows the pathway of each reported tornado. The numbers by each tornado correspond with the tornado description in **Figure 50**. Unlike other natural hazards (i.e., severe winter storms, drought and extreme heat), tornadoes impact a relatively small area. Typically the area impacted by a tornado is less than four square miles. In Whiteside County, the average damage pathway or area impacted by a tornado is 0.03 square miles.

On March 29, 1981 an F4 tornado near Prophetstown blew the roof off of this house.

Photograph courtesy of Bruce Franks

The longest tornado recorded in Whiteside County occurred on March 29, 1981. This F4 tornado measured 5.1 miles in length and touched down just northwest of Prophetstown and traveled northeast grazing Lyndon before lifting off north of Interstate 88. The damage pathway of this tornado covered an estimated 0.10 square miles.

The widest tornado recorded in Whiteside County occurred on March 21, 1966. This F2 tornado, measuring 300 yards wide, touched down southwest of Morrison. The tornado was only on the ground for a brief time and did not travel any measurable distance. As a result, the damage pathway of this tornado covered less than 0.02 square miles.

What locations are affected by tornadoes?

Tornadoes have the potential to affect the entire County. Two of the participating municipalities, Fulton and Prophetstown have had reported occurrences of tornadoes within their corporate limits. The *2013 Illinois Natural Hazard Mitigation Plan* prepared by IEMA classifies Whiteside County's hazard rating for tornadoes as "elevated."

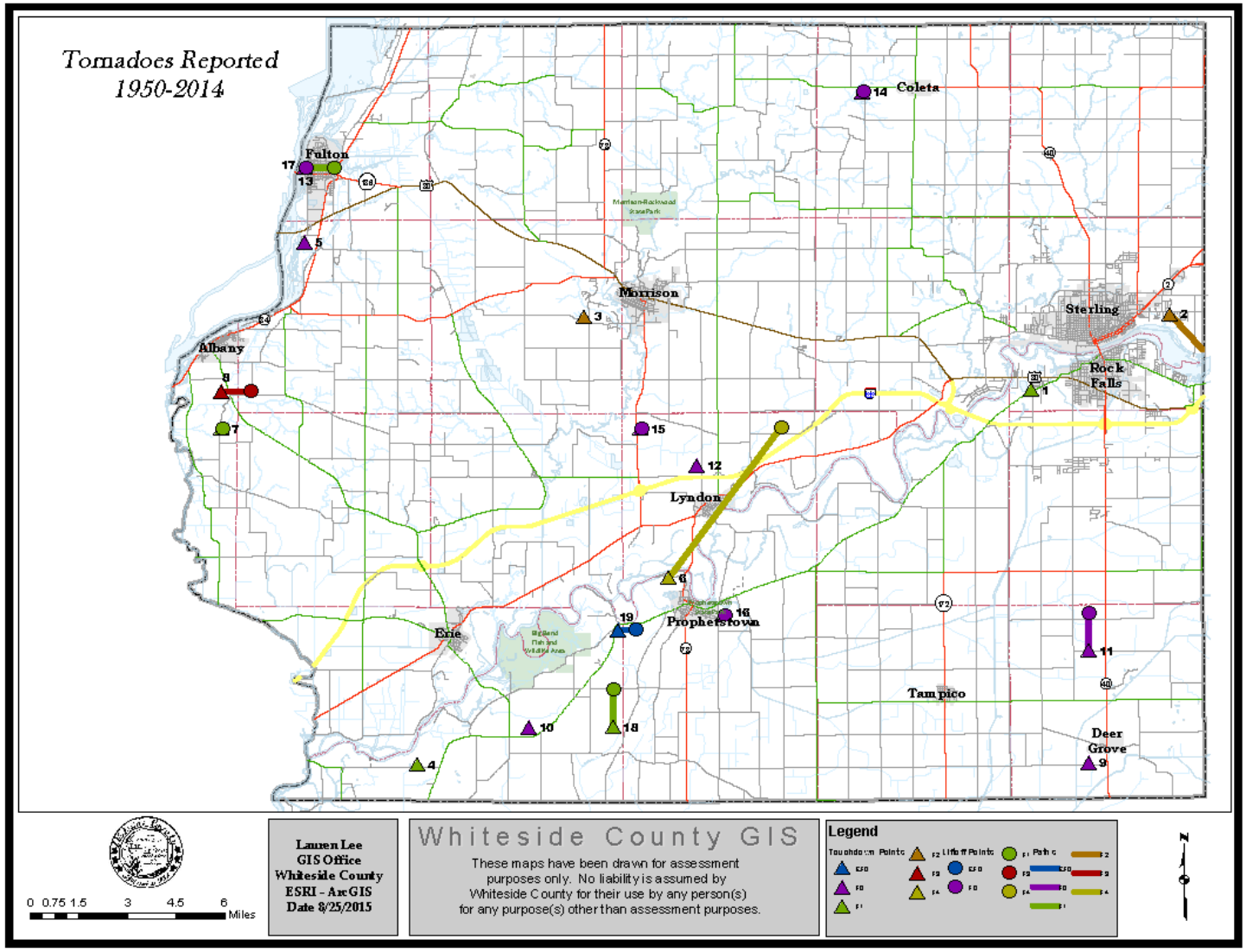
Numerous outbuildings, sheds and barns were destroyed as a result of the F4 tornado on March 29, 1981.

Photograph courtesy of Bruce Franks

What is the probability of future tornadoes occurring?

Whiteside County has had 19 verified occurrences of tornadoes between 1950 and 2014. With 19 tornadoes over the past 65 years, the probability or likelihood that a tornado will touchdown somewhere in the County in any given year is 29%. There were four years over the last 65 years where more than one tornado occurred. This indicates that the probability that more than one tornado may occur during any given year within the County is 6%.

Figure 54
Tornado Touchdowns in Whiteside County



ASSESSING VULNERABILITY

Are the participating jurisdictions vulnerable to tornadoes?

Yes. All of Whiteside County is vulnerable to the dangers presented by tornadoes. According to NOAA's Storm Events Database a majority of the tornadoes have touched down or passed through the southern half of the County. Fulton and Prophetstown are the only participating municipalities that have had a tornado touch down or pass through their municipal boundaries. **Figure 55** lists the verified tornadoes that have touched down in or near each participating municipality. In terms of unincorporated areas vulnerable to tornadoes, East Clinton and Portland have each had one tornado touch down in their vicinity.

Figure 55
Verified Tornado Touchdowns In or Near Participating Municipalities

Participating Municipality	Number of Verified Tornadoes	Year Tornado Touchdown
Coleta	1	1996
Deer Grove	2	1992, 1995
Erie	2	1967, 1992
Fulton	2	1996*, 2003*
Morrison	2	1966, 1999
Prophetstown	4	1981, 1999*, 2004, 2013
Rock Falls	1	1961
Sterling	1	1962
Tampico	0	---

* Tornado touched down or passed through the municipality.

What impacts resulted from the recorded tornadoes?

Data obtained from NOAA's Storm Events Database indicates that between 1950 and 2014, 10 of the 19 tornadoes caused $5,592,000 in property damage and $15,000 in crop damage.

There were two events where property damage totals were at least $2.5 million. Property damage information was either unavailable or none was recorded for the remaining nine reported occurrences.

NOAA's Storm Events Database documented four injuries as a result of the September 1, 1961 tornado. Detailed information on the injuries sustained was unavailable. There were no fatalities and no other reported injuries associated with any of the other tornado events. In comparison, Illinois averages roughly four tornado fatalities annually; however, this number varies widely from year to year.

Tornado Fast Facts – Impacts/Risk

Tornado Impacts
- Total Property Damage: ***$5,592,000***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***$15,000***
- Injuries: ***4***
- Fatalities: ***0***

Tornado Risk/Vulnerability to:
- Public Health & Safety – Rural Areas: ***Low***
- Public Health & Safety – Municipalities: ***High***
- Buildings/Infrastructure/Critical Facilities – Rural Areas: ***Low***
- Buildings/Infrastructure/Critical Facilities – Municipalities/Populated Unincorp. Areas: ***High***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

Located throughout this section and in **Appendix M** are select photographs provided by Prophetstown Police Chief Bruce Franks that show the extent of the property damage sustained during the F4 tornado that touched down near Prophetstown on March 29, 1981. In addition, a timeline and news articles detailing the damage caused by this tornado can be found in **Appendix K**.

What other impacts can result from tornadoes?

In addition to causing damage to buildings and properties, tornadoes can damage infrastructure and critical facilities such as roads, bridges, railroad tracks, drinking water treatment facilities, water towers, communication towers, antennae, power substations, transformers and poles. Depending on the damage done to the infrastructure and critical facilities, indirect impacts on individuals could range from inconvenient (i.e., adverse travel) to life-altering (i.e., loss of utilities for extended periods of time).

What is the level of risk/vulnerability to public health and safety from tornadoes?

Whiteside County ranks in the middle of all counties in Illinois in terms of tornado frequency. This fact alone suggests that the overall risk posed by tornadoes to public health and safety is medium to low. While frequency is important, other factors must be examined when assessing vulnerability including population distribution and density, the ratings and pathways of previously recorded tornadoes, the presence of high risk living accommodations (such as high rise buildings, mobile homes, etc.) and adequate access to health care for those injured following a tornado.

Whiteside County

For Whiteside County the level of risk or vulnerability posed by tornadoes to public health and safety is considered to be low. This assessment is based on the fact that tornadoes do not occur frequently in the County and a large majority of the tornadoes that have impacted the County have touched down in rural areas away from concentrated populations. This has contributed to a low number of injuries and fatalities. In addition, the County is not densely populated and there is not a large number of high risk living accommodations present.

Two – 175,000 bushel grain storage bins were destroyed at Rock River Lumber & Grain along IL Rte. 78 on March 29, 1981 as a result of the F4 tornado.

Photograph courtesy of Bruce Franks

In terms of adequate access to health care, both CGH Medical Center in Sterling and the Morrison Community Hospital are equipped to provide continuous care to persons injured by a tornado assuming that they are not directly impacted. In addition there are also nearby hospitals in Clinton, Iowa, Dixon (Lee County), Princeton (Bureau County), Geneseo (Henry County) and the Quad Cities area (Rock Island County) which are equipped to provide care.

Participating Municipalities

In general if a tornado were to touchdown or pass through any of the participating municipalities the risk to the public health and safety would be considered high. This is based on the fact that most of the participating jurisdictions are small in size (less than two square miles) and have relatively dense and evenly distributed populations within their municipal boundaries. As a result, if a tornado were to touch down anywhere within the corporate limits of these municipalities it will have a greater likelihood of causing injuries or even fatalities.

Are existing buildings, infrastructure and critical facilities vulnerable to tornadoes?

Yes. All existing buildings, infrastructure and critical facilities located within the County and the participating municipalities are vulnerable to damage from tornadoes. Buildings, infrastructure and critical facilities located in the path of a tornado usually suffer extensive damage, if not complete destruction.

While some buildings adjacent to a tornado's path may remain standing with little or no damage, all are vulnerable to damage from flying debris. It is common for flying debris to cause damage to roofs, siding and windows. In addition, mobile homes, homes on crawlspaces and buildings with large spans (i.e., schools, barns, airport hangers, factories, etc.) are more likely to suffer damage. Most workplaces and many residential units do not provide sufficient protection from tornadoes.

The damages sustained by infrastructure and critical facilities during a tornado are similar to those experienced during a severe storm. There is a high probability that power, communication and transportation will be disrupted in and around the affected area.

Assessing the Vulnerability of Existing Residential Structures

One way to assess the vulnerability of existing residential structures is to estimate the number of housing units that may be potentially damaged if a tornado were to touchdown or pass through any of the participating municipalities or the County. In order to accomplish this, a set of decisions/assumptions must be made regarding:

- the size of the tornado;
- the method used to estimate the area within each jurisdiction impacted by the tornado; and
- the method used to estimate the number of potentially-damaged housing units.

The following provides a brief discussion of each decision/assumption.

Size of Tornado: To calculate the number of existing residential structures vulnerable to a tornado, the size of the tornado must first be determined. There are several scenarios that can be used to calculate the size, including the worst case and the average. For this analysis the average tornado size will be used since it has a higher probability of recurring. In Whiteside County the average size of a tornado is 0.034 square miles. This average is based on over 60 years of data.

Assumption #1

Size of Tornado = 0.034 sq. miles

Method for Estimating the Area Impacted: Next, a method for determining the area within each jurisdiction impacted by the average-sized tornado needs to be chosen. There are several methods that can be used including creating an outline of the average-sized tornado and overlaying it on a map of each jurisdiction (most notably the municipalities) to see if any portion of the area falls outside of the corporate limits (which would require additional calculations) or just assume that the entire area of the average-sized tornado falls within the limits of each jurisdiction. For this discussion, it is assumed that the entire area of the average-sized tornado will fall within the limits of the participating jurisdictions.

Assumption #2

The entire area impacted by the average-sized tornado falls within the limits of each participating jurisdiction.

This method is quicker, easier and more likely to produce consistent results when the Plan is updated. There is, however, a greater likelihood that the number of potentially-damaged housing units will be overestimated for those municipalities that have irregular shaped boundaries or occupy less than one square mile.

Method for Estimating Potentially-Damaged Housing Units: With the size of the tornado calculated and a method for estimating the area impacted chosen, a decision must be made on a method for estimating the number of potentially-damaged housing units. There are several methods that can be used including overlaying the average-sized tornado on a map of each jurisdiction and counting the impacted housing units or calculating the average housing unit density to estimate the number of potentially-damaged housing units.

Assumption #3

The average housing unit density for each municipality will be used to determine the number of potentially-damaged housing units.

For this analysis, the average housing unit density will be used since it provides a realistic perspective on potential residential damages without conducting extensive counts. Using the average housing unit density also allows future updates to the Plan to be easily recalculated and provides an exact comparison to previous calculations.

The average housing unit density can be calculated by taking the number of housing units in a jurisdiction and dividing that by the land area within the jurisdiction. **Figure 56** provides a sample calculation.

Figure 56
Calculation of Average Housing Unit Density

Total Housing Units ÷ Land Area = Average Housing Unit Density
(Rounded Up to the Nearest Whole Number)

Whiteside County: 25,770 housing units ÷ 684.251 sq. miles = 38 housing units/sq. mile

Figure 57 provides a breakdown of housing unit densities by participating municipality as well as for the unincorporated areas of the County and the County as a whole. While the average housing unit density provides an adequate assessment of the number of housing units in areas

where the housing density is fairly constant, such as municipalities, it does not provide a realistic assessment for those counties with large, sparsely populated rural areas such as Whiteside County.

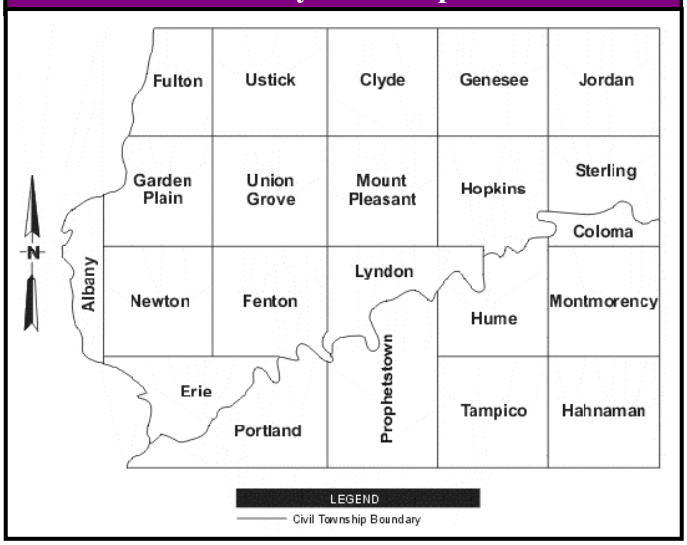
Figure 57
Average Housing Unit Density by Participating Municipality

Jurisdiction	Total Housing Units (2010)	Mobile Homes (2000)*	Land Area (Sq. Miles) (2010)	Average Housing Unit Density (Units/Sq. Mile) (Raw)
Coleta	71	0	0.596	---
Deer Grove	22	4	0.455	---
Erie	678	21	1.443	469.85447
Fulton	1,700	77	2.274	747.58135
Morrison	1,870	31	2.463	759.23670
Prophetstown	908	7	1.371	662.29030
Rock Falls	4,123	23	3.655	1,128.04378
Sterling	6,947	42	5.709	1,216.85059
Tampico	317	4	0.388	---
Unincorp. County	8,453	606	664.047	12.72952
County	25,770	896	684.251	37.66162

Source: U. S. Census Bureau.

* At the time this Plan was drafted the U.S. Census Bureau had not released the 2010 Census DP-4 Selected Housing Characteristics data tables for geographic type: place (i.e., municipalities.). It was decided that the 2000 census data would be used in its place instead of estimates for mobile homes.

Figure 58
Whiteside County Township Boundaries



Source: Illinois Secretary of State

In Whiteside County, as well as many other northwestern Illinois counties, there are pronounced differences in housing unit densities within the County. Approximately 67% of all housing units

are located in four of the County's 18 townships (Coloma, Fulton, Mount Pleasant and Sterling) while approximately 63% of all mobile homes are located in five of the 18 townships (Coloma, Fulton, Lyndon, Mount Pleasant and Sterling). **Figure 58** identifies the township boundaries. Tornado damage to buildings (especially mobile homes), infrastructure and critical facilities in these more densely populated townships is likely to be greater than in the rest of the County.

This substantial difference in density skews the average *county* housing unit density in Whiteside County and is readily apparent when the average *county* housing unit density is compared to the average housing unit densities for each of the townships within the County. **Figure 59** provides a breakdown of housing unit densities by township and illustrates the differences between the various townships and the County as a whole.

Figure 59
Average Housing Unit Density by Township

Township	Total Housing Units (2010)	Mobile Homes (2000)*	Land Area (Sq. Miles) (2010)	Average Housing Unit Density (Units/Sq. Mile) (Raw)
Albany	487	54	12.347	39.44278
Clyde	186	10	35.810	5.19408
Coloma	5,162	223	10.053	513.47856
Erie	836	21	23.992	34.84495
Fenton	236	25	34.897	6.76276
Fulton	2,032	113	17.276	117.61982
Garden Plain	492	48	30.701	16.02554
Genesee	329	13	35.403	9.29300
Hahnaman	148	4	35.749	4.13998
Hopkins	904	7	35.654	25.35480
Hume	194	18	29.439	6.58990
Jordan	354	0	35.855	9.87310
Lyndon	460	91	27.271	16.86773
Montmorency	1,027	40	35.780	28.70319
Mount Pleasant	2,176	64	35.802	60.77873
Newton	178	6	35.922	4.95518
Portland	186	23	34.727	5.35606
Prophetstown	1,162	16	47.949	24.23408
Sterling	8,003	73	23.397	342.05240
Tampico	449	9	35.743	12.56190
Union Grove	519	24	35.094	14.78885
Ustick	250	14	35.390	7.06414
County	25,770	896	684.251	37.66162
Townships – 4 most populated	17,373	473	86.528	200.77894
Townships – 18 least populated	8,397	423	597.723	14.04831

Source: U. S. Census Bureau.

* At the time this Plan was drafted the U.S. Census Bureau had not released the 2010 Census DP-4 Selected Housing Characteristics data tables for geographic type: county subdivisions (i.e., townships.). It was decided that the 2000 census data would be used in its place instead of estimates for mobile homes.

For 18 of the 22 townships, the average *county* housing unit density is greater (in some cases considerably greater) than the average *township* housing unit densities. In addition, the average *county* housing unit density is considerably less than the housing unit densities for the four most populated townships.

Estimating the Number of Potentially-Damaged Housing Units

With the average housing unit densities calculated it is relatively simple to provide an estimate of the number of existing potentially-damaged housing units. This can be done by taking the average housing unit density and multiplying that by the average-sized tornado. **Figure 60** provides a sample calculation.

Figure 60 **Calculation of Potentially-Damaged Existing Housing Units**
Average Housing Unit Density x Average-Sized Tornado= Potentially-Damaged Housing Units (Rounded Up to the Nearest Whole Number) Whiteside County: 37.66162 housing units/sq. mile x 0.034 sq. miles = 1.28050 housing units **(2 housing units)**

For those municipalities that cover less than one square mile, the average housing unit density cannot be used to calculate the number of potentially-damaged housing units. The average housing unit density assumes that the land area within the municipality is at least one square mile and as a result distorts the number of potentially-damaged housing units for very small municipalities.

To calculate the number of potentially-damaged housing units for these municipalities, take the average area impacted by the tornado and divide that by the land area within the municipality to get the impacted land area. The impacted land area is then multiplied by the total number of housing units within the municipality to get the number of potentially-damaged housing units. **Figure 61** provides a sample calculation.

Figure 61 **Calculation of Potentially-Damaged Housing Units** **for Municipalities Covering Less Than One Square Mile**
Average Area Impacted (Sq. Miles) ÷ Land Area (Sq. Miles) = Impacted Land Area Coleta: 0.034 sq. mile ÷ 0.596 sq. miles = 0.05704698 Impacted Land Area x Total Housing Units = Potentially-Damaged Housing Units (Rounded Up to the Nearest Whole Number) Coleta: 0.05704698 x 71 housing units = 4.05033557 housing units **(5 housing units)**

Figures 62 and **63** provide a breakdown of the number of potentially-damaged housing units by participating municipality as well as by township and for the unincorporated areas of the County

and the County as a whole. It is important to note that for the four most densely populated townships, the estimated number of potentially-damaged housing units would only be reached if a tornado's pathway included the major municipality within the township. If the tornado remained in the rural portion of the township, then the number of potentially-damaged housing units would be considerably lower.

Figure 62
Estimated Number of Housing Units by Municipality Potentially Damaged by a Tornado

Participating Municipality	Total Housing Units (2010)	Land Area (Sq. Miles) (2010)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.034 Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.034 Sq. Mi.) (Rounded Up)
Coleta	71	0.596	---	4.05034	5
Deer Grove	22	0.455	---	1.64396	2
Erie	678	1.443	469.85447	15.97505	16
Fulton	1,700	2.274	747.58135	25.41777	26
Morrison	1,870	2.463	759.23670	25.81405	26
Prophetstown	908	1.371	662.29030	22.51787	23
Rock Falls	4,123	3.655	1,128.04378	38.35349	39
Sterling	6,947	5.709	1,216.85059	41.37292	42
Tampico	317	0.388	---	27.77835	28
Unincorp. County	8,453	664.047	12.72952	0.43280	1
County	25,770	684.251	37.66162	1.28050	2

What is the level of risk/vulnerability to existing buildings, infrastructure and critical facilities vulnerable from tornadoes?

There are several factors that must be examined when assessing the vulnerability of existing buildings, infrastructure and critical facilities to tornadoes. These factors include tornado frequency, population distribution and density, the ratings and pathways of previously recorded tornadoes, and the presence of high risk living accommodations (such as high rise buildings, mobile homes, etc.).

Whiteside County

For Whiteside County the level of risk or vulnerability posed by tornadoes to existing buildings, infrastructure and critical facilities is consider to be medium to low. This assessment is based on the frequency with which tornadoes have occurred in the County as well as the amount of damage that has been sustained tempered by the low population density throughout most the County as well as the relative absence of high risk living accommodations. While previously recorded tornadoes have followed largely rural pathways they have caused significant damage on several occasions.

Participating Municipalities

In general if a tornado were to touchdown or pass through any of the participating municipalities the risk to existing buildings, infrastructure and critical facilities would be considered high. This assessment is based on the population and housing unit distribution of the municipalities where

wide expanses of open spaces do not generally exist. As a result, if a tornado were to touch down within any of the municipalities it will have a greater likelihood of causing substantial property damage.

Figure 63
Estimated Number of Housing Units by Township Potentially Damaged by a Tornado

Township	Total Housing Units (2010)	Land Area (Sq. Miles) (2010)	Average Housing Unit Density (Units/Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.034 Sq. Mi.) (Raw)	Potentially-Damaged Housing Units (Units/0.034 Sq. Mi.) (Rounded Up)
Albany	487	12.347	39.44278	1.34105	2
Clyde	186	35.810	5.19408	0.17660	1
Coloma	5,162	10.053	513.47856	17.45827	18
Erie	836	23.992	34.84495	1.18473	2
Fenton	236	34.897	6.76276	0.22993	1
Fulton	2,032	17.276	117.61982	3.99907	4
Garden Plain	492	30.701	16.02554	0.54487	1
Genesee	329	35.403	9.29300	0.31596	1
Hahnaman	148	35.749	4.13998	0.14076	1
Hopkins	904	35.654	25.35480	0.86206	1
Hume	194	29.439	6.58990	0.22406	1
Jordan	354	35.855	9.87310	0.33569	1
Lyndon	460	27.271	16.86773	0.57350	1
Montmorency	1,027	35.780	28.70319	0.97591	1
Mount Pleasant	2,176	35.802	60.77873	2.06648	3
Newton	178	35.922	4.95518	0.16848	1
Portland	186	34.727	5.35606	0.18211	1
Prophetstown	1,162	47.949	24.23408	0.82396	1
Sterling	8,003	23.397	342.05240	11.62978	12
Tampico	449	35.743	12.56190	0.42710	1
Union Grove	519	35.094	14.78885	0.50282	1
Ustick	250	35.390	7.06414	0.24018	1
County	25,770	684.251	37.66162	1.28050	2
Townships – 4 most populated	17,373	86.528	200.77894	6.82648	7
Townships – 18 least populated	8,397	597.723	14.04831	0.47764	1

Are future buildings, infrastructure and critical facilities vulnerable to tornadoes?

Yes and No. While five of the participating jurisdictions have building codes in place that will likely lessen the vulnerability of new buildings and critical facilities to damage from tornadoes, others do not. However, even new buildings and critical facilities built to code are vulnerable to the risks posed by a high rated tornado.

Infrastructure such as new communication and power lines will continue to be vulnerable to tornadoes as long as they are located above ground. Flying debris can disrupt power and communication lines even if they are not directly in the path of the tornado. Steps to bury all

new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

What are the potential dollar losses to vulnerable structures from tornadoes?

Unlike other hazards, such as flooding, there are no standard loss estimation models or methodologies for tornadoes. However, a rough estimate of potential dollar losses to the *potentially-damaged housing units* determined previously can be calculated if several additional decisions/assumptions are made regarding:

- the value of the potentially-damaged housing units; and
- the percent damage sustained by the potentially-damaged housing units (i.e., damage scenario).

These assumptions represent a ***probable scenario*** based on the reported historical occurrences of tornadoes in Whiteside County. The purpose of providing a rough estimate is to help residents and municipal/county officials make informed decisions to better protect themselves and their communities. These estimates are meant to provide a ***general idea*** of the magnitude of the potential damage that could occur. The following provides a brief discussion of each decision/assumption.

Assumption #4

The average market value for residential structures in each participating jurisdiction will be used to determine the value of potentially-damaged housing units.

Value of Potentially-Damaged Housing Units: In order to determine the potential dollar losses to the potentially-damaged housing units, the monetary value of the units must first be calculated. Typically when damage estimates are prepared after a natural disaster such as a tornado, they are based on the market value of the structure. Since it would be impractical to determine the individual market value of each potentially-damaged housing unit, the average market value of residential structures in each municipality will be used.

To determine the average market value, the average assessed value must first be calculated. The average assessed value is determined by taking the total assessed value of residential buildings within a jurisdiction and dividing that number by the total number of housing units within the jurisdiction. **Figure 64** provides a sample calculation. The total assessed value is based on 2013 tax assessment information provided by the Whiteside County Supervisor of Assessments.

Figure 64 Calculation of Average Assessed Value
Total Assessed Value of Residential Buildings ÷ Total Housing Units = Average Assessed Value (Rounded to the Nearest Penny) Albany: $10,706,979 ÷ 417 housing units = $25,676.21

To determine the average market value, the average assessed value is multiplied by three (the assessed value of a structure in Whiteside County is approximately one-third of the market

value). **Figure 65** provides the average assessed value and average market value for each participating municipality as well as for the unincorporated areas of the County and the County as a whole.

Figure 65
Average Market Value of Housing Units

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2013)	Total Housing Units (2010)	Average Assessed Value (Raw)	Average Market Value (Raw)	Average Market Value (Rounded)
Coleta	$1,385,484	71	$19,513.85915	$58,541.57745	$58,542
Deer Grove	$332,775	22	$15,126.13636	$45,378.40908	$45,378
Erie	$18,476,018	678	$27,250.76401	$81,752.29203	$81,752
Fulton	$44,866,161	1,700	$26,391.85941	$79,175.57823	$79,176
Morrison	$47,212,000	1,870	$25,247.05882	$75,741.17646	$75,741
Prophetstown	$18,561,505	908	$20,442.18612	$61,326.55836	$61,327
Rock Falls	$62,067,834	4,123	$15,054.04657	$45,162.13971	$45,162
Sterling	$114,216,688	6,947	$16,441.15273	$49,323.45819	$49,323
Tampico	$6,378,448	317	$20,121.28707	$60,363.86121	$60,364
Unincorp. County	$230,821,627	8,453	$27,306.47427	$81,919.42281	$81,919
County	$560,441,939	25,770	$21,747.84397	$65,243.53191	$65,244

Source: Brands, Robin, Whiteside County Supervisor of Assessments.

Damage Scenario: Finally, a decision must be made regarding the percent damage sustained by the potentially-damaged housing units and their contents. For this scenario, the expected percent damage sustained by the structure and its contents is 100%; in other words, all of the potentially-damaged housing units would be completely destroyed. While it is highly unlikely that each and every housing unit would sustain the maximum percent damage, identifying and calculating different degrees of damage within the average area impacted gets complex and provides an additional complication when updating the Plan.

Assumption #5

The tornado would completely destroy the potentially-damaged housing units.

Structural Damage = 100%
Content Damage = 100%

Potential Dollar Losses

Now that all of the decisions/assumptions have been made, the potential dollar losses can be calculated. First, the potential dollar losses to the ***structure*** of the potentially-damaged housing units must be determined. This is done by taking the average market value for a residential structure and multiplying it by the percent damage (100%) to get the average structural damage per unit. Next the average structural damage per unit is then multiplied by the number of potentially-damaged housing units. **Figure 66** provides a sample calculation.

Next, the potential dollar losses to the ***content*** of the potentially-damaged housing units must be determined. Based on FEMA guidance, the value of a residential housing unit's content is approximately 50% of its market value. Therefore, start by taking one-half the average market

value for a residential structure and multiply by the percent damage (100%) to get the average content damage per unit. Next the average content damage per unit is multiplied by the number of potentially-damaged housing units. **Figure 67** provides a sample calculation.

Figure 66 ***Structure* – Potential Dollar Loss Calculations**
Average Market Value per Housing Unit x Percent Damage = Average Structural Damage Albany: $77,029 x 100% = $77,029 per Unit Average Structural Damage x Number of Potentially-Damaged Housing Units = Potential Dollar Losses – Structure (Rounded to the Nearest Dollar) Albany: $77,029 x 14 housing units = $1,078,406

Figure 67 ***Content* – Potential Dollar Loss Calculations**
½ (Average Market Value of a Housing Unit) x Percent Damage = Average Content Damage Albany: ½ ($77,029) x 100% = $38,514.50 per Unit Average Content Damage x Number of Potentially-Damaged Housing Units = Potential Dollar Losses – Content (Rounded to the Nearest Dollar) Albany: $38,514.50 x 14 housing units = $539,203

Finally the ***total potential dollar losses*** may be calculated by adding together the potential dollar losses to the structure and content. **Figure 68** gives a breakdown of the total potential dollar losses by jurisdiction.

For comparison, an estimate of potential dollar losses was also calculated for the entire County, the unincorporated portions of the County, and for the four most populated and the 18 least populated townships. As discussed previously, the estimate for the County is skewed because it does not take into consideration the differences in the housing density within the County.

This assessment illustrates why potential residential dollar losses should be considered when jurisdictions are deciding which mitigation projects to pursue. Potential dollar losses caused by an average tornado in Whiteside County would be expected to ***exceed at least $1 million*** in any of the participating municipalities with the exception of Coleta and Deer Grove.

Figure 68
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Tornado

Participating Jurisdiction	Average Market Value (2013)	Potentially-Damaged Housing Units (Rounded Up)	Potential Dollar Losses		Total Potential Dollar Losses
			Structure	Content	
Coleta	$58,542	5	$292,710	$146,355	$439,065
Deer Grove	$45,378	2	$90,756	$45,378	$136,134
Erie	$81,752	16	$1,308,032	$654,016	$1,962,048
Fulton	$79,176	26	$2,058,576	$1,029,288	$3,087,864
Morrison	$75,741	26	$1,969,266	$984,633	$2,953,899
Prophetstown	$61,327	23	$1,410,521	$705,261	$2,115,782
Rock Falls	$45,162	39	$1,761,318	$880,659	$2,641,977
Sterling	$49,323	42	$2,071,566	$1,035,783	$3,107,349
Tampico	$60,364	28	$1,690,192	$845,096	$2,535,288
Unincorp. County	$81,919	1	$81,919	$40,960	$122,879
County	$65,244	2	$130,488	$65,244	$195,732
Townships – 4 Most Populated	$65,244	7	$456,708	$228,354	$685,062
Townships – 18 Least Populated	65,244	1	$65,244	$32,622	$97,866

Figure 50
(Sheet 1 of 4)
Tornadoes Reported in Whiteside County
1961 – 2014

Map No.	Date(s)	Start Time	Location(s)	Magnitude (Fujita Scale)	Length[1] (Miles)	Width (Yards)	Injuries	Fatalities	Property Damage	Crop Damage	Description
1	9/1/1961	8:00 p.m.	Rock Falls^	F1	n/a	100	4	0	$25,000	n/a	
2	5/7/1962	8:30 p.m.	Sterling^	F2	1.5	10	0	0	n/a	n/a	*Touchdown/Liftoff – Two Counties* Touched down in Whiteside County east of Sterling and traveled southeast lifting off near Harmon in Lee County – total length: 7.2 miles
3	3/21/1966	2:40 p.m.	Morrison^	F2	n/a	300	0	0	$25,000	n/a	
4	4/21/1967	3:30 p.m.	Erie^	F1	0.3	30	0	0	$2,500	n/a	
5	6/20/1974	5:00 p.m.	East Clinton	F0	n/a	33	0	0	$0	n/a	
6	3/29/1981	6:30 p.m.	Prophetstown^ Lyndon	F4	5.1	33	0	0	$2,500,000	n/a	
7	5/8/1988	3:16 p.m.	Albany^	F1	0.1	10	0	0	$25,000	n/a	
8	3/13/1990	5:11 p.m.	Albany^	F3	3.0	250	0	0	$2,500,000	n/a	
9	6/17/1992	12:20 p.m.	Deer Grove^	F0	0.1	30	0	0	$0	n/a	
10	6/19/1992	7:50 p.m.	Erie^	F0	0.2	40	0	0	$2,500	n/a	
Subtotal:							**4**	**0**	**$5,080,000**	**$0**	

[1] The length provided is only for the portion(s) of the tornado that occurred in Whiteside County.

^ Tornado touchdown verified in the vicinity of this location(s).

Figure 50
(Sheet 2 of 4)
Tornadoes Reported in Whiteside County
1961 – 2014

Map No.	Date(s)	Start Time	Location(s)	Magnitude (Fujita Scale)	Length[1] (Miles)	Width (Yards)	Injuries	Fatalities	Property Damage	Crop Damage	Description
11	5/9/1995	5:45 p.m.	Deer Grove^	F0	1.0	75	0	0	$0	n/a	
12	5/27/1995	7:10 p.m.	Lyndon^	F0	0.1	50	0	0	$0	n/a	A tornado touched down briefly on Interstate 88 near mile marker 27
13	5/10/1996	1:45 a.m.	Fulton	F1	2.0	100	0	0	$500,000	n/a	*Touchdown/Liftoff – Two Counties* Touched down in Clinton County, Iowa (near Clinton), crossed the Mississippi River touching down again in Fulton – total length: 7.0 miles - overturned mobile homes, trapping several people inside - destroyed homes
14	7/17/1996	8:00 p.m.	Coleta^	F0	0.3	20	0	0	$0	$0	The tornado snapped several one foot diameter trees in half
15	5/12/1999	5:24 p.m.	Morrison^	F0	0.1	10	0	0	$0	n/a	
16	6/12/1999	1:20 p.m.	Prophetstown	F0	0.1	10	0	0	$0	n/a	
Subtotal:							**0**	**0**	**$500,000**	**$0**	

[1] The length provided is only for the portion(s) of the tornado that occurred in Whiteside County.

^ Tornado touchdown verified in the vicinity of this location(s).

Figure 50
(Sheet 3 of 4)
Tornadoes Reported in Whiteside County
1961 – 2014

Map No.	Date(s)	Start Time	Location(s)	Magnitude (Fujita Scale)	Length[1] (Miles)	Width (Yards)	Injuries	Fatalities	Property Damage	Crop Damage	Description
17	9/12/2003	5:38 p.m.	Fulton	F0	0.3	35	0	0	$5,000	$10,000	A high rated F0 touched down on the southeast side of Fulton, south-southwest of the intersection of 24th Ave. & 4th St. It moved northeast through the Sikkema Trailer Park and crossed 5th & 6th streets before dissipating in a corn field. - widespread tree limb damage was noted during the survey with corn stalks tossed into power lines - adjacent corn field was heavily damaged
18	7/5/2004	2:52 p.m.	Prophetstown^	F1	0.3	30	0	0	$7,500	$5,000	A low rated F1 landspout developed near Washington Rd. and moved northwest through a corn field before dissipating - a machine shed had part of its roof torn off along with the west wall blown down
Subtotal:							**0**	**0**	**$12,000**	**$15,000**	

[1] The length provided is only for the portion(s) of the tornado that occurred in Whiteside County.

^ Tornado touchdown verified in the vicinity of this location(s).

Figure 50
(Sheet 4 of 4)
Tornadoes Reported in Whiteside County
1961 – 2014

Map No.	Date(s)	Start Time	Location(s)	Magnitude (Fujita Scale)	Length[1] (Miles)	Width (Yards)	Injuries	Fatalities	Property Damage	Crop Damage	Description
19	5/30/2013	4:35 p.m.	Portland Prophetstown^	EF0	0.57	25	0	0	$0	$0	- downed some trees
Subtotal:							**0**	**0**	**$0**	**$0**	
GRAND TOTAL							**4**	**0**	**$5,592,000**	**$15,000**	

[1] The length provided is only for the portion(s) of the tornado that occurred in Whiteside County.

^ Tornado touchdown verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Image and Publications System, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Events Database.
Southern Illinoisan.

3.5 EXTREME HEAT

IDENTIFYING THE HAZARD

What is the definition of extreme heat?

Extreme heat is characterized by temperatures that hover 10 degrees or more above the average high temperature of a region for a prolonged period of time (several days to several weeks) and is often accompanied by high humidity. In comparison, a heat wave is generally defined as a prolonged period of excessive heat and humidity. While there is no universally agreed upon definition of a heat wave, for most the United States the "standard" definition is a period of three or more consecutive days of highs reaching at least 90°F.

Extreme heat events are usually a result of both high temperatures and high relative humidity. (Relative humidity refers to the amount of moisture in the air.) The higher the relative humidity or the more moisture in the air, the less likely that evaporation will take place. This becomes significant when high relative humidity is coupled with soaring temperatures.

On hot days the human body relies on the evaporation of perspiration or sweat to cool and regulate the body's internal temperature. Sweating does nothing to cool the body unless the water is removed by evaporation. When the relative humidity is high, then the evaporation process is hindered, robbing the body of its ability to cool itself.

On average, more than 1,000 people die each year in the United States from extreme heat. In fact, extreme heat claims more lives each year than floods, lightning, tornadoes and hurricanes combined.

What is the Heat Index?

In an effort to raise the public's awareness of the hazards of extreme heat, the National Weather Service devised the "Heat Index". The Heat Index, sometimes referred to as the "apparent temperature", is a measure of how hot it feels when relative humidity is added to the actual air temperature. **Figure 69** shows the Heat Index as it corresponds to various air temperatures and relative humidity.

As an example, if the air temperature is 96°F and the relative humidity is 65%, then the Heat Index would be 121°F. It should be noted that the Heat Index values were devised for shady, light wind conditions. Exposure to full sunshine can increase Heat Index values by up to 15°F. Also strong winds, particularly with very hot, very dry air, can be extremely hazardous. When the Heat Index reaches 105°F or greater, there is an increased likelihood that continued exposure and/or physical activity will lead to individuals developing severe heat disorders.

What are heat disorders?

Heat disorders are a group of illnesses caused by prolonged exposure to hot temperatures and are characterized by the body's inability to shed excess heat. These disorders develop when the heat gain exceeds the level the body can remove or if the body cannot compensate for fluids and salt lost through perspiration. In either case the body loses its ability to regulate its internal

temperature. All heat disorders share one common feature: the individual has been overexposed to heat, or over exercised for their age and physical condition on a hot day. The following describes the symptoms associated with the different heat disorders.

Figure 69
Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	126	130					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

Source: NOAA, National Weather Service.

- **Sunburn.** Sunburn is characterized by redness and pain of skin exposed too long to the sun without proper protection. In severe cases it can cause swelling, blisters, fever and headaches. It can significantly retard the skin's ability to shed excess heat.
- **Heat Cramps.** Heat cramps are characterized by heavy sweating and painful spasms, usually in the muscles of the legs and possibly the abdomen. The loss of fluid through perspiration leaves the body dehydrated resulting in muscle cramps. This is usually the first sign that the body is experiencing trouble dealing with heat.
- **Heat Exhaustion.** Heat exhaustion is characterized by heavy sweating, weakness, nausea, exhaustion, dizziness and faintness. Breathing may become rapid and shallow and the pulse thready (weak). The skin may appear cool, moist and pale. Blood flow to the skin increases, causing blood flow to decrease to the vital organs. This results in a mild form of shock. If not treated, the victim's condition will worsen.
- **Heat Stroke (Sunstroke).** Heat stroke is a life-threatening condition characterized by a high body temperature (106°F or higher). The skin appears to be dry and flushed with very little perspiration present. The individual may become mentally confused and

aggressive. The pulse is rapid and strong. There is a possibility that the individual will faint or slip into unconsciousness. If the body is not cooled quickly, then brain damage and death may result.

Studies indicate that, all things being equal, the severity of heat disorders tend to increase with age. Heat cramps in a 17-year-old may be heat exhaustion in someone 40 and heat stroke in a person over 60. Elderly persons, small children, chronic invalids, those on certain medications and persons with weight or alcohol problems are particularly susceptible to heat reactions.

Figure 70 below indicates the heat index at which individuals, particularly those in higher risk groups, might experience heat-related disorders. Generally, when the heat index is expected to exceed 105°F, the National Weather Service will initiate extreme or excessive heat alert procedures.

Figure 70
Relationship between Heat Index and Heat Disorders

Heat Index (°F)	Heat Disorders
80°F – 90°F	Fatigue is possible with prolonged exposure and/or physical activity
90°F – 105°F	Heat cramps, heat exhaustion and heat stroke possible with prolonged exposure and/or physical activity
105°F – 130°F	Heat cramps, heat exhaustion and heat stroke likely; heat stroke possible with prolonged exposure and/or physical activity
130°F or Higher	Heat stroke highly likely with continued exposure

Source: NOAA, Heat Wave: A Major Summer Killer.

What is an excessive heat alert?

An excessive heat alert is an advisory or warning issued by the National Weather Service when the Heat Index is expected to have a significant impact on public safety. The expected severity of the heat determines the type of alert issued. There are four types of alerts that can be issued for an extreme heat event. The following provides a brief description of each type of alert based on the ***excessive heat advisory/warning criteria*** established by National Weather Service Weather Forecast Office of the Quad Cities, Iowa/Illinois. The Quad Cities Office is responsible for issuing alerts for Whiteside County.

- **Outlook.** An excessive heat outlook is issued when the potential exists for an excessive heat event to develop over the next three to seven days.
- **Watch.** An excessive heat watch is issued when conditions are favorable for an excessive heat event to occur within the next 24 to 72 hours.
- **Advisory/Warning.** An excessive heat advisory or warning is issued when an excessive heat event occurring, imminent or has a very high probability of occurring within the next 36 hours. Advisories alert the public to conditions which will cause significant discomfort or inconvenience and, if caution is not taken, could pose a threat to life while warnings indicate conditions that pose a threat to life.

PROFILING THE HAZARD

When have extreme heat events occurred previously? What is the extent of these events?

Extreme Heat Fast Facts – Occurrences

Number of Extreme Heat Events Reported (1997 – 2014): ***4***

Hottest Temperature Recorded in the County: ***112°F (July 14, 1936)***

Figure 71, located at the end of this section, summarizes the previous occurrences as well as the extent or magnitude of extreme heat events recorded in Whiteside County. NOAA's Storm Events Database has documented four occurrences of extreme heat in Whiteside County between 1997 and 2014.

Of the four events, three (75%) took place in July making this the peak month for extreme heat events in Whiteside County. Three of the four events (75%) began during the a.m. hours.

According to the available historical data from the Midwestern Regional Climate Center and the National Weather Service COOP records, the hottest recorded temperature over a 109-year period between 1895 and 2003 in Whiteside County was 112°F at Morrison on July 14, 1936.

What locations are affected by extreme heat?

Extreme heat events affect the entire County. A single extreme heat event will generally extend across an entire region and affect multiple counties. The *2013 Illinois Natural Hazard Mitigation Plan* classifies Whiteside County's hazard rating for extreme heat as "elevated."

Do any of the participating municipalities have designated cooling centers?

Yes. Four of the nine participating municipalities have designated cooling centers. A "designated" cooling center is identified as any facility that has been *formally* identified by the municipality (through emergency planning, resolution, Memorandum of Agreement, etc.) as a location available for use by residents during extreme heat events. **Figure 72** identifies the location of each cooling center by jurisdiction. The County is also served by one state-designated cooling center located at the Illinois Department of Human Services office, 2605 Woodlawn Road in Sterling.

What is the probability of future extreme heat events occurring?

Whiteside County has only experienced four verified extreme heat events between 1997 and 2014. With four occurrences over the past 18 years, the probability or likelihood that the County may experience an extreme heat event in any given year is 22%.

ASSESSING VULNERABILITY

Are the participating jurisdictions vulnerable to extreme heat?

Yes. All of Whiteside County, including the participating municipalities, is vulnerable to the dangers presented by extreme heat. Since 2004, Whiteside County has experienced two extreme heat events.

Figure 72
Designated Cooling Centers by Participating Municipality

Name/Address	Name/Address
Coleta	*Rock Falls*
United Methodist Church, 112 N. Main St.	Community Building, 601 W. 10th St.
Deer Grove	Fire Station, 1013 7th Ave.
---	Library, 1007 7th Ave.
Erie	Area Churches as needed on a rotating basis
Fire Station, 809 9th Ave.	*Sterling*
Fulton	Challand Middle School, 17006th Ave.
---	Washington Elementary School, 815 W. LeFevre
Morrison	Lincoln Elementary School, 1601 E. 6th St.
---	Franklin Elementary School, 1510 E. 25th St.
Prophetstown	Jefferson Elementary School, 806 E. LeFevre
---	*Tampico*

What impacts resulted from the recorded extreme heat events?

Damage information was either unavailable or none was recorded for any of the reported extreme heat events. No injuries or fatalities were reported as a result of any of the recorded extreme heat events.

Extreme Heat Fast Facts – Impacts/Risk

Extreme Heat Impacts
- Total Property Damage: ***n/a***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Extreme Heat Risk/Vulnerability to:
- Public Health & Safety – General Population: ***Low/Medium***
- Public Health & Safety – Sensitive Populations: ***Medium***
- Buildings/Infrastructure/Critical Facilities: ***Low***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

While no specific injuries or fatalities were reported in Whiteside County, it does not mean that none occurred. It simply means that extreme heat was not identified as the primary cause. This is especially true for fatalities. Usually heat is not listed as the primary cause of death, but rather an underlying cause. The heat indices were sufficiently high for all four events to produce heat cramps or heat exhaustion with the possibility of heat stroke in cases of prolonged exposure or physical activity.

In comparison, Illinois averages 74 fatalities per year as a result of extreme heat. Extreme heat has triggered more fatalities than any other natural hazard in Illinois. More fatalities are attributed to extreme heat than the combined number of fatalities attributed to floods, tornadoes, lightning and extreme cold.

Even if injuries and fatalities due to extreme heat are under reported in Whiteside County, the level of risk or vulnerability posed by extreme heat to the public health and safety of the *general population* is considered to be low to medium. This assessment is based on the absences of designated cooling centers in some of the participating municipalities tempered by the impacts of

previously reported extreme heat events and the fact that Whiteside County does not have large urban areas where living conditions (such as older, poorly-ventilated high rise buildings and low-income neighborhoods) tend to contribute to heat-related injuries and fatalities.

The level of risk or vulnerability posed by extreme heat to the public health and safety of *sensitive populations* is considered to be medium. Sensitive populations such as the elderly, small children, individuals with chronic conditions, those on certain medication and persons with weight or alcohol problems are more susceptible to heat-related reactions and therefore their risk is elevated.

What other impacts can result from extreme heat events?

Other impacts of extreme heat include road buckling, power outages, stress on livestock, early school dismissals and school closings. In addition, extreme heat events can also lead to an increase in water usage and may result in municipalities imposing water use restrictions. In Whiteside County, extreme heat should not impact municipal water supplies since none obtain their water from surface water bodies.

Are existing buildings, infrastructure and critical facilities vulnerable to extreme heat?

No. In general, existing buildings, infrastructure and critical facilities located in the County and the participating municipalities are not vulnerable to extreme heat. The primary concern is for the health and safety of those living in the County (including all of the municipalities).

While buildings do not typically sustain damage from extreme heat, in rare cases infrastructure and critical facilities may be directly or indirectly damaged. While uncommon, extreme heat has been known to contribute to damage caused to roadways within Whiteside County. The combination of extreme heat and vehicle loads has caused pavement cracking and buckling.

Extreme heat has also been known to indirectly contribute to disruptions in the electrical grid. When the temperatures rise, the demand for energy also rises in order to operate air conditioners, fans and other devices. This increase in demand places stress on the electrical grid components, increasing the likelihood of power outages. While not common in Whiteside County, there is the potential for this to occur. The potential may increase over the next two decades if new power plants are not built to replace the state's aging nuclear power facilities that are expected to be decommissioned.

In general, the risk or vulnerability to buildings, infrastructure and critical facilities from extreme heat is considered low, even taking into consideration the potential for damage to roadways and disruptions to the electrical grid.

Are future buildings, infrastructure and critical facilities vulnerable to extreme heat?

No. Future buildings, infrastructure and critical facilities within the County and participating municipalities are no more vulnerable to extreme heat events than the existing building, infrastructure and critical facilities. As discussed above, buildings do not typically sustain damage from extreme heat. Infrastructure and critical facilities may, in rare cases, be damaged by extreme heat, but very little can be done to prevent this.

What are the potential dollar losses to vulnerable structures from extreme heat?

Unlike other natural hazards there are no standard loss estimation models or methodologies for extreme heat. With only no recorded events listing property damage numbers for extreme heat, there is no way to accurately estimate future potential dollar losses. Since extreme heat typically does not cause structure damage, it is unlikely that future dollar losses will be excessive. The primary concern associated with extreme heat is the health and safety of those living in the County and municipalities, especially sensitive populations such as the elderly, infants, young children and those with medical conditions.

Figure 71
Extreme Heat Events Reported in Whiteside County
1997 – 2014

Date(s)	Start Time	Magnitude	Injuries	Fatalities	Property Damage	Crop Damage
7/25/1997 thru 7/27/1997	4:00 a.m.	- Heat and humidity combined to produce excessive heat index values reaching 105°F to 110°F during the day.	n/a	n/a	n/a	n/a
7/19/1999 thru 7/31/1999	4:00 a.m.	- A strong ridge of high pressure over the central US produced very hot and humid conditions. - Temperatures around 100°F combined with dew points in the 70s to produce heat indices of 105°F to as high as 125°F.	n/a	n/a	n/a	n/a
7/4/2012 thru 7/7/2012	12:00 p.m.	- A very hot and humid air mass surged into the Midwest during the long 4th of July holiday. - Afternoon and evening temperatures soared into the upper 90s to lower 100s with nighttime temperatures remaining well into the 70s. Combining heat and humidity create heat index values of 105°F to 115°F during the afternoons and evenings. - The high temperature at Sterling on Saturday July 7th was 104°F.	n/a	n/a	n/a	n/a
8/27/2013 thru 8/30/2013	11:00 a.m.	- A dome of unseasonably warm air blanketed the region at the end of August. - Maximum temperatures soared into the 90s during much of this period with several locations reporting lower 100s. Dew points were well into the 60s and lower 70s. The combination of high temperatures and humidity pushed the heat index values to 100°F to 105°F with a few locations reporting 110°F. - The maximum temperature in Sterling soared to 100°F on August 30th. - Schools without air conditioning either cancelled classes or dismissed students early. - Many cities and towns opened cooling centers.	n/a	n/a	n/a	n/a
Subtotal:			**0**	**0**	**$0**	**$0**

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Climatic Data Center, Storm Events Database.

3.6 DROUGHT

IDENTIFYING THE HAZARD

What is the definition of a drought?

While there is no universally accepted definition of drought, it can generally be defined as a period of unusually persistent dry weather that continues long enough to cause serious problems such as crop damage and/or water supply shortages. A drought may also be defined as the cumulative deficit of precipitation relative to what is normal for a region over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group or environmental sector.

There are four types of drought. They are differentiated based on the use and need for water. The following provides a brief description of each type.

- **Meteorological Drought.** Meteorological drought is a period of well-below-average precipitation that spans a few months to a few years. It can be identified by a shortfall in precipitation. Due to climate differences, what might be considered a drought in one location of the country may not be in another location.
- **Agricultural Drought.** An agricultural drought is a period when soil moisture no longer meets the needs of a particular crop to germinate and grow. It can be identified by a deficit in soil moisture.
- **Hydrological Drought.** Hydrological drought is a period when surface and subsurface water supplies (i.e., streams, lakes, aquifers, etc.) drop below normal levels. It can be identified by a deficit in surface and groundwater.
- **Socioeconomic Drought.** Socioeconomic drought is a period when water shortages begin to affect people. In this case, there is not enough water to meet human and environmental needs.

The severity of a drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area. It is generally difficult to pinpoint the beginning and the end of a drought. Because the impacts of a drought accumulate slowly at first, a drought may not be recognized until it has become well established. Even during a drought there may be one or two months with above average precipitation totals. These wet months do not necessarily signal the end of a drought and generally do not have a major impact on moisture deficits.

Droughts can be short, lasting just a few months, or they can persist for several years before regional climate conditions return to normal. While drought conditions can occur at any time throughout the year, the most apparent time is during the summer months. Nationally, drought impacts often exceed $1 billion due in part to the sheer size of the areas affected.

How are droughts measured?

There are several quantitative measures (indices) that have been developed to measure drought in the United States. How these indices measure drought depends on the discipline affected (i.e., agriculture, hydrology, meteorology, etc.) and the region being considered. Although none

of the major indices are inherently superior to the rest, some are better suited than others for certain uses. Two of the indices highlighted in this plan are:

- the Palmer Drought Severity Index (PDSI) and
- the U.S. Drought Monitor.

The PDSI was the first comprehensive drought index developed in the United States and is still in use today. It is designed to indicate when weather conditions have been abnormally dry or wet and provides a standardized method of identifying and comparing drought conditions regardless of time or location.

The U.S. Drought Monitor is a relatively new index that combines quantitative measures with input from experts in the field. It is designed to provide the general public, media, government officials and others with an easily understandable "big picture" overview of drought conditions across the United States. In the last several years, NOAA has begun including the U.S. Drought Monitor's drought intensity ratings along with the weather information provided for drought events recorded with the National Climate Data Center.

The following provides a more detailed discussion of these two indices to aid the plan's developers and the general public in understanding how droughts are identified and categorized. The information used to prepare this section utilizes one or both of these indices to identify previous drought events recorded in the County.

Palmer Drought Severity Index (PDSI)

The Palmer Drought Severity Index (PDSI), developed in 1965, was the first comprehensive drought index used in the United States. The PDSI is a long-term meteorological index that indicates when weather conditions have been abnormally dry or abnormally wet. It is most effective at measuring impacts that are sensitive to soil moisture conditions, such as agriculture.

The PDSI is calculated based on precipitation and temperature data, as well as the local available water content of the soil and the cumulative patterns of previous months. The index ranges from +4 (extremely moist) to -4 (extreme drought). **Figure 73** shows the classification system utilized by the PDSI.

The PDSI has been useful as a drought monitoring tool and many federal and state agencies rely on it to trigger drought relief programs. It provides a standardized method to measure moisture conditions so that comparisons can be made between various locations and times. The PDSI is most useful when working with large areas of uniform topography. It is not as well suited for use in the western states, with their mountainous terrain and varying climate extremes.

Figure 73
Palmer Classification System

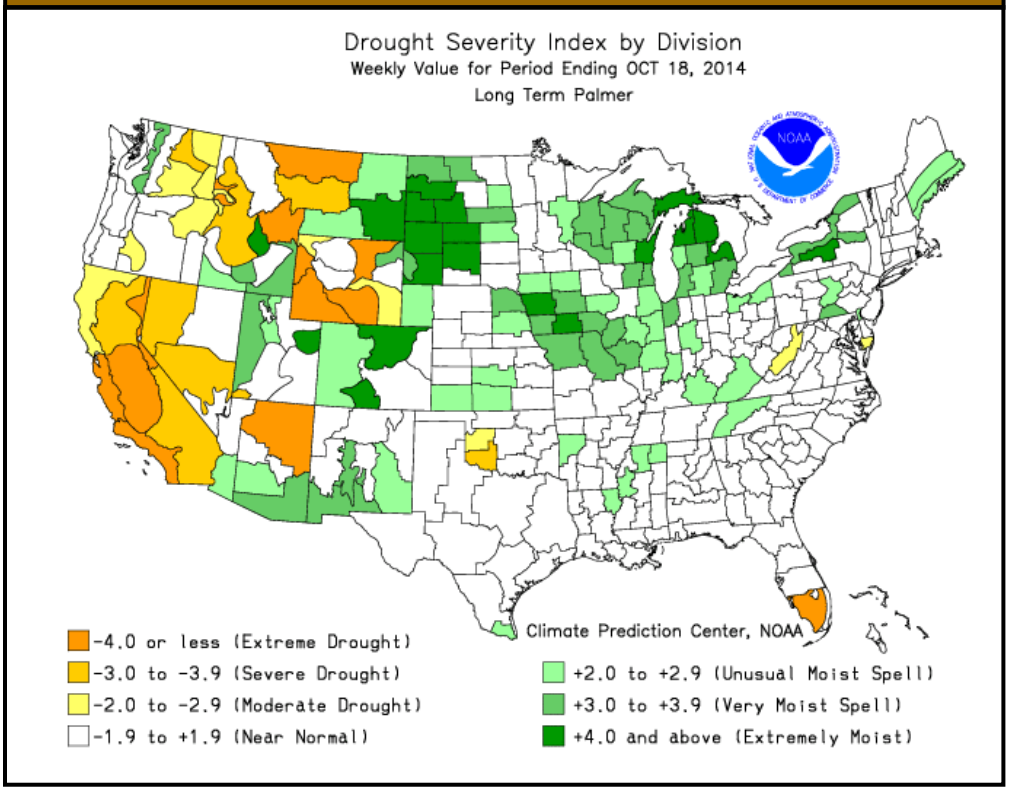
Index Value	Description
4.00 or more	extremely wet
3.00 to 3.99	very wet
2.00 to 2.99	moderately wet
1.00 to 1.99	slightly wet
0.50 to 0.99	incipient wet spell
0.49 to -0.49	near normal
-0.50 to -0.99	incipient dry spell
-1.00 to -1.99	mild drought
-2.00 to -2.99	moderate drought
-3.00 to -3.99	severe drought
-4.00 or less	extreme drought

Source: National Drought Mitigation Center.

Calculations of the PDSI are made for 350 climate divisions in the United States and Puerto Rico. PDSI values have typically been calculated on a monthly basis. The National Climate Data Center has records on the monthly PDSI values for every climate division in the United States dating back to 1895.

In addition to the monthly calculations, weekly PDSI values are now being calculated for the climate divisions during every growing season. NOAA's Climate Prediction Center produces a weekly map that shows the climate divisions and their PDSI value by color. **Figure 74** shows an example of this map.

Figure 74
Palmer Drought Severity Index Map



Source: National Weather Service, Climate Prediction Center.

U.S. Drought Monitor

A relatively new index used for assessing drought conditions is the U.S. Drought Monitor. The U.S. Drought Monitor is unique in that it blends multiple numeric measures of drought with the best judgments of experts to create a weekly map that depicts drought conditions across the United States. It began in 1999 as a federal, state and academic partnership, growing out of a Western Governors' Association initiative to provide timely and understandable scientific information on water supplies and drought for policymakers.

The U.S. Drought Monitor is produced jointly by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National

Oceanic and Atmospheric Administration. Five drought intensity categories, D0 through D4, are utilized to identify areas of drought. **Figure 75** provides a brief description of each category.

Figure 75
U.S. Drought Monitor – Drought Severity Classifications

Category	Possible Impacts
D0 (Abnormally Dry)	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.
D1 (Moderate Drought)	Some damage to crops, pastures; streams, reservoirs, or wells low; some water shortages developing or imminent; voluntary water-use restrictions requested
D2 (Severe Drought)	Crop or pasture losses likely; water shortages common; water restrictions imposed
D3 (Extreme Drought)	Major crop/pasture losses; widespread water shortages or restrictions
D4 (Exceptional Drought)	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies

Source: U.S. Drought Monitor.

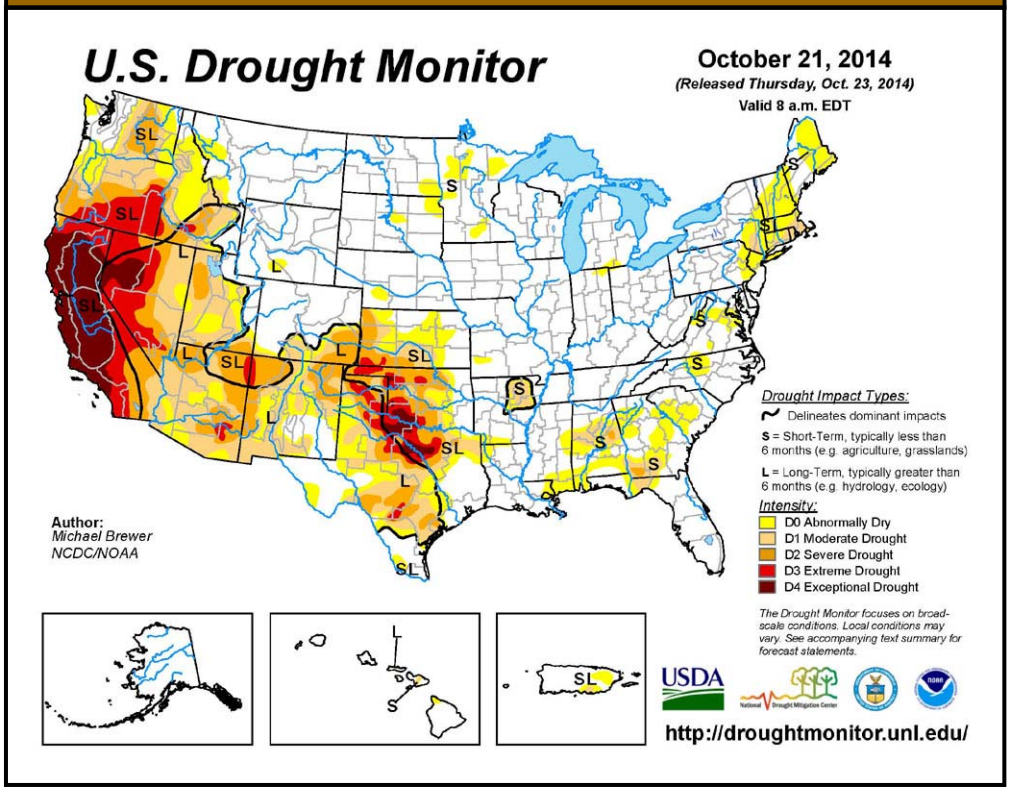
The drought intensity categories are based on five key indicators, numerous supplementary indictors and local reports from more than 350 expert observers around the Country. The five key indicators include the Palmer Drought Severity Index, Climate Prediction Center's Soil Moisture Model (percentiles), United States Geological Survey Weekly Streamflow (percentiles), Standardized Precipitation Index and Objective Short and Long-term Drought Indicator Blends (percentiles).

Because the ranges of the various indicators often don't coincide, the final drought category tends to be based on what a majority of the indictors show and on local observations. The authors also weight the indices according to how well they perform in various parts of the country and at different times of the year. It is the combination of the best available data, location observations and experts' best judgment that make the U.S. Drought Monitor more versatile than other drought indices.

In addition to identifying and categorizing general areas of drought, the weekly map also identifies whether a drought's impacts are short-term (typically less than 6 months – agriculture, grasslands) or long-term (typically more than 6 months – hydrology, ecology). **Figure 76** shows an example of the U.S. Drought Monitor weekly map.

The U.S. Drought Monitor is designed to provide a general and up-to-date overview of current drought conditions. It is not designed to depict local conditions. As a result, there could be water shortages or crop failures within areas not designated as drought, just as there could locations with adequate water supplies in an area designated as D3 or D4.

Figure 76
U. S. Drought Monitor Map



Map Courtesy of NDMC-UNL.

PROFILING THE HAZARD

When have droughts occurred previously? What is the extent of these previous droughts?

Drought Fast Facts – Occurrences

Number of Drought Events Reported (1983 – 2014): ***5***

According to NOAA's Storm Events Database, the Illinois State Water Survey, the Illinois Emergency Management Agency and the USDA there have been five official drought events reported for Whiteside County between 1983 and 2014. The following provides a summary of these previous occurrences as well as the extent or severity of each event.

- In 1983, all 102 Illinois counties were proclaimed state disaster areas because of high temperatures and insufficient precipitation beginning in mid-June. USDA crop yield statistics indicates that corn yields were 18 percent lower than the previous year while soybean yields did not experience any reductions from the previous year.
- In 1988, approximately half of all Illinois counties (including Whiteside County) were impacted by drought conditions, although none of the counties were proclaimed state disaster areas. Lower than normal precipitation levels were recorded between April and June and unusually dry weather conditions persisted throughout the summer months.

Soybean and corn yields were 42 to 58 percent lower than the previous year, according to USDA crop yield statistics.

- In 2005-2006, drought conditions impacted much of the state, including Whiteside County. A dry winter and spring developed into full-blown drought conditions by the middle of June. On June 21, 2005 Whiteside County was designated as D1 – moderate drought and upgraded to D2 –severe drought on June 28, 2005. By July 19, 2005 the County was classified as D3 – extreme drought.

  On July 27, 2005 the USDA designated 93 counties in Illinois, including Whiteside County, as primary natural disaster areas due to the damage and losses caused by drought. Extreme drought conditions continued through the remainder of the year and into January 2006. The drought conditions in the County were downgraded to D2 on January 31, 2006. Severe to moderate drought conditions continued through the rest of the winter and into the spring before being downgraded to D0 – abnormally on April 25, 2006.

  According to USDA crop yield statistics soybean and corn yields were 7 to 31 percent lower than the previous year.

- In 2012, drought conditions impacted all of Illinois and most of the Midwest. On June 26, 2012 Whiteside County was designated as D1 – moderate drought and upgraded to D2 – severe drought on July 17, 2012 due to an abnormally warm and dry spring. The next week, on July 24, 2005 the County was classified as D3 – extreme drought due to the continued hot and dry conditions.

  Extreme drought conditions continued through October before being downgraded to D2 – severe drought on October 30, 2005. On December 25, 2012 a majority of the County was downgraded to D1 – moderate drought. Moderate drought conditions continued through the rest of the winter and into the spring before being downgraded to D0 – abnormally dry on March 19, 2013.

  Crop stress was extreme for corn and soybeans during this event. On August 1, 2012 the USDA designated 66 counties in Illinois, including Whiteside County, as primary natural disaster areas due to damage and losses caused by drought and excessive heat. Soybean and corn yields were 3 to 14 percent lower than the previous year according to USDA crop yield statistics.

- In 2013, drought conditions impacted the central and northern portions of Illinois all though none of the counties were designated as primary natural disaster areas by USDA. According to the Illinois State Climatologist this was considered a "flash drought." Where most droughts move slow and take three to six months to develop, flash droughts can move very fast. Exceptionally dry weather over July and August coupled with warmer than average temperatures at the end of August drove up the water use by crops leading to an agricultural drought.

  In September 3, 2013 Whiteside County was designated at D1 – moderate drought and upgraded to D2 – severe drought on September 17, 2013 due to extremely dry conditions between July and September. Moderate drought conditions continued through October into the beginning of November before being downgraded to D1- moderate drought on

November 12, 2013. Moderate drought conditions continued through the rest of the winter before being downgraded to D0 – abnormally dry on February 25, 2014.

USDA crop yield statistics indicate that soybean yields were 6 percent lower than the previous year while corn yields increased from the previous year.

The Illinois State Water Survey records indicate that droughts also occurred in the region in 1931, 1934 and 1936; however, the extent to which Whiteside County was impacted was unavailable.

What locations are affected by drought?

Drought events affect the entire County. Droughts, like extreme heat and severe winter storms, tend to impact large areas, extending across an entire region and affecting multiple counties. The *2013 Illinois Natural Hazard Mitigation Plan* classifies Whiteside County's hazard rating for drought as "high."

What is the probability of future drought events occurring?

Whiteside County has experienced five droughts between 1983 and 2014. With five occurrences over 32 years, the probability or likelihood that the County may experience a drought in any given year is 16%. However, if earlier recorded droughts are factored in, then the probability that Whiteside County may experience a drought in any given year decreases to 9.5%.

ASSESSING VULNERABILITY

Are the participating jurisdictions vulnerable to drought?

Yes. All of Whiteside County is vulnerable to drought. Neither the amount nor the distribution of precipitation; soil types; topography; or water table conditions provides protection for any area within the County. Since 2004 Whiteside County has experienced three droughts.

What impacts resulted from the recorded drought events?

Damage information was only available for one of the five drought events experienced between 1983 and 2014. According to data obtained from NOAA's Storm Events Database the 2005-2006 drought caused $228.57 million in crop damage . This total represents losses sustained in 13 counties (including Whiteside County). A breakdown by county was unavailable. Damage information was either unavailable or none was recorded for the remaining four reported occurrences.

Drought Fast Facts – Impacts/Risk

Drought Impacts
- Total Property Damage: ***n/a***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***$228.57 million***

Drought Risk/Vulnerability to:
- Public Health & Safety: ***Low***
- Buildings/Infrastructure/Critical Facilities: ***Low***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

Of the five drought events, disaster relief payment information was only available for one of the events. In 1988, landowners and farmers in Illinois were paid in excess of $382 million in relief payments; however a breakdown by county was unavailable.

No injuries or fatalities were reported as a result of any of the recorded drought events in Whiteside County. Unlike other natural hazards that affect the County, drought events do not typically cause injuries or fatalities. The primary concern centers on the financial impacts that result from loss of crop yields and livestock and potential drinking water shortages. Even taking into consideration the potential impacts that a water shortage may have on the general public, the risk or vulnerability to public health and safety from drought is low.

What other impacts can result from drought events?

Based on statewide drought records available from the Illinois State Water Survey, the most common impacts that result from severe drought events in Illinois include reductions in crop yields and drinking water shortages.

Crop Yield Reductions

Agriculture is a major economic enterprise in Whiteside County. Farmland accounts for approximately 90% of all the land in the County. According to the 2012 Census of Agriculture, there were 1,110 farms in Whiteside County occupying 403,242 acres. Of the land in farms, approximately 92% or 369,972 acres is in crop production. Approximately 15.5% of the land in crop production is irrigated. Compared to a majority of the State and even neighboring counties, this is a relatively large amount of irrigated acres.

According to the 2012 Census of Agriculture, crop sales accounted for $337.2 million in revenue while livestock sales accounted for $98.4 million. Whiteside County ranks 6th in Illinois for crop cash receipts and 5th for livestock cash receipts. A severe drought would have a great financial impact on the large agricultural community, particularly if it occurred during the growing season. Dry weather conditions, particularly when accompanied by excessive heat, can result in diminished crop yields and place stress on livestock.

A reduction in crop yields was seen as a result of the 1983, 1988, 2005-2006, 2012 and 2013 droughts. **Figure 77** illustrates the reduction yields seen for corn and soybeans during the five recorded drought events.

Records obtained from the USDA's National Agricultural Statistics Service show that the 1983 drought resulted in corn yield reductions of 18.0% while the 1988 drought resulted in corn yield reductions of 58.4% and soybean yield reductions of 42.5%. In 2005, the drought caused a 31.1% reduction in corn yields and a 7.8% reduction in soybean yields. The 2012 drought caused corn yield reductions of 14.0% and soybean yield reductions of 3.3% while the 2013 drought resulted in soybean yield reductions of 6.3%.

Drinking Water Shortages

Municipalities that rely on surface water sources for their drinking water supplies are more vulnerable to shortages as a result of drought. In Whiteside County ***none of the participating municipalities rely on surface water sources*** for their drinking water supplies. With the exception of Rock Falls, Tampico and Prophetstown, all of the participating municipalities obtain water from relatively deep bedrock wells. Rock Falls, Tampico and one of Prophetstown's wells are drilled into shallower unconfined aquifers. The high recharge rate

found in these unconfined aquifers have generally helped prevent water shortages during drought, but can leave drinking water vulnerable to contamination not likely to occur at wells found in confined aquifers. Prolonged drought or a series of droughts in close succession do have the potential to impact water levels in aquifers used for individual drinking water wells in rural areas.

Figure 77
Crop Yield Reductions Due to Drought in Whiteside County

Year	Corn		Soybeans	
	Yield (bushel)	% Reduction Previous Year	Yield (bushel)	% Reduction Previous Year
1982	128.0	--	40.0	--
1983	**105.0**	**18.0%**	40.0	--
1984	114.0	--	34.5	**13.8%**
1987	125.0	--	43.5	--
1988	**54.0**	**58.4%**	**25.0**	**42.5%**
1989	116.0	--	44.5	--
2004	183.0	--	51.0	--
2005	**126.0**	**31.1%**	**47.0**	**7.8%**
2006	174.0	--	53.0	--
2010	164.4	--	51.9	--
2011	**162.6**	**1.1%**	54.6	--
2012	**139.8**	**14.0%**	**52.8**	**3.3%**
2013	179.8	--	**49.5**	**6.3%**

Source: USDA, National Agricultural Statistics Service.

Are existing buildings, infrastructure and critical facilities vulnerable to drought?

No. In general, existing buildings, infrastructure and critical facilities located in Whiteside County and the participating municipalities are not vulnerable to drought. The primary concern centers on the financial impacts that result from loss of crop yields and livestock.

While buildings do not typically sustain damage from drought events, in rare cases infrastructure and critical facilities may be directly or indirectly impacted. While uncommon, droughts can contribute to roadway damage. Severe soil shrinkage can compromise the foundation of a roadway and lead to cracking and buckling.

Prolonged heat associated with drought can also increase the demand for energy to operate air conditioners, fans and other devices. This increase in demand places stress on the electrical grid, which increases the likelihood of power outages. Additionally, droughts have the potential to impact drinking water supplies. Reductions in the water levels of wells and surface water supplies can cause water shortages that require water conservation measures to be enacted in an effort to maintain a sufficient supply of water to provide drinking water and fight fires.

In general, the risk or vulnerability to buildings, infrastructure and critical facilities from drought is low, even taking into consideration the potential impact a drought may have on drinking water supplies and the stress that prolonged heat may place on the electrical grid.

Are future buildings, infrastructure and critical facilities vulnerable to drought?

No. Future buildings, infrastructure and critical facilities within the County are no more vulnerable to drought than the existing building, infrastructure and critical facilities. As discussed above, buildings do not typically sustain damage from drought. Infrastructure and critical facilities may, in rare cases, be damaged by drought, but very little can be done to prevent this damage.

What are the potential dollar losses to vulnerable structures from drought?

Unlike other natural hazards there are no standard loss estimation models or methodologies for drought. Since drought typically does not cause structure damage, it is unlikely that future dollar losses will be excessive. The primary concern associated with drought is financial impacts that result from loss of crop yields and the potential impacts to drinking water supplies. Since a majority of the County is involved in farming activities, it is likely that there will be future dollar losses to drought. In addition, reduced water levels and the water conservation measures that typically accompany a drought will most likely impact businesses and industries that are water-dependent (i.e., car washes, landscapers etc.).

3.7 EARTHQUAKE

IDENTIFYING THE HAZARD

What is the definition of an earthquake?

An earthquake is a 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). Most earthquakes occur along the boundaries of the earth's tectonic plates. These slow-moving plates are being pulled and dragged in different directions, sliding over, under and past each other. Occasionally, as the plates move past each other, their jagged edges will catch or stick causing a gradual buildup of pressure (energy).

Eventually, the force exerted by the moving plates overcomes the resistance at the edges and the plates snap into a new position. This abrupt shift releases the pent-up energy, producing vibrations or seismic waves that travel outward from the earthquake's point of origin. The location below the earth's surface where the earthquake starts is known as the hypocenter or focus. The point on the earth's surface directly above the focus is the epicenter.

The destruction caused by an earthquake may range from light to catastrophic depending on a number of factors including the magnitude of the earthquake, the distance from the epicenter, the local geologic conditions as well as construction standards and time of day (i.e., rush hour). Earthquake damage may include power outages, general property damage, road and bridge failure, collapsed buildings and utility damage (ruptured gas lines, broken water mains, etc.).

Most of the damage done by an earthquake is caused by its secondary or indirect effects. These secondary effects result from the seismic waves released by the earthquake and include ground shaking, surface faulting, liquefaction, landslides and, in rare cases, tsunamis.

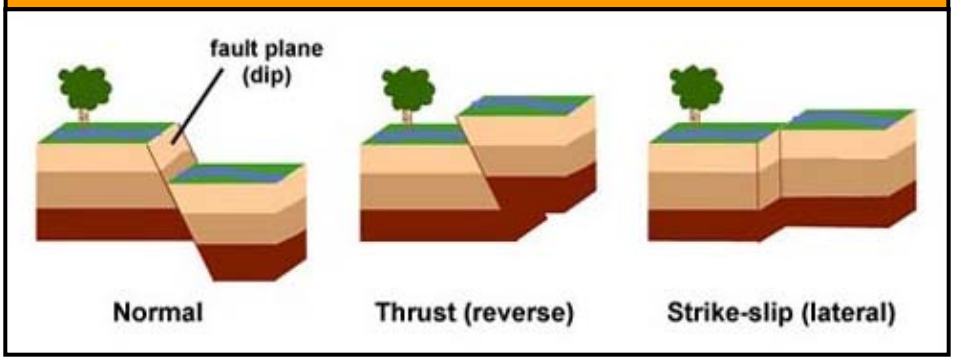
According to the U.S. Geological Survey earthquakes pose a significant risk to more than 75 million Americans in 39 states. Twenty-six urban areas across the United States, including St. Louis, Missouri, are at risk of significant seismic activity. The Federal Emergency Management Agency has estimated future annual earthquake losses in the United States at $5.6 billion a year.

What is a fault?

A fault is a fracture or zone of fractures in the earth's crust between two blocks of rock. They may range in length from a few millimeters to thousands of kilometers. Many faults form along tectonic plate boundaries.

Faults are classified based on the angle of the fault with respect to the surface (known as the dip) and the direction of slip or movement along the fault. There are three main groups of faults: normal, thrust (reverse) and strike-slip (lateral). **Figure 78** provides an illustration of each type of fault.

Figure 78
Fault Illustration



Source: U. S. Geological Survey.

Normal faults occur in response to pulling or tension along the two blocks of rock causing the overlying block to move down the dip of the fault plane. Most of the faults in Illinois are normal faults. Thrust or reverse faults occur in response to squeezing or compression of the two blocks of rock causing the overlying block to move up the dip of the fault plane. Strike-slip or lateral faults can occur in response to either pulling/tension or squeezing/compression causing the blocks to move horizontally past each other.

Geologists have found that earthquakes tend to recur along faults, which reflect zones of weakness in the earth's crust. Even if a fault zone has recently experienced an earthquake, there is no guarantee that all the stress has been relieved. Another earthquake could still occur.

What are tectonic plates?

Tectonic plates are large, irregularly-shaped, relatively rigid sections of the earth's crust that float on the top, fluid layer of the earth's mantle. There are about a dozen tectonic plates that make up the surface of the planet. These plates are approximately 50 to 60 miles thick and the largest are millions of square miles in size.

How are earthquakes measured?

The severity of an earthquake is measured in terms of its magnitude and intensity. A brief description of both terms and the scales used to measure each are provided below.

Magnitude

Magnitude refers to the amount of seismic energy released at the hypocenter of an earthquake. The magnitude of an earthquake is determined from measurements of ground vibrations recorded by seismographs. As a result, magnitude is represented as a single, instrumentally determined value. A loose network of seismographs has been installed all over the world to help record and verify earthquake events.

There are several scales that measure the magnitude of an earthquake. The most well known is the Richter Scale. This logarithmic scale provides a numeric representation of the magnitude of an earthquake through the use of whole numbers and decimal fractions. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold

increase in ground vibrations measured. In addition, each whole number increase corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number. It is important to note that the Richter Scale is used only to determine the magnitude of an earthquake, it does not assess the damage that results.

Once an earthquake's magnitude has been confirmed, it can be classified. **Figure 79** categorizes earthquakes by class based on their magnitude (i.e., Richter Scale value). Any earthquake with a magnitude less than 3.0 on the Richter Scale is classified as a microquake while any earthquake with a magnitude of 8.0 or greater on the Richter Scale is considered a "great" earthquake. Earthquakes with a magnitude of 2.0 or less are not commonly felt by individuals. The largest earthquake to occur in the United States since 1900 took place off the coast of Alaska in Prince William Sound on March 28, 1964 and registered a 9.2 on the Richter Scale.

Figure 79
Earthquake Magnitude Classes

Class	Magnitude (Richter Scale)
micro	smaller than 3.0
minor	3.0 – 3.9
light	4.0 – 4.9
moderate	5.0 – 5.9
strong	6.0 – 6.9
major	7.0 – 7.9
great	8.0 or larger

Source: Michigan Technological University, Department of Geological and Mining Engineering and Sciences, UPSeis

Intensity

Intensity refers to the effect an earthquake has on a particular location. The intensity of an earthquake is determined from observations made of the damage inflicted on individuals, structures and the environment. As a result, intensity does not have a mathematical basis; instead it is an arbitrary ranking of observed effects. In addition, intensity generally diminishes with distance. There may be multiple intensity recordings for a region depending on a location's distance from the epicenter.

Although numerous intensity scales have been developed over the years, the one currently used in the United States is the Modified Mercalli Intensity Scale. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. The lower numbers of the intensity scale are based on human observations (i.e., felt only by a few people at rest, felt quite noticeably by persons indoors, etc).

The higher numbers of the scale are based on observed structural damage (i.e., broken windows, general damage to foundations etc.). Structural engineers usually contribute information when assigning intensity values of VIII or greater. **Figure 80** provides a description of the damages associated with each level of intensity as well as comparing Richter Scales values to Modified Mercalli Intensity Scale values.

Generally the Modified Mercalli Intensity value assigned to a specific site after an earthquake is a more meaningful measure of severity to the general public than magnitude because intensity refers to the effects actually experienced at that location.

Figure 80
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.

Sources: Michigan Technological University, Department of Geological and Mining Engineering and Sciences, UPSeis.
U.S. Geological Survey.

When and where do earthquakes occur?

Earthquakes can strike any location at any time. However, history has shown that most earthquakes occur in the same general areas year after year, principally in three large zones around the globe. The world's greatest earthquake belt, the circum-Pacific seismic belt (nicknamed the "Ring of Fire"), is found along the rim of the Pacific Ocean, where about 81 percent of the world's largest earthquakes occur.

The second prominent belt is the Alpide, which extends from Java to Sumatra and through the Himalayan Mountains, the Mediterranean Sea and out into the Atlantic Ocean. It accounts for about 17 percent of the world's largest earthquakes, including those in Iran, Turkey and Pakistan. The third belt follows the submerged mid-Atlantic Ridge, the longest mountain range in the world, nearly splitting the entire Atlantic Ocean north to south.

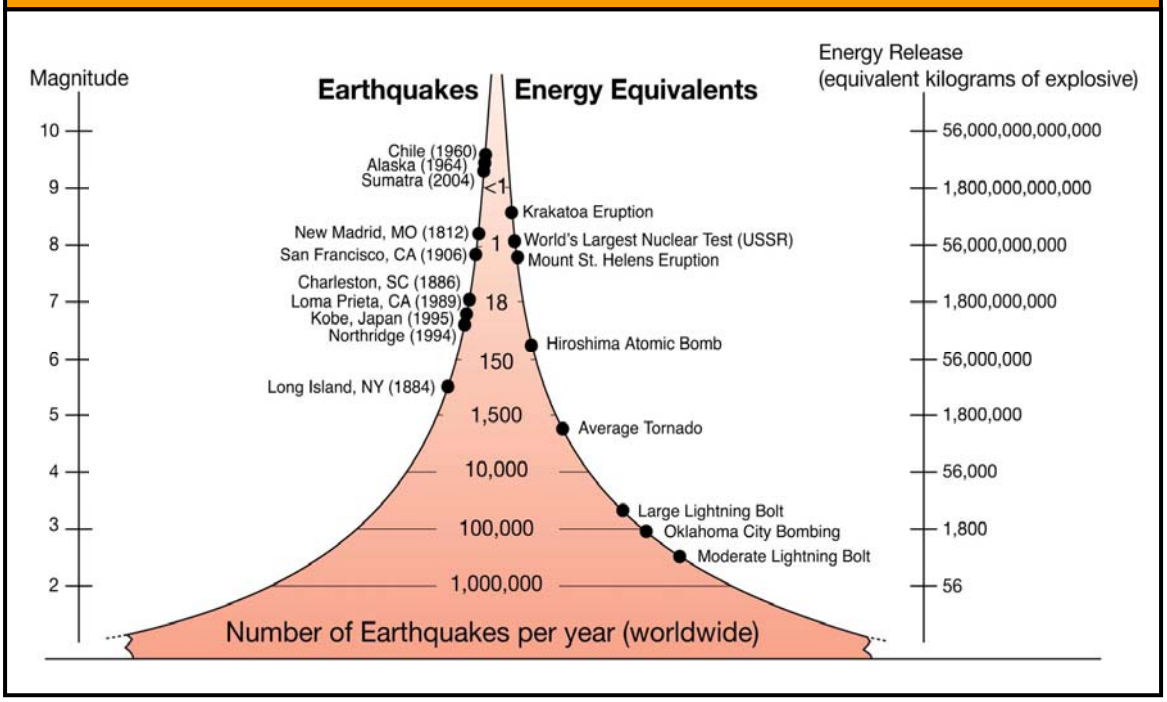
While most earthquakes occur along plate boundaries some are known to occur within the interior of a plate. (As the plates continue to move and plate boundaries change over time,

weakened boundary regions become part of the interiors of the plates.) Earthquakes can occur along zones of weakness within a plate in response to stresses that originate at the edges of the plate or from deep within the earth's crust. The New Madrid earthquakes of 1811 and 1812 occurred within the North American plate.

How often do earthquakes occur?

Earthquakes occur every day. Worldwide, small earthquakes, such as magnitude 2 earthquakes, occur over 2,500 times a day. These earthquakes are known as microquakes and are generally not felt by humans. Major earthquakes, such as magnitude 7 earthquakes, generally occur at least once a month. **Figure 81** illustrates the approximate number of earthquakes that occur worldwide per year based on magnitude. This figure also identifies manmade and natural events that release approximately the same amount of energy for comparison.

Figure 81
Approximate Number of Earthquakes Recorded Annually



Source: Incorporated Research Institutions for Seismology, Education and Outreach Series – Educational One-Pagers, How Often Do Earthquakes Occur?

PROFILING THE HAZARD

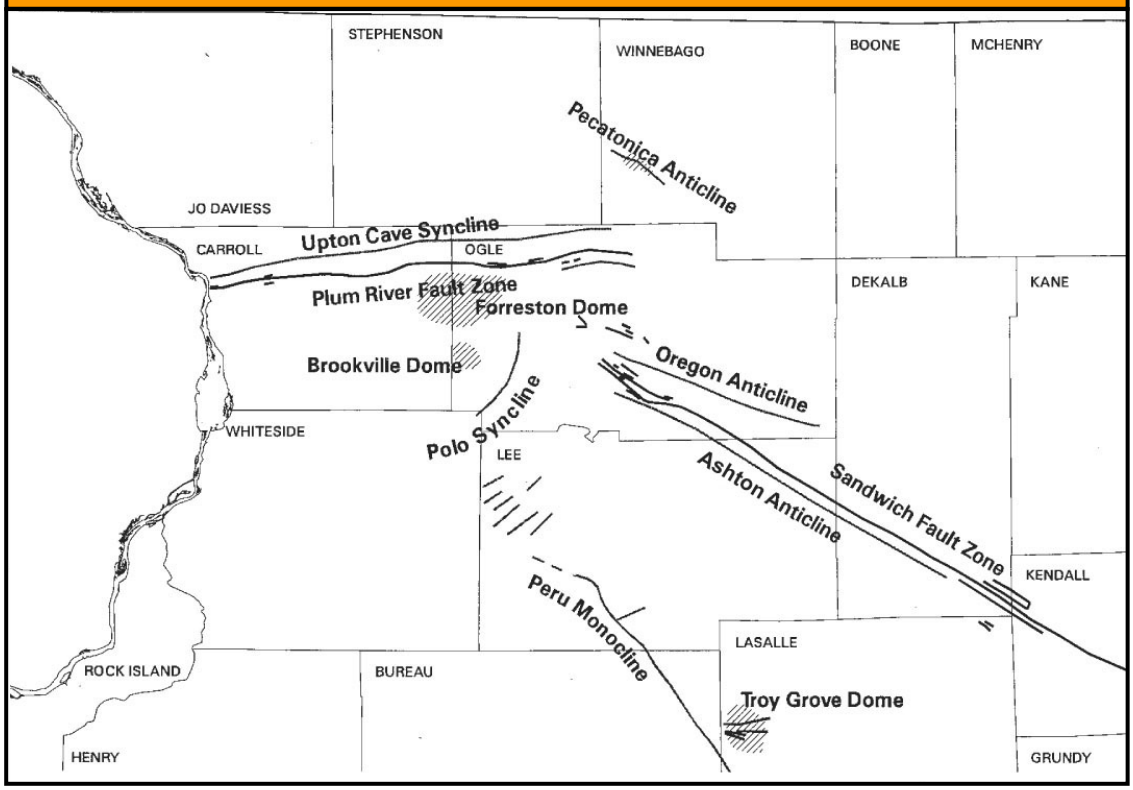
Are there any faults located within the County?

No. However, there are two known fault zones in the region, the Plum River Fault Zone and the Sandwich Fault Zone. **Figure 82** illustrates the location of both fault zones.

The Plum River Fault Zone is 112 miles long and trends slightly northeast across eastern Iowa and northwestern Illinois, from Linn, Iowa to Ogle County, Illinois. It varies in width from a few hundred feet to approximately 3,900 feet.

The Sandwich Fault Zone is the largest fault zone in northern Illinois. It is approximately 85 miles long and runs northwest/southeast across northern Illinois, from central Ogle County to southern Will County. It varies in width from ½ mile to 2 miles.

Figure 82
Geological Structures in Northern Illinois



Source: Illinois State Geological Survey.

When have earthquakes occurred previously? What is the extent of these previous quakes?

Earthquake Fast Facts – Occurrences

Earthquakes Originating in the County (1795 – 2013): ***1***
Fault Zones Located within the County: ***None***
Earthquakes Originating in nearby Counties (1795-2013): 6
Fault Zones Located in Nearby Counties: ***2***

According to the Illinois State Geological Survey (ISGS) *Earthquakes of Illinois: 1795 – 2013* map, one earthquake has originated in Whiteside County during the last 200 years. On October 22, 1909 at 4:30 p.m. CST an earthquake originated in Sterling. The earthquake was originally assessed as a magnitude of 4.0; however this magnitude was determined from epicentral intensity not seismographic data. A recent re-evaluation of the historical data by ISGS determined that this event was more likely a magnitude 3.3 earthquake. Damage information was unavailable for this event.

Whiteside County residents have also felt ground shaking caused by earthquakes that have originated outside of the County. The following provides a brief description, by region, of those events.

Northern Illinois

Several earthquakes have originated in nearby Carroll, Lee and Rock Island Counties. The following provides a brief description of each.

- On January 23, 1928 an earthquake originated in Carroll County approximately one mile east of Argo Fay or seven miles south-southwest of Mount Carroll. This earthquake was originally assessed as a magnitude 3.5; however, a recent re-evaluation of the historical data by ISGS determined that this event was more likely a magnitude 3.1 earthquake. This earthquake does not appear to have been associated with the Plum River Fault Zone. Damage information was unavailable for this event.
- Two earthquakes originated in Lee County and neither appear to be associated with the Sandwich Fault Zone. The first earthquake occurred on September 15, 1972 near Amboy and was originally assessed as magnitude 4.5; however, ISGS re-evaluated this event and determined that it was a magnitude 4.4 earthquake. Minor structural damage, such as cracks in chimneys and plaster, was reported. Ground shaking was felt over most of northern Illinois.

  The second earthquake originated near Dixon on September 2, 1999 and was originally assessed as a magnitude 3.5; however, ISGS re-evaluated the data and determined this event was actually a magnitude 3.7 earthquake. Ground shaking was felt over several counties.
- Three earthquakes originated in Rock Island County in the mid 1930s. The first earthquake occurred in Moline on November 12, 1934 and was originally assessed as a magnitude 4.0; however, a re-evaluation by ISGS determined that it was a magnitude 3.9 earthquake.

  The other two earthquakes occurred five minutes apart on January 5, 1935 in Rock Island. Both earthquakes were originated assess as magnitude 3.4 quakes; however ISGS's re-evaluation determined that both earthquakes were magnitude 3.0.

In addition to these events, there have been approximately two dozen other earthquakes that have occurred in northern Illinois in the last century, though none of them were greater than a magnitude 5.1. These earthquakes generally caused minor damage within 10 to 20 miles of the epicenter and were felt over several counties. Earthquakes greater than a magnitude 5 are generally not expected in this region. The following highlights a few of the other recent earthquakes that have taken place in northern Illinois.

- A magnitude 2.4 earthquake took place on January 30, 2012 on the east side of McHenry in McHenry County. This earthquake was felt mainly in McHenry County and western Lake County.
- On February 10, 2010, a magnitude 3.8 earthquake took place approximately two miles northeast of Virgil in Kane County. This earthquake was felt over much of Illinois, Indiana and central and southern Wisconsin. Some minor structural damage was reported.

- A magnitude 4.2 earthquake took place on June 28, 2004 approximately eight miles northwest of Ottawa in La Salle County. Ground shaking was felt over six states.

The largest earthquake to take place in northern Illinois in the past several hundred years occurred on May 26, 1909. The exact location of this magnitude 5.1 earthquake isn't known, but the greatest damage occurred in and near Aurora where many chimneys fell and gas lines were ruptured. Minor structural damage was reported across northern and central Illinois and southern Wisconsin. Ground shaking was felt over seven states.

Southern Illinois

Whiteside County residents also felt ground shaking caused by several earthquakes that have originated in southeastern Illinois.

- On April 18, 2008, a magnitude 5.4 earthquake was reported in southeastern Illinois near Bellmont in Wabash County. The earthquake was located along the Wabash Valley seismic zone. Minor structural damage was reported in several towns in Illinois and Kentucky. Ground shaking was felt over all or parts of 18 states in the central United States and southern Ontario, Canada.
- A magnitude 5.1 earthquake took place on June 10, 1987 in southeastern Illinois near Olney in Richland County. This earthquake was also located along the Wabash Valley seismic zone. Only minor structural damage was reported in several towns in Illinois and Indiana. Ground shaking was felt over all or parts of 17 states in the central and eastern United States and southern Ontario, Canada.
- The strongest earthquake in the central United States during the 20th century occurred along the Wabash Valley seismic zone in southeastern Illinois near Dale in Hamilton County. This magnitude 5.4 earthquake occurred on November 9, 1968 with an intensity estimated at VII for the area surrounding the epicenter. Moderate structural damage was reported in several towns in south-central Illinois, southwest Indiana and northwest Kentucky. Ground shaking was felt over all or parts of 23 states in the central and eastern United States and southern Ontario, Canada.

Three of the ten largest earthquakes ever recorded within the continental United States took place in 1811 and 1812 along the New Madrid seismic zone. This zone lies within the central Mississippi Valley and extends from northeast Arkansas through southeast Missouri, western Tennessee, western Kentucky and southern Illinois. These magnitude 7.7 and 7.5 major earthquakes were centered near the town of New Madrid, Missouri and caused widespread devastation to the surrounding region and were felt by people in cities as far away as Pittsburgh, Pennsylvania and Norfolk, Virginia.

The quakes locally changed the course of the Mississippi River creating Reelfoot Lake in northwestern Tennessee. These earthquakes were not an isolated incident. The New Madrid seismic zone is one of the most seismically active areas of the United States east of the Rockies. Since 1974 more than 4,000 earthquakes have been recorded within this seismic zone, most of which were too small to be felt.

What locations are affected by earthquakes?

Earthquake events affect the entire County. Earthquakes, like drought and extreme heat, impact large areas, extending beyond county boundaries. Whiteside County's proximity to two earthquake fault zones (the Plum River and the Sandwich) makes the entire area likely to be affected by an earthquake if these faults become seismically active. The *2013 Illinois Natural Hazard Mitigation Plan* classifies Whiteside County's hazard rating for earthquakes as "guarded."

What is the probability of future earthquake events occurring?

As with flooding, calculating the probability of future earthquakes changes depending on the magnitude of the event. According to the ISGS, Illinois is expected to experience a magnitude 3.0 earthquake every year, a magnitude 4.0 earthquake every four years and a magnitude 5.0 earthquake every 20 years. The likelihood of an earthquake with a magnitude of 6.3 or greater occurring somewhere in the central United States within the next 50 years is between 86% and 97%.

ASSESSING VULNERABILITY

Are the participating jurisdictions vulnerable to earthquakes?

Yes. All of Whiteside County is vulnerable to earthquakes. The unique geological formations topped with glacial drift soils found in the central United States conduct an earthquake's energy farther than in other parts of the Nation. Consequently, earthquakes that originate in the Midwest tend to be felt at greater distances than earthquakes with similar magnitudes that originate on the West Coast.

The infrequency of major earthquakes, coupled with relatively low magnitude/intensity of past events, has led the public to perceive that Whiteside County is not vulnerable to damaging earthquakes. This perception has allowed the County and participating municipalities to develop largely without regard to earthquake safety.

What impacts resulted from the recorded earthquake events?

While Whiteside County residents felt the earthquakes that occurred in northern Illinois in 2010, 2004, 1999 and 1972, no damages or injuries were reported. Given the magnitude of the great earthquakes of 1811 and 1812, it is almost certain that individuals in what is now Whiteside County felt those quakes; however historical records do not indicate the intensity or impacts that these quakes had on the County. If another earthquake the magnitude of those recorded in 1811 and 1812 occurs again along the New Madrid seismic zone, the damage that will be experienced in northern Illinois is not expected to be substantial.

Earthquake Fast Facts – Risk

Earthquake Risk/Vulnerability to:

- Public Health & Safety – Moderate Quake: ***Low***
- Public Health & Safety – Great Quake: ***Low***
- Buildings/Infrastructure/Critical Facilities – Moderate Quake: ***Low***
- Buildings/Infrastructure/Critical Facilities – Great Quake: ***Low***

The risk or vulnerability to public health and safety from an earthquake is dependent on the intensity and location of the event. Since there are no known faults in Whiteside County, the likelihood that an earthquake will originate in the County is very small, decreasing the chances for catastrophic damages. Any impacts that are felt by Whiteside County residents will most likely originate from outside the County. However, the fault zones in northern Illinois are not expected to produce an earthquake greater than a magnitude 5 decreasing the likelihood that an earthquake originating in the region will cause significant damage.

As a result the risk or vulnerability to public health and safety is considered to be low. Even if another minor earthquake were to take place in or adjacent to the County, the risk or vulnerability to the public health and safety of residents in Whiteside County is still considered to be low.

What other impacts can result from earthquakes?

Earthquakes can impact human life, health and public safety. **Figure 83** details the potential impacts that may be experienced by the County should a magnitude 6.0 or greater earthquake occur in the region.

Are existing buildings, infrastructure and critical facilities vulnerable to earthquakes?

Yes. All existing buildings, infrastructure and critical facilities located in Whiteside County and the participating municipalities are vulnerable to damage from earthquakes. Unreinforced masonry buildings are most at risk during an earthquake because the walls are prone to collapse outward. Steel and wood buildings have more ability to absorb the energy from an earthquake while wood buildings with proper foundation ties have rarely collapsed in earthquakes.

Depending on the intensity of the earthquake, building damage in Whiteside County could range from negligible to moderate in well-built structures and considerable in poorly-built structures. An earthquake has the ability to damage infrastructure and critical facilities such as roads and utilities. In the event of a strong earthquake, bridges are expected to experience moderate damage such as cracking in the abutments and subsidence of piers and supports. The structural integrity may be compromised to the degree where safe passage is not possible, resulting in adverse travel times as alternate routes are taken. Some rural families may become isolated where alternate paved routes do not exist. In addition, cracks may form in the pavement of key roadways.

Are future buildings, infrastructure and critical facilities vulnerable to earthquakes?

Yes. While five of the participating jurisdictions have building codes in place, these codes do not contain seismic provisions that address structural vulnerability for earthquakes. As a result, there is the potential for future buildings, infrastructure and critical facilities to face some of the same vulnerabilities as those of existing buildings, infrastructure and critical facilities described previously.

What are the potential dollar losses to vulnerable structures from earthquakes?

Since property damage information was either unavailable or none was recorded for the documented earthquake in Whiteside County there is no way to accurately estimate future potential dollar losses to vulnerable structures in the County. In addition, there is insufficient

data available to make useful predictions regarding potential earthquake damages through the use of computer modeling.

Since all structures within the County are vulnerable to damage, it is likely that there will be future dollar losses from a strong earthquake. As a result, participating jurisdictions were asked to consider mitigation projects that could provide wide ranging benefits for reducing the impacts or damages associated with earthquakes.

Figure 83
Potential Earthquake Impacts

Direct	Indirect
Buildings • Temporary displacement of businesses, households, schools and other critical services where heat, water and power are disrupted • Long-term displacement of businesses, households, schools and other critical services due to structural damage or fires *Transportation* • Damages to bridges (i.e., cracking of abutments, subsidence of piers/supports, etc.) • Cracks in the pavement of critical roadways • Increased traffic on Interstate 88, US Route 30, and IL Routes 40, 78, and 84 as residents move out of the area to seek shelter and medical care and as emergency response, support services and supplies move north to aid in recovery • Misalignment of rail lines due to landslides (most likely near stream crossings), fissures and/or heaving *Utilities* • Downed power and communication lines • Breaks in drinking water and sanitary sewer lines resulting in the temporary loss of service • Disruptions in the supply of natural gas due to cracking and breaking of pipelines *Health* • Injuries/deaths due to falling debris and fires *Other* • Cracks in the earthen dams of the lakes and reservoirs within the County which could lead to dam failures	*Health* • Use of County health facilities to treat individuals injured closer to the epicenter • Emergency services (ambulance, fire, law enforcement) may be needed to provide aid in areas where damage was greater *Other* • Disruptions in land line telephone service throughout an entire region (i.e., northern Illinois) • Depending on the seasonal conditions present, more displacements may be expected as those who may have enough water and food supplies seek alternate shelter due to temperature extremes that make their current housing uninhabitable

3.8 DAMS

IDENTIFYING THE HAZARD

What is the definition of a dam?

A dam is an artificial barrier constructed across a stream channel or a man-made basin for the purpose of storing, controlling or diverting water. Dams typically are constructed of earth, rock, concrete or mine tailings. The area directly behind the dam where water is impounded or stored is referred to as a reservoir.

According to the National Inventory of Dams (NID), there are approximately 87,359 dams in the United States and Puerto Rico, with 1,592 dams located in Illinois. (The NID is maintained by the U.S. Army Corps of Engineers and is updated approximately every two years.) Of the 1,592 dams in Illinois, approximately 93% are constructed of earth.

What is the definition of a dam failure?

A dam failure is the partial or total collapse, breach or other failure of a dam that causes flooding downstream. In the event of a dam failure, the people, property and infrastructure downstream could be subject to devastating damages. The potential severity of a full or partial dam failure is influenced by two factors:

- the capacity of the reservoir and
- the extent and type of development and infrastructure located downstream.

There are two categories of dam failures, "flood" or "rainy day" failures and "sunny day" failures. A "flood" or "rainy day" failure usually results when excess precipitation and runoff cause overtopping or a buildup of pressure behind a dam which leads to a breach. Even normal storm events can lead to "flood" failures if debris plugs the water outlets. Given the conditions that lead to a "flood" failure (i.e., rainfall over a period of hours or days), there is usually a sufficient amount of time to warn and evacuate residents downstream.

Unlike a "flood" failure, there is generally no warning associated with a "sunny day" failure. A "sunny day" failure is usually the result of improper or poor dam maintenance, internal erosion, vandalism or an earthquake. This unexpected failure can be catastrophic because it may not allow enough time to warn and evacuate residents downstream.

No one knows precisely how many dam failures have occurred in the United States, however, it is estimated that hundreds have taken place over the last century. Some of the worst failures have caused catastrophic property and environmental damage and have taken hundreds of lives. The worst dam failure in the last 50 years occurred on February 26, 1972 in Buffalo Creek, West Virginia. A tailings dam owned by the Buffalo Mining Company failed, taking the lives of 125 people, injuring 1,100 people, destroying 500 homes and causing more than $400 million in damages.

Dam failures have been documented in every state, including Illinois. According to the Dam Incident Database compiled by the National Performance of Dams Program, there have been 20 reported dam failures in Illinois between 1950 and 2001.

What causes a dam failure?

Dam failures can result from one or more of the following:

- ***prolonged periods of rainfall and flooding*** (the cause of most failures);
- ***inadequate spillway capacity*** resulting in excess flow overtopping the dam;
- ***internal erosion*** caused by embankment or foundation leakage ;
- ***improper maintenance*** (including failure to remove trees, repair internal seepage problems, maintain gates, valves and other operational components, etc.);
- ***improper design*** (including use of improper construction materials and practices);
- ***negligent operation*** (including failure to remove or open gates or valves during high flow periods);
- ***failure of an upstream dam on the same waterway***;
- ***landslides into reservoirs*** which cause surges that result in overtopping of the dam;
- ***high winds*** which can cause significant wave action and result in substantial erosion; and
- ***earthquakes*** which can cause longitudinal cracks at the tops of embankments that can weaken entire structures.

How are dams classified?

Each dam in Illinois is assigned a hazard classification based on the potential for loss of life and damage to property in the event of a dam failure. The three classifications are Class I, Class II and Class III. **Figure 84** provides a brief description of each hazard classification. The hazard classifications used in Illinois are similar to those used by the U.S. Army Corps of Engineers to classify dams listed in the National Inventory of Dams. It is important to note that the hazard classification assigned is not an indicator of the adequacy of the dam or its physical integrity and in no way reflects the current condition of the dam.

Figure 84
Dam Hazard Classification System

Class	Description
Class I	Dams located where failure has a high probability of causing loss of life or substantial economic loss downstream (i.e., a dam located where its failure may cause additional damage to such structures as a home, a hospital, a nursing home, a highly travelled roadway, a shopping center or similar type facilities where people are normally present downstream of the dam).
Class II	Dams located where failure has a moderate probability of causing loss of life or may cause substantial economic loss downstream (i.e., a dam located where its failure may cause additional damage to such structures as a water treatment facility, a sewage treatment facility, a power substation, a city park, a U.S. Route or Illinois Route highway, a railroad or similar type facilities where people are downstream of the dam for only a portion of the day or on a more sporadic basis).
Class III	Dams located where failure has a low probability of causing loss of life, where there are no permanent structures for human habitation, or minimal economic loss downstream (i.e., a dam located where its failure may cause additional damage to agricultural fields, timber areas, township roads or similar type areas where people seldom are present and where there are few structures).

Source: Illinois Administrative Code.

Are there any classified dams owned by any of the participating jurisdictions?

No. There are no classified dams owned by any of the participating jurisdictions.

Are there any other publicly-owned classified dams within the County?

Yes. There are a total of five publicly-owned classified dams within the County. The Illinois Department of Natural Resources (IDNR) and the U.S. Army Corps of Engineers (USACE) both own two dams a piece respectively and the Illinois Department of Transportation (IDOT) owns one dam. **Figure 85** provides a brief description of each dam.

Figure 85
Publicly-Owned Classified Dams Located in Whiteside County

Name	Associated Waterway	Owner	Type	Purpose	Completion Date
Class I					
Lake Carlton Dam	Tributary of Rock Creek	IDNR	Earth	Recreation	1969
Class II					
Mississippi River Dam 13	Mississippi River	USACE Rock Island District	Gravity	Navigation	1939
Class III					
Morrison Rockwood Siltation Pond Dam	Tributary of Rock Creek	IDNR	Earth	Debris Control	1981
Sterling Upper Dam	Rock River	IDNR	Gravity	Other, Hydroelectric	1907
Class Unknown					
Upper Sterling	Rock River	IDOT	Gravity	Hydroelectric, Flood Control	1907

Sources: Diedrichsen, Mike, Illinois Department of Natural Resources, Office of Water Resources.
U.S. Army Corps of Engineers, National Inventory of Dams Interactive Report.

Are there any privately-owned classified dams within the County?

Yes. There are two privately-owned classified dams within Whiteside County. **Figure 86** provides a brief description of each dam.

Figure 86
Privately-Owned Classified Dams Located in Whiteside County

Name	Associated Waterway	Owner	Type	Purpose	Completion Date
Class II					
French Pond Dam	Tributary of Elkhorn Creek	Private	Earth	Recreation	1965
Class III					
Leo Johnson Lake Dam	Tributary of Elkhorn Creek	Private	Earth	Recreation	1962

Sources: Diedrichsen, Mike, Illinois Department of Natural Resources, Office of Water Resources.
U.S. Army Corps of Engineers, National Inventory of Dams Interactive Report.

PROFILING THE HAZARD

When have dam failures occurred previously? What is the extent of these previous dam failures?

According to the data from Stanford University's National Performance of Dams Program Dam Incident Database and discussions with Planning Committee members there are no known recorded dam failures in Whiteside County.

Dam Failure Fast Facts – Occurrences

Number of Dam Failures Reported: ***None***

What locations are affected by dam failure?

Dam failures have the potential to impact Fulton, Morrison, Sterling, Rock Falls and unincorporated areas of Whiteside County. **Figure 87** shows the locations of the publically and privately-owned classified dams in Whiteside County.

What is the probability of future dam failure events occurring?

Since none of the dams have experienced a dam failure, it is difficult to specifically establish the probability of a future failure; however, it is estimated to be relatively low.

ASSESSING VULNERABILITY

Are the participating jurisdictions vulnerable to dam failures?

Yes. Fulton, Morrison, Sterling, Rock Falls and portions or unincorporated Whiteside County are vulnerable to the dangers presented by dam failures. However, none of the rest of the County or participating municipalities are considered vulnerable.

What impacts resulted from the recorded dam failures?

Since there have been no *recorded* dam failures in Whiteside County, there are no recorded impacts to report. In terms of the risk or vulnerability to public health and safety from a dam failure, there are several factors that must be taken into consideration including the severity of the event, the capacity of the reservoir and the extent and type of development and infrastructure located downstream. When these factors are taken into consideration, the overall risk to public health and safety posed by a dam failure in Whiteside County is low.

Dam Failure Fast Facts – Risk

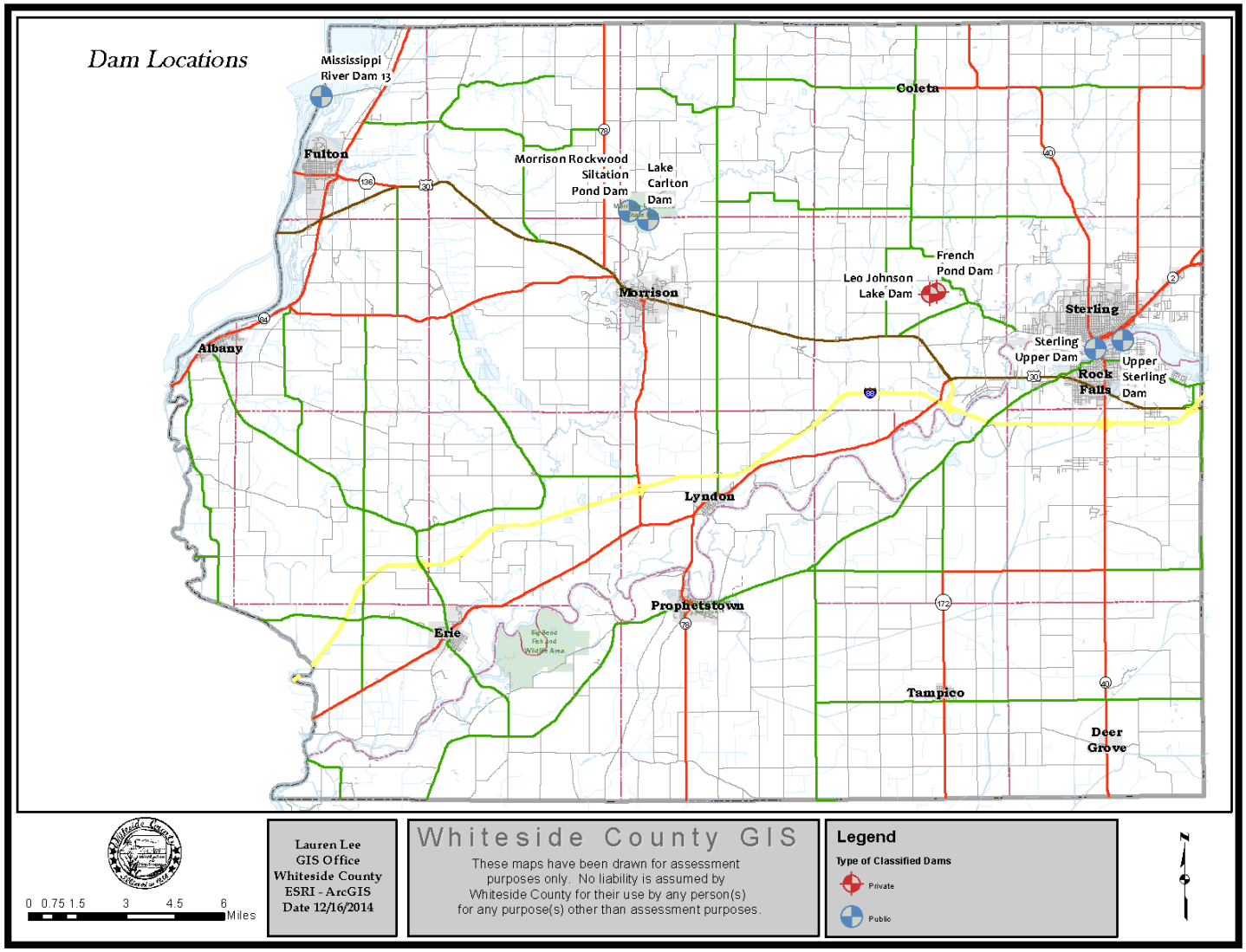
Dam Failure Risk/Vulnerability to:

- Public Health & Safety: – ***Low***
- Buildings/Infrastructure/Critical Facilities: – ***Low***

What other impacts can result from dam failures?

The impacts from a dam failure are similar to those of a flood. There is the potential for injuries, loss of life, property damage and crop damage. Depending on the type of dam failure, there may be little, if any warning that an event is about to occur, similar to flash flooding. As a result, one of the primary threats to individuals is from drowning. Motorists who choose to drive over flooded roadways run the risk of having their vehicles swept off the road and downstream.

Figure 87
Locations of Classified Dams in Whiteside County



Flooding of roadways is also a major concern for emergency response personnel who would have to find alternative routes around any section of road that becomes flooded due to a dam failure.

In addition to concerns about injuries and death, the water released by a dam failure poses the same biological and chemical risks to public health as floodwaters. The flooding that results from a dam failure has the potential to force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological contaminants into buildings and basements and onto roads and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew, which can pose a health hazard, especially for small children, the elderly and those with specific allergies.

Flooding from dam failures can also cause chemical contaminants such as gasoline and oil to enter floodwaters if underground storage tanks or pipelines crack and begin leaking during a dam failure event. Depending on the time of year, the water released by a dam failure may also carry away agricultural chemicals that have been applied to farm fields and cause damage to or loss of crops.

Are existing buildings, infrastructure and critical facilities vulnerable to dam failures?

Yes. While Emergency Action Plans were not available for any of the classified dams, a visual inspection of the area surrounding several of these dams indicates that there are buildings and infrastructure that are vulnerable to dam failures.

Depending on whether there is a full or partial dam failure, all of the vulnerable buildings, infrastructure and critical facilities may be inundated by water and structural damage may result. Because none of the reservoirs within the County are immense in size, the damage sustained from dam failure flooding may not be to the structure, but to the contents of the building or nearby infrastructure.

In addition to impacting structures, a dam failure can damage roads and utilities. Roadways, culverts and bridges can be weakened by dam failure floodwaters and may collapse under the weight of a vehicle. Power and communication lines, both above and below ground, are also vulnerable to dam failure flooding. Depending on their location and the velocity of the water as it escapes the dam, power poles may be snapped causing disruptions to power and communication. Water may also get into any buried lines causing damage and disruptions.

As with public health and safety, the risk or vulnerability to buildings, infrastructure and critical facilities is dependent on several factors including the severity of the event, the capacity of the reservoir and the extent and type of development and infrastructure located downstream. In general, the risk from a dam failure in Whiteside County is relatively low.

Are future buildings, infrastructure and critical facilities vulnerable to dam failures?

Yes. Any future buildings, infrastructure and critical facilities located within the flood path of a classified dam are vulnerable to damage from a dam failure. As a result, future buildings,

infrastructure and critical facilities face the same vulnerabilities as those of existing buildings, infrastructure and critical facilities described previously.

What are the potential dollar losses to vulnerable structures from dam failures?

Unlike other hazards, there are no standard loss estimation models or methodologies for dam failures. Given that there have been no recorded dam failures in Whiteside County, sufficient information was not available to prepare a reasonable estimate of future potential dollar losses to vulnerable structure from dam failures.

3.9 LEVEES

IDENTIFYING THE HAZARD

What is the definition of a levee?

In general, the U.S. Army Corps of Engineers (USACE or the Corps) defines a "levee" as an earthen embankment, floodwall or structure along a water course whose purpose is flood risk reduction or water conveyance. Levees are typically not designed to hold back water for extended periods of time, rather they are meant to provide temporary flood protection from seasonal high water, precipitation and other weather events. While levees reduce the risk from a flooding event, they do not eliminate it. There is always the chance a flood will exceed the capacity of a levee, no matter how well it is built.

The Mississippi and Illinois River valleys were largely transformed from permanent, seasonal wetlands to highly productive agricultural lands by the construction of levees and the organization of drainage districts between 1879 and 1916.

What is the definition of a breach?

A breach is a rupture, break or gap in a levee which causes previously contained water to flood the land behind a levee. If the levee breach is identified as a "failure breach" then the cause of the breach is known and occurred without overtopping. In order for a breach to be termed a failure breach, an investigation is usually required to determine the cause.

What is the definition of overtopping?

Overtopping occurs when the water levels contained by the levee exceed the levee's crest elevation and flood the land behind the levee. The flooding occurs from overflow/overwash (waves) and other sources. In most cases overtopping may damage the levee but not compromise it. If the levee is compromised because of overtopping then it is identified as an "overtopping breach."

What causes a levee breach?

Levee breaches can result from one or more of the following:

- ***erosion of the crown and land-side face of the levee*** caused by overtopping (the higher the velocity of flow over the levee, the more quickly that erosion will occur and cause a failure of the levee);
- ***sand boils and piping*** resulting from the relatively fast passage of flood waters through permeable materials under the base of the levee to the land behind the levee (depending on the amount of sand and soil transported by the waters from the base to the surface, the levee may settle unevenly, crack or even completely fail);
- ***seepage and saturation*** (prolonged exposure to water will cause levee materials to become saturated, leading to seepage and sloughing of the soil on land-side face of the levee and resulting in the loss of slope stability and ultimately failure of the levee);
- ***erosion of the river-side slope of the levee*** as a result of wave action caused by wind and/or commercial or recreational vessels over a long period of time (most Illinois levees

are constructed of sand and alluvial materials, both of which are among the easiest materials to erode);

- ***structural failures*** at gates, walls or closure structures;
- ***improper maintenance*** (including failure to maintain gates, walls or closure structures; remove trees; fill in holes created by burrowing animals, etc.); and
- ***earthquakes*** which can cause loss of soil strength and destabilize the levee and foundation materials.

Who is responsible for regulating levees?

This is no single agency with responsibility for levee oversight nationwide. The USACE has specific and limited authorities for approximately 2,000 levees across the country, totaling 14,000 miles. While the Corps serves as one of the nation's largest infrastructure stewards, the misperception exists that the USACE has universal responsibility for the nation's levees. There are three different classifications of levees:

- ***Federally Authorized Levees***. A levee typically designed and built by the Corps in cooperation with a local sponsor, then turned over to the local sponsor (i.e. drainage district) to operate, maintain, repair and replace the levee.
- ***Non-Federally Authorized Levees***. A levee designed and built by a non-federal agency, which is responsible for the operation, maintenance, repair and replacement of the levee.
- ***Private or Corporate-Owned Levees***. A levee designed and built by a private citizen, company or other public entity, which is responsible for the operation, maintenance, repair and replacement of the levee. The Corps has no responsibility for this type of levee.

What is a drainage district?

A drainage district is a local unit of government formed by area landowners to "…construct, maintain or repair drains or levees or to engage in other drainage or levee work for agricultural, sanitary or mining purposes" (70 ILCS 605/3-1). Drainage districts may be organized by petition or referendum and are approved by the circuit court of the county in which the greater part of the district lies.

Each district is usually governed by three drainage commissioners, although there are districts in Illinois that have as many as five drainage commissioners. The drainage commissioners may be any adult who resides in Illinois and owns land within the district's boundaries. Commissioners are either appointed by the county or elected.

Drainage districts are funded through assessments. Each benefited landowner in a district is assessed a fee for the maintenance and upkeep of the district. Under the Illinois Drainage Code, a district which is organized to maintain levees shall include the term "drainage and levee district" in its name.

Are there any Mississippi River drainage and levee districts in Whiteside County?

Yes. According to the US Army Corps of Engineers National Levee Database there are two active Mississippi River drainage and levee districts (D&LD) located in Whiteside County that operate and maintain levees. **Figure 88** provides information on each district.

Figure 88
Mississippi River Drainage and Levee Districts – Whiteside County

Drainage & Levee District	Levee Classification	Year Completed	Land Protected (Acres)	Length of Levee(s) (Miles)	Level of Protection	Inspection Rating
Fulton	Federal	1979	10,869	10.6	200 years	Minimally Acceptable
Meredosia*	Federal	1977	10,334	3.4	100 years	Minimally Acceptable

* D&LD extends between Rock Island and Whiteside Counties.

Source: US Army Corps. of Engineers, National Levee Database.

A third drainage and levee district, Penny Slough Drainage and Levee District, was identified in Whiteside County along the Rock River. However, according to the US Army Corps of Engineers the D&LD received an "unacceptable" rating during their last inspection in 2012 and the system has been placed on "inactive" status. As a result, it is not included in the following discussions.

PROFILING THE HAZARD

When have levee breaches occurred previously? What is the extent of these previous levee breaches?

There have been no recorded levee breaches along the Mississippi River in Whiteside County.

Levee Breach Fast Facts – Occurrences

Number of Levee Breaches Reported: ***None***

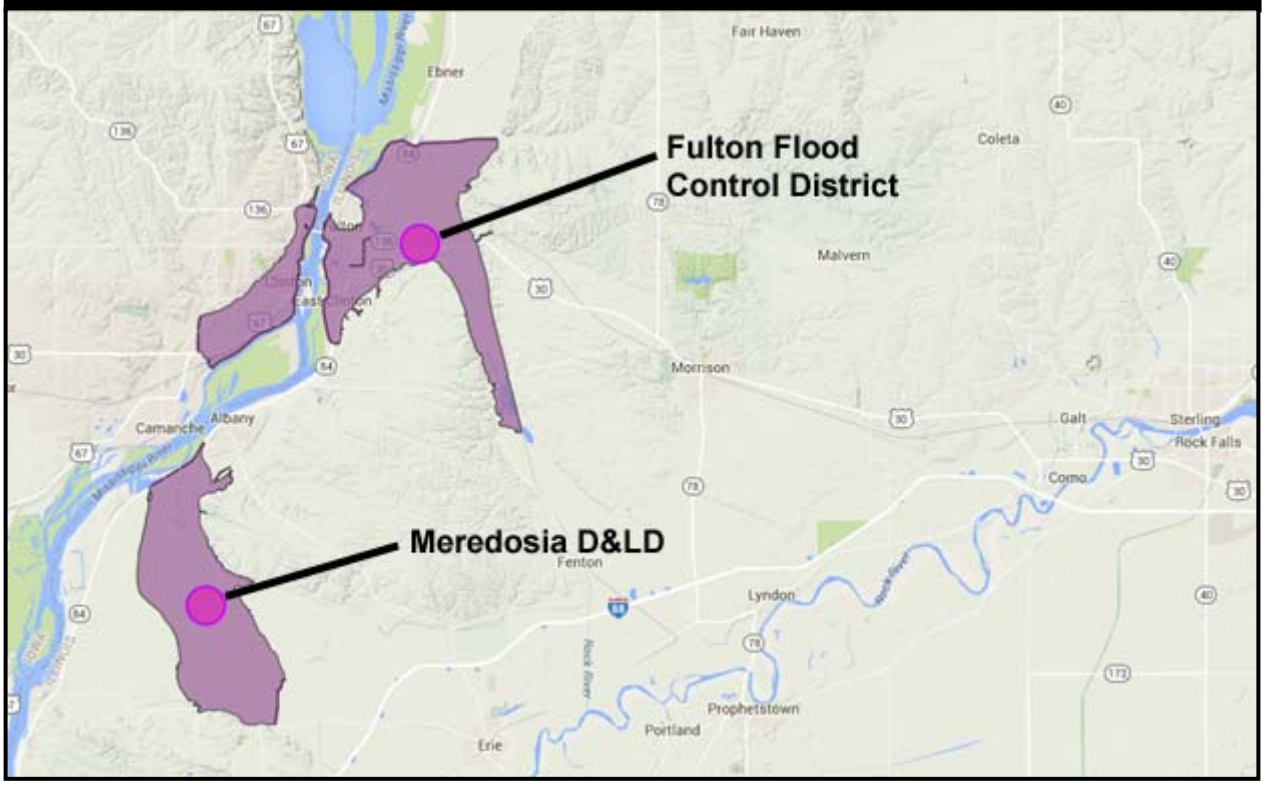
What locations are affected by levee breaches?

Levee breaches within the drainage and levee districts have the potential to affect Fulton and unincorporated areas of Whiteside County along the Mississippi River. **Figure 89** illustrates the locations of the drainage and levee districts in Whiteside County.

What is the probability of future levee breach events occurring?

There are several factors that must be considered when calculating the probability of future levee breaches including whether a breach has occurred previously, the age and current conditions of the levee, whether proper maintenance is ongoing and the magnitude of the event. Since none of the levees in Whiteside County have experienced a breach it is difficult to specifically establish the probability of future levee breaches; however, it is estimated to be relatively low.

Figure 89
Locations of Mississippi River Drainage and Levee Districts – Whiteside County



ASSESSING VULNERABILITY

Are the participating jurisdictions vulnerable to levee breaches?

Yes. Fulton and portions of unincorporated Whiteside County adjacent to the Mississippi River are vulnerable to the dangers presented by levee breaches. However, none of the rest of the County or participating municipalities are considered vulnerable.

What impacts resulted from the recorded levee breaches?

Since there have been no *recorded* levee breaches in Whiteside County, there are no recorded impacts to report. In terms of the risk or vulnerability to public health and safety from a levee breach, there are a couple of factors that must be taken into consideration including the magnitude or severity of the precipitating event (whether an earthquake or flooding), the extent and type of development and infrastructure protected by the levee and the amount of time available to enact emergency measures such as evaluations. When all of the factors are taken into consideration, the risk to public health and safety posed by a levee breach in Whiteside County is considered low to medium.

Levee Failure Fast Facts – Risk

Levee Breach Risk/Vulnerability to:

- Public Health & Safety: – ***Low to Medium***
- Buildings/Infrastructure/Critical Facilities: – ***Low to Medium***

What other impacts can result from levee breaches?

Aside from causing damage to buildings, infrastructure and critical facilities, floodwaters released due to a levee breach also pose biological and chemical risks to public health. Flooding can force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological contaminants into buildings and basements and onto roads and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew which can pose a health hazard, especially for small children, the elderly and those with specific allergies. Flooding also has the potential to contaminate drinking water sources used for both human and livestock consumption.

Flooding resulting from a levee breach can also cause chemical contaminants such as gasoline and oil to enter the floodwaters if underground storage tanks or pipelines crack and begin leaking during an event. Depending on the time of year, floodwaters also may carry away agricultural chemicals that have been applied to farm fields.

Are existing buildings, infrastructure and critical facilities vulnerable to levee breaches?

Yes. Buildings, infrastructure and critical facilities located within the drainage and levee districts are vulnerable to levee breaches. With the exception of a portion of Fulton, most of the area within the districts is farmland with only a few residences and farmsteads.

Depending on the magnitude of the breach, all of the vulnerable buildings, infrastructure and critical facilities may be inundated by water and structural and content damage may result. In addition to impacting structures, a levee breach can damage roads and utilities. Roadways, culverts and bridges can be weakened by levee breach floodwaters and may collapse under the weight of a vehicle. Power and communication lines, both above and below ground, are also vulnerable to levee breach flooding. Depending on their location and the velocity of the water as it escapes the levee, power poles may be snapped causing disruptions to power and communication. Water may also get into any buried lines causing damage and disruptions.

As with public health and safety, the risk or vulnerability to buildings, infrastructure and critical facilities is dependent on a couple factors including the magnitude or severity of the precipitating event (whether an earthquake or flooding), the extent and type of development and infrastructure protected by the levee and the amount of time available to implement emergency measures such as sandbagging. In general, the risk to existing buildings, infrastructure and critical facilities from a levee breach in Whiteside County is considered low to medium.

Are future buildings, infrastructure and critical facilities vulnerable to levee breaches?

Yes. Any future buildings, infrastructure and critical facilities located within the drainage and levee districts are vulnerable to damage from a levee breach. As a result, future buildings, infrastructure and critical facilities face the same vulnerabilities as those of existing buildings, infrastructure and critical facilities described previously.

What are the potential dollar losses to vulnerable structures from levee breaches?

Unlike other hazards, there are no standard loss estimation models or methodologies for levee breaches. Given that there have been no recorded levee breaches in Whiteside County, sufficient information is not available to prepare a reasonable estimate of future potential dollar losses to vulnerable structures from levee breaches within the County.

3.10 MAN-MADE HAZARDS

While the process to develop this Plan focused on natural hazards, the Planning Committee recognized that man-made hazards can also pose risks to public health and property. The extent and magnitude of the impacts that result from man-made hazard events can be influenced by natural hazard events. For example, severe winter storms can cause accidents involving trucks transporting hazardous substances. These accidents may lead to the release of these substances which can result in injury and potential contamination of the natural environment.

Consequently, the Planning Committee decided to profile the more prominent man-made hazards in Whiteside County. The man-made hazards assessed in this Plan include:

- Hazardous Substances
  - Generation
  - Transportation
  - Storage/Handling
- Waste Disposal
- Hazardous Material Incidents
- Waste Remediation
- Terrorism

3.10.1 Hazardous Substances

Hazardous substances broadly include any flammable, explosive, biological, chemical, or physical material that has the potential to harm public health or the environment. For the purposed of this Plan, the term hazardous substance includes hazardous product and hazardous waste. A hazardous waste is defined as the byproduct of a manufacturing process that is either listed or has the characteristics of ignitability, corrosivity, reactivity or toxicity and cannot be reused. A hazardous product is all other hazardous material.

Hazardous substances can pose a public health threat to individuals at their workplace and where they reside. The type and quantity of the substance, the pathway of exposure (inhalation, ingestion, dermal, etc.), and the frequency of exposure are factors that will determine the degree of adverse health effects experienced by individuals. Impacts can range from minor, short-term health issues to chronic, long-term illnesses.

In addition to impacting public health, hazardous substances can also cause damage to buildings, infrastructure and the environment. Accidents involving hazardous substances can range from minor (scarring on building floors and walls) to catastrophic (i.e., destruction of entire buildings, structural damage to roadways, etc.) and lead to injuries and fatalities. The number of accidents involving hazardous substances in Illinois and across the Nation every year underscores the need for trained and equipped emergency responders to minimize damages.

Since 1970, significant changes have occurred in regards to how hazardous substances are transported and disposed. Comprehensive regulations and improved safety and industrial hygiene practices have reduced the frequency of incidents involving hazardous substances. Based on the small number of facilities in Whiteside County that generate and use hazardous substances, the population size, transportation patterns, and land use, the probability of a release occurring in Whiteside County should remain relatively low compared to other counties in Illinois. The relatively low numbers of transportation accidents should not diminish municipal or county commitment to emergency management.

The following subsections identify the general pathways – generation, transportation and storage/handling – by which hazardous substances pose a risk to public health and the environment in Whiteside County.

3.10.1.1 Generation

Whiteside County has approximately seven (7) facilities that generate hazardous substances as a result of their operations according to the Illinois Environmental Protection Agency (IEPA). **Figure 90** identifies the hazardous substance generators located in Whiteside County and summarizes the substances generated.

Figure 90
Generators of Solid & Liquid Hazardous Substances – 2012

Name	Hazardous Substances Generated	Amount Generated (Pounds)
Fulton		
Timken Drives LLC 901 19th Ave.	Ammonia Methanol	498 138
	Total:	*636*
Rock Falls		
IFH Group, Inc. 3300 E. US Route 30	Manganese	21
Micro Industries 200 W. Second St.	Manganese	21
Sterling		
Dana Driveshaft Manufacturing 2001 Eastwood Dr.	Manganese	11
Frantz Manufacturing 2585 Edwardsville Rd.	Ammonia	n/a
Sterling Steel 101 Avenue K	Chromium Compounds Lead Manganese Compounds Mercury Zinc	59,943 124,233 1,070,884 41 3,943,261
	Total:	*5,198,362*
Wahl Clipper Corp. 2900 N. Locust St.	Chromium Nickel Manganese Phenol	10,792 14,420 14,384 2,738
	Total:	*42,334*

Source: U.S. Environmental Protection Agency, TRI Explorer, Releases: Facility Report.

There are an additional three (3) additional facilities that have permits from the IEPA to generate hazardous substances: General Electric CEP, 709 Wall Street, Morrison; K Mart, Store 3105, 2901 E. 4th Street, Sterling; and Crop Production Services, Inc., 24009 Lincoln Road, Sterling.

3.10.1.2 Transportation

Roadways

Illinois has the nation's third largest highway system with over 139,000 miles of highways, streets, and roads and over 26,400 bridges. Most of the truck traffic in Whiteside County is carried on I-88, an east-west highway which connects Whiteside County to the Quad Cities and Chicago. Other major roadways that carry truck traffic include U.S. Route 30, IL Route 78, IL Route 84 and IL Route 2. While this modern roadway system provides convenience and efficiency for commuters, it also aids in-state and intra-state commerce which includes the transportation of hazardous substances. A Commodity Flow Study to gauge chemical transport has not yet been conducted for Whiteside County.

According to records obtained from the IEPA and the Illinois Emergency Management Agency (IEMA), there were nine (9) recorded roadway accidents involving the shipment of hazardous waste and/or products in Whiteside County from 2004 through 2013. **Figure 91** provides information on these accidents.

Figure 91
Roadway Accidents Involving Shipments of Hazardous Products: 2004 – 2013

Date	Area	Location	Hazardous Product Released
7/25/2005	Lyndon[^]	IL Rte. 78 & Moline Rd.	Road Paint
1/6/2008	Rock Falls[^]	I-88 eastbound on the US 30 exit ramp	Ethanol
5/8/2008	Rock Falls[^]	2675 E. Riverdale Rd. & US 30	G-Max Lite Herbicide
11/26/2008	Coleta[^]	IL Rte. 40 & Genesee Rd.	Manure
8/11/2009	Morrison[^]	Henry Rd. and Prairie Center Rd.	Sodium Hydrosulfide
9/17/2009	Erie[^]	I-88 Milepost 12	Detergent
3/7/2011	Rock Falls[^]	Hoover Rd. & I-88 overpass	Hydraulic Fluids
4/14/2013	Prophetstown[^]	IL Rte. 78 4 miles south of the City	Seed Corn treated with Apron Max Fungicide
12/20/2013	Rock Falls[^]	I-88 Milepost 34	Sulfuric Acid (road flares)

[^] Accident verified in the vicinity of this location.

Railways

Illinois' rail system is the country's second largest, with the East St. Louis and Chicago terminals being two of the nation's busiest. In Whiteside County there are two main rail lines: Burlington Northern Santa Fe and Union Pacific.

Since 2000, hazardous substances moving through Illinois have accounted for between six (6) and ten (10) percent of the total freight traffic. Annual tonnage of hazardous substances moving through Illinois has varied in recent years between 30 million tons to 47 million tons. In comparison, the Association of American Railroads estimates that approximately six (6) percent of all rail traffic in the United States involves the movement of hazardous substances.

The Illinois Commerce Commission (ICC) is required to maintain records on railway accidents which involve hazardous substances. Their records are divided into three categories. These three categories are described in **Figure 92**.

Figure 92 Railroad Accident Classification Categories	
Category	**Description**
A	railroad derailments resulting in the release of the hazards substance(s) being transported
B	railroad derailments where hazards substance(s) were being transported but no release occurred
C	releases of hazardous substance(s)s from railroad equipment occurred, however no railroad derailment was involved

Since 2004, there have been four (4) rail accidents involving hazardous substances in Whiteside County according to the ICC. In comparison, ICC records indicate that since 2004 the annual number of railway accidents in Illinois involving hazardous substances has ranged between 35 and 113. **Figure 93** provides a breakdown by category of the railway accidents/incidents involving hazardous substances that have occurred in Whiteside County as well as in Illinois.

Figure 93
(Sheet 1 of 2)
Railway Accidents/Incidents Involving Hazardous Substances: 2004 – 2013

Year	Category	Accident/Incident Location			
		Illinois	Whiteside County	Cook & Collar Counties	All Other Counties
2004	A	16	0	6	10
	B	4	0	2	2
	C	57	0	30	27
2005	A	11	0	4	7
	B	8	0	3	5
	C	57	0	29	28
2006	A	6	0	1	5
	B	12	0	6	6
	C	95	0	58	37
2007	A	7	0	5	2
	B	10	1	8	2
	C	81	1	46	35
2008	A	7	0	4	3
	B	4	0	2	2
	C	62	0	38	24
2009	A	5	0	1	4
	B	5	0	3	2
	C	25	0	14	11
2010	A	3	0	2	1
	B	20	0	17	3
	C	80	0	42	38
2011	A	8	0	1	7
	B	10	0	9	1
	C	60	1	33	27

Figure 93
(Sheet 2 of 2)
Railway Accidents/Incidents Involving Hazardous Substances: 2004 – 2013

Year	Category	Accident/Incident Location			
		Illinois	Whiteside County	Cook & Collar Counties	All Other Counties
2012	A	4	0	2	2
	B	13	0	11	2
	C	73	0	42	31
2013	A	5	0	3	2
	B	23	1	16	7
	C	82	0	51	31

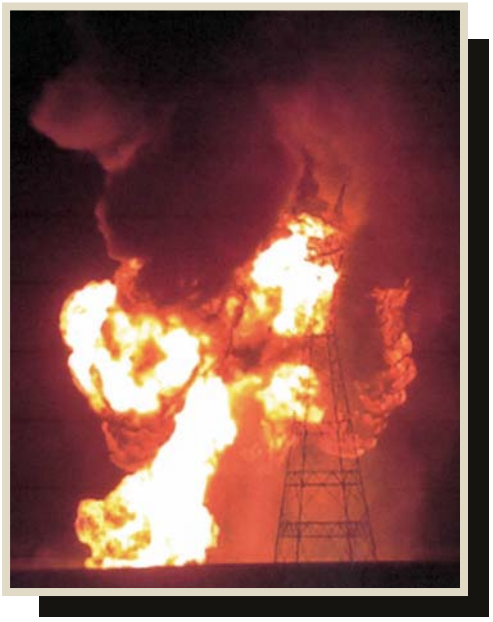
Source: Illinois Commerce Commission.

The top 20 hazardous substances moved by rail through Illinois include: sodium hydroxide, petroleum gases (liquefied), sulfuric acid, anhydrous ammonia, chlorine, sulfur, vinyl chloride, propane, fuel oil, denatured alcohol, methanol, gasoline, phosphoric acid, hydrochloric acid, styrene monomer, carbon dioxide (refrigerated liquid), ammonium nitrate, sodium chlorate, and diesel fuel.

Pipelines

Energy gases (natural gas and liquefied petroleum gas), petroleum liquids (crude oil and gasoline) and liquid and gas products used in industrial processes are carried in above-ground and buried pipelines across Illinois. In Whiteside County, there are five (5) major pipelines that carry natural gas (Alliance Pipeline, Alliant Energy, Jo-Carroll Energy, Natural Gas Pipeline Company of North America and Northern Border Pipeline Co.) Four (4) major pipelines carry crude oil, gasoline or hazardous liquids (Enterprise Products Operating LLC, Kinder Morgan, Magellan Pipeline Co. and Oneok NGL Pipeline).

Six (6) pipeline releases occurred in Whiteside County during a ten year study period from 2004 through 2013. Four of these releases involved natural gas while the other two involved propane or a mixtures that included propane. No injuries or fatalities occurred as a result of any of these release; however three resulted in evacuations. **Figure 94** details the location, commodity released and number/type of evacuations.



A pipeline release of a propane and ethane mixture on August 13, 2013 resulted in an explosion and fire near Erie that led to evacuations within a one mile radius of the release. Photo taken at Albany Rd. & I-88.

Photograph courtesy of William Lukehart

Figure 94
Pipeline Releases in Whiteside County: 2004 - 2013

Date	Location	Hazardous Substances Released	Evacuations
10/15/2007	Tampico	Natural Gas	---
2/28/2008	Deer Grove	Natural Gas	---
12/16/2010	Fulton	Natural Gas	---
11/7/2011	Tampico	Propane	unspecified number
5/7/2013	Rock Falls	Natural Gas	3 residents; sheltering in place of a nursing home & closure of one road
8/13/2013	Erie	Propane & Ethane Mixture	explosion & fire resulted in evacuations within a one mile radius of the release

Source: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

There have been several high profile incidents across the Nation, including one in Illinois, that have raised public concerns about our aging pipeline infrastructure. The following provides a brief description of each incident.

- On July 26, 2010 a 30-inch liquid product pipeline rupture near Marshall, Michigan and released at least 840,000 gallons of oil into a creek that led to the Kalamazoo River, a tributary of Lake Michigan.
- Soon afterward on September 9, 2010, another pipeline release received national attention. A 34-inch liquid product pipeline in the Chicago Suburb of Romeoville, Illinois released over 360,000 gallons of crude oil that flowed through sewers and into a retention pond narrowly avoiding the Des Plaines River. This release triggered numerous odor complaints from residents in the adjacent municipalities of Lemont and Bolingbrook. The property damage/cleanup costs were estimated at $46.6 million.
- Also on September 9, 2010, a 30-inch high pressure natural gas pipeline ruptured in the San Francisco suburb of San Bruno, California that resulted in an explosion that killed eight people, destroyed over 30 homes and damaged an entire neighborhood. The property damage was estimated at around $55 million.
- On March 12, 2014 a gas main rupture in Manhattan, New York that resulted in an explosion that killed eight people and leveled two multi-use, five story buildings.

Continual monitoring and maintenance of these pipelines is necessary to prevent malfunctions from corrosion, aging, or other factors that could lead to a release. In addition, to normal wear and tear experienced by pipelines, the possibility of sabotage and seismic activity triggering a release must be considered when considering emergency response scenarios.

3.10.1.3 Storage/Handling

Beyond knowing where hazardous substances are generated and the methods and routes used to transport them, it is important to identify where hazardous substances are handled and stored. This information will help government officials and emergency management professionals make informed choices on how to better protect human health, property and the environment and what

resources are needed to should an incident take place. Information on the types of Extremely Hazardous Substances (EHS) handled and/or stored within the County was obtained from IEMA's Tier Two Reports and IEPA's Resource Conservation & Recovery Act (RCRA) Permits.

An "Extremely Hazardous Substance" is any USEPA-identified chemical that could cause serious, irreversible health effects from an accidental release. There are approximately 400 chemicals identified as EHSs. Stationary sources who possess one or more of these substances at or above threshold planning quantities area required to notify IEMA.

Figure 95 identifies the types of Extremely Hazardous Substances and the facilities that store and handle them. Aside from EHSs, there are other chemicals, such as water reactives, that can pose risks that are equal to or greater than the risks posed by EHSs. These risks can be identified through a Commodity Flow Study or a Threat and Hazard Identification and Risk Assessment (THIRA)

Figure 95
Extremely Hazardous Substances by Tier II Facility

Facility Name	Extremely Hazardous Substance
Morrison	
Rock River Lumber & Grain	Anhydrous Ammonia
Prophetstown	
Rock River Lumber & Grain	Anhydrous Ammonia
Sterling	
AT&T	Sulfuric Acid
Dana Driveshaft	Sulfuric Acid
Frantz	Anhydrous Ammonia Sulfuric Acid
Praxair	Sulfuric Acid
Wahl Clipper Corp.	Anhydrous Ammonia Sulfuric Acid
Tampico	
Tampico Elevator	Anhydrous Ammonia

Source: Illinois Emergency Management Agency, Tier II Hazardous Chemical Reports.

3.10.2 Waste Disposal

Solid Waste

Waste disposal has caused surface water and ground water contamination in Illinois and across the Nation. Beginning in the late 1970s substantial regulatory changes strengthened the design, operating and monitoring requirements for landfills where the majority of waste is disposed. These regulatory changes have helped reduce the public health threat posed by landfills. Although the rise in recycling activity has reduced the amount of waste disposed, the majority of solid waste (waste generated in households) continues to be disposed of in landfills. As of January 1, 2013 there were 41 landfills operating in Illinois.

According IEPA's Annual Landfill Capacity Report issued in July 2014, there is one commercial landfill currently operating in Whiteside County. Prairie Hill Recycling and Disposal Facility is a county-owned facility near Morrison that is operated by Waste Management of Illinois, Inc. This landfill is projected to have approximately 18 years of capacity remaining based on the current disposal rate.

There are currently five Illinois landfills that serve Whiteside and the adjacent counties. These landfills are:

- Lee County Landfill Incorporated near Dixon (Lee County);
- Advanced Disposal Services Orchard Hills Landfill Inc., in Davis Junction (Ogle County);
- Rochelle Municipal Landfill No. 2 (Ogle County);
- Upper Rock Island County Landfill in East Moline (Rock Island County), and
- Quad Cities Phase IV Landfill in Milan (Rock Island County)

There are currently no off-site hazardous waste treatment or disposal facilities located in Whiteside County.

3.10.3 Hazardous Material Incidents

Hazardous materials, also known as hazardous substances, broadly include any flammable, explosive, biological, chemical, or physical material that has the potential to harm public health or the environment. A hazardous material or HazMat incident refers to any accident involving the release of hazardous substances. These accidents can take place where the substances are used, generated or stored or while they are being transported. In addition, HazMat incidents also include the release of hazardous substances, such as fuel, used to operate vehicles. These releases can be the result of an accident or a leak. **Figure 96**, located at the end of this section, provides information on the HazMat incidents recorded in Whiteside County.

From 2004 through 2013, there were 94 HazMat incidents recorded in Whiteside County. Of these incidents, approximately 65% occurred at fixed facilities and approximately 35% involved transportation accidents.

Based on the recorded incidents, ***Whiteside County experienced an average of 10 HazMat incidents annually***. The types of existing industries; the major transportation corridors through the County which include interstate highways, rail and barge; and chemical use within and adjacent to the County suggest that HazMat incidents are likely to continue to take place at the rate reflected in the 10-year study period. Constant vigilance, proper training and equipment, and prompt response are needed to minimize the potential impacts of each incident.

3.10.4 Waste Remediation

Hazardous waste remediation in Illinois is primarily handled through two programs: the federal Superfund program and the state Site Remediation Program. Sites that pose the largest threat to public health and the environment are typically found in the Superfund program. Most other hazardous waste sites are handled through the Site Remediation Program.

Superfund(CERLCA) Program/National Priorities List
Since the advent of the national Superfund program in 1981, there have been 52 Superfund sites in Illinois. There are ***no sites*** in Whiteside County being ***managed through the Superfund program***:

Illinois Site Remediation Program (non-Superfund)
Sites that do not qualify for the federal Superfund program, but where hazardous waste exists that poses a risk to public health and the environment, are regulated through the Illinois Site Remediation Program (SRP). Since the mid-1980s, remediation activities have been conducted and monitored at nearly 4,000 sites in Illinois. When inspections and sampling results indicate that remediation objectives have been achieved, the IEPA issues a No Further Remediation (NFR) Letter to the property owner. This letter describes what remediation activities have been taken and whether any portion of the property, based on future property use, might need additional remediation.

There are ***30 SRP sites*** in Whiteside County. Approximately 50% of these SRP sites have received NFR letters or are nearly complete with their remediation activities. Only eight (8) of these sites are active and none of these pose an immediate threat to public health or the environment.

Leaking Underground Storage Tank Program
Petroleum products leaking from underground storage tanks are regulated through the Leaking Underground Storage Tank (LUST) Program. This program began in the late 1980s as a result of the threats posed by vapors in homes and businesses, contaminated groundwater, and contaminated soil. In Illinois over 14,500 acres of soil contaminated by leaking underground tanks have been remediated since 1988.

In Whiteside County there are ***111 cases involving remediation of leaks and contaminated soil*** through this Program. Approximately 95% of these sites have received No Further Remediation (NFR) Letters or remediation is virtually complete. Six (6) sites in Whiteside County received a "high priority classification," and all of these sites have received an NFR letter. There are only five (5) LUST sites where substantial work needs to be completed.

3.10.5 Terrorism

Terrorism has different definitions across the globe. For the purpose of this Plan, terrorism will be defined as any event that includes ***violent acts*** which ***threaten or harm lives, health or property*** conducted by ***domestic or foreign*** individuals or groups ***aimed at civilians, the federal government or symbolic locations*** intended to ***cause widespread fear***.

The attack on the World Trade Center and the Pentagon on September 11, 2001 by foreign terrorists galvanized national action against terrorism and resulted in the creation of the United States Department of Homeland Security. While the number of terrorist activities garnering national attention in the U.S. has been relatively small, approximately 80,000 terrorist events have occurred worldwide between 1970 and 2007, according to the National Consortium for the Study of Terrorism and Responses to Terrorism (the Consortium). During this same time span, the Consortium documented 1,347 terrorist events within the U.S. The greatest number of these

events occurred in New York (266), Miami (70), San Francisco (66), Washington (59) and Los Angeles (54). There are approximately 40 terrorist groups that have been documented as operating within the U.S.

Acts of terrorism have resulted in fatalities and injuries as a result of kidnappings, hijackings, bombings, and the use of chemical and biological weapons. The Global Terrorism Database has documented 18 fatalities and 44 injuries attributed to terrorism in the United States since 2000. The attack on the World Trade Center and the Pentagon on September 11, 2001 resulted in nearly 3,000 additional fatalities and an estimated 12,000 injuries.

The Federal Bureau of Investigation's (FBI) provides supporting documentation on domestic terrorist attacks between 1970 and 2005 in a series of reports on terrorism. These reports provide a chronological summary of terrorist incidents in the United States with detailed information on attacks between 1980 and 2005. During this time period 192 incidents were documented within the United States. Five of these incidents occurred in Illinois; four in the Chicago area and one downstate.

In the past several years there have been other terrorism incidents in Illinois that have received media coverage. In 2001, a suspected terrorist with possible ties to al-Qaeda was apprehended after engaging in communication and fiscal activities in support of terrorism in the Peoria and Macomb areas. Most recently a single individual from Macon County sought to carry out his anger at the federal government by detonating a van filled with explosive outside of the Federal Courthouse in Springfield on September 24, 2009. This attempt was thwarted by the FBI.

It is impossible to predict with any reasonable degree of accuracy how many terrorism events might be expected to occur in Whiteside County or elsewhere in Illinois. Although targets for terrorist activity are more likely centered in larger urban areas, recruitment, training and other support activities, such as the one described above, are as likely to occur in rural areas as in urban areas.

The economic resources available to some terrorist groups coupled with the combination of global tensions, economic uncertainty and frustration towards government appear to have recently raised the frequency of attempts. Enhanced efforts by law enforcement officials and civilian vigilance for unusual activity or behavior will be needed to repel terrorists whether they are domestic or foreign in origin.

Figure 96
(Sheet 1 of 3)
HazMat Incidents in Whiteside County: 2004 – 2013

Date	Location	Hazardous Substances Released
2004		
1/6	Rock Falls	Diesel Fuel
1/8	Sterling	Gear Oil
3/19	Rock Falls	Diesel Fuel
4/13	Prophetstown	Gasoline
5/11	Albany^ – Mississippi River	Waste Oil*
8/3	Tampico^	Diesel Fuel
10/10	Rock Falls^	Diesel Fuel
10/27	Albany	Gasoline
11/4	Rock Falls	Sewer Water
2005		
1/19	Sterling^	Factory Water
5/3	Galt	Diesel Fuel
7/5	Sterling	Hydraulic Oil
7/25	Lyndon^	Road Paint†
10/4	Rock Falls	Radioactive Substance
2006		
1/19	Rock Falls	Gasoline
9/14	Sterling	Hydraulic Oil
2007		
1/12	Deer Grove^	Motor Oil, Hydraulic Oil & Diesel Fuel
2/14	Sterling^	Crankcase Oil
4/29	Sterling	Diesel Fuel
5/12	Morrison^	Natural Gas
9/28	Sterling	Heating Oil
10/11	Sterling	Gasoline
10/15	Tampico^	Natural Gas
11/8	Lyndon^	Anhydrous Ammonia
11/28	Rock Falls	Motor Oil
2008		
1/6	Rock Falls^	Ethanol†
2/11	Sterling^	Diesel Fuel
3/19	Albany^	Sludge
5/8	Rock Falls^	G-Max Lite Herbicide†
7/16	Rock Falls^	Petroleum Product
8/20	Coleta^	Liquid Manure
9/22	Morrison	Gasoline
11/26	Coleta^	Liquid Manure†
12/3	Fulton^	Diesel Fuel

^ Incident verified in the vicinity of this location.
* Incident involved the transportation of a hazardous substance by barge.
† Incident involved the transportation of a hazardous substance by roadway.

Figure 96
(Sheet 2 of 3)
HazMat Incidents in Whiteside County: 2004 – 2013

Date	Location	Hazardous Substances Released
2009		
2/12	Rock Falls	Diesel Fuel
3/20	Rock Falls	Gasoline
4/2	Sterling^	Diesel Fuel
6/22	Morrison	Transformer Oil
8/11	Morrison^	Sodium Hydrosulfide†
9/17	Erie^	Detergent†
11/2	Sterling^	Diesel Fuel
11/20	Sterling^	Diesel Fuel
11/23	Sterling	Diesel Fuel
11/28	Sterling^	Antifreeze
2010		
4/1	Sterling^	Diesel Fuel
4/12	Coleta^	Anhydrous Ammonia
4/13	Prophetstown	Gasoline
6/24	Rock Falls	Waste Oil
7/10	Erie^	Diesel Fuel
7/29	Sterling^	Diesel Fuel
9/7	Fulton^	Diesel Fuel
9/14	Sterling^	Diesel Fuel
10/9	Sterling^	Diesel Fuel
11/17	Sterling^	Diesel Fuel
2011		
1/13	Sterling	Diesel Fuel
2/1	Rock Falls^	Diesel Fuel
2/11	Sterling^	Diesel Fuel
3/7	Rock Falls^	Hydraulic Fluid†
3/18	Sterling^	Diesel Fuel
5/1	Sterling^	Diesel Fuel
5/13	Sterling^	Diesel Fuel
5/28	Sterling^	Diesel Fuel
6/3	Sterling^	Diesel Fuel
6/4	Sterling^	Diesel Fuel
6/12	Sterling^	Diesel Fuel
6/26	Sterling^	Diesel Fuel
7/18	Rock Falls	Diesel Fuel & Gasoline
7/20	Sterling^	Diesel Fuel
7/29	Sterling^	Diesel Fuel
8/3	Sterling^	Diesel Fuel
8/18	Sterling^	Diesel Fuel
9/27	Sterling^	Diesel Fuel
9/27	Rock Falls	Gasoline

^ Incident verified in the vicinity of this location.
† Incident involved the transportation of a hazardous substance by roadway.

Figure 96
(Sheet 3 of 3)
HazMat Incidents in Whiteside County: 2004 – 2013

Date	Location	Hazardous Substances Released
2011 Continued…		
11/7	Tampico^	Propane
11/14	Sterling	Oil
11/16	Fulton	Gasoline
2012		
4/6	Prophetstown^	Nitrogen Fertilizer
8/2	Rock Falls	Heating Oil
8/14	Rock Falls	Gasoline, Kerosene & Diesel Fuel
9/18	Albany	Gasoline
2013		
1/10	Sterling	Gasoline
4/17	Prophetstown^	Seed Corn treated with Apron Max Fungicide†
4/20	Fenton^	Diesel Fuel
4/22	Tampico	Fuel Oil
5/1	Morrison^	Anhydrous Ammonia
5/7	Rock Falls	Natural Gas
5/9	Rock Falls^	Diesel Fuel
7/17	Sterling	Heating Oil
8/13	Erie^	Propane
8/30	Fulton	Gasoline
11/8	Prophetstown	Gasoline & Diesel Fuel
12/19	Sterling	Diesel Fuel
12/20	Rock Falls^	Road Flares (sulfuric acid)†

^ Incident verified in the vicinity of this location.
† Incident involved the transportation of a hazardous substance by roadway.

4.0 MITIGATION STRATEGY

4.0 MITIGATION STRATEGY

The mitigation strategy identifies how participating jurisdictions are going to reduce or eliminate the potential loss of life and property damage that results from the natural and man-made hazards identified in the Risk Assessment section of this Plan. The strategy includes:

- Developing mitigation goals. Mitigation goals describe the objective(s) or desired outcome(s) that the participants would like to accomplish in term of hazard and loss prevention. These goals are intended to reduce or eliminate long-term vulnerabilities to natural and man-made hazards.
- Identifying a comprehensive range of jurisdiction-specific mitigation actions including those related to continued compliance with the National Flood Insurance Program. Mitigation actions are projects, plans, activities or programs that achieve at least one of the mitigation goals identified.
- Analyzing and prioritizing mitigation actions.
- Implementing and administering mitigation actions.

A detailed discussion of each aspect of the mitigation strategy is provided below.

4.1 MITIGATION GOALS

The first step in the mitigation strategy was to develop a set of mitigation goals. Based on early communications with Planning Committee members, the consultant developed a preliminary list of eight hazard mitigation goals. This list was distributed at the first meeting Committee Meeting held on July 7, 2014. Members were asked to review the goals before the second meeting and consider whether any changes needed to be made or if additional goals should be included. At the Planning Committee's October 30, 2014 meeting the group discussed the preliminary goals and approved them with no changes or additions. **Figure 97** identifies the approved mitigation goals.

Figure 97
Hazard Mitigation Goals

Goal 1	Educate people about the hazards (natural and man-made) 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 and man-made 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 and man-made hazards.
Goal 4	Incorporate natural and man-made hazard mitigation into community plans and regulations.
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 and man-made hazards.
Goal 8	Protect historic, cultural, and natural resources from the effects of natural and man-made hazards.

4.2 IDENTIFICATION OF MITIGATION ACTIONS

Following the development of the mitigation goals, the Planning Committee members were asked to consult with their respective jurisdictions to identify a comprehensive range of mitigation actions that would meet the specific needs and risks associated with their jurisdiction.

Representatives of the following jurisdictions were also asked to identify mitigation actions that would address their continued compliance with the National Flood Insurance Program.

- Erie
- Fulton
- Morrison
- Prophetstown
- Rock Falls
- Sterling
- Whiteside County

The compiled lists of new mitigation actions were reviewed to assure the appropriateness and suitability of each action. Those actions that were not deemed appropriate and/or suitable were either reworded or eliminated.

4.3 ANALYSIS OF MITIGATION ACTIONS

The mitigation actions identified by each jurisdiction were then assigned to one of six broad mitigation activity categories which allowed Planning Committee members to compare and consolidate similar actions. **Figure 98** identifies each category and provides a brief description.

Figure 98
Types of Mitigation Activities

Category	Description
Regulatory Activities (RA)	Regulatory activities are designed to reduce a jurisdiction's vulnerability to specific hazard events. These activities are especially effective in hazard prone areas where development has yet to occur. Examples include: planning and zoning, floodplain regulations and local ordinances (i.e., building codes, etc.).
Structural Projects (SP)	Structural projects lessen the impact that a hazard has on a particular structure through design and engineering. Examples include: storm sewers, road and bridge projects, storm/tornado shelters, flood walls and seismic retrofits.
Public Information & Awareness (PI)	Public information and awareness activities are used to educate individuals about the potential hazards that affect their community and the mitigation strategies that they can take part in to protect themselves and their property. Examples include: outreach programs, school programs, brochures and handout materials, evacuation planning and drills, volunteer activities (i.e., culvert cleanout days, initiatives to check on the elderly/disabled during hazard events, etc.).
Studies (S)	Studies are used to identify activities that can be undertaken to reduce the impacts associated with certain hazards. Examples include: hydraulic and drainage studies.
Miscellaneous Projects (MP)	Miscellaneous projects is a catchall for those activities or projects that help to reduce or lessen the impact that a hazard may have on a critical facility or community service. Examples include: snow fences, generators, warning sirens, etc.
Property Protection (PP)	Property protection activities are designed to retrofit existing structures to withstand natural hazards or to remove structures from hazard prone areas. In Illinois, this category of activities primarily pertains to flood protection. Examples include: acquisition, relocation, elevation, insurance (i.e., flood, homeowners, etc.) and retrofitting (i.e., impact resistant windows, etc.).

Each mitigation action was then analyzed to determine:

- the hazard or hazards being mitigated;
- the degree to which the impacts associated with a particular hazard(s) would be mitigated (i.e., reduced or eliminated);
- the general size of the population affected (i.e., small, medium or large);
- the goal or goals fulfilled;
- whether the action would reduce the effects on new or existing buildings and infrastructure; and
- whether the action would ensure continued compliance with the National Flood Insurance Program.

4.4 PRIORITIZATION OF MITIGATION ACTIONS

Next the Planning Committee members worked together with the consultant to develop a method to prioritize each action. **Figure 99** identifies and describes the four-tiered prioritization methodology adopted by the Planning Committee. The methodology developed provides a means of objectively determining which actions have a greater likelihood of eliminating or reducing the long-term vulnerabilities associated with the most frequently-occurring natural hazards.

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

Figure 99
Mitigation Action Prioritization Methodology

		Hazard	
		Most Significant Hazard **(M)** (i.e., severe storms, severe winter storms, floods, tornadoes)	Less Significant Hazard **(L)** (i.e., extreme heat, drought, earthquakes, dam failures, levee breaches)
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 significant hazards	**HL** mitigation action will virtually eliminate damages and/or significantly reduce the probability of fatalities and injuries from less significant 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 significant hazards	**LL** mitigation action has the potential to reduce damages, fatalities and/or injuries from less significant hazards

4.5 IMPLEMENTATION & ADMINISTRATION OF MITIGATION ACTIONS

Finally, each participating jurisdiction was asked to identify how the mitigation actions will be implemented and administered. This included:

- Identifying the party or parties responsible for oversight and administration.
- Determining what funding source(s) are available or will be pursued.
- Describing the time frame for completion.

In addition, a preliminary qualitative cost/benefit analysis was conducted on each mitigation action. The costs and benefits were analyzed in terms of the general overall cost to complete an action as well as the action's likelihood of permanently eliminating or reducing the risk associated with a specific hazard. The general descriptors of high, medium and low were used. These terms are not meant to translate into a specific dollar amount, but rather to provide a relative comparison between the actions identified by each jurisdiction.

This analysis is only meant to give the participants a starting point to compare which actions are likely to provide the greatest benefit based on the financial cost and staffing effort needed. It is understood that when a grant application is submitted for a specific action, a detailed cost/benefit analysis will most likely be required to receive funding.

4.6 RESULTS OF MITIGATION STRATEGY

Figures 100 through **110**, located at the end of this section, summarize the results of the mitigation strategy. The mitigation actions are arranged by participating jurisdiction and include both existing and new actions.

Figure 100
(Sheet 1 of 5)
Whiteside County Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
ESDA												
HM	Purchase and install storm warning siren(s) at Morrison-Rockwood State Park.	SS, T	MP	Reduces	Small	2	n/a	n/a	ESDA	2-3 years	TBD	Low/High
LM	Secure a Memorandum of Agreement with the Illinois Department of Natural Resources prior to installation if storm warning siren(s) will be placed within Morrison-Rockwood State Park.	SS, T	RA	Reduces	Small	2	n/a	n/a	ESDA	2-3 years	County	Low/High
HM	Purchase and install storm warning siren systems in unincorporated communities and subdivisions within the County.	SS, T	MP	Reduces	Small	2	n/a	n/a	ESDA	TBD	TBD	Medium/High
HM	Purchase and install an automated telephone warning system (reverse 911) to notify residents/responders county-wide of emergency information.	EH, EQ, F, SS, SWS, T	MP	Reduces	Large	2	n/a	n/a	ESDA / 911	1-3 years	TBD	Medium/High
LM	Develop and implement a community outreach program that informs residents about the risks to life and property associated with each of the hazards that affect Whiteside County and the proactive actions that they can take to reduce or eliminate their risk.	DF, EH, EQ, F, SS, SWS, T	PI	Reduces	Large	1, 2	Yes	Yes	ESDA	1-3 years	TBD	Low/High
HM	Identify and designate heating/cooling centers in unincorporated Whiteside County.	EH, SWS	MP	Reduces	Medium	2	n/a	n/a	ESDA	1 year	County	Low/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	MMH	Man-Made Hazards
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 100
(Sheet 2 of 5)
Whiteside County Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
ESDA Continued…												
HM	Identify special needs populations within the County in order to provide assistance during natural hazard events.	DF, EH, EQ, F, SS, SWS, T	PI	Reduces	Medium	2, 4	n/a	n/a	ESDA / LEPC	1-3 years	TBD	Low/High
HM	Purchase and install automatic emergency backup generators at critical County facilities to provide uninterrupted power and maintain operations during power outages.	DF, EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	ESDA	3 years	TBD	Medium/High
HM	Purchase and install automatic emergency backup generators at long term care and other critical health care facilities within the County to provide uninterrupted power to critical systems during power outages.	EH, EQ, F, SS, SWS, T	MP	Eliminates	Small	2, 3, 5	n/a	Yes	ESDA	3 years	TBD	Medium/High
LM	Secure a Memorandum of Agreement with private long term care and other critical health facilities to install automatic emergency backup generators.	EH, EQ, F, SS, SWS, T	RA	Reduces	Small	2, 3, 5	n/a	Yes	ESDA	3 years	County	Low/High
LM	Devote a section of the County's website to the EMA in order to provide residents with electronic access to county-specific information on natural and man-made hazards.	DF, EH, EQ, F, MMH, SS, SWS, T	PI	Reduces	Large	1, 2	Yes	Yes	ESDA / IT	1-3 years	TBD	Low/High
LM	Conduct county-wide hazardous substances commodity flow analysis.	MMH	S	Reduces	Medium	2, 3, 5	n/a	Yes	ESDA	1-3 years	75% Federal 25% Local	Low/Medium

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	MMH	Man-Made Hazards
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 100
(Sheet 3 of 5)
Whiteside County Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
EDA Continued…												
LM	Develop an emergency response/action plan detailing how displaced pets will be accommodated during and after natural hazard events.	DF, EH, EQ, SS, SWS, T	S	Reduces	Medium	2	n/a	n/a	ESDA	1-3 years	TBD	Low/Medium
LM	Update the County Hazardous Materials Response Team's training and replace or upgrade personal protective equipment up through Level A as needed.	MMH	MP	Reduces	Small	2	n/a	n/a	ESDA	TBD	TBD	Low/High
Highway Department												
HM	Install landscape (living snow fences)/man-made barriers to maintain access to critical facilities and ease hazardous driving conditions along select County-owned roadways including, but not limited to: - Sand Road from Albany to Garden Plain Rd. - Frog Pond Rd. from Garden Plain Rd. to US 30 - Lyndon Rd. from US 30 to the County line - Coleta Rd. from Holly Rd. to the County line - Emerson Rd. from US 30 to Sterling - Yorktown Rd. from the County line to Star Rd.	SWS	MP	Reduces	Medium	2, 3, 5	n/a	Yes	Highway Department	Ongoing	TBD	Low/Medium

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	MMH	Man-Made Hazards
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 100
(Sheet 4 of 5)
Whiteside County Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
Highway Department Continued…												
LM	Conduct drainage/hydraulic study to determine the appropriate remedy to alleviate recurring roadway flooding issues on Emerson Rd., approx.. 1 ½ miles east of US 30.	F, SS	S	Reduces	Small	2, 3, 5	n/a	Yes	Highway Department	TBD	TBD	Low/Medium
HM	Select, design and construct the appropriate remedy to alleviate recurring roadway flooding issues on Emerson Rd., approx.. 1 ½ miles east of US 30.	F, SS	SP	Reduces	Small	2, 3, 5	n/a	Yes	Highway Department	TBD	TBD	Medium/Medium
LM	Conduct hydraulic study to determine the appropriate remedy(s) to prevent further streambed erosion and migration of Little Rock Creek into Sawyer Rd. (approx.. 900 ft. north of Spring Valley Rd.).	F, SS, SWS	S	Reduces	Small	2, 3, 5	n/a	Yes	Highway Department	TBD	TBD	Low/Medium
HM	Select, design and construct the appropriate remedy(s) to prevent further streambed erosion and migration of Little Rock Creek into Sawyer Rd. (approx.. 900 ft. north of Spring Valley Rd.).	F, SS, SWS	SP	Reduces	Small	2, 3, 5	n/a	Yes	Highway Department	TBD	TBD	High/Medium
LM	Conduct drainage/hydraulic study to determine the appropriate remedy(s) to alleviate recurring roadway flooding from the Rock River at Prophet Rd. near its intersection with Luther Rd.	F, SS, SWS	S	Reduces	Small	2, 3, 5	n/a	Yes	Highway Department	TBD	TBD	Low/Medium

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	MMH	Man-Made Hazards
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 100
(Sheet 5 of 5)
Whiteside County Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
Highway Department Continued…												
HM	Select, design and construct the appropriate remedy(s) to alleviate recurring roadway flooding from the Rock River at Prophet Rd. near its intersection with Luther Rd.	F, SS, SWS	SP	Reduces	Small	2, 3, 5	n/a	Yes	Highway Department	TBD	TBD	High/Medium
Zoning Department												
LM	Make the most recent Flood Insurance Rate Maps available to assist the public in considering where to construct new buildings.*	F	RA	Reduces	Medium	1, 2, 6, 7	Yes	Yes	Zoning Department	TBD	County	Low/High
LM	Make County officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	PI	Reduces	Small	1, 2, 3 5, 6, 7	Yes	Yes	Zoning Department	TBD	County	Low/Medium
LM	Provide information materials to public officials and the public about the National Flood Insurance Program's voluntary Community Rating System.*	F	PP	Reduces	Medium	1, 2, 3, 5, 6, 7	Yes	Yes	Zoning Department	TBD	County	Low/Medium

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	MMH	Man-Made Hazards
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 101
Coleta Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Purchase and install storm warning siren(s).	SS, T	MP	Reduces	Large	2	n/a	n/a	Village Board	TBD	TBD	Medium/High
LM	Purchase NOAA weather radios and distribute to Village residents.	EH, F, SS, SWS, T	MP	Reduces	Large	2	n/a	n/a	Village Board	TBD	TBD	Low/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 102
Deer Grove Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Designate the Village Hall/Township Building as a heating/cooling center for use by residents.	EH, SWS	MP	Reduces	Medium	2	n/a	n/a	Village Board	TBD	Village	Low/High
HM	Purchase portable backup generator for use at Village Hall/Township Building (designated heating and cooling center) to provide uninterrupted power during power outages.	EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	Village Board	TBD	TBD	Medium/High
LM	Purchase and install electric hookups at Village Hall/Township Building (designated heating and cooling center) for use with portable backup generator to provide uninterrupted power during power outages.	EH, EQ, F, SS, SWS, T	MP	Reduces	Medium	2, 3, 5	n/a	Yes	Village Board	TBD	TBD	Low/Medium

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 103
Erie Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Construct a dike/levee along the southeastern edge of the Village to address recurring flooding issues associated with the Rock River.	F, SS, SWS	SP	Reduces	Medium	2, 3, 5	Yes	Yes	Village Board	TBD	TBD	High/High
HM	Improve storm sewer system to alleviate drainage problems and better manage stormwater.	F, SS, SWS	SP	Reduces	Medium	2, 3, 5	Yes	Yes	Village Board	TBD	75% Federal 25% Local	Medium/High
HM	Upgrade/retrofit drinking water treatment facility to better protect it from natural hazard events.	EQ, F, SS, SWS, T	SP	Reduces	Large	2, 3, 5	n/a	Yes	Village Board	TBD	TBD	Medium/Medium
LM	Make the Village's most recent Flood Insurance Rate Maps available at Village Hall to assist individuals interested in constructing new buildings within the City.*	F	PI	Reduces	Small	1, 2, 6, 7	Yes	n/a	Village Board	1 year	City	Low/High
LM	Make Village officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	RI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	Village Board	1 year	City	Low/Medium
LM	Make informational materials available about the National Flood Insurance Program's voluntary Community Rating System.*	F	PI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	Village Board	1 year	City	Low/Low

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 104
(Sheet 1 of 3)
Fulton Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Upgrade lift station at 5th Ave. and 11th St. to maximize operating reliability, increase capacity and better manage wastewater in an effort to alleviate drainage problems and backups.	F, SS, SWS	SP	Reduces	Medium	2, 3, 5	Yes	Yes	Public Works Department	5 years	TBD	Medium/Medium
HM	Purchase and install an automatic emergency backup generator at Well #3 to provide power to pump water during power outages.	EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	Public Works Department	5 years	TBD	Medium/High
HM	Purchase and install storm warning siren for south side of the City (11th St. and 16th Ave.).	SS, T	MP	Reduces	Large	2	n/a	n/a	Police Department/ Public Works Department	3 years	TBD	Medium/High
HM	Purchase and install an automatic emergency backup generator at City Hall (accommodates both City services as well as the Police Department) to provide uninterrupted power and maintain operation during power outages	EH, EQ, F, SS, SWS, T	MP	Eliminates	Small	2, 3, 5	n/a	Yes	City Administrator	10 years	TBD	Low/High
HM	Trim trees and remove dead material to minimize disruptions to electrical power and communications networks near critical facilities.	SS, SWS, T	MP	Reduces	Large	2, 3, 5	Yes	Yes	Public Works Department	Ongoing	City	Low/High
HM	Reline sewer line sections north of 13th Ave. to eliminate storm water infiltration and prevent sewage backups.	F, SS, SWS	SP	Eliminates	Medium	2, 3, 5	Yes	Yes	Public Works Department	5-10 years	TBD	Medium/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 104
(Sheet 2 of 3)
Fulton Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Identify and eliminate storm sewer/sanitary sewer cross connections.	F, SS	SP	Reduces	Small	2, 3, 5	Yes	Yes	Public Works Department	Ongoing	TBD	Medium/High
LM	Purchase NOAA weather radios and distribute to City residents.	EH, F, SS, SWS, T	MP	Reduces	Large	2	n/a	n/a	Police Department	TBD	TBD	Low/High
HM	Update/retrofit Robert Fulton Community Center to serve as a storm/emergency shelter and heating/cooling center for City residents.	EH, EQ, F, SS, SWS, T	SP	Reduces	Medium	2	n/a	Yes	Community Services	TBD	TBD	Medium/High
HM	Purchase portable emergency pumps to remove excess water from critical facilities/infrastructure during heavy rain/flood events.	F, SS, SWS	MP	Reduces	Small	2, 3, 5	Yes	Yes	Public Works	TBD	TBD	Low/Medium
HM	Upgrade the City's safety/emergency notification system.	EH, EQ, F, SS, SWS, T	MP	Reduces	Large	2	n/a	n/a	Police Department	TBD	TBD	Medium/High
LM	Secure a Memorandum of Agreement with the River Bend School District to purchase and install emergency backup generators at Fulton Elementary School, River Bend Middle School and Fulton High School.	EH, EQ, F, SS, SWS, T	RA	Reduces	Medium	2, 3, 5	n/a	Yes	City Administrator	TBD	City	Low/Medium

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 104
(Sheet 3 of 3)
Fulton Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Purchase and install emergency backup generators at Fulton Elementary School, River Bend Middle School and Fulton High School to provide uninterrupted power to critical systems during power outages.	EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	Public Works	TBD	TBD	Medium/High
LM	Secure a Memorandum of Agreement with the River Bend School District to implement the appropriate remedy(s) at Fulton High School to increase storm drain capacity.	F, SS, SWS	RA	Reduces	Small	2, 3, 5	n/a	Yes	City Administrator	TBD	City	Low/Medium
HM	Implement the appropriate remedy(s) at Fulton High School to increase storm drain capacity.	F, SS, SWS	SP	Reduces	Small	2, 3, 5	n/a	Yes	Public Works Department	TBD	TBD	Medium/Medium
LM	Make the City's most recent Flood Insurance Rate Maps available at City Hall to assist individuals interested in constructing new buildings within the City.*	F	PI	Reduces	Small	1, 2, 6, 7	Yes	n/a	City Administrator	1 year	City	Low/High
LM	Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	RI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	City Administrator	1 year	City	Low/Medium
LM	Make informational materials available about the National Flood Insurance Program's voluntary Community Rating System.*	F	PI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	City Administrator	1 year	City	Low/Low

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 105
(Sheet 1 of 5)
Morrison Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Purchase and install additional storm warning sirens to improve coverage.	SS, T	MP	Reduces	Medium	2	n/a	n/a	Police Department/ Emergency Management	3 months	TBD	Low/High
HM	Purchase/subscribe to a mass storm warning notification system/service (i.e., Reverse 911, Code Red, etc.) to notify residents/responders of natural hazard events.	EH, EQ, F, SS, SWS, T	MP	Reduces	Large	2	n/a	n/a	Police Department/ Emergency Management	3 months	TBD	Medium/High
HM	Construct railroad overpass over Union Pacific Railroad to maintain vital municipal services throughout the entire City. Presently there are five at-grade crossing all within a mile of each other in the City. The three downtown crossings are only blocks apart. If a train were to breakdown or derail, a majority, if not all of the crossings could be blocked separating half of the City from critical services such as fire, police and ambulance.	EH, EQ, F, SS, SWS, T	SP	Eliminated	Medium	2, 5	n/a	n/a	Public Works	5 years	TBD	High/Medium
LM	Develop and Secure a Memorandum of Agreement with IDOT and Union Pacific Railway to construct a railroad overpass to maintain vital municipal services throughout the entire City during train accidents, derailments or breakdowns.	EH, EQ, F, SS, SWS, T	RA	Reduces	Medium	2, 5	n/a	n/a	City Council / Public Works	5 years	City	Low/Medium

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	MMH	Man-Made Hazards
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 105
(Sheet 2 of 5)
Morrison Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Update/retrofit City building to serve as a storm/emergency shelter and heating/cooling center for City residents.	EH, EQ, F, SS, SWS, T	SP	Reduces	Medium	2	n/a	Yes	Emergency Management / Public Works	6 months	TBD	Medium/High
HM	Relocate public works building adjacent to Rock Creek floodplain to alleviate recurring flooding issues.	F, SS, SWS	PP	Eliminates	Small	2, 3, 5	n/a	Yes	City Council / Administration	3-5 years	75% Federal 25% Local	Medium/Medium
HM	Construct new wastewater treatment facility to address water infiltration susceptibility issues currently experienced by the existing aging plant.	F, SS	SP	Eliminates	Large	2, 3, 5	Yes	n/a	City Council / Administration	1-4 years	TBD	High/High
HM	Purchase and install emergency backup generators with automatic transfer switches at all lift stations with the City to maintain operations during power outages.	EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	Yes	Yes	City Council / Administration / Public Works	2-5 years	TBD	Medium/High
HM	Purchase and install an automatic emergency backup generator at City Hall (accommodates both City services as well as the Police Department) to provide uninterrupted power and maintain operation during power outages	EH, EQ, F, SS, SWS, T	MP	Eliminates	Small	2, 3, 5	n/a	Yes	City Council / Administration / Police Department	3-6 years	TBD	Low/High
HM	Purchase and install an automatic emergency backup generator at Well #4 to provide power to pump water during power outages.	EQ, F, SS, SWS, T	MP	Eliminates	Large	2, 3, 5	n/a	Yes	City Council / Administration / Public Works	2-5 years	TBD	Medium/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	MMH	Man-Made Hazards
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 105
(Sheet 3 of 5)
Morrison Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
LM	Conduct sewer line reconnaissance study to identify locations where storm water infiltrates the lines.	F, SS, SWS	S	Reduces	Medium	2, 3, 5	Yes	Yes	City Council / Administration / Public Works	Ongoing	TBD	Low/High
HM	Repair/reline sewer line sections/mains where storm water infiltration is occurring to prevent sewage backups.	F, SS, SWS	SP	Eliminates	Medium	2, 3, 5	Yes	Yes	City Council / Administration / Public Works	Ongoing	TBD	Medium/High
LM	Purchase video reconnaissance equipment for use in identifying locations in the storm and sanitary sewer lines where problems may existing due to sediment and debris buildup or water infiltration.	F, SS	MP	Reduces	Medium	2, 3, 5	Yes	Yes	City Council / Administration / Public Works	2-5 years	TBD	Medium/High
LM	Conduct drainage/hydraulic study to identify the appropriate remedy(s) to alleviate recurring flooding problems experienced by residents in the southeast quadrant of the City in and adjacent to the French Creek floodplain.	F, SS, SWS	S	Reduces	Small	2, 3, 5, 6	Yes	Yes	City Council / Administration / Public Works	6-10 years	75% Federal 25% Local	Low/Medium
HM	Ensure separation of sewer and storm systems along US 30 within the City to accommodate stormwater flow, maximize the carrying capacity of the sewer system and reduce the potential for waterborne disease outbreaks from a combine sewer overflow discharge event.	F, SS, SWS	SP	Eliminates	Medium	2, 3, 5	Yes	Yes	City Council / Administration / Public Works	3-6 years	75% Federal 25% Local	High/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	MMH	Man-Made Hazards
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 105
(Sheet 4 of 5)
Morrison Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Extend storm sewer system east from Maple and Elm Streets to French Creek to better manage stormwater runoff and alleviate drainage/flooding problems.	F, SS, SWS	SP	Reduces	Small	2, 3, 5	n/a	Yes	City Council / Administration / Public Works	5-7 years	75% Federal 25% Local	High/Medium
HM	Extend French Creek Rd. east to Sawyer Rd. to provide an alternate route for emergency services personnel from IL Rte. 78 to US 30 in the event that the primary access road (Cherry St./IL Rte. 78) is blocked.	F, MMH, SS, SWS, T	SP	Eliminates	Medium	2, 3, 5	Yes	Yes	City Council / Administration / Public Works	5-8 years	TBD	High/High
HM	Replace Sawyer Rd. bridge over French Creek to address flooding issues and to increase flow capacity.	F, SS, SWS	SP	Reduces	Small	2, 3, 5	n/a	Yes	City Council / Administration / Public Works	5-7 years	TBD	High/Medium
HM	Inspect and clean out or replace/upgrade storm basins/intakes to maximize/increase flow capacity and alleviate backups.	F, SS, SWS	SP	Reduces	Small	2, 3, 5	Yes	Yes	City Council / Administration / Public Works	Ongoing	TBD	Low/High
LM	Conduct drainage study to identify the cause(s) and determine the appropriate remedy(s) to alleviate recurring roadway drainage/ponding issues at Genesee St. and US 30.	F, SS, SWS	S	Reduces	Medium	2, 3, 5	n/a	Yes	City Council / Administration / Public Works	1-2 years	75% Federal 25% Local	Low/Medium
HM	Select, design and construct the appropriate remedy(s) to alleviate recurring roadway drainage/ponding issues at Genesee St. and US 30.	F, SS, SWS	SP	Eliminate	Medium	2, 3, 5	n/a	Yes	City Council / Administration / Public Works	TBD	75% Federal 25% Local	Medium/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	MMH	Man-Made Hazards
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 105
(Sheet 5 of 5)
Morrison Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
LM	Make the City's most recent Flood Insurance Rate Maps available at City Hall to assist individuals interested in constructing new buildings within the City.*	F	PI	Reduces	Small	1, 2, 6, 7	Yes	n/a	City Council	1 year	City	Low/High
LM	Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	RI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	City Council	1 year	City	Low/Medium
LM	Make informational materials available about the National Flood Insurance Program's voluntary Community Rating System.*	F	PI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	City Council	1 year	City	Low/Low

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	MMH	Man-Made Hazards
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado
F	Flood		

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure106
(Sheet 1 of 2)
Prophetstown Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Design and construct a community safe room (tornado shelter) equipped with emergency backup generator and heating/air conditioning units that can also serve as an emergency shelter/heating and cooling center for City residents.	EH, F, SS, SWS, T	SP	Reduces	Medium	2	Yes	n/a	Police & ESDA Department	3 years	75% Federal 25% Local	High/High
HM	Purchase and install an automatic emergency backup generator at the ESDA Building to provide uninterrupted power and maintain operations during power outages.	EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2 , 3, 5	n/a	Yes	Police & ESDA Department	3 years	TBD	Medium/High
LM	Purchase a portable, trailer-mounted lighting system with emergency backup generator for use during power outages.	EH, EQ, F, SS, SWS, T	MP	Reduces	Small	2, 3, 5	n/a	Yes	Police & ESDA Department	2 years	TBD	Low/Medium
LM	Purchase NOAA weather radios and distribute to City residents.	EH, F, SS, SWS, T	MP	Reduces	Large	2	n/a	n/a	Police & ESDA Department	1 year	TBD	Medium/High
HM	Bury utility lines to critical facilities to limit service disruptions during natural hazard events.	SS, SWS, T	MP	Eliminates	Large	2, 3, 5	n/a	Yes	Public Works Department	5 years	TBD	Medium/High
LM	Make the City's most recent Flood Insurance Rate Maps available at City Hall to assist individuals interested in constructing new buildings within the City.*	F	PI	Reduces	Small	1, 2, 6, 7	Yes	n/a	City Council	1 year	City	Low/High

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure106
(Sheet 2 of 2)
Prophetstown Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
LM	Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	RI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	City Council	1 year	City	Low/Medium
LM	Make informational materials available about the National Flood Insurance Program's voluntary Community Rating System.*	F	PI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	City Council	1 year	City	Low/Low

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 107
(Sheet 1 of 6)
Rock Falls Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Purchase portable emergency pumps to remove excess water from critical facilities/infrastructure during heavy rain/flood events.	F, SS, SWS	MP	Reduces	Small	2, 3, 5	Yes	Yes	City Council	TBD	TBD	Low/Medium
HM	Purchase and install an emergency backup generator with automatic transfer switch at City Hall/EOC Center to provide uninterrupted power and maintain operations during a power outage.	DF, EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	City Council	TBD	TBD	Medium/High
HM	Retrofit the Community Building to include a community safe room and serve as a storm safe/emergency shelter and heating/cooling center for City residents. As part of the retrofit, an emergency backup generator with automatic transfer switch would be purchased and installed and the HVAC, electrical, bathrooms and kitchen studied and upgraded as necessary.	DF, EH, EQ, F, SS, SWS, T	SP	Reduces	Small	2, 3	n/a	Yes	City Council	TBD	75% Federal 25% Local	High/High
HM	Purchase and install an emergency backup generator with automatic transfer switch at Police/Fire Complex to provide uninterrupted power and maintain operations during a power outage.	DF, EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	City Council	TBD	TBD	Medium/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 107
(Sheet 2 of 6)
Rock Falls Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
LM	Construct water main loop from Antec Rd. south to Rock Falls Rd. (U.S. 30) and then west to Clear Water Dr. to provide redundancy in the system, minimize service disruptions as a result of pipe or water main breaks and aid in fire suppression in the event of a natural hazard.	DR, EH, EQ, SS, SWS, T	SP	Reduces	Small	2, 3, 5	Yes	Yes	City Council / Water Department	TBD	TBD	High/Medium
LM	Construct water main loop from E. 2nd St. hydroelectric facility east to Emmons Ave. and then south to Arland St.. to provide redundancy in the system, minimize service disruptions as a result of pipe or water main breaks and aid in fire suppression in the event of a natural hazard.	DR, EH, EQ, SS, SWS, T	SP	Reduces	Medium	2, 3, 5	Yes	Yes	City Council / Water Department	TBD	TBD	High/Medium
LM	Construct water main loop from U.S. 30/IL Rte. 40 intersection east to Industrial Park Rd. to provide redundancy in the system, minimize service disruptions as a result of pipe or water main breaks and aid in fire suppression in the event of a natural hazard.	DR, EH, EQ, SS, SWS, T	SP	Reduces	Small	2, 3, 5	Yes	Yes	City Council / Water Department	TBD	TBD	High/Medium

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 107
(Sheet 3 of 6)
Rock Falls Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
LM	Construct water main loop from the east Water Tower (Industrial Park Rd.) easterly to McNeil Rd. and then north to Dixon Ave. to provide redundancy in the system, minimize service disruptions as a result of pipe or water main breaks and aid in fire suppression in the event of a natural hazard.	DR, EH, EQ, SS, SWS, T	SP	Reduces	Small	2, 3, 5	Yes	Yes	City Council / Water Department	TBD	TBD	High/Medium
LM	Construct water main loop from the drinking water treatment plant (9th Ave.) west to Riverdale Rd. and then north to Rock Falls Rd. (U.S. 30) to provide redundancy in the system, minimize service disruptions as a result of pipe or water main breaks and aid in fire suppression in the event of a natural hazard.	DR, EH, EQ, SS, SWS, T	SP	Reduces	Small	2, 3, 5	Yes	Yes	City Council / Water Department	TBD	TBD	High/Medium
HM	Purchase three (3) electric pumps with piping to bypass pump influent building and outlet to aeration ditch in case of screw lift failure at water reclamation facility during heavy rain/flood events.	F, SS, SWS	MP	Reduces	Large	2, 3, 5	n/a	Yes	City Council / Sewer Department	TBD	TBD	Medium/High
HM	Purchase a portable emergency backup generator to provide uninterrupted power to the 5th St. pump station to maintain operations during power outages.	EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	City Council / Sewer Department	TBD	TBD	Medium/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 107
(Sheet 4 of 6)
Rock Falls Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Purchase a portable emergency backup generator to provide uninterrupted power to the C Ave. pump station to maintain operations during power outages.	EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	City Council / Sewer Department	TBD	TBD	Medium/High
HM	Slip line 800 to 1,000 feet of sanitary sewer on W. 19th St. between 12th Ave. and 18th Ave. to eliminate storm water infiltration and prevent sewage backups.	F, SS, SWS	SP	Eliminates	Small	2, 3, 5	n/a	Yes	City Council / Sewer Department	TBD	TBD	Low/High
HM	Extend storm water collection system from the Benchmark Subdivision to the Rock River to better manage stormwater runoff and alleviate recurring drainage/flooding problems.	F, SS, SWS	SP	Reduces	Small	2, 3, 5	Yes	Yes	City Council / Sewer Department	TBD	TBD	Medium/High
HM	Extend storm water collection system from the Lincoln St., Garfield St. and Swallow Ct. area to the Rock River to better manage stormwater runoff and alleviate recurring drainage/flooding problems.	F, SS, SWS	SP	Reduces	Small	2, 3, 5	Yes	Yes	City Council / Sewer Department	TBD	TBD	Medium/High
HM	Extend storm water collection system from Hienze Dr. to the Rock River to better manage stormwater runoff and alleviate recurring drainage/flooding problems.	F, SS, SWS	SP	Reduces	Small	2, 3, 5	Yes	Yes	City Council / Sewer Department	TBD	TBD	Low/High
LM	Conduct sewer line reconnaissance study to identify locations where storm water infiltrates the lines.	F, SS, SWS	S	Reduces	Medium	2, 3, 5	Yes	Yes	City Council / Sewer Department	TBD	TBD	Low/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 107
(Sheet 5 of 6)
Rock Falls Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Repair/reline any and all sewer line sections identified as points of origin for storm water infiltration that have caused the main sewer lines and lift stations to be rendered inoperable due to flooding.	F, SS, SWS	SP	Eliminates	Medium	2, 3, 5	Yes	Yes	City Council / Sewer Department	TBD	TBD	Medium/High
HM	Purchase and install stand-by generator to provide uninterrupted power to the pump station located at the Old Stanley Building to maintain operations during power outages.	EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	City Council / Sewer Department	TBD	TBD	Medium/High
HM	Purchase and install a reverse 911 telephone warning system to notify residents/responders of natural hazard events.	EH, EQ, F, SS, SWS, T	MP	Reduces	Large	2	n/a	n/a	City Council	TBD	TBD	Medium/High
HM	Purchase and install additional storm warning sirens at strategic locations within the City to ensure maximum coverage.	SS, T	MP	Reduces	Large	2	n/a	n/a	City Council	TBD	TBD	Low/High
LM	Purchase NOAA weather radios for distribution to City residents and emergency shelters.	EH, F, SS, SWS, T	MP	Reduces	Large	2	n/a	n/a	City Council	TBD	TBD	Low/High
LM	Conduct a study to determine if retention ponds strategically located throughout the City would alleviate recurring and chronic street flooding.	F, SS, SWS	S	Reduces	Medium	2, 3, 5	Yes	Yes	City Council / Streets Department	TBD	75% Federal 25% Local	Low/Medium
HM	Design and construct retention ponds at strategic locations throughout the City to alleviate recurring and chronic street flooding	F, SS, SWS	SP	Reduces	Medium	2, 3, 5	Yes	Yes	City Council / Streets Department	TBD	75% Federal 25% Local	Medium/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 107
(Sheet 6 of 6)
Rock Falls Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
LM	Develop an expanded emergency response/action plan detailing how non-government buildings (churches, etc.) can be utilized as shelters for residents displaced during natural hazard events.	EH, EQ, F, SS, SWS, T	S	Reduces	Large	2	n/a	n/a	City Council	TBD	City	Low/High
HM	Design and construct the appropriate remedy for the East 11th St. Bridge over the Hennepin Canal to (a.) address scour damage to the bridge deck caused by repeated flooding and (b.) increase the capacity of the bridge to reduce the likelihood of future damage.	F, SS, SWS	SP	Reduces	Small	2, 3, 5	n/a	Yes	City Council / Streets Department	TBD	TBD	High/Medium
LM	Make the City's most recent Flood Insurance Rate Maps available at City Hall to assist individuals interested in constructing new buildings within the City.*	F	PI	Reduces	Small	1, 2, 6, 7	Yes	n/a	City Council	1 year	City	Low/High
LM	Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	RI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	City Council	1 year	City	Low/Medium
LM	Make informational materials available about the National Flood Insurance Program's voluntary Community Rating System.*	F	PI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	City Council	1 year	City	Low/Low

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 108
(Sheet 1 of 3)
Sterling Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Purchase and install additional storm warning sirens to improve coverage, especially on the west end of the City.	SS, T	MP	Reduces	Medium	2	n/a	n/a	Fire Department	2 years	TBD	Low/High
HM	Purchase a portable flood barrier system (inflatable dams) that can be erected across the drive to the wastewater treatment facility's screen house to protect the basement of the building from Elkhorn Creek flooding. Past events have threatened to flood the screen house.	F, SS, SWS	MP	Reduces	Small	2, 3, 5	n/a	Yes	Public Works	1 year	TBD	Low/Medium
HM	Construct Northland Mall Regional detention pond to better manage stormwater runoff and reduce the likelihood of roadway flooding.	F, SS, SWS	SP	Reduces	Medium	2, 3, 5	Yes	Yes	Public Works	5 years	75% Federal 25% Local	Medium/High
HM	Construct appropriate drainage improvement(s) on the City's north side to alleviate chronic flooding issues.	F, SS, SWS	SP	Reduces	Medium	2, 3, 5	Yes	Yes	Public Works	10 years	75% Federal 25% Local	High/High
LM	Conduct sewer line reconnaissance study to identify locations where storm water infiltrates the lines.	F, SS, SWS	S	Reduces	Medium	2, 3, 5	Yes	Yes	Public Works	Ongoing	TBD	Low/High
HM	Repair/reline sewer line sections/mains where storm water infiltration is occurring to prevent sewage backups.	F, SS, SWS	SP	Eliminates	Medium	2, 3, 5	Yes	Yes	Public Works	Ongoing	TBD	Medium/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 108
(Sheet 2 of 3)
Sterling Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Purchase and install an emergency backup generator at the City's fueling station to maintain operations during power outages. This fueling station services police, fire, ambulance, schools and CGH Medical Center.	EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	City Council	TBD	TBD	Low/High
LM	Conduct a study to determine the appropriate remedy to alleviate recurring flooding issues associated with the undersized storm sewer and catch basin draining 8th Ave. under the Union Pacific Railroad to the Rock River.	F, SS, SWS	S	Reduces	Small	2, 3, 5	n/a	Yes	City Council	TBD	75% Federal 25% Local	Low/Medium
LM	Secure a Memorandum of Agreement with the Union Pacific Railroad to construct the appropriate remedy under the railroad tracks to alleviate recurring flooding issues at the south end of 8th Ave.	F, SS, SWS	RA	Reduces	Small	2, 3, 5	n/a	n/a	City Council	TBD	City	Low/High
HM	Select, design and construct the appropriate remedy to alleviate recurring flooding issues associated with the undersized storm sewer and catch basin draining 8th Ave. under the Union Pacific Railroad to the Rock River.	F, SS, SWS	SP	Reduces	Small	2, 3, 5	n/a	Yes	City Council	TBD	75% Federal 25% Local	Medium/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 108
(Sheet 3 of 3)
Sterling Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
LM	Make the City's most recent Flood Insurance Rate Maps available at City Hall to assist individuals interested in constructing new buildings within the City.*	F	PI	Reduces	Small	1, 2, 6, 7	Yes	n/a	City Council	1 year	City	Low/High
LM	Make City officials aware of the most recent Flood Insurance Rate Maps and issues related to construction in a floodplain.*	F	RI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	City Council	1 year	City	Low/Medium
LM	Make informational materials available about the National Flood Insurance Program's voluntary Community Rating System.*	F	PI	Reduces	Small	1, 2, 3, 5, 6, 7	Yes	Yes	City Council	1 year	City	Low/Low

* Mitigation action to ensure continued compliance with NFIP.

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 109
(Sheet 1 of 2)
Tampico Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
HM	Purchase and install storm warning siren(s) with automatic emergency backup generator(s).	SS, T	MP	Reduces	Large	2	n/a	n/a	Village Board	6 months	TBD	Medium/High
HM	Replace/upsize lift station(s) to maximize operating reliability, increase capacity and better manage wastewater in an effort to alleviate drainage problems and backups.	F, SS, SWS	SP	Reduces	Medium	2, 3, 5	Yes	Yes	Village Board	5-10 years	TBD	Medium/Medium
HM	Purchase a portable backup generator for use at lift stations to maintain operations during power outages.	EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	Yes	Yes	Village Board	5-10 years	TBD	Medium/High
LM	Prepare emergency operations plan for the Village.	EH, EQ, F, SS, SWS, T	S	Reduces	Large	2, 3, 4, 5, 8	Yes	Yes	Village Board	1 year	TBD	Medium/High
HM	Designate emergency shelter/heating and cooling center within the Village for use by residents.	EH, SWS	MP	Reduces	Medium	2	n/a	n/a	Village Board	1 year	Village	Low/High
HM	Purchase portable backup generator for use at designated emergency shelter/heating and cooling center to provide uninterrupted power during power outages	EH, EQ, F, SS, SWS, T	MP	Eliminates	Medium	2, 3, 5	n/a	Yes	Village Board	1 year	TBD	Medium/High
LM	Purchase and install electric hookups at designated emergency shelter/ heating and cooling center for use with portable backup generator to provide uninterrupted power during power outages.	EH, EQ, F, SS, SWS, T	MP	Reduces	Medium	2, 3, 5	n/a	Yes	Village Board	1 year	TBD	Low/Medium

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 109
(Sheet 2 of 2)
Tampico Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
LM	Drill an additional drinking water well to supplement the existing public water supply during a drought and aid in fire suppression as necessary during natural hazard events.	DR	SP	Reduces	Large	2, 3, 5	n/a	Yes	Village Board	10 – 15 years	TBD	High/High
LM	Replace existing 100-year-old water tower with a new 100,000 gallon elevated drinking water storage tank to increase the amount of water available in reserve, improve resiliency to drought and aid in fire suppression as necessary during natural hazard events.	DR,EQ, F, SS, SWS, T	SP	Reduces	Large	2, 3, 5	Yes	n/a	Village Board	10-15 years	TBD	High/High
HM	Identify residents with special needs in order to provide assistance during a natural hazard event.	EH, EQ, F, SS, SWS, T	PI	Reduces	Small	2	n/a	n/a	Village Board	6 months	TBD	Low/High

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

Figure 110
Whiteside County Regional Office of Education Hazard Mitigation Actions

Priority	Activity/Project Description	Hazard(s) to be Mitigated	Type of Mitigation Activity	Degree of Mitigation	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				
LM	Conduct a study to determine the safest location(s) in each school building for students and staff to shelter in place in the event of a tornado.	T	S	Reduces	Large	2	n/a	n/a	Regional Office of Education	2 years	Regional Office of Education	Low/Medium

Acronyms

Hazard(s) to be Mitigated:

DF	Dam Failure	F	Flood
DR	Drought	SS	Severe Storms (Thunderstorms, etc.)
EH	Extreme Heat	SWS	Severe Winter Storms (Snow, etc.)
EQ	Earthquake	T	Tornado

Type of Mitigation Activity:

RA	Regulatory Activities	S	Studies
SP	Structural Projects	MP	Miscellaneous Projects
PI	Public Involvement	PP	Property Protection

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5.0 RECOMMENDATIONS

5.0 RECOMMENDATIONS

The following recommendations came about as a result of the mitigation planning process. These recommendations should be reviewed and discussed periodically by the professional staff and elected officials of each participating jurisdiction to determine if actions should be taken.

GENERAL

Mitigate Repetitive Loss Structures and Critical Facilities. Mitigation is strongly encouraged for all structures in the mapped floodplain, with a higher priority given to repetitive loss structures and critical facilities, as funding or other resources become available.

Drinking Water. Natural hazards have the ability to disrupt public water service and cause drinking water to become contaminated. Flooding is a common natural hazard that poses two district threats: 1) direct damage to drinking water supplies, and 2) contamination of lakes and wells that serve as drinking water sources. While all of the municipalities in Whiteside County obtain their drinking water from groundwater wells, Rock Falls, Tampico and Prophetstown all have wells that are drilled into unconfined aquifers which are more vulnerable to contamination than deeper wells.

An inexpensive way to help protect drinking water involves the adoption of maximum setback zones around community water wells. When a setback zone is established, potential sources of compounds that can contaminate drinking water are prevented from being located close to these wells. Consequently, the probability of a flood or tornado causing the release of contamination near a well is substantially reduced. The Illinois Environmental Protection Agency allows county and municipal officials to designate maximum setback zones up to 1,000 feet. Both Rock Falls and Tampico have adopted maximum setback zones around their drinking water wells. While Prophetstown has two wells, only one of them is drilled into bedrock. As a result, it is recommended that City adopt maximum setback zones around its shallow drinking water well.

While deeper wells are generally less vulnerable to contamination than shallow wells, sources of contamination near the wellhead present a hazard to the drinking water. Leaks from storage tanks, spills of product during loading and unloading, and other releases of chemicals can enter deep wells. As a result, it is recommended that even those municipalities with deep wells consider adopting setback zones for their community wells.

Efforts to provide safe drinking water should extend beyond the adoption of setback zones. To provide a sufficient quantity of water during a drought as well as to protect the quality of drinking water, consideration should be given to forming a water district to serve rural residents who live in small municipalities and unincorporated areas.

Emergency Management Plans for Schools. Develop and annually update Emergency Operation Plans for elementary, middle and high schools. These plans should describe how to mitigate risks from natural hazards, structural failures, shooters and hostage situations, fires and bombs. A no-match federal grant has been used to develop these plans and conduct tabletop and full-scale exercises involving health, law enforcement, fire, and emergency management

personnel. While the grant is not currently available, it is expected to resume in the future and in the interim information to assist schools with these tasks is available from the Whiteside County ESDA Office.

Developing and Disseminating Hazard Information. Public information materials should be prepared that will help residents take protective actions prior to natural hazard events. These materials should be based on risk communication principles to improve their effectiveness. In addition to developing printed materials, feedback from Whiteside County residents indicates that the internet, television, and radio should be utilized to disseminate information.

Hazardous Substances. Knowing where hazardous substances are generated, stored and transported can be useful to reduce impacts before an accident occurs. Fire departments, other first responders and planners can use this information to better prepare when responding to HazMat incidents, deploying resources and planning for potential disasters such as the series of recent railroad accidents involving the transport of crude oil including the derailment in nearby Jo Daviess County in 2015. Identifying the types of chemicals and how they are transported can be done through a Commodity Flow Study which is currently funded by the Illinois Emergency Management Agency.

Drainage and Flooding Problems. Alleviating flooding and drainage problems across the County is a major concern repeatedly expressed throughout the planning process. County and community officials are encouraged to work together to find creative solutions to improve storm water management.

JURISDICTION-SPECIFIC

County and municipal officials are encouraged to collaborate in their pursuit of the following actions.

Coleta

- Purchase and install storm warning sirens.
- Distribute NOAA weather radios to residents to help alert them to impending natural hazard events.

Deer Grove

- Designate a heating/cooling center for Village residents.
- Obtain a backup power source for the Village Hall/Township Building.

Erie

- Consider construction of a dike/levee to protect the Village from river flooding.
- Retrofit storm sewer system to alleviate drainage problems and better manage stormwater.

Fulton

- Identify and eliminate cross connections to the sanitary sewer system to decrease the amount of untreated wastewater released during periods of heavy precipitation.
- Reline sewer line sections in need of repair.

Morrison

- Relocate the public works building adjacent to the Rock Creek floodplain to reduce recurring flooding problems.
- Separate sewer and storm water systems along U.S. 30.
- Repair sewer line sections where storm water infiltration is occurring to prevent sewage backups.
- Upgrades or construction of a wastewater treatment system will improve community resilience to problems triggered by high precipitation events and floods.

Prophetstown

- Purchase and install an emergency backup generator at the ESDA building to maintain operations during power outages.
- Design and construct a community safe room that can serve as a shelter from tornadoes, severe heat and severe cold.

Rock Falls

- Consider various projects—including retention ponds and extending the storm water collection system—to reduce vulnerability to drainage problems associated with the storm water collection system.
- Design and construct an appropriate remedy for the East 11th Street Bridge over the Hennepin Canal to address scour damage to the bridge deck caused by repeated flooding.

Sterling

- Efforts should continue to improve the community's capacity to reduce storm damages from storm water by conducting sewer line reconnaissance, repairing sewer sections where storm water infiltration is occurring, and constructing retention basins. These basins provide a high benefit at a relatively lower cost to combat flooding and drainage problems.
- Minimize flood impacts to the wastewater treatment facility by purchasing a portable flood barrier system that can be erected during Elkhorn Creek flood events.
- Begin discussions with the Union Pacific Railroad about steps to reduce recurring flood problems at 8th Avenue.

Tampico

- Drainage and flooding issue can be alleviated by replacing or upsizing lift stations to better manage wastewater. Culverts and drainage ditches should be checked and maintained as needed.
- Prepare an emergency operations plan for the Village.

6.0 PLAN MAINTENANCE

6.0 PLAN MAINTENANCE

This section focuses on the Federal Emergency Management Agency (FEMA) requirements for maintaining and updating the Plan once it has been approved by FEMA and adopted by the participating jurisdictions. These requirements include:

- establishing the method and schedule for monitoring, evaluating and updating the Plan;
- describing how the mitigation strategy will be incorporated into existing planning processes; and
- detailing how continued public input will be obtained.

These requirements ensure that the Plan remains an effective and relevant document. Provided below is detailed discussion of each requirement.

6.1 MONITORING, EVALUATING & UPDATING THE PLAN

The County must establish a method and schedule for monitoring, evaluating and updating the Plan. This method allows the participating jurisdictions to review and adjust the planning process as needed, make necessary changes and updates to the Plan and track the implementation and results of the mitigation actions that have been undertaken.

6.1.1 Monitoring and Evaluating the Plan

The Plan will be monitored and evaluated by a Plan Maintenance Subcommittee on an annual basis. The Plan Maintenance Subcommittee will be composed of key members from the original Planning Committee, including representatives from all of the participating jurisdictions. The Subcommittee will be chaired by the Whiteside County Emergency Services and Disaster Agency (ESDA). All meetings held by the Subcommittee will be open to the public. The information gathered at each Subcommittee meeting will be documented and provided to all participating jurisdictions for their review and use in the Plan update.

The Whiteside County ESDA will be responsible for monitoring the status of the mitigation actions identified in the Plan and providing the Illinois Emergency Management Agency (IEMA) with an annual progress report. It will be the responsibility of each participating jurisdiction to provide a progress report on the status of their mitigation actions at each Subcommittee meeting.

Monitoring & Evaluating

- A Plan Maintenance Subcommittee will be formed to monitor and evaluate the Plan.
- The Plan will be monitored and evaluated on an ***annual basis***.
- Each participating jurisdiction will be responsible for providing an annual progress report on the status of their mitigation actions.
- New mitigation actions can be added by participating jurisdictions during the annual evaluation.

The Plan Maintenance Subcommittee will also evaluate the Plan on an annual basis to determine the effectiveness of the planning process and the implemented mitigation actions. In addition, the Subcommittee will decide whether any changes need to be made. As part of the evaluation of the planning process, the Subcommittee will review the goals to determine whether they are still relevant or if new goals need to be added; assess whether other natural hazards need to be addressed or included in the Plan and review any

new hazard data that may affect the Risk Assessment portion of the Plan. The Subcommittee will also evaluate whether other County departments should be invited to participate.

In terms of evaluating the effectiveness of the mitigation actions that have been implemented, the Subcommittee will assess whether a project is on time, in line with the budget and moving ahead as planned; whether the project achieved the goals outlined and had the intended result; and whether losses were avoided as a result of the project. In addition, each of the participating jurisdictions will be given an opportunity to add new mitigation actions to the Plan and modify or discontinue mitigation actions already identified. In some cases a project may need to be removed from the list of mitigation actions because of unforeseen problems with implementation.

6.1.2 Updating the Plan

The Plan must be updated within five years of the date the first participating jurisdiction adopts the Plan. (This date can be found in Section 7, Plan Adoption.) This ensures that all the participating jurisdictions will remain eligible to receive federal grant money to implement those mitigation actions identified in this Plan.

It will be the responsibility of the Plan Maintenance Subcommittee to update the Plan. The update will incorporate all of the information gathered and changes proposed at the previous annual monitoring and evaluation meetings. In addition, any government entity that did not take part in the original planning process that now wishes to participate may be added. It will be the responsibility of these entities to provide all of the information needed to be integrated into the Plan.

Updating

- The Plan Maintenance Subcommittee will be responsible for updating the Plan.
- The Plan ***must be updated within 5 years*** of the date the first participating jurisdiction adopts the Plan.
- Any government entities that did not take part in the original planning process but who now wish to participate may do so.
- Once the updated Plan has received FEMA/IEMA approval, each participating jurisdiction ***must re-adopt the Plan*** to remain eligible to receive federal grant money.

A public forum will be held to present the updated Plan to the public for review and comment. The comments received at the public forum will be reviewed and incorporated into the updated Plan. The Subcommittee will then present the updated Plan to the participating jurisdictions for approval.

Once the Subcommittee has received approval from all of the participating jurisdictions, it will submit the updated Plan to the IEMA and FEMA for review. ***Once the updated Plan has received approval, FEMA requires that each of the participating jurisdictions re-adopt the Plan to remain eligible to receive federal grant money to implement identified mitigation actions.***

6.2 INCORPORATING THE MITIGATION STRATEGY INTO EXISTING PLANNING MECHANISMS

As part of the planning process, the Planning Committee identified current plans, policies/ordinances and maps that supplement or help support mitigation planning efforts. **Figure 7** identifies the existing planning mechanism available by jurisdiction. It will be the responsibility of each participating jurisdiction to incorporate, where applicable, the mitigation strategy and other information contained in the Plan into the planning mechanisms identified for their jurisdiction.

6.3 CONTINUED PUBLIC INVOLVEMENT

The County and participating jurisdictions understand the importance of continued public involvement and will seek public input on the Plan throughout the plan maintenance process. A copy of the approved Plan will be maintained and available for review at the Whiteside County ESDA Office. Individuals will be encouraged to provide feedback and submit comments for the Plan update to the Whiteside County ESDA.

The comments received will be compiled and presented at the annual Plan Maintenance Subcommittee meetings where members will consider them for incorporation into the updated Plan. All meetings held by the Plan Maintenance Subcommittee will be noticed and open to the public. A separate public forum will be held prior to updating the Plan to provide the public an opportunity to comment on the updates proposed for the Plan.

7.0 PLAN ADOPTION

7.0 PLAN ADOPTION

The final step in the planning process is the adoption of the approved Plan by each participating jurisdiction. Each jurisdiction must formally adopt the Plan to be eligible for federal grant money to implement mitigation actions identified in this Plan.

7.1 PLAN ADOPTION PROCESS

Before the Plan can be adopted by the participating jurisdictions, it must be made available for public review and comment through a public forum and comment period. Any comments received are incorporated into the Plan and the Plan is then submitted to the Illinois Emergency Management Agency (IEMA) and the Federal Emergency Management Agency (FEMA) for their review and approval.

Once IEMA and FEMA have reviewed and approved the Plan, it will be presented to the County and each participating jurisdiction for adoption. ***Each participating jurisdiction must formally adopt*** the Plan to become eligible to receive federal grant money to implement the mitigation actions identified in this Plan. If any of the jurisdictions choose not to adopt the Plan, their choice will not affect the eligibility of those that do adopt the Plan.

Figure 111 identifies the participating jurisdictions and the date each formally adopted the Plan. Signed copies of the adoption resolutions are located in **Appendix N**.

Figure 111
Plan Adoption Dates

Participating Jurisdiction	Plan Adoption Date
Coleta, Village of	02/08/2016
Fulton, Village of	02/16/2016
Rock Falls, City of	02/16/2016
Morrison, City of	03/01/2016
Erie, Village of	03/08/2016
Whiteside County	03/16/2016
Deer Grove, Village of	03/21/2016
Sterling, City of	06/06/2016
Prophetstown, City of	07/12/2016
Tampico, Village of	07/19/2016
Whiteside County Regional Office of Education	

8.0 REFERENCES

8.0 REFERENCES

Provided below is a listing, by section, of the resources utilized to create this document.

1.0 INTRODUCTION

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1.2 Demographics

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2.0 PUBLIC INVOLVEMENT

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2.4 INCORPORATING EXISTING PLANNING DOCUMENTS

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3.0 RISK ASSESSMENT

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4.0 MITIGATION STRATEGY

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COUNTY RESOLUTION AUTHORIZING THE DEVELOPMENT OF THE PLAN

APPENDIX A

#9

RESOLUTION FOR PURSUIT OF THE PREPARATION OF A NATURAL HAZARD MITIGATION PLAN

WHEREAS; Whiteside County, Illinois would like to obtain grant money through the Disaster Mitigation Act of 2000, as money is available for Planning and Projects that can reduce or eliminate the damages caused by natural hazards such as rain, snow, wind, ice storms, floods, drought and earthquakes; and

WHEREAS; Whiteside County, Illinois must prepare a Natural Hazard Mitigation Plan before money can be released for projects; and

WHEREAS; this plan will include a listing of potential projects that can help reduce the damages caused by these storms; and

WHEREAS; Whiteside County will follow the next step in this process, which will be to prepare a grant application through Johnson, Depp & Quisenberry, an environmental and engineering consulting firm, for the preparation of this plan.

NOW THEREFORE, BE IT RESOLVED; that the WHITESIDE COUNTY BOARD does Hereby pass this resolution to pursue the preparation of a Natural Hazard Mitigation Plan.

Passed this 19th day of June, 2012

Tony Anderson

County Board Chairman

ATTEST:

Dare Nelson

County Clerk and Recorder

COUNTY CLERK WHITESIDE COUNTY ILLINOIS

PLANNING COMMITTEE MEETING ATTENDANCE SHEETS

APPENDIX B

Attendance Sheet

Whiteside County Multi-Jurisdictional
Natural Hazards Mitigation Planning Committee Meeting

July 17, 2014

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	BARRY DYKHUIZEN	MORRISON	CA
2.	MARIA WOLFF	Whiteside County Health Dept.	Dir Public Health
3.	RUSS RENNER	WHITESIDE CO. HIGHWAY	COUNTY ENGINEER
4.	Rick Powers	City of Sterling	Supt. Public Works
5.	Gary Cook	Twin City Joint Fire Command	Fire Chief
6.	Karl Kovarik	Whiteside Co. 911	Coordinator
7.	Bob Sondgerath	Whiteside ROE	Superintendent
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

Attendance Sheet

Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Planning Committee Meeting

July 17, 2014

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Andrea Bostwick	Johnson, Depp & Quisenberry	Env. Specialist
2.	SETH JANSSEN	WHITESIDE CO. EDDA	EDDA COORDINATOR
3.	Douglas Buhler	Public	
4.	Lloyd Sherman	amature Radio	WH. EC/RACES
5.	James w. Melton	Public	
6.	Jim Duff,	Whiteside Co Bd.	Chairman
7.	BRUCE FRANKS	PROPHETSTOWN	CHIEF
8.	Dana Nelson	~~County Cl.~~ Whiteside Co	County Clerk
9.	Gene Vehnster	W.C. Health Dept.	Dir. Env. Hlth
10.	Kelly Wilhelm	WHCO Sheriff's office	sheriff
11.	Kevin Smith	Sterling City mgmt.	Manament Intern
12.	Scott Shumard	City of Sterling	City Manager
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Attendance Sheet

Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Planning Committee Meeting

July 17, 2014

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Larry Acker	3F Forecasts National Weather Service	Editor
2.	GREG MICHAUD	JDQ	
3.	[illegible]	Erie PD	Chief
4.	Mary Jo Sigel	Village of Tampico	Commissioner
5.	Dick ABBas	Amateur Radio	—
6.	Bill Abbott	Farm Bureau	
7.	Kristine Hill	Tampico	Mayor
8.	BILL WESCOTT	CITY OF ROCK FALLS	MAYOR
9.	Boyd Van Dellen	Fulton Fire Protection Dist.	Dep chief
10.	Erik Renkes	Fulton Fire Protection Dist.	
11.	E. Stuart Richter	Whiteside Co Planning & Zoning	Administrator
12.	BRIAN STRIKE	City of Prophetstown	public Works Director
13.	Birgie VanderVinne	Farmers Insurance	Owner
14.	Ryan Venema	CGH EMS	EMS CHIEF
15.	Robin Brando	Assessor Whiteside Co.	S of A
16.	Joel Horn	Whiteside Co ~~Admin~~	Admin

Attendance Sheet

Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Planning Committee Meeting

October 30, 2014

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Larry Acker	3F Forecasts + NWS.	Editor.
2.	MJ Sigel	Tampico, IL	Commisioner
3.	[illegible]	Fulton IL	Public Works Director
4.	BRIAN MELTON	MORRISON	CHIEF OF POLICE
5.	RUSS REAVER	WHITESIDE CO. HIGHWAY	COUNTY ENGINEER
6.	BRIAN STRIKE	City of Prophetstown	Public Works Director
7.	AL Thompson	VILLAGE of DEERGROVE	Village President
8.	Bob Sondgeroth	Whiteside ROE	Superintendent.
9.	E. Stuart Richter	Whiteside Planning & Zoning	Administrator
10.	Karl Kovarik	Whiteside Co 911	Coordinator
11.	Shirley Wolford	CGH MEDICAL CENTER	Em Coord.
12.	RYAN VENEMA	CGH MEDICALL CENTER - EMS	DIRECTOR OF EMS
13.	Theresa Wittenauer	Blackhawk Hills Regional Council	Exect. Dir.
14.	Betty Turner	WCHD	PHA
15.	[illegible]	WC Administrator	
16.	Andrea Bostwick	IDOT	Env. Spec.

Appendix B

Attendance Sheet

Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Planning Committee Meeting

October 30, 2014

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Douglas Buhler	Public Rep	—
2.	SETH JANSSEN	WHITESIDE COUNTY	ESDA COORDINATOR
3.	Jim Duffy	Whiteside County	Bd Chair
4.	Kristie Hill	Lampico	Mayor
5.	Will T. Lulkhart	Erie PD	Chief
6.	James W. Melton	Citizens of Whiteside	Secretary ERIE FPD
7.	Sally Douglas	Coleta	Village President
8.	Lloyd Sherman	Amateur Radio	DEC & WH. RACE Office
9.	Dick ABBAS	Amateur Radio	ARES
10.	Marcia Widolff	Whiteside Co. Health Dept	Dir. Public Health
11.	WILLIAM B. WESCOTT	CITY OF ROCK FALLS	MAYOR
12.	Ed Connor	City of Fulton	Administrator
13.	Bill Abbott	Wh Co Farm Bureau	
14.	BRUCE FRANKS	PROPHETSTOWN POLICE	CHIEF
15.	Lauren Lee	County	GIS Coordinator
16.	Robin Brands	County	S of A

Appendix B

Attendance Sheet

Whiteside County Multi-Jurisdictional
Natural Hazards Mitigation Planning Committee Meeting

October 30, 2014

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Gene Johnston	W.C. Health Dept.	Env. Hlth Dir.
2.	Kevin Smith	City of Sterling	Management Intern
3.	Scott Shumard	City of Sterling	City Manager
4.	Tamara Hiatt-Glenn	WIXN Dixon	News
5.	Barry Dykhuizen	City Morrison	Admin
6.	Gary Cook	Twin City Fire Chief	Chief
7.	Greg Michaud	Johnson, Depp & Quisenberry	Mgr, Env. Services
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Attendance Sheet

Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Planning Committee Meeting

March 5, 2015

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Larry Russey	Fulton City	Mayor
2.	[illegible]	WCHD	director PH
3.	Barry Dykhuizen	Morrison	City Admin
4.	Steve Parsen	MCH EMS	EMS Director.
5.	Kevin Smith	Sterling City	Mgmt Fellow
6.	Theresa Wittenauer	Blackhawk Hills Regional Council	Ex. Director
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Attendance Sheet

Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Planning Committee Meeting

March 5, 2015

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Bruce Hill	Tampico	commissioner
2.	Kristine Hill	Tampico	Mayor Tampico
3.	Andrea Bostwick	Johnson Depp & Quisenberry	Environmental Specialist
4.	Doug Buhler	Public Rep	
5.	Lloyd Sherman	ARES/RACES	DEC
6.	Dick Abbas	ARES	Radio ops.
7.	Jim Duff	Co Bd.	Chair
8.	Gene Johnston	WC Health	Dir. Env. Hlth
9.	Mary Jo Sigel	Tampico	Commissioner
10.	Ryan Venema	CGH	PREHOSPITAL CARE DIRECTOR
11.	Gary Cook	Twin City Joint Fire	Chief
12.	Robin Brando	Assessor Whiteside Co.	S of A
13.	E. Stuart Richter	Planning & Zoning Admin. →	
14.	Joel Horn	Whiteside Co Admin	Administrator
15.	BRUCE FRANKS	PROPHETSTOWN	CHIEF
16.	Karl Kovarik	WC911	Coordinator

Attendance Sheet

Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Planning Committee Meeting

March 5, 2015

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	GREG MICHAUD	Johnson, DEPP & QUISENBERRY	MGR, ENV. SERVICES
2.	BILL WESCOTT	CITY OF ROCK FALLS	MAYOR
3.	SETH JANSSEN	WHITESIDE COUNTY	ESDA COORDINATOR
4.	AL JACKSON	FULTON, IL	
5.	Lauren Lee	Whiteside County	GIS Coordinator
6.	BRIAN MELTON	MORRISON	CHIEF OF POLICE
7.	RUSS REXNER	WHITESIDE COUNTY HIGHWAY	COUNTY ENGINEER
8.	Jennifer Behrens	WCHD (student)	student
9.	Butch Nimmick	MORRISON EMS	EMT-P/T
10.	SCOTT SHUMARD	City of Sterling	City Manager
11.	Bob Sandgeroth	Whiteside Reg. off. of Education	Superintendent
12.			
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Attendance Sheet

Whiteside County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

June 25, 2015

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	GREG MICHAUD	Johnson, Depp & Quisenberry	MGR, ENV. SERVICES
2.	Bruce Hill	Tampico	
3.	Betty Abbott	None	None
4.	Jerrod Reynolds	Prophetstown	Police
5.	Theresa Witteveen	Blackhawk Hills Regional Council	Ex. Director
6.	Gary Cook	Twin City Fire	Chief
7.	Joel Horn	Whiteside Co	Adm
8.	[illegible]	Morrison IL	Mayor
9.	Karl Kovarik	Whiteside Co 911	911 Coordinator
10.	Robin Brando	Whiteside Supervisor of Assessments	S of A
11.	E. Stuart Richter	Whiteside Co. Plan. & Zon	Administrator
12.	Maria Widdoff	WLHD	Dir. public health
13.	Scott Shumaker	City of Sterling	
14.	Bob Sandgeroth	Regional Office of Education	Superintendent
15.			
16.			

Attendance Sheet

Whiteside County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

June 25, 2015

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Andrea Bostwick	Johnson Depp & Quisenberry	Env. Spec.
2.	Bill Wescott	City of Rock Falls	Mayor
3.	Larry Acker	Nat. Weather Service	
4.	Seth Janssen	Whiteside ESDA	Coordinator
5.	Doug Buhler	Public Rep.	
6.	Terry M Strike	Tampico	Chief
7.	Sally Douglas	Coleta	Village President
8.	Bill Abbott	Co FB	Director
9.	Dick Abbas	Ares/Amateur Radeo/Public	
10.	Lloyd Sherman	ARES/RACES	EC/DEC
11.	Ryan Venema	CGH EMS	Prehospital Care
12.	Al Thompson	Deer Grove	Village Pres.
13.	Russ Renner	Whiteside County Highway	County Engineer
14.	Barry Dykhuizen	Morrison	City Admin
15.	Lauren Lee	Whiteside County	GIS Coordinator
16.	Gene Johnston	" Health	Dir. Env. Hlth

Attendance Sheet

Whiteside County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

October 1, 2015

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	GREG R. MICHAUD	JOHNSON, DEPP & QUISENBERRY	MGR, ENV. SERVICES
2.	Douglas Buhler	Public	—
3.	SETH JANSSEN	WHITESIDE COUNTY ESDA	ESDA COORDINATOR
4.	TOM RICHTER	Ogle Co EMA	Coordination
5.	Jim Duffy	Whiteside Co Board	Chair
6.	BRUCE FRANKS	PROPHETSTOWN PD + ESDA	CHIEF
7.	Stu Richter	Whiteside County Zoning	PZA
8.	Bruce Hill	Public	Public Safty
9.	JAMES W. MELTON	Public ERIE FIRE Dept	Public President trustees
10.	Michael Krabbenhoeft		Sauk Valley Media Photographer
11.	Beth Zurmi	Public Health	Administrator
12.	Robin Brands	S of A - Whiteside Co.	S of A
13.	Joel Horn	Whiteside	Admin.
14.	Floyd Sherman	RACES AMATEUR RADIO	RACES OFFICER
15.	Jermaine Pigeo	Sauk Valley media	
16.	Lauren Lee	Whiteside County	GIS Coordinator

Appendix B

Attendance Sheet

Whiteside County Multi-Jurisdictional
All Hazards Mitigation Planning Committee Meeting

October 1, 2015

	Name (Please Print)	Representing (Jurisdiction/Organization)	Title
1.	Andrea Bostwick	JDC	Env. Specialist
2.	Kristine Hill	Tampico	Mayor
3.	RYAN VENEMA	CGH EMS	PREHOSPITAL DIRECTOR / EMS
4.	Larry Acker	NWS	Weather
5.	Barry [illegible]	CITY OF MORRISON	CITY ADMIN
6.	Kevin Colley	LEE Co EMA	Director
7.	[illegible] Abbott	WHCA FB	Director
8.	BILL WESCOTT	CITY OF ROCK FALLS	MAYOR
9.	RUSS RENNER	WHITESIDE COUNTY HIGHWAY	COUNTY ENGINEER
10.	Gary Cook	Twin City Fire Commnd	Fire Chief
11.	Sally Douglas	Coleta	Village President
12.	SCOTT SHUMARD	City of Sterling	City Manager
13.			
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Appendix B

PLANNING COMMITTEE MEETING MINUTES

APPENDIX C

Meeting Minutes

Whiteside County Multi-Jurisdictional
Natural Hazards Mitigation Planning Committee

July 17, 2014
Odell Public Library
307 Madison Street, Morrison
1:00 p.m.

Committee Members

Amateur Radio Emergency Services
CGH Medical Center
Erie, Village of
Farmers Insurance Company
Fulton Fire Protection District
Mitigation Planning Consultants
    Johnson, Depp & Quisenberry
Morrison, City of
Prophetstown, City of
Public Representatives
    Doug Buhler
    Jim Melton
Rock Falls, City of
Sterling, City of
Tampico, Village of
Twin City Joint Fire Command
Whiteside County Offices
    Administrator
    Assessor
    Clerk
    County Board
    ESDA
    Health Department
    Highways
    Planning & Zoning
    Sheriff
    911
Whiteside County Farm Bureau
Whiteside County ROE
3 F Forecasts
    Larry Acker

Welcome and Introductions

Seth Janssen, Whiteside County ESDA Coordinator, welcomed attendees. He thanked attendees for agreeing to serve on this Committee. Seth asked the Committee members to introduce themselves by providing their name and who they represent.

Binders and handout materials were distributed to each member.

What Is A Natural Hazard Mitigation Plan and Why Should We Prepare It?

Greg Michaud, Johnson, Depp & Quisenberry, described why mitigation planning is needed and how participating jurisdictions can benefit.

Although Whiteside County has an emergency response plan with strong protocols and working relationships established, the purpose of a natural hazard mitigation plan is to prevent or reduce the damages caused by severe storms and other natural hazards. Since the early 1990s damages caused by weather extremes have risen substantially. In 2011, the United States experienced $52 billion in severe storm damages.

As damages from severe storms and other natural hazards continue to rise, the Federal Emergency Management Agency (FEMA) is encouraging counties throughout the United States to prepare natural hazard mitigation plans. Natural hazard refers to floods, tornadoes, severe summer storms (including thunderstorms, hail and lightning events), severe winter storms (including ice and snow storms), extreme heat, drought, earthquakes, and dam failures.

From the damages caused by natural disasters, FEMA has calculated that for every dollar spent on mitigation, $3 to $4 dollars can be reaped in savings.

Developing this plan provides three major benefits:

1). When the next federally-declared natural disaster occurs, Whiteside County and all impacted municipalities who participate in the planning process will received the full amount of money that they are eligible for from FEMA.

2). Specific projects and recommendations will be developed through the planning process to help each participating jurisdiction reduce damages. By including these projects in this Plan, the participating jurisdictions will have an opportunity to receive state and federal funds to complete projects that might not otherwise be realized.

3). Verifiable information about the natural hazards that occur in Whiteside County will be gathered that will 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 develop a Plan that will be approved by the Illinois Emergency Management Agency (IEMA) and FEMA. A five meeting process has been developed to achieve this goal. Specific activities for the Committee meetings include:

1st Committee meeting	Orientation to the Planning Process Begin identifying Critical Facilities & Existing Planning Documents
2nd Committee meeting	Discuss the Risk Assessment Approve Mission Statement & Goals Committee returns the Critical Facilities List and the Existing Planning Documents List
3rd Committee meeting	Begin discussing Mitigation Projects and Activities Develop a Mitigation Strategy Committee returns list of Mitigation Projects and Activities
4th Committee meeting	Finish discussing Mitigation Projects and Activities Committee discusses approval/adoption of the Plan
5th Committee meeting (Public Forum)	Present the Revised Plan for public review Committee helps answer questions from the public

Other highlights of this discussion include:

- Submitting a list of mitigation projects does not commit any municipality or the County to obligate funds. These lists help assure eligibility for funding. All mitigation projects and activities for which federal funding will be sought must be included in the Plan.
- This is not a competition between municipalities or the County. Each participating jurisdiction picks the mitigation projects that they feel will best protect their residents and property. While water supply may be most important for one community, protection from tornado or flood may be more important to another community.
- FEMA's intent is to encourage mitigation. FEMA has not used these Plans to "penalize" municipalities or counties who do not implement mitigation projects included in their Plans.

Mission Statement & Goals

Andrea Bostwick, Johnson, Depp & Quisenberry, described the draft of a proposed mission statement and goals that are required for this Plan. Copies are included in the meeting packet. The goals were drafted in a manner that should help cover most, if not all, mitigation projects that are anticipated to be submitted. However, specific goals related to where you live can be added to this list. Every project included in the Plan should be aimed at one or more of the goals developed by this Committee. Committee Members were asked to review and discuss this draft at the next meeting.

She also requested photos of severe weather events and damages caused by these events. These photos will be used in the Plan.

Andrea distributed the following documents:

- Critical Facilities form (She noted that the list of Critical Facilities will be provided to IEMA and FEMA and not included in the copy of the Plan available to the public.)
- Existing Planning Documents List (This list includes Land Use Plans, Flood Ordinances, and related documents.)
- Designated Shelters
- Hazard Event Questionnaire

If comprehensive municipal plans have been developed, copies of these documents—or a link where an electronic copy can be viewed--should be sent to Andrea or Greg so that these documents can be evaluated and described in the Plan.

Since the Mission Statement and Goals are linked to the mitigation projects that Committee members will be submitting, the Committee was asked to share their recollections of severe weather events and damages.

Among the events described by Committee members were the following:

- Countywide snow storm in January, 1979, that closed schools and some roads for approximately 5 days. In some areas the fire trucks could not get out so snow mobiles had to be used to deliver medication and check on individuals.
- A blizzard along with ice jams along the Rock River in February, 1994, closed Route 78 making travel difficult between Prophetstown and Morrison.
- A micro burst at the beginning of July, 2014 bent the Fulton Fire Protection District radio tower in half causing at least $32,000 in damages to the tower and building.
- Flooding has closed Route 84 north of Albany on repeated occasions.
- Flooding from the Rock River near Rock Falls has curtailed travel.
- Prolonged severe weather in 2012-2013 hindered emergency medical services to rural portions of the County.
- Winds damaged the communication tower at CGH a couple of years ago.
- The extreme cold and repeated snow storms during the winter of 2013-2014 led some schools to use as many as 9 snow days. The last time all snow days were used was during 1978-79.

Community Participation

Municipalities are encouraged to have multiple representatives so that they can assure their eligibility for the benefits described earlier in the meeting. Municipalities can "tag team" these meetings so that when one member is unable to attend, the municipality can still meet attendance requirements. When unforeseen obligation arises, a substitute can be designated and they do not have to be an official or employee of the municipality. For the county representatives, participation is important because it helps the county meet the local match for this grant through in-kind services.

What Happens Next?

The risk assessment, goal setting, and the mission statement will be the main topics of the next committee meeting.

Committee members were asked to complete a citizen survey before they left, and to make copies of this survey available in their jurisdictions.

Committee members were asked if they wanted their Plan to include only natural hazards or if they wanted select man-made hazards, such landfills, leaking underground storage tanks, and hazardous waste site remediations, to be included. The Committee voted to include these man-made hazards in their Plan. While some mention can be made about transportation, IEMA/FEMA offers another grant for Commodity Flow Studies which can provide an in depth analysis about the types of hazardous substances transported through the county and potential impacts on human health and the environment.

The second meeting of the Committee was set for:

Thursday, October 30
Odell Public Library
307 S. Madison
1 p.m.

Public Comment

Two questions arose. In response to a question about grants and local match, Greg said that a summary of some of the key grants, including local match percentages and contact persons, will be provided to the Committee. Most grants have a 25% match requirement and in-kind services can be used to meet this match.

In response to another question about levees, Greg said that IEMA typically does not provide funding to repair or maintain private levees.

With no further comments or questions, Seth Janssen thanked the Committee members for their attendance. He noted that this Plan is being funded through a FEMA grant and that local match for this grant is through in-kind services which include Committee members attendance at these planning meetings.

Meeting Minutes

Whiteside County Multi-Jurisdictional
All Hazards Mitigation Planning Committee

October 30, 2014
Odell Public Library
307 Madison Street, Morrison
1:00 p.m.

Committee Members

Amateur Radio Emergency Services
Blackhawk Hills Regional Council
CGH Medical Center
Coleta, Village of
Deer Grove, Village of
Erie, Village of
Fulton, City of
Mitigation Planning Consultants
    Johnson, Depp & Quisenberry
Morrison, City of
Prophetstown, City of
Public Representatives
    Doug Buhler
    Jim Melton
Rock Falls, City of
Sterling, City of
Tampico, Village of
Twin City Joint Fire Command
Whiteside County Offices:
    911
    Administrator
    Assessor
    Clerk
    County Board
    ESDA
    GIS
    Health Department
    Highways
    Planning & Zoning
Whiteside County Farm Bureau
Whiteside County ROE
WIXN Radio, Dixon
3 F Forecasts
    Larry Acker

Welcome and Introductions

Seth Janssen, Whiteside County ESDA Coordinator, welcomed attendees. He noted that the focus of this meeting is Risk Assessment. He reminded Committee Members that their attendance is part of the in-kind service for the grant which funds this planning process. Since there are some new members to this Committee, he asked attendees to introduce themselves before the presentations began.

Handout materials were distributed to each member.

Risk Assessment

Greg Michaud, Johnson, Depp & Quisenberry (JDQ), began the presentation by reminding Committee members that at the previous meeting we discussed cumulative storm damages nationwide, but we did not know how much storm damage occurred in Whiteside County. With the completion of the Risk Assessment, which covers over 50 years of weather data for Whiteside County, we now have verifiable information to share.

Natural Hazards
An overview of the 136 page Risk Assessment contained in the handout materials was provided. The frequency, magnitude and property damages for each category of natural hazard were described. Whiteside County has had eight (8) Federal disaster declarations since 1965. Documented damages from severe storms and other natural hazards in Whiteside County reveal dollar losses exceeding $8.1 million with at least 509 injuries and 6 deaths. He repeated that the number of injuries and damage losses reported in this Risk Assessment are only those which were documented. Reports were found that indicate more injuries and property damages occurred, but neither the injuries or damages were quantified.

Severe Storms
Approximately $1.1 million in damages, 250 injuries and 3 deaths have resulted from severe thunderstorms with damaging winds, hail, and lightning events since 1962. Severe storms are the most frequently occurring natural hazard in Whiteside County. At least 238 events meet the severe storms criteria in Whiteside County.

Tornadoes
Since 1961, 19 tornadoes have been verified in Whiteside County. Whiteside County is located on the edge of "tornado alley" in Illinois. Counties in the heart of the Illinois tornado alley have more than double the number of tornadoes verified in Whiteside County. Damages reached $5.6 million including 4 injuries, but no fatalities. Ten of these tornadoes caused property damage. Two of these tornadoes caused over $2 million in damages during each event.

The average tornado in Whiteside County is approximately 1 mile long and 63 yards wide. There have been one F4, one F3, two F2, five F1, nine F0, and 1 EF0 tornadoes.

The worst tornadoes in the county occurred in March, 1981, and March, 1990. The 1981 tornado, classified as an F4, was approximately five miles long, and caused $2.5 million in property damage in the Prophetstown and Lyndon area. Numerous grain bins and outbuildings were also damaged. The 1990 tornado, classified as an F3, was approximately 3 miles long, and caused $2.5 million in property damage in the Albany area.

Floods
Floods contributed to seven of the eight Federal disaster declarations. At least 43 floods have been documented since 1965 causing approximately $1.5 million in property damage.

Severe Winter Storms
One hundred and fifty-one events involving excessive snow, ice, or extreme cold have been verified since 1950. This number is higher than what is found in most other Illinois counties. At least 255 injuries and 3 deaths can be attributed to severe winter storms and this number is likely to be much higher since National Weather Service records tend to not have severe winter storm damage information earlier than the mid-1990s.

$31,400 in damages has been recorded but this figure does not include snow removal and salt spreading costs.

Seven major storms have occurred each year in 1997, 2000, and 2007. Six major storms occurred in 2010.

One of the eight federal declarations in Whiteside County occurred in February, 2011 when 15-19 snow accumulations occurred during the first week. Fifty to sixty mph winds contributed to road and school closings.

The record 24 hour snowfall was measured at 18 3/4 inches on February 1, 2011 at Morrison, and the record cold temperature of -30°F also recorded at Morrison on February 13, 1905.

Extreme Heat

Four extreme heat events have been reported since 1997. Road buckling and crop damage often occur, but crop damage is usually not measurable unless drought occurs. No deaths were attributed to these events.

Drought

Five droughts have occurred since 1980—1983, 1988, 2005/2006, 2012, and 2013. Following each drought, crop yield reductions were substantial.

Year	Corn	Soybeans
1983	18.0%	---
1988	58.4%	42.5%
2005/2006	31.1%	7.8%
2012	14.0%	3.3%
2013	---	6.3%

Dams

There are five publicly owned dams and two privately owned dams in Whiteside County that have been given hazard classifications. Class I dams have a high probability of causing loss of life or substantial economic loss, and Class II dams have a moderate probability of causing damage. Lake Carlton dam is a Class I dam, and the Mississippi River Dam 13 is a Class II dam.

Earthquakes

Since the early 1900s, there have been seven earthquakes felt in the vicinity of Whiteside County: three in Rock Island County, two in Lee County, one in Carroll County and one in Whiteside County. All of these earthquakes measured less than 5.0 magnitude. There are geologic faults in the adjacent counties to the north and east, but there are no known geologic faults in Whiteside County.

Greg added that Larry Acker, a 3rd generation weather observer, helped provide some of the data used in this assessment. Committee members were asked to provide information on events not

included in the tables in the Risk Assessment handout. Stu Richter mentioned that the number of repetitive loss properties impacted by floods may be higher and he will provide information that can be included in the Plan.

Man-Made Hazards
While the focus of this planning effort is directed at natural hazards, FEMA allows a small portion of the planning process to be devoted to an overview of selected man-made hazards. Although this overview does not have the same depth as the assessment of natural hazards, it provides useful information to place various man-made hazards in perspective. Some of this information should be helpful to first responders so that they can take necessary safety precautions to protect themselves and others.

Chemical Generators
There are ten companies in Whiteside County who report the quantities of chemicals they generate. There are two companies that would be considered "major" generators of hazardous substances and they are both located in Sterling.

Transportation
Roads & HazMat Incidents: Since HazMat incidents include responses to chemical releases while they are transported as well as responses to releases from stationary facilities, the number of HazMat incidents and roadway problems were discussed together. Whiteside County averages about 10 HazMat incidents a year. This number is similar to other rural counties in Illinois. In most cases, diesel fuel, gasoline, and motor oil are the most frequently released substances.

Rail: Four incidents involving hazardous substances occurred in Whiteside County from 2004 through 2013. None of these incidents involved evacuations or derailments.

Pipelines: Six incidents involving releases from pipelines occurred in Whiteside County from 2004 through 2013. Three of these incidents resulted in evacuations. One incident, near Erie on August 13, 2013, resulted in a fire and an explosion. Greg emphasized that there is a need for constant readiness. With the age of these pipelines, the risk increases. This fact was illustrated by the recent major pipeline breaks in California, in Will County, Illinois, and in Michigan.

Disposal
There is one active solid waste landfill operating in Whiteside County, and there are five operating landfills in adjacent counties. There are no commercial chemical treatment or disposal facilities in Whiteside County.

Remediation
Superfund/CERCLIS: There are no Superfund sites or candidate sites in Whiteside County. (The CERLCIS is an inventory of candidate sites being considered for Superfund listing.)

Illinois Site Remediation Program (SRP): Illinois has an active program to eliminate risks to public health and the environment from sites where chemical contamination exists. Thirty sites in Whiteside County are enrolled in this program. Most of these sites have received No Further Remediation Letters or are nearing remediation. Eight other sites are in varying stages of remediation, but none of these sites pose an imminent threat to residents.

Leaking Underground Storage Tanks (LUST): One hundred eleven (111) incidents involving leaking underground storage tanks have been documented in Whiteside County. Approximately 95% of these incidents have received No Further Remediation Letters or are virtually completed. Six sites had received a "high priority" classification, and work on all six of these sites has been completed. There are only five sites where substantial works may be needed which is exceptional when compared to other counties.

In response to a question, Greg noted that rail accidents involving hazardous substances in the County totaled four during the ten year study period. While this is a small number of rail incidents, the amount of deep crude oil shipments is on the rise in northwest Illinois. Detailed information about rail accidents in the County and throughout Illinois is included in the Risk Assessment material distributed at the start of the meeting.

Before the next presentation, the following forms distributed at the previous meeting: "**Critical Facilities,**" **"List of Existing Planning Documents," "Hazard Event Questionnaire," "Identification of Severe Weather Shelters,"** and the **"Citizen Survey"** were collected from the Committee members.

To help better identify storm damages to critical facilities, Andrea Bostwick, JDQ, distributed a **Critical Facilities Damage Questionnaire.** Committee members were requested to provide information on this form about dates, type of hazard event, critical facility damaged, and, if available, the amount of damages incurred. Information provided by the Committee will be used to supplement other information to complete the Vulnerability Assessment for each participating jurisdiction.

Mission Statement & Goals

Andrea reminded members that a draft mission statement and goals were provided at the previous committee meeting. She asked if any revisions were needed for the mission statement. No revisions were proposed.

She then asked if any additions were needed to the draft goals to reflect any specific situation in Whiteside County. No revisions were proposed. Andrea responded to a question about goals saying that the list of goals can be amended after the Plan is approved. The Plan is not a static document. Annual update meetings should be conducted each year following Plan approval.

Mitigation

Greg reminded Committee Members that the purpose of the next meeting is to bring ideas for mitigation projects. He referred everyone to the handout that lists examples of mitigation projects for the County and municipalities. The following categories of projects were described.

Studies may be needed to identify the cause of the problem. A drainage problem may exist, but the most effective remedy may be uncertain. Debris in culverts, undersized culverts, and changes in land use all contribute to drainage problems. A drainage study may be needed to determine the cause or group of causes for a recurring drainage problem.

Structural projects typically are the most frequently mentioned category of mitigation projects. Examples of structural projects are included in the handout material.

While lower on the priority scale, but important to prevent damages are ***Public information/education activities.*** These activities have been proven to be useful to alert people about how to protect themselves and their property.

Andrea distributed paper copies of the **"Hazard Mitigation Project Form"** that should be used to submit projects and activities. She described several problems to avoid when completing these forms. Providing locations, such as street names, is needed. For clarity, often just one additional word is needed. When mentioning towers, are you referring to a water tower or a communication tower? She emphasized that submitting a project does not obligate any jurisdiction to complete the project. FEMA is trying to stimulate mitigation to reduce the extraordinary amount of money being expended on storm damages.

In response to a question, it was noted that most mitigation grants provide 75% in state/federal funds and require a 25% local match. The local match can often be met with in-kind services instead of money.

What Happens Next?

The Committee set Thursday, March 5, 2015 as the date for its next meeting. The starting time will remain at 1 p.m. and the location will remain the same.

Public Comment

With no additional questions or comments, Seth Janssen adjourned the meeting.

Meeting Minutes

Whiteside County Multi-Jurisdictional
All Hazards Mitigation Planning Committee

March 5, 2015
Odell Public Library
307 Madison Street, Morrison
1:00 p.m.

Committee Members

Amateur Radio Emergency Services (ARES)
Blackhawk Hills Regional Council
CGH Medical Center
Fulton, City of
Mitigation Planning Consultants
    Johnson, Depp & Quisenberry
Morrison, City of
Morrison Community Hospital
Prophetstown, City of
Public Representatives
    Doug Buhler
Rock Falls, City of
Sterling, City of
Tampico, Village of
Twin City Joint Fire Command
Whiteside County Offices
    911
    Administrator
    Assessor
    County Board
    ESDA
    GIS
    Health Department
    Highways
    Planning & Zoning
Whiteside County ROE

Welcome and Introductions

Seth Janssen, Whiteside County ESDA Coordinator, welcomed attendees. He noted that the focus of this meeting is the Vulnerability Assessment and Mitigation Projects. He announced an upcoming training session for municipal officials and distributed information about this event.

Information packets about the Vulnerability Assessment, Mitigation Projects and related items were distributed to Committee Members.

Vulnerability Assessment

Greg Michaud, JDQ, began by noting the contrast between the previous committee meeting and today's meeting. Over 50 years of severe weather and storm damage information was summarized in the previous meeting. Today the Vulnerability Assessment estimates future damages in terms of dollar loss to residences including contents based on FEMA acceptable formulas. The most recent property tax assessment figures were provided by the County Supervisor of Assessments and building counts were conducted to help calculate these damage estimates.

Tornadoes
Whiteside County is located on the edge of "tornado alley" in Illinois where the most tornadoes occur. Using information about each of the nineteen (19) verified tornadoes, damages were calculated based on an "average" tornado. In Whiteside County, the average sized tornado impacts approximately 0.03431 square miles (1.0 miles long x 189 feet wide). Housing densities were calculated from U.S. Census Bureau information for each of the participating jurisdictions.

Losses in the unincorporated townships of the County differ sharply between the four most populated townships and the other townships. Damages are estimated to range from approximately $98,000 in the lesser populated areas to $685,000 in the four most populated townships.

Potential dollar losses for residences and contents would be expected to exceed at least $1 million in any of the participating municipalities with the exception of Coleta and Deer Grove. Potential damages in Fulton, Morrison, Prophetstown, Rock Falls, Sterling and Tamipico would be expected to exceed $2 million in each municipality.

Floods
Approximately 21% of the land area in Whiteside County is in the floodplain and thus susceptible to flooding from creeks and streams. Riverine flooding has historically been a major concern because of the Mississippi and Rock Rivers. This vulnerability assessment makes projected damage estimates based solely on riverine flooding that impact residential structures within a base floodplain.

A combined sixty-three residences are located in the floodplain of the three municipalities of Albany, Erie and Sterling. Combined flood damages for these three municipalities to residential properties are estimated at $1.65 million.

Six of the eleven municipalities have businesses located in the floodplain.

Three municipalities (Albany, Erie and Fulton) have critical facilities located in the floodplain including two wastewater treatment facilities, a middle school, and a high school.

Coleta and Tampico would not experience this kind of riverine flooding since there are no streams or creeks with floodplains within their municipal limits. However, flash flooding would impact these municipalities as well as the rest of Whiteside County.

The Community Rating System is a federal program that can help reduce the cost of flood insurance premiums for those who live within designated floodplains. Various activities, most of which are informational and administrative, can be selected by each impacted jurisdiction to reduce insurance premium costs for all residents who live within their boundaries.

Project Prioritization Method
A Project Prioritization Method is required by FEMA in the Plan. The term Project Prioritization Method actually refers to a method to classify each project.

Greg identified the two primary factors in the development of this strategy:

1) Frequency of hazard—severe storms occur more frequently than earthquakes.

2) Degree of mitigation—some projects will *eliminate* damages while most projects will reduce, but not eliminate damages.

Greg acknowledged that while this methodology does not take cost or politics into consideration, these factors may affect the order in which projects are implemented.

Mitigation Projects

Andrea Bostwick, JDQ, described how the Project Prioritization Methodology, the lists of Mitigation Projects, and other information will be presented for Committee review at the next Committee meeting

Andrea chose a frequently needed mitigation project, a storm safe shelter, as an example to show how a typical project is prioritized and entered into the Plan on a Mitigation Table. A sufficiently large-size chart was placed on the wall so that everyone in the room could read it from where they sat. Andrea entered information about each category describing various factors that will be used to make determinations about each project and activity. She explained that most of the information on the Mitigation Project Table will be prepared by JDQ, but that the Table cannot be started until all of the participants submit their list of projects.

She explained that all mitigation projects submitted will be organized by participating jurisdiction. At the next Committee meeting, all of the mitigation projects will be presented in the format that Andrea described.

Each jurisdiction will have the opportunity to review their projects as well as those projects submitted by other participants. When needed, JDQ will make suggestions, but each jurisdiction will decide which projects they want on their list.

What Happens Next?

It is anticipated that about three months will be needed for all of the participants to assemble their mitigation project lists. Consequently, the Committee agreed to schedule the next meeting on:

Thursday, June 25
Odell Public Library
1 p.m.

Andrea distributed compensation forms and requested that Committee members complete these forms and return them to JDQ. Information from these forms will remain confidential and will be used to complete the grant close-out report submitted to IEMA/FEMA.

Public Comment

With no further public comment, Seth Janssen adjourned the meeting by thanking attendees for their participation.

Meeting Minutes

Whiteside County Multi-Jurisdictional
All Hazards Mitigation Planning Committee
June 25, 2015
Odell Public Library
307 Madison Street, Morrison
1:00 p.m.

Committee Members

Amateur Radio Emergency Services (ARES)
Blackhawk Hills Regional Council
CGH Medical Center
Coleta, Village of
Deer Grove, Village of
Mitigation Planning Consultants
    Johnson, Depp & Quisenberry
Morrison, City of
Prophetstown, City of
Public Representatives
    Doug Buhler
Rock Falls, City of
Sterling, City of
Tampico, Village of
Twin City Joint Fire Command
Whiteside County Offices:
    911
    Administrator
    Assessor
    ESDA
    GIS
    Health Department
    Highway Department
    Planning & Zoning
Whiteside County Farm Bureau
Whiteside County ROE
Larry Acker, 3F Forecasts

Welcome and Introductions

Seth Janssen, Whiteside County ESDA Coordinator, welcomed attendees. He noted that the focus of this meeting is to complete each jurisdiction's list of Mitigation Projects. Information packets about the Mitigation Projects and related items were distributed to Committee Members.

Mitigation Project Submittal & Action Tables

Before beginning this presentation, Greg Michaud provided a brief recap to help reorient Committee members as to what has been accomplished and what will be covered at this meeting. He noted that the severe weather (tornadoes and flash floods) experienced in the region during the past week underscores the importance of the Committee's work.

Greg commended the Committee Members for assembling their lists of mitigation projects and activities. Eighty-three (83) mitigation projects and activities were described and prioritized in the Action Tables.

Committee members were provided approximately 25 minutes during the meeting to review the Action Tables containing the descriptions of the mitigation projects and activities. Andrea Bostwick and Greg moved throughout the room to discuss questions with each member. Some additional mitigation projects were provided and will be added to these tables.

Plan Maintenance and Update

Andrea described the Plan maintenance and update commitments that are detailed in the Plan. A subgroup of the Planning Committee will meet annually under the direction of the Whiteside County ESDA to report on the progress of their projects and make any additions or edits to their list of projects. There is no penalty for not building any project. The intent of the planning process is to encourage mitigation, not to penalize municipalities or counties.

Every five years, the Plan is formally updated and resubmitted to IEMA/FEMA. At the five year update, any jurisdiction who wants to become part of the Plan may do so. Any new jurisdiction must supply the same information that all of the current jurisdictions supplied.

A public forum will be conducted to present the draft Plan to the public. Interested persons can comment on the Plan at this forum or by providing comments to Committee members or the Whiteside County ESDA.

The first jurisdiction to formally adopt the Plan begins the five year clock. If a jurisdiction decides not to adopt the Plan, FEMA will still approve the Plan and those jurisdictions who adopt the Plan will become eligible for state/federal funds.

She cautioned all of the jurisdictions not to adopt the Plan until after FEMA provides preliminary approval. An e-mail will be issued notifying the Committee members that the Plan has received approval.

Weather Forecast

Larry Acker, 3F Forecasts, is a third generation weather information collector in northern Illinois. In addition to monitoring weather information for the National Weather Service, he does analyses to make long-range weather predictions.

Higher than normal rainfall until July 24 is anticipated based on information that Larry has analyzed. Hot temperatures and drier than normal conditions are predicted from the end of July through September.

What Happens Next?

Public Forum

The final Committee meeting will be conducted in the early evening as an open-house style public forum where the draft Plan will be presented for review and comment. Contrary to conventional public meetings, at an open-house style public forum the public can come and go at their convenience.

The Committee chose to hold the public forum on:

Thursday, October 1
Odell Public Library
5 p.m. to 6:30 p.m.

Committee members were asked their preferences regarding format of the draft Plan that they will make available for public comment. A two week public comment period will follow the public forum. Paper copies will be provided to Deer Grove and Morrison while the other jurisdictions requested electronic copies of the draft Plan.

Photographs
Prophetstown provided photographs of storm damage, but more photos are needed for the Plan. Attendees were encouraged to submit photos as soon as possible.

Public Comment

With no other questions, the meeting was adjourned by Seth Janssen.

CITIZEN QUESTIONNAIRE

APPENDIX D

QUESTIONNAIRE

Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Plan

You can help protect lives and property from storm damage in Whiteside County by taking a few moments to complete this questionnaire.

1. Please indicate where you live in Whiteside County:

_____ Albany
_____ Coleta
_____ Como
_____ Deer Grove
_____ East Clinton
_____ Emerson
_____ Erie
_____ Fenton
_____ Fulton
_____ Galt
_____ Garden Plain
_____ Hillsdale
_____ Lyndon
_____ Morrison
_____ Penrose
_____ Portland
_____ Prophetstown
_____ Rock Falls
_____ Round Grove
_____ Spring Hill
_____ Sterling
_____ Tampico
_____ Union Grove
_____ Unionville
_____ Unincorporated Whiteside County

_____ Other (please specify): _____

2. Please place a check mark next to each of the natural hazards listed below that you have experienced in Whiteside County. (Please check all that apply.)

_____ Severe Summer Storms (thunderstorms, hail and/or lightning strikes)
_____ Floods
_____ Severe Winter Storms (snow, sleet, ice and/or extreme cold)
_____ Extreme Heat
_____ Tornadoes
_____ Earthquakes
_____ Drought
_____ Other (please specify): _____

3. Which of the natural hazards above have you encountered most frequently?

_____

4. Rank the natural hazards listed below in sequential order from 1 to 7 based on which hazard you feel poses the greatest threat. (1 = greatest threat and 7 = least threat). *Each number should only be used once.*

_____ Severe Summer Storms
_____ Floods
_____ Severe Winter Storms
_____ Extreme Heat
_____ Tornadoes
_____ Earthquakes
_____ Drought
_____ Other (please specify): _____

5. What types of mitigation projects or activities are most needed in Whiteside County? (Please check the ***five*** you feel are most important.)

_____ Public information fact sheets and brochures describing actions residents can take to protect themselves and their property against natural hazard impacts

_____ Floodplain Ordinances

_____ Building Codes and Enforcement

_____ Sirens or other Alert Systems

_____ Flood or Drainage Protection (If selected, please check the type of flood or drainage activity that is needed below.)

- ____ Culvert and drainage ditch maintenance
- ____ Retention pond construction
- ____ Dam or levee construction/maintenance
- ____ Hydraulic studies to determine cause of drainage problems

_____ Maintain power during storms by burying power lines, trimming trees and/or purchasing a back-up generator

_____ Tornado Safe Shelters

_____ Maintain roadway passage during snow storms and heavy rains

_____ Provide sufficient water supply during drought

_____ Identify residents with special needs in order to provide assistance during a natural hazard event

_____ Retrofit critical infrastructure(public water supplies, schools, sewage treatment facilities, bridges, hospitals and other important services) to reduce potential damages

_____ Other (please specify): _____

6. What are the most effective ways ***for you*** to receive information about how to make your household and property safer from natural disasters? (Please check all that apply.)

_____ Newspapers
_____ Television
_____ Radio
_____ Internet
_____ Schools
_____ Mail
_____ Fact Sheet/Brochure
_____ Extension Service
_____ Public Workshops/Meeting
_____ Fire Department/Law Enforcement
_____ Public Health Department
_____ Municipal/County Government
_____ Other (please specify): _____

Thank you for your time in assisting with the development of the County's Natural Hazards Mitigation Plan.

Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Planning Committee

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FREQUENTLY ASKED QUESTIONS FACT SHEET

APPENDIX E

Frequently Asked Questions

Whiteside County Multi-Jurisdictional Natural Hazards Mitigation Planning Committee

1) **What is the Whiteside County Natural Hazards Mitigation Plan?**
The Whiteside County Natural Hazards Mitigation Plan evaluates damage to life and property from storms and other natural hazards in this county and identifies projects and activities that can reduce these damages. The Plan is considered to be multi-jurisdictional because it includes municipalities and institutions who want to participate.

2) **What is natural hazard mitigation?**
Natural hazard mitigation is any action taken to reduce or eliminate long-term risk to life and property from a natural hazard. Storms are the most frequently occurring natural hazards, but other natural hazards being considered in this Plan include drought and earthquakes.

3) **Why is this Plan being developed?**
The Plan fulfills federal planning requirements of Section 104 of the Disaster Mitigation Act of 2000 and the Stafford Act. Three key benefits this plan will provide Whiteside County are:

   a) Funding following declared disasters.
   b) Funding for mitigation projects and activities before disasters occur.
   c) Increased awareness about natural hazards and closer cooperation among the various organizations and political jurisdictions involved with emergency planning and response.

4) **Who is developing this Plan?**
The Whiteside County Natural Hazards Mitigation Planning Committee is preparing the Plan with assistance from technical experts in emergency planning, environmental matters, and infrastructure. The Committee includes members from agriculture, business and economic development, emergency services, municipal, county and state government, health care, insurance, law enforcement, and institutions such as the American Red Cross.

5) **How can I participate?**
You are invited to attend public meetings of the Whiteside County Natural Hazards Mitigation Planning Committee. In addition you are encouraged to provide photographs, other documentation, and anecdotal information about damages you experienced with natural hazards in Whiteside County. Surveys will be available at participating municipalities and through Whiteside County to help gather specific information from residents. All of this information will be used to draft the Plan. The draft Plan will be presented in a public forum for further public input.

More information can be obtained by contacting:

Seth Janssen, Director
Whiteside County ESDA
400 N. Cherry St.
Morrison, Illinois 61270
(815) 772-4044

MEDIA OUTLETS SERVING WHITESIDE COUNTY

APPENDIX F

Media Outlets Serving Whiteside County

Newspapers

Daily Gazette (daily)
SaukValley.com
3200 E. Lincolnway
Sterling, IL 61081
(815) 625-3600
http://www.saukvalley.com/

Erie Review (weekly)
910 Albany St.
Erie, IL 61250
(815) 772-7244

Fulton Journal (weekly)
1009 4th St.
Fulton, IL 61252
(815) 589-2424

Prairie Advocate (Weekly)
446 S. Broad St.
Lanark, IL 61046
(815) 493-2560
www.pacc-news.com

Prophetstown Echo (weekly)
342 Washington St.
Prophetstown, IL 61277
(815) 537-5107

thecity1.com Morrison Online
218 W. Main St., Suite 100
Morrison, IL 61270
(815) 772-8718
www.thecity1.com

Whiteside News Sentinel (weekly)
100 E. Main St.
Morrison, IL 61270
(815) 772-7244

Radio Stations

WIXN (1460 AM)
1460 S. College Ave.
Dixon, IL 61021
(815) 288-3341
www.myrockriverradio.com

WSDR (1240 AM)
3101 Freeport Rd.
Sterling, IL 61081
(815) 625-1240

WLLT (107.7 FM)
260 St. Rte. 2
Dixon, IL 61021
(815) 284-1077

PRESS RELEASES AND NEWS ARTICLES PUBLISHED

APPENDIX G

Whiteside County E.S.D.A.
400 North Cherry Street
Morrison, IL 61270
815-772-4044

Contact: Seth Janssen

Countywide Plan For Natural Disasters

Morrison, IL (07/07/14)—Whiteside County will begin preparing a countywide plan that will identify activities and projects to reduce the damages caused by natural hazards such as floods, snow storms, thunderstorms, tornadoes, and ice storms among others. The plan is called a Natural Hazard Mitigation Plan and will be funded through a grant from the Federal Emergency Management Agency (FEMA).

Whiteside County has had ten Federal declared disasters since 1965 with flooding occurring during nine of these ten disasters. These disasters occurred in 1965, 1969, 1973, 1974, 1985, 1990, 1993, 2005, 2008 and 2011.

"Developing this plan will help us be better prepared before storms hit. The focus of this plan is to reduce the harm to property and residents. We have an emergency response plan. The mitigation plan is aimed at prevention so it will complement our response plan. The county and each participating municipality who adopts the mitigation plan being developed will become eligible for federal funds," said Seth Janssen, Whiteside County Emergency Services & Disaster Agency Coordinator.

A Whiteside County Hazard Mitigation Planning Committee has been created with representatives from each participating municipality along with technical partners and other stakeholders. Meetings of this committee will be conducted as working sessions so that any interested resident can attend and ask questions. The purpose of these working sessions is to gather and discuss information that will be used to prepare the plan.

The first meeting of this Committee will be on Thursday, July 17, at the Odell Public Library located at 307 S. Madison Street in Morrison beginning at 1 p.m.

All Whiteside County municipalities are invited to participate in this planning process. Albany, Erie, Fulton, Morrison, Prophetstown, Rock Falls, Sterling, and Tampico intend to participate. There is still time for other municipalities to join the process. This is a "living plan" which will be updated annually allowing participants to add projects to the plan; however, municipalities who do not participate during the development of the plan must wait five years before they will have the opportunity to participate again.

"Typically plans are developed and then the public is asked to comment. With this Hazard Mitigation Plan, input from the public will be gathered before and during its development. We will also hold a public forum after the Plan is drafted, but our focus will be to gather input before the draft is completed," added Janssen.

Emergency Services and Disaster Agency
Prevention—Protection—Response—Recovery—Mitigation

Articles by Category

thecity1.com
July 9, 2014

Countywide Plan for Natural Disasters Seeks Input

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Details
Created: Wednesday, 09 July 2014 10:23

Whiteside County will begin preparing a Countywide plan that will identify activities and projects to reduce the damages caused by natural hazards, such as floods, snow storms, thunderstorms, tornadoes, and ice storms, among others. The plan is called a Natural Hazard Mitigation Plan and will be funded through a grant from the Federal Emergency Management Agency (FEMA.)

Whiteside County has had ten Federal declared disasters since 1965 with flooding occurring during nine of these ten disasters. They occurred in 1965, 1969, 1973, 1974, 1985, 1990, 1993, 2005, 2008, and 2011.

"Developing this plan will help us be better prepared before storms hit. The focus of this plan is to reduce the harm to property and residents. We have an emergency response plan. The mitigation plan is aimed at prevention, so it will complement our response plan. The County and each participating municipality who adopts the mitigation plan being developed will become eligible for Federal funds," said Seth Janssen, Whiteside County Emergency Services & Disaster Agency Coordinator.

A Whiteside County Hazard Mitigation Planning Committee has been create, with representatives from each participating municipality, along with technical partners and other stakeholders. Meetings of this committee will be conducted as working sessions so that any interested resident can attend and ask questions. The purpose of these working sessions is to gather and discuss information that will be used to prepare the plan.

Appendix G

The first meeting of this Committee will be on Thursday, July 17, 2014, at the Odell Public Library, 307 S. Madison Street, in Morrison, IL, beginning at 1:00 p.m.

All Whiteside County municipalities are invited to participate in this planning process. Albany, Erie, Fulton, Morrison, Prophetstown, Rock Falls, Sterling, and Tampico, IL, intend to participate. There is still time for other municipalities to join the process. This is a "living plan" which will be updated annually, allowing participants to add projects to the plan. However, municipalities who do not participate during the development of the plan must wait five years before they will have the opportunity to participate again.

"Typically plans are developed, and then the public is asked to comment. With this Hazard Mitigation Plan, input from the public will be gathered before and during its development. We will also hold a public forum after the Plan is drafted, but our focus will be to gather input before the draft is completed," added Janssen.

SaukValley.com
July 10, 2014

SaukValley.com - Serving Dixon, Sterling and Rock Falls, Illinois

New committee preps for disaster in Whiteside County

Public input sought on reducing flood, other natural damages

Published: Thursday, July 10, 2014 1:15 a.m. CDT

MORRISON – A committee has formed, and public comment is being sought on a countywide plan to identify activities and projects needed to reduce damages caused by natural hazards such as floods, snowstorms, thunderstorms, tornadoes, and ice storms.

The Whiteside County Natural Hazard Mitigation Plan will be funded by a grant from the Federal Emergency Management Agency, according to a news release from Sgt. Seth Janssen, the county's Emergency Services and Disaster Agency coordinator.

Whiteside County has had 10 federal disasters declared since 1965, nine involving flooding, the release said.

"Developing this plan will help us be better prepared before storms hit," Janssen said. "The focus of this plan is to reduce the harm to property and residents. We have an emergency response plan. The mitigation plan is aimed at prevention, so it will complement our response plan."

"The county and each participating municipality that adopts the mitigation plan being developed will become eligible for federal funds," he said in the release.

The new Whiteside County Hazard Mitigation Planning Committee has representatives from each participating municipality, along with technical partners and other stakeholders.

Public meetings will be held to gather and discuss information that will be used to prepare the plan.

All Whiteside County municipalities are invited to participate. Most – Albany, Erie, Fulton, Morrison, Prophetstown, Rock Falls, Sterling, and Tampico – already have indicated they will.

This is a "living plan" that will be updated each year, allowing participants to add projects to the plan.

"Typically, plans are developed and then the public is asked to comment," Janssen said. "With this hazard mitigation plan, input from the public will be gathered before and during its development. We will also hold a public forum after the plan is drafted, but our focus will be to gather input before the draft is completed."

To attend

The first meeting of the Whiteside County Hazard Mitigation Planning Committee begins at 1 p.m. July 17 at Odell Public Library, 307 S. Madison St. in Morrison.

Call Sgt. Seth Janssen, the county's Emergency Services and Disaster Agency coordinator, at 815-772-4044, ext. 209, for more information.

Meeting agendas will be posted at www.whiteside.org online.

Whiteside County E.S.D.A.
400 North Cherry Street
Morrison, IL 61270
815-772-4044

Contact: Seth Janssen
(815)772-4044

Reducing Damages Caused By Severe Weather

Morrison, IL (October 20, 2014)—Extreme weather events in Whiteside County raise important questions. How vulnerable are residents to these storms? What are the most frequently occurring natural hazards? How much damage do storms and other natural hazards, such as drought, cause?

These questions and other related issues will be discussed when representatives from Whiteside County and local municipalities meet Thursday, October 30 at the Odell Public Library at 307 S. Madison in Morrison. This group, the Whiteside County Hazard Mitigation Committee, will meet through the next several months to prepare the plan to reduce damages caused by natural hazards. The Committee Meeting begins at 1 p.m. and all Committee Meetings are open to the public.

"The plan should become our best resource to help county and municipal officials decide what steps to take to prepare for storms and other natural hazards. After this Plan is completed, comprehensive information will be available in one document to help guide those who are making decisions about how to better protect residents," said Seth Janssen, Whiteside County Emergency Services & Disaster Coordinator.

Developing public information materials, building storm shelters, designing roads, bridges, water supplies and other services to better withstand natural disasters, are some examples of the kind of projects and activities that can reduce storm damages.

While the plan is being developed, at least four Mitigation Committee meetings will be conducted. Interested persons can provide input at these meetings, or submit their comments and questions to their municipal or county representatives.

Public comments will be used to develop a draft plan. After the draft plan is developed, a public forum will be held where the draft plan will be presented for review and comment.

"By identifying the frequency of each natural hazard and their magnitude, projects can be identified to reduce damages caused by these events," added Janssen.

Emergency Services and Disaster Agency
Prevention—Protection—Response—Recovery—Mitigation

Whiteside County E.S.D.A.
400 North Cherry Street
Morrison, IL 61270
815-772-4044

FOR IMMEDIATE RELEASE

Contact: Seth Janssen
(815)772-4044

Identifying Projects to Reduce Damages Caused By Severe Weather

Morrison, IL (February 27, 2015)—Steps to prevent injuries and deaths while maintaining vital services for Whiteside County residents when floods and severe storms hit will be discussed when the Whiteside County Natural Hazard Mitigation Planning Committee meets at 1:00 p.m. on March 5, in the Odell Public Library at 307 S. Madison Street in Morrison. This meeting is open to the public.

This Committee began work in July, 2014, to identify projects and activities that can protect County residents and property from storms and other natural disasters. This work is aimed at taking action before severe weather occurs.

“Emergency plans are directed at responding after a storm or natural disaster hits. This is the first time in Whiteside County that we developing plans to reduce or eliminate damages caused by specific types of storms and other natural disasters,” said Seth Janssen, Whiteside County Emergency Services & Disaster Coordinator.

Resolving drainage problems, retrofitting water supplies and other critical facilities to better withstand natural disasters, and building storm shelters are a few examples of the kinds of projects that might be included in the plan. Developing public information materials and conducting drainage studies are examples of other activities that might also be included in the Natural Hazard Mitigation Plan.

“All of the municipalities who participate will become eligible for all of the storm damage money for which they are due following a federally declared disaster. In addition, participating jurisdictions can also become eligible for federal/state grant money for mitigation projects,” added Janssen.

XXXXXXXXXXXXXXXXX

Emergency Services and Disaster Agency
Prevention—Protection—Response—Recovery—Mitigation

Articles by Category

thecity1.com
March 3, 2015

Identifying Projects to Reduce Severe Weather Damage

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Details
Created: Tuesday, 03 March 2015 11:48

Steps to prevent injuries and deaths, while maintaining vital services for Whiteside County residents, when floods and severe storms hit will be discussed when the Whiteside County Natural Hazard Mitigation Planning Committee meets at 1:00 p.m. on Thursday, March 5, 2015. The meeting will be in the Odell Public Library, 307 S. Madison Street, Morrison, IL, and is open to the public.

This Committee began work in July 2014, to identify projects and activities that can protect County residents and property from storms and other natural disasters. This work is aimed at **taking action before severe weather occurs**.

"Emergency plans are directed at responding after a storm or natural disaster hits. This is the first time in Whiteside County that we are developing plans to reduce or eliminate damages caused by specific types of storms and other natural disasters," said Sergeant Seth Janssen, Whiteside County Emergency Services & Disaster Coordinator.

Resolving drainage problems, retrofitting water supplies and other critical facilities to better withstand natural disasters, and building storm shelters are examples of the kinds of projects that might be included in the plan. Developing public information materials and conducting drainage studies are examples of other activities that might be included in the Natural Hazard Mitigation Plan.

"All of the municipalities who participate will become eligible for all of the storm damage money, for which they are due following a Federally declared disaster. In addition, participating jurisdictions can also become eligible for Federal/State grant money for mitigation projects," added Sergeant Janssen.

He can be reached at 815-772-4044, extension 209.

Appendix G

Whiteside County E.S.D.A.
400 North Cherry Street
Morrison, IL 61270
815-772-4044

FOR IMMEDIATE RELEASE

Contact: Seth Janssen
(815)772-4044

Projects to Reduce Damages Caused By Storms

Morrison, IL (JUNE 15, 2015)—Projects and activities to protect residents and property from storms and other hazards will be discussed at the Whiteside County Natural Hazards Mitigation Planning Committee meeting on June 25 at the Odell Public Library, 307 S. Madison Street, in Morrison. The meeting begins at 1 p.m. and is open to the public.

"Severe weather in Whiteside County has resulted in over $8.1 million in documented damages to buildings, crops, and other critical infrastructure since 1965. Whiteside County has had four federally declared disasters since 2001. In addition, we have experienced an increase in the severity of heavy rainfall events during the last two decades. Taking preventative steps reduces the number of personal injuries and the amount of dollars lost," according to Seth Janssen, Coordinator, Whiteside County Emergency Services & Disaster Agency.

Whiteside County has an emergency response plan, but not a mitigation plan. "Emergency response plans describe what actions should be taken after severe weather hits, this mitigation plan identifies actions that should be taken before severe weather occurs," added Janssen.

While the public has provided input on portions of the plan, the entire plan will be presented for public review and comment before it is submitted to the state and federal government for approval.

"A public forum will be conducted later this year for interested persons to review the plan and ask questions of Committee members. A two week public comment period will be established to accommodate interested persons who are unable to attend the forum. We want to make sure that anybody who is interested has an opportunity to review and comment on the draft plan," said Janssen.

Interested persons can submit questions and comments to the Committee members or directly to the Whiteside County Emergency Services & Disaster Agency.

XXXXXXXXXXXXXXXXX

Emergency Services and Disaster Agency
Prevention—Protection—Response—Recovery—Mitigation

Articles by Category

thecity1.com
June 16, 2015

How to Reduce Storm Damage

Like 0

Details
Created: Tuesday, 16 June 2015 13:52

Projects and activities to protect residents and property from storms and other hazards will be discussed at the Whiteside County Natural Hazards Mitigation Planning Committee meeting on Thursday, June 25, 2015. The meeting begins at 1:00 p.m. at Odell Public Library, 307 S. Madison Street, Morrison, IL. Severe weather in Whiteside County caused over $8.1 million in documented damages to buildings, crops, and other critical infrastructure since 1965.

Shown above is Morrison storm damage from Monday, August 25, 2014. Photo by Brennan Bender.

"Whiteside County has had four Federally-declared disasters since 2001. We experienced an increase in the severity of heavy rainfall events during the last two decades. Taking preventative steps reduces the number of personal injuries and the amount of dollars lost," according to Seth Janssen, Coordinator, Whiteside County Emergency Services and Disaster Agency. "The County has an emergency response plan, but not a mitigation plan."

"Emergency response plans describe what actions should be taken after severe weather hits. The mitigation plan identifies actions that should be taken before severe weather occurs," Janssen added. "While the public has provided input on portions of the plan, the entire plan will be presented for public review and comment, before it is submitted to the State and Federal Governments for approval."

A public forum will be conducted later this year for interested persons to review the plan and ask questions of

Appendix G

Committee members. A two week public comment period will be established, to accommodate interested persons who are unable to attend the forum.

"We want to make sure that anybody who is interested has an opportunity to review. Interested persons can submit questions and comments to the committee members or go directly to the Whiteside County Emergency Services and Disaster Agency," said Janssen.

Appendix G

Whiteside County E.S.D.A.
400 North Cherry Street
Morrison, IL 61270
815-772-4044

Contact: Seth Janssen
815-772-4044

Public Forum on Plans to Reduce Storm Damage

Morrison, IL (SEPTEMBER 21, 2015)--Projects to prevent injuries, deaths and property damage from major storms and other types of severe weather will be presented for public comment in the Whiteside County Natural Hazards Mitigation Plan. This Plan will be available for review at the public forum on Thursday October 1 from 5 p.m. to 7 p.m. at the Odell Public Library, 307 S. Madison, in Morrison. Members of the Whiteside County Natural Hazards Mitigation Planning Committee will be available to answer questions and discuss the Plan.

"Persons can come and go at their convenience. If someone only has a few minutes to review a plan, ask a question, or comment, they can easily do so at any time during the forum. This forum is designed to accommodate busy schedules. Unlike some conventional meetings, there are no formal presentations forcing attendees to wait before they can speak," according to Seth Janssen, Coordinator, Whiteside County Emergency Services & Disaster Agency.

Approximately 120 projects and activities have been identified to protect Whiteside County residents and property from storms and other natural disasters. This Committee has been conducting working meetings open to the public since July, 2014.

CGH Medical Center, Morrison Community Hospital, ARES and RACES (two radio organizations involved with emergency communications), the Blackhawk Hills Regional Council, and the Whiteside County Farm Bureau joined county and municipal representatives on the Whiteside County Hazard Mitigation Planning Committee.

"Committee members helped identify projects that reflect the specific needs of each participating municipality. Evaluating information about storms and damages was used to develop specific suggestions about potential projects that can reduce harm to people and property," added Janssen.

A public comment period will remain open until October 15. Comments can be directed to the Whiteside County Emergency Services & Disaster Agency. Following the public comment period, any revisions that are needed will be made before the Plan is submitted to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for approval.

Emergency Services and Disaster Agency
Prevention—Protection—Response—Recovery—Mitigation

Articles by Category

thecity1.com
September 21, 2015

Public Forum to Reduce Storm Damage October 1

Like 0

Details
Created: Monday, 21 September 2015 11:56

Projects to prevent injuries, deaths, and property damage from major storms and other types of severe weather will be presented for Public Comment, in the Whiteside County Natural Hazards Mitigation Plan. This Plan will be available for review at the public forum on Thursday, October 1, 2015, from 5:00 to 7 p.m. at the Odell Public Library, 307 S. Madison Street, in Morrison, IL.

Members of the Whiteside County Natural Hazards Mitigation Planning Committee will be available to answer questions and discuss the Plan.

"Persons can come and go at their convenience. If someone only has a few minutes to review a plan, ask a question, or comment, they can easily do so, at any time during the forum. This forum is designed to accommodate busy schedules. Unlike some conventional meetings, there are no formal presentations, forcing attendees to wait before they can speak," stated Seth Janssen, Coordinator, Whiteside County Emergency Services & Disaster Agency.

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"Committee members helped identify projects that reflect the specific needs of each participating municipality. Evaluating information about storms and damages [l]ed to develop[ing] specific suggestions about potential projects that can reduce harm to people and property," added Janssen.

A Public Comment period will remain open until Thursday, October 15. Comments can be directed to the Whiteside County Emergency Services & Disaster Agency. Any revisions that are needed will be made,

Appendix G

before the Plan is submitted to the Illinois Emergency Management Agency and the Federal Emergency Management Agency for approval.

Appendix G

SaukValley.com
September 24, 2015

SaukValley.com - Serving Dixon, Sterling and Rock Falls, Illinois

Forum on severe weather plan Thursday in Morrison

Published: Thursday, Sept. 24, 2015 6:19 p.m. CDT

MORRISON – A public forum will be held Thursday on a proactive plan for severe weather is being formed in Whiteside County, and public input is sought.

Countywide input is sought for the Whiteside County Natural Hazards Mitigation Plan, which will include projects to prevent injuries, deaths, and property damage from major storms and other severe weather.

"The purpose of the public forum is for interested citizens to discuss the plan or ask questions with committee members present," said Seth Janssen, the county's Emergency Services and Disaster Agency coordinator. "It is required by [Federal Emergency Management Agency] as part of the grant process that allowed the county to produce the plan."

CGH Medical Center, Morrison Community Hospital, Amateur Radio Emergency Service, Radio Amateur Civil Emergency Service, the Blackhawk Hills Regional Council and the Whiteside County Farm Bureau joined county and municipal representatives to form the Whiteside County Hazard Mitigation Planning Committee.

"Committee members helped identify projects that reflect the specific needs of each participating municipality," Janssen said. "Evaluating information about storms and damages was used to develop specific suggestions about potential projects that can reduce harm to people and property."

Since July 2014, the committee has identified 120 projects and activities to protect Whiteside County residents and property from storms and other natural disasters.

The plan will be funded by a grant from FEMA.

"The tentative final plan will be available for review on Oct. 1 at Odell Library," Janssen said. "I say 'tentative' because there will be a period of 2 weeks after that date that revisions might be made."

Once the 2 weeks are up, Janssen said, the plan will be submitted to FEMA for approval.

"Once approved, I plan to add a PDF to the county website where it will be available for anyone to view," he said.

To attend

The Whiteside County Hazard Mitigation Planning Committee forum will be held from 5 to 7 p.m. Thursday at Odell Public Library, 307 S. Madison St. in Morrison.

Call Seth Janssen, the county's emergency services and disaster agency coordinator, at 815-772-4044 for more information.

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SaukValley.com
October 1, 2015

SaukValley.com - Serving Dixon, Sterling and Rock Falls, Illinois

Public a no-show for Whiteside County weather plan forum

Outdoor warning siren at state park tops wish list

Published: Thursday, Oct. 1, 2015 8:36 p.m. CDT

MORRISON – There was one thing missing from a public forum in Morrison on Thursday.

The public.

The forum was held so that residents could get a look at the roughly 400-page severe weather plan at the Odell Public Library. The plan – called the Whiteside County Natural Hazards Mitigation Plan – takes a proactive approach to severe weather and included projects designed to prevent injuries, deaths, and property damage from major storms and other severe weather.

Despite the fact that no one showed up to weigh in on the weather plan, the city's Emergency Services and Disaster Agency coordinator, Seth Janssen, tried to find a silver lining in the clouds.

"Hopefully, people are thinking, 'We put our trust in them and they are doing what's best for the county,'" said Janssen.

The plan was put together by Whiteside County Hazard Mitigation Planning Committee, which consists of county and municipal representatives as well as representatives from CGH Medical Center, Morrison Community Hospital, Amateur Radio Emergency Service, Radio Amateur Civil Emergency Service, the Blackhawk Hills Regional Council and the Whiteside County Farm Bureau.

Since July 2014, the committee has identified 120 projects and activities to protect county residents and property from storms and other natural disasters.

One of the projects that Janssen said is on the "wish list" is to purchase and install an outdoor warning siren at Rockwood State Park in Morrison.

Another request in the plan is to both design and build remedies "to alleviate recurring roadway flooding from the Rock River in the area of Prophetstown Road and Luther Road."

"When it floods or water washes debris on the road, we have to spend money and clean it up," Janssen said

The plan is divided into sections that cover the planning process, the risk assessment, the mitigation strategy, recommendations, plan maintenance and adoption.

The risk assessment identifies the natural and man-made hazards that pose a threat to the county.

The tentative final plan will be on display for another 2 weeks.

"The 2-week period is where everyone in Whiteside County can submit a comment," said committee member Greg Michaud. "We hope this is a starting point to reduce some of the damages we found during our research."

Once the 2 weeks are up, the committee has to wait a couple of months for the Federal Emergency Management Agency and the Illinois Emergency Management Agency to approve the plan.

The plan, if approved, will be funded by a FEMA grant.

After that, the public will get chance to check it out – again.

"Once approved, I plan to add a PDF to the county website where it will be available for anyone to view," he said.

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PUBLIC FORUM – PLANNING PROCESS SUMMARY HANDOUT

APPENDIX H

WHITESIDE COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

PUBLIC FORUM – OPEN HOUSE

OCTOBER 1, 2015
ODELL PUBLIC LIBRARY, MORRISON
5:00 P.M. – 7:00 P.M.

Each year natural hazards (i.e., severe thunderstorms, tornadoes, severe winter storms, flooding, etc.) cause damage to property and threaten the lives and health of Whiteside County residents. Since 1965, Whiteside County has had nine federally-declared disasters.

In addition, between 2005 and 2014 there have been 91 thunderstorms with damaging winds; 72 heavy rain events producing at least 1.50 inches of rain; 32 severe winter storms (snow and ice); 19 general flood and flash flood events; 16 severe storms with hail one inch in diameter or great; 5 extreme cold events; 4 lightning strike events; 3 droughts; 2 extreme heat events; 2 earthquakes felt by residents in the County; and 1 tornado. While natural hazards cannot be avoided, their impacts can be reduced through effective hazard mitigation planning.

What is hazard mitigation planning?

Hazard mitigation planning is the process of determining how to reduce or eliminate property damage and loss of life from natural and man-made hazards. This process helps the County and participating municipalities reduce their risk by identifying vulnerabilities and developing mitigation actions to lessen and sometimes even eliminate the effects of a hazard. The results of this process are documented in an all hazards mitigation plan.

Why prepare an all hazards mitigation plan?

By preparing and adopting an all hazards mitigation plan, participating jurisdictions become eligible to apply for and receive federal hazard mitigation funds to implement mitigation actions identified in the Plan. These funds, made available through the Disaster Mitigation Act of 2000, can help provide local government entities with the opportunity to complete mitigation projects that would not otherwise be financially possible.

Who participated in the development of the Whiteside County Multi-Jurisdiction All Hazards Mitigation Plan?

Recognizing the benefits that could be gained from preparing an all hazards mitigation plan, the Whiteside County Board passed a resolution on June 19, 2012 authorizing the development of the Whiteside County Multi-Jurisdictional All Hazards Mitigation Plan. The County then invited all the local government entities within Whiteside County to participate. The following jurisdictions chose to participate in the Plan's development:

- Coleta
- Deer Grove
- Erie
- Morrison
- Prophetstown
- Rock Falls
- Sterling
- Tampico
- Whiteside County ROE

WHITESIDE COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

How was the Plan developed?

The Whiteside County Multi-Jurisdictional All Hazards Mitigation Plan was developed through the Whiteside County Multi-Jurisdictional All Hazards Mitigation Planning Committee. The Planning Committee included representatives from each participating jurisdiction, as well as agriculture, education, emergency services (fire, law enforcement, ARES & RACES), healthcare, GIS and planning and development. The Planning Committee met five times between July 2014 and October 2015.

Which natural and man-made hazards are included in the Plan?

After much discussion, the Planning Committee chose to include the following natural and man-made hazards in this Plan:

Natural Hazards:

- severe storms (thunderstorms, hail, lighting & heavy rain)
- severe winter storms (snow, ice & extreme cold)
- flood
- tornadoes
- extreme heat
- drought
- earthquakes
- dams
- levees

Man-Made Hazards:

- hazardous substances (generation, transportation and storage/handling)
- waste disposal
- hazardous material incidents
- waste remediation
- terrorism

What is included in the Plan?

The Plan is divided into sections that cover the planning process; the risk assessment; the mitigation strategy, including lists of mitigation actions identified for each participating jurisdiction; recommendations; and plan maintenance and adoption. The majority of the Plan is devoted to the risk assessment.

This risk assessment identifies the natural and man-made hazards that pose a threat to the County and includes a profile of each natural hazard which describes the location and severity of past occurrences, reported damages to public health and property, and the likelihood of future occurrences. It also provides a vulnerability assessment that estimates the potential impacts each natural and man-made hazard would have on the health and safety of the residents of Whiteside County as well as the buildings, critical facilities and infrastructure located within the County.

What happens next?

Any comments received at tonight's public forum will be are incorporated into the draft Plan before it is submitted to the Illinois Emergency Management Agency (IEMA) and the Federal Emergency Management Agency (FEMA) for review. Once IEMA and FEMA have reviewed and approved the Plan, it will be presented to the County and each participating jurisdiction for formal adoption. After adopting the Plan, each participating jurisdiction can apply for federal mitigation funds and begin implementation of the mitigation actions identified in the Plan.

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PUBLIC FORUM – PLAN COMMENT SHEET

APPENDIX I

WHITESIDE COUNTY MULTI-JURISDICTIONAL ALL HAZARDS MITIGATION PLAN

PUBLIC FORUM – OCTOBER 1, 2015
COMMENT SHEET

The Whiteside County Multi-Jurisdictional All Hazards Mitigation Plan evaluates damage to life and property from natural and man-made hazards that occur in the County. This Plan also identifies projects and activities submitted by the County and each participating jurisdiction that will help reduce these damages. This comment sheet should be used to provide feedback on the draft Plan.

What comments, concerns or questions do you have regarding the draft Plan? (Use additional sheets if necessary.)

_____

_____

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_____

Please Print Your Name, Address, and Phone Number Below

Name: _____ Phone: _____

Address: _____

_____ Zip Code: _____

Comments will be accepted until October 16, 2015.

Place
Stamp
Here

Mr. Seth Janssen, Coordinator
Whiteside County ESDA
400 N. Cherry St.
Morrison, IL 61270

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HAZARD MITIGATION PLANNING LETTER SENT TO ADJACENT COUNTIES

APPENDIX J

Whiteside County E.S.D.A.
400 North Cherry Street
Morrison, IL 61270
815-772-4044

TO: Carroll County EMA (Greg Miller); Ogle County EMA (Tom Richter); Lee County EMA (Kevin Lalley); Bureau County EMA (Keenan Campbell); Henry County (Mat Schnepple), and Rock Island County EMA (Jerry Shirk)

From: Seth Janssen, Whiteside County ESDA

Subject: Hazard Mitigation Planning

Date: September 1, 2015

The purpose of this memorandum is to invite you to attend a planning meeting of the Whiteside County Natural Hazard Mitigation Committee. Since we share a common border with six other counties, you may have interest or concerns regarding our Plan.

Johnson, Depp & Quisenberry, an emergency management and engineering consulting firm experienced in preparing these plans, is leading our planning process.

The next meeting of the Committee will be:

> **Thursday, October 1**
> Odell Public Library
> 307 S. Madison Street
> Morrison, IL
> **5 p.m.**

Food and beverages will be provided at the meeting. If you plan to attend or have questions, please contact Greg Michaud, our mitigation planning consultant, at 217/529-4534

Whiteside County E.S.D.A.
400 North Cherry Street
Morrison, IL 61270
815-772-4044

TO: Carroll County EMA (Greg Miller); Ogle County EMA (Tom Richter); Lee County EMA (Kevin Lalley); Bureau County EMA (Keenan Campbell); Henry County (Mat Schnepple), and Rock Island County EMA (Jerry Shirk)

From: Seth Janssen, Whiteside County ESDA

Subject: Hazard Mitigation Planning

Date: September 21, 2015

The purpose of this memorandum is to invite you to attend a planning meeting of the Whiteside County Natural Hazard Mitigation Committee. Since we share a common border with six other counties, you may have interest or concerns regarding our Plan.

Johnson, Depp & Quisenberry, an emergency management and engineering consulting firm experienced in preparing these plans, is leading our planning process.

The next meeting of the Committee will be:

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307 S. Madison Street
Morrison, IL
5 p.m.

Food and beverages will be provided at the meeting. If you plan to attend or have questions, please contact Greg Michaud, our mitigation planning consultant, at 217/529-4534

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HAZARD EVENT NEWS ARTICLES

APPENDIX K

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AUGUST 25, 2014 – MORRISON THUNDERSTORM WITH DAMAGING WINDS

Storm Damage in Morrison, IL knocks out power in the city

Tallie Johnson ()

Like 0 Tweet 0

08/25/2014 09:50 PM 08/25/2014 11:01 PM

Pounding rains, strong winds and dark clouds rumbled over parts of the Quad City area Monday.

And areas west of the quad cities took an especially hard hit, and thousands are still without power tonight.
Many in Morrison, Illinois are still cleaning up Monday night.

"It was just black as can be off to the west, and all of a sudden it got a little breezy and then boom it just rained like crazy, said Morrison resident Jim Blakemore.

The storm started around two in the afternoon, and the heavy rain and wind only lasted just several minutes.

"It knocked down a lot of trees and a lot of power lines it also knocked down some trees on the railroad tracks...so traffic was rerouted through town a different way and it was a pretty big hassle to get anywhere in town," said Dalbert Weibenga, Assistant Fire Chief.

Now the city is littered with branches on the ground ,and the sidewalks are covered in debris. The entire city is without power.

"There was just branches ..I...branches were literally coming out of trees as we were walking it was really something," said Jim Blakemore.

Some residents like Jim Ferry have a lot of cleaning up to do. The tree in his front yard completely broke in half.

"I heard this big crash and boom i felt the whole house shake and this tree had fallen behind me," said Morrison resident Jim Ferry.

Still Ferry says he's lucky.

"No one got hurt it fell where it didn't land on my house," said Ferry.

No word yet on when the power will be back on in the city.

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Page: 1

Articles by Category

-

50-60 MPH Winds Wreck Havoc

Like 573

Details
Created: Tuesday, 26 August 2014 09:41
Written by Stephanie Vavra

Editor's note: Morrison, IL, residents shared these photographs of storm damage on Facebook.

"Whole Gale"-force winds ravished Morrison, IL, the afternoon of Monday, August 25, 2014. Beginning around 2:00 p.m., winds that were measured at 55 MPH in Fulton, IL, and estimated here to be at 60 MPH, tore down the town's stately trees and electrical power lines. The horizontal rain amounted to 1.5 inches, doing its own damage and scattering plant debris.

Kevin Phelps of KWQC-TV6 stated on Tuesday, August 26, that this storm was "like the rainstorms we get on the Gulf [of Mexico.] It's so humid and [full of] moisture. It's got no place to go."

Perhaps the most damaging effect was to the home of Veronica Kruse, 514 Anthony Court. A tree at the west side of a string of townhouses sliced through her roof.

It was fortunate that schools had dismissed at 1:05, due to the extreme heat. Most students likely were home safely before the storm struck. Imagine trying to calm little ones, in Pre-School through grade two, like those attending Northside School, 520 N. Genesee Street, seen below.

The first photo was taken from the northwest corner of High and Genesee Streets. The second faces south along Genesee.

Appendix K

City of Morrison Public Works Department employees, Morrison Police officers and firemen, and Whiteside County Sheriff's Deputies went into action. They secured areas of downed power lines. The Union Pacific Railroad was shut down for 2.5 hours due to trees on the tracks. The City will cut down small trees, stated Director of Public Services Gary Treseriter. He stated ComEd anticipated having full power restored by the end of Tuesday. "ComEd has four or five crews working. It's a war zone out there," he added, regarding the cleaning of limbs around the City.

Bramm Tree Service, 6861 Fulton Road, Fulton, IL, and Ryan's Tree Service, Inc., 23454 Emerson Road, Sterling, IL, attacked fallen limbs and trees with efficiency. If you need help removing storm-damaged trees, call them at **815-772-2550** or **815-626-2322**, respectively.

In sharp contrast to the early afternoon, the day calmed, cooled, and cleared. However, darkness overtook the town, as more than 1360 homes were without power. Some would see the lights return at 10:08 p.m. Some areas remained without power Tuesday, August 26.

Between those times, a decision had to be made regarding classes on Tuesday. About 9:00 p.m., Morrison Unit School District #6 cancelled school, but the bus to the Whiteside Area Career Center in Sterling, IL, would carry students at the regular time.

Downed power lines draped across the 500 block of Portland Avenue (IL Route 78), left; Winfield Street; a sidewalk on Lincolnway.

Appendix K

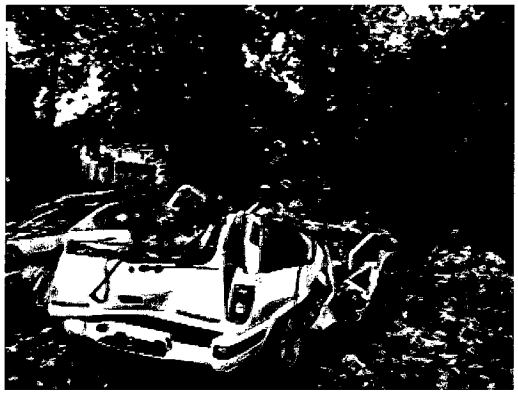
It will be some time before citizen's and public property returns to normal. The summer storm of August 25 will remain a topic of lively conversation.

Appendix K

Storms leave behind damage and power outages in Morrison

POSTED 10:41 AM, AUGUST 26, 2014, BY SHELLIE NELSON, *UPDATED AT 11:12AM, AUGUST 26, 2014*

PHOTO GALLERY



VIEW GALLERY (3 IMAGES)

Schools cancelled classes as residents worked to recover from storms that knocked down trees and knocked out power in Morrison, Illinois.

Storms that pushed through the area during the afternoon and evening Monday, August 25, 2014, included hail, heavy rain and high winds.

Trees and power lines were downed, and power was knocked out for hundreds of homes and businesses in the area.

Schools cancelled classes as power outages were still scattered in the Morrison area Tuesday, August 26.

Cleanup was underway and many residents reported power was restored before noon Tuesday.

Articles by Category

-

MCUD Offers Respite for Families After Storm

Like 8

Details

Created: Tuesday, 26 August 2014 16:34

In an effort to assist those families still without power from yesterday's [Monday, August 25, 2014,] storm, Morrison Junior High, 305 E. Winfield Street, Morrison, IL, will be open to the public on Tuesday, August 26....Families may shower, charge cell phones, get a reprieve from the weather, or anything else that can be done to help. The building will be open from 5:30 until 7:00 p.m. or later if there is a need. If you need to charge electronic devices, please bring a power strip if you have one. We will be playing a movie for the children during this time in the air conditioned band room. Please feel free to pass this on to others in need.

Appendix K

Articles by Category

-

As Bad as It Was, It Could Have Been Worse

Like 1

Details
Created: Wednesday, 27 August 2014 18:37
Written by Stephanie Vavra

Many citizens of Morrison, IL, are coping with the aftermath of a severe wind storm of Monday, August 25, 2014.

If one could mark on a continuum all the damage that occurred within those few minutes, some might have a change in perspective regarding their situation. One could also play the game called ["the] GOOD NEWS [is..., but the] BAD NEWS [is...."] Even with extensive property damage and destruction of trees, our town did not suffer a disastrous tornado or loss of life. Extensive clean up, a great insurance carrier, and patience will lessen this mess. Look at all the tree debris dragged to the edge of yards already.

Once, a travel agent helped my husband complete airline paperwork, when our Morrison Travel Club members went to Berlin, Germany, and his luggage went to Paris, France. He chose to wait a day to see if it would be returned to him, rather than taking the airline's financial assistance to buy replacement items. His bag was at the hotel before we awoke. Imagine the conscious effort several people took through the night to make that happen. The agent told my husband a British expression about such misfortunes, "You can dine out on that story for two week." It meant he would have a story to share with friends who asked about his trip.

Each of us will be able to "dine out on" our story of this summer storm and its aftermath. You decide how long you wish to tell it. Following is one couple's story.

Brandon and Stephanie Shelton, 609 Greenwood Drive, Morrison, have a BAD NEWS--GOOD NEWS story to tell about the home they have only owned since February. BAD NEWS: According to Brandon, he was on a plane to California when the storm struck. GOOD NEWS: Stephanie and the children, 11-year-old daughter Madison and 8-year old son Mckinley, were safely at home.

BAD NEWS: A large elm was uprooted and fell onto their above-ground swimming pool. A large branch hit Stephanie's LR4 Land Rover. GOOD NEWS: As it descended, the tree only slightly dented the roof, slid down without shingle damage, and ripped loose only a 2.5 foot portion of the gutter.

BAD NEWS: They had no electricity for 24 hours. A new patio set and grill are under the limb debris. Two smaller trees were lost on the south side of the house. GOOD NEWS: The Shelton's have already cut those in smaller pieces, and a submersible pump will drain the pool. Brandon noted swim season was about over.

MORE GOOD NEWS: Brandon immediately returned from his trip, and the couple set into place a clean up effort for Wednesday, August 27. On that afternoon, Ryan's Tree Service, Inc., 23454 Emerson Road, Sterling, IL, drove into their driveway and came to the Sheltons' rescue. A large portion of tree was lifted over the house and gentled onto the front driveway, to be deconstructed and removed. The whimsical, rebar face sculpture remains upright within the limbs.

Appendix K

We can imagine what he is saying about this ordeal.

Appendix K

Storm focuses on Morrison

By Nancy Gravert

Monday, August 25, 2014 will be a day that will be etched in every member of Morrison Illinois for many years to come!

The day started off very hot and humid as the past several days had been but then it is summer in the midwest and we had been rather spoiled as far as heat and yes, even humidity had gone, this summer. It seemed as if our weather was trying hard to catch up to the typical summer stuff.

The heat was so intense that Morrison Unit District #6 Schools had made the decision to release students at 1:00 pm. This was probably one of the best decisions that the new Superintendent, Scott Vance could have made because just one hour later, Morrison was to be hit with one of the worst storms in it's history!

At approximately 2:00 pm the sky turned from rather over cast to the darkest blue very quickly and with in a matter of a few minutes became increasingly windy. By 2:15 it was apparent that this was going to be a nasty one! It struck quickly, out of no where and hit with vengeance. In a very short period of time the winds picked up to 50 mph and went up from there. Trees were no match to the winds as the rain came down in buckets and the winds just kept increasing.

Continued on page 9

Appendix K

Morrison C meets afte

by Jerry Lindsey

Following the massive winds and rain that devastated the city of Morrison, the Morrison City Council convened without Leo Sullivan and Melanie Schroeder in the electricity generated Law Enforcement Building with a limited agenda.

Annual Audit: Mat Scheller, WIPFli of Sterling, reviewed the annual audit and awarded it the highest rating available ('unqualified'). The city closed the last fiscal year with 16.1 million dollars in assets of which 12.1 million dollars are Capital Assets. He noted a $280,000 improvement in the net income versus the previous year with sewer and water recording a $391,000 increased cash flow compared to last year.

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The City

When the storm hit at 2:15 p.m. on the 25th, the City of Morrison took a direct hit and was temporarily devastated with downed power lines and broken trees. Both major highways were closed from 3 to 8 hours causing major traffic jams as vehicles searched for ways to get through the maze of fallen trees. There was considerable property damage but thankfully no injuries were reported.

Well, a week later we are pretty much back to

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First Annu

by Jerry Lindsey

As the days of summer pass by ar youthful minds start to grasp the new jects required of them in school, e thing appears to be happening for a re They study to get good grades, they tice to improve their skills, they dre impress the others, they act accordi

Morrison storm

continued from page 1

The storm up rooted some of Morrison's largest old oak trees that had been around for centuries and took large portions or broke off sections of many that were not up rooted. Pine trees were like match sticks and limps took to flight. The storm lasted approximately 20 minutes and then began to subside, only to leave behind a entire community of destruction.

Vehicles with oak trees on top of or inside of was to be seen in many parts of the community. There was not a block that did not have some form of damage on either residents or city property. It was a great challenge to even get from and Highway 78 were closed following the storm due to downed trees and power lines. Traffic was virtually at a standstill for several hours.

After everyones nerves calmed down, the tremendous task of clean up began. There was no school in Morrison the following day as crews tried to clear streets and open areas to traffic.

As of Wednesday, August 27th many of the streets were opened back up to traffic and all of the power was restored to the area.

Large Township Trucks from the entire area could be seen loaded with debri

Morrison resident was even noticed traveling around town, loading up her cake pan with cookies and all of her children with water bottles to hand out to crews of ComEd employees as they worked diligently to restore the utility poles and downed wires. Were else would you see this type of hospitality but in the midwest and Morrison Illinois.

A huge thanks to everyone who had any assistance in the clean up of this massively destructive storm.

Yes, this was a storm that our community will remember for many years but as with any other catastrophe, we do recover as long as we have each other!

Karen Kuehl took a morning stroll following the Monday storm and noticed an 85 -year old neighbor sawing her fallen evergreens with a handsaw and amassed a crew to assist

The Morri
positive story
ing storm of A

HILLTOP LA
Custome
Appreciation
Saturday, Septem
Celebrating 50
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Come out for
Pulled Pork Sand
Potato Salad, and
11:30 a.m. to 3:0
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815-

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MARCH 29, 1981 – PROPHETSTOWN TORNADO

—Dispatch photo by Terry Herbig

Marilyn Sibley today looks over the wreckage of her and her husband's Prophetstown-area farm. It was blasted apart Sunday night by a tornado. 'I felt this tremendous pressure in my ears, and things started flying around, glass and debris,' she recalled.

Gus Roman Farm

4-17-1981

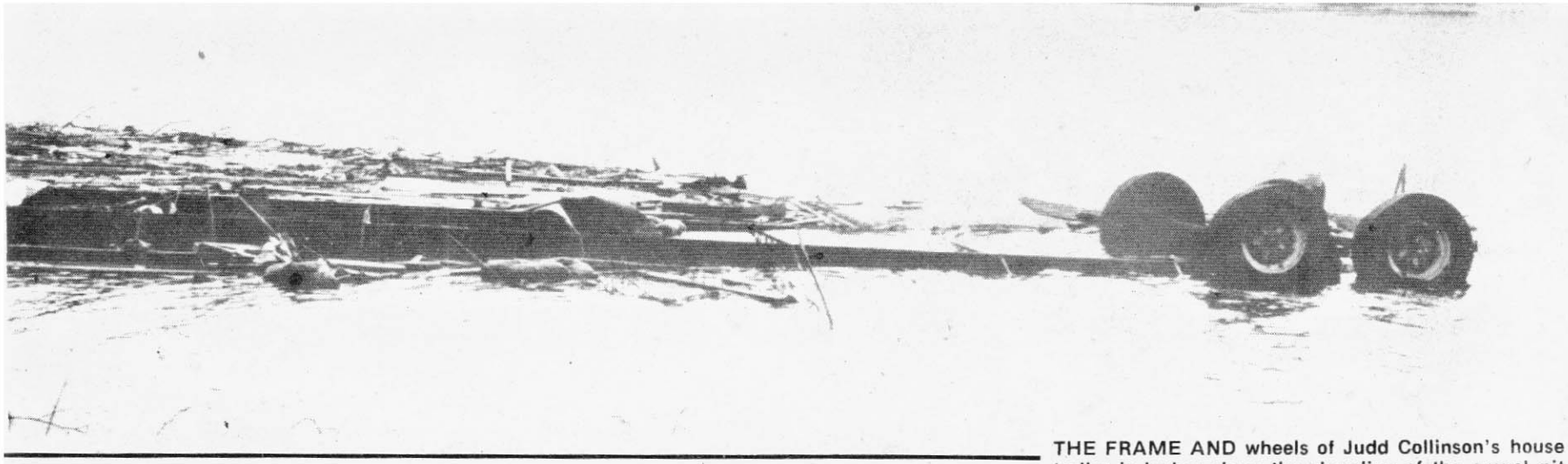
GUS ROMAN and his family rode out the storm together. However, Gus Roman's wife, Jeri, and their three small children weren't quite that together. Gus was driving his truck in from the back of the farm [circled area] just as the storm was striking the farm. He stopped the truck and watched the tornado take the roof right off his house, his wife and three children inside.

GUS ROMAN looks over his property Monday. His dog Coke was in the truck with Roman as he watched the tornado go through his farm. "Me and that dog were fighting for the floor boards in that old truck," said Roman, a Vietnam veteran who has been under fire before and has learned to be cool under pressure.

FROM THE FRONT, the trees frame the Gus Roman house on the Springhill Blacktop. All five members of the family went through the tornado and lived to tell about it.

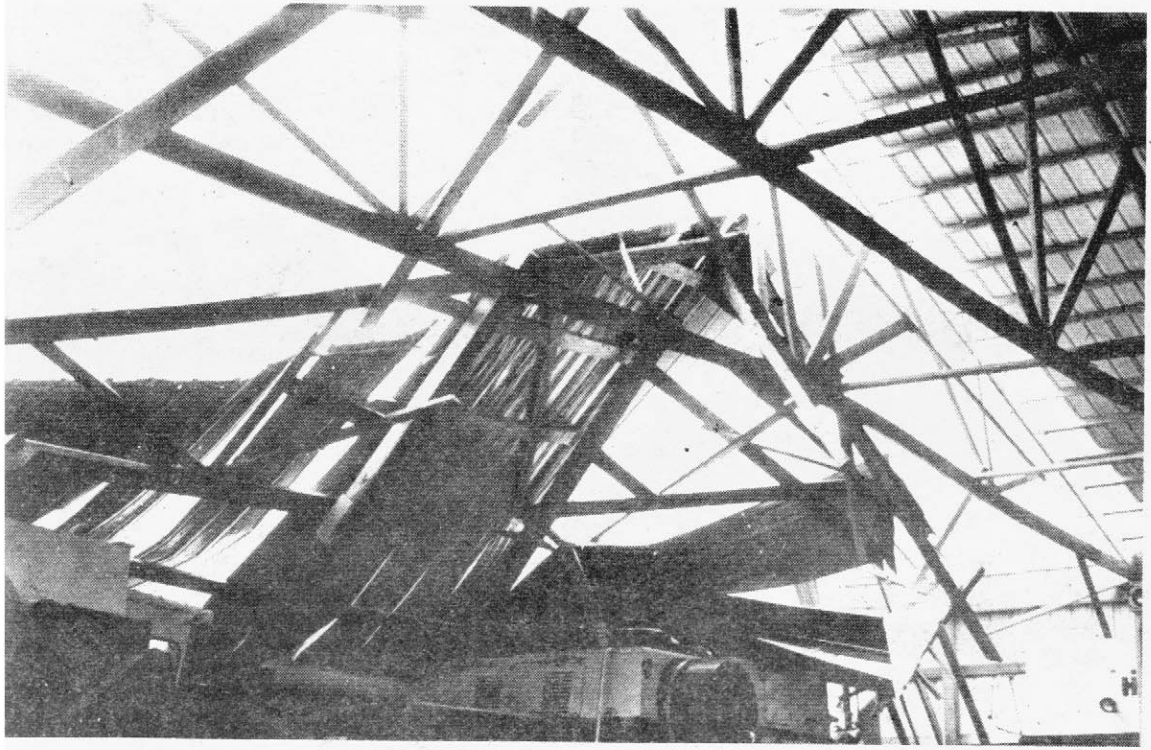
WHILE GUS ROMAN'S white German Shepard looks on, friends help extricate Fred VanDeWostine's tractor from a destroyed shed. Van DeWostine farms the nearby ground and the farm equipment is stored at Roman's. According to Fred, the farm machinery made it through reasonably well.

THE BACK of the Roman house as it appeared right after the storm. By Monday and Tuesday, Roman's friends and neighbors were working hard to clear the mass created by the tornado.



THE FRAME AND wheels of Judd Collinson's house trailor is laying along the shoreline of the gravel pit some 250 yards from where it was sitting when the storm struck. The trailer was sitting directly in front of the building on the left, the one with the wall blown out. The rest of the trailer is in the gravel pit while another trailer which was sitting nearby was destroyed when it was blown into some trees 50 yards away. According to Earl Collinson, two warehouses were completely destroyed, several gravel conveyors, a scale-house, the two trailers and several evergreen trees. Other equipment was also damaged and the insurance company has told them to go ahead and repair things on a labor/materials basis.

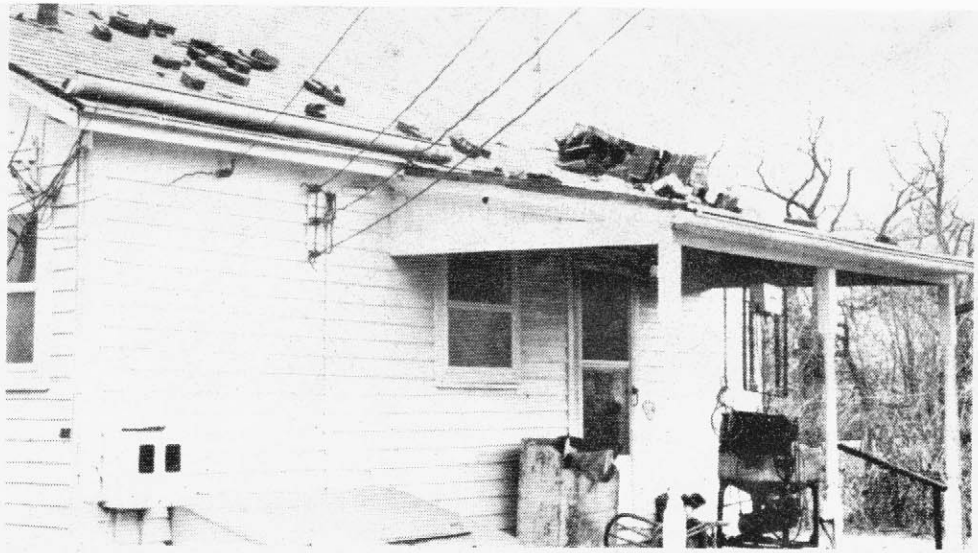
THE SOUTH-END of the new storage building at Prophetstown Equipment is blown in and some machinery was blown around. No damage estimates are available yet although the main office of Prophetstown Equipment, according to co-owner Don Bartlett, was "rather twisted and will never be the same."



Prophetstown Equipment

A PICTURE SHOT from inside the storage building at Prophetstown Equipment shows how the south wall came down on two combines. Had the two large machines not been there, the entire building may have been destroyed.

BRETT MELTON spent the major portion of Monday with a chain saw as he sliced away at two huge trees downed in Earl Hanson's front yard. "I nearly fell out of that tree 20 times," said Melton.



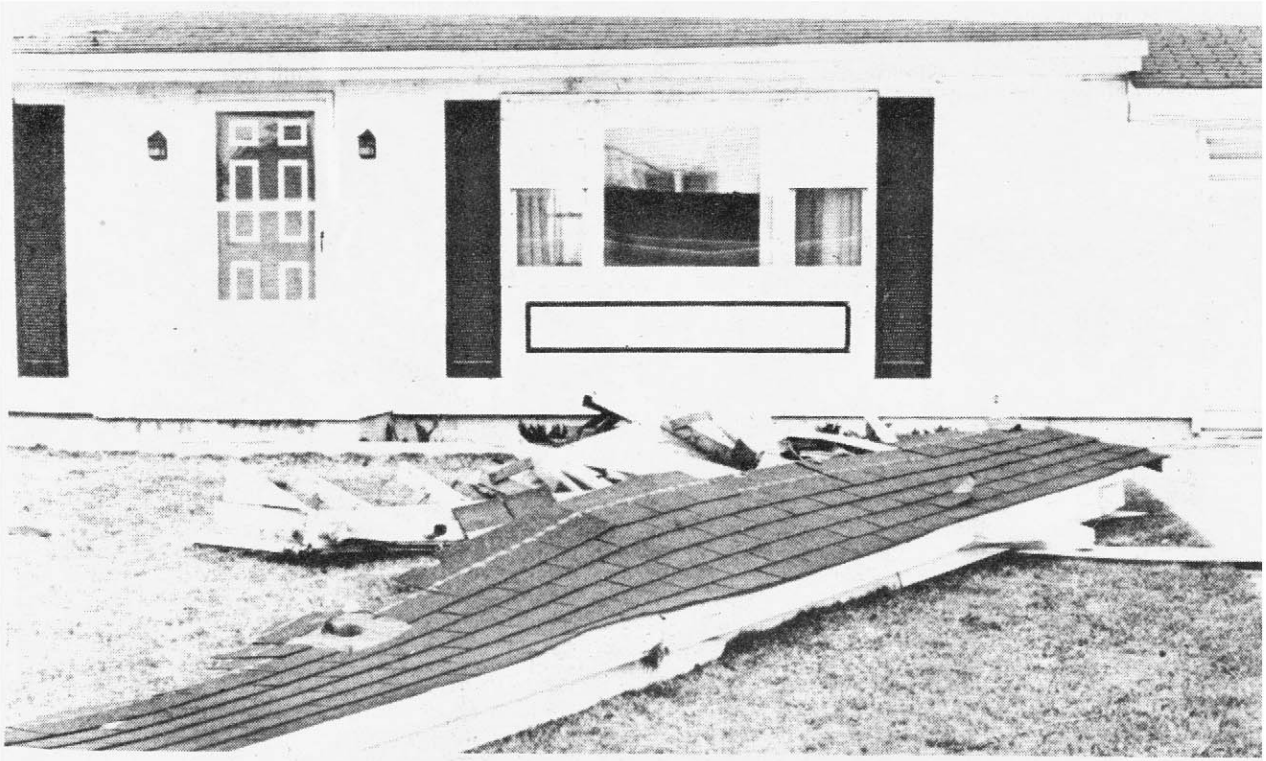
TWO CHIMNEYS were blown down and lay on the roof of Earl Hanson's house. Hanson was inside the house and went to the basement just seconds before the tornado hit. "My ears popped and then it was absolutely still," said Hanson. He expected his house to be gone, but when he started looking around he learned that he had lost the chimneys, a barn, a few trees and a circular irrigation system which as in a field behind the house. "The windmill was still standing," said Hanson.

"THE NEIGHBORHOOD'S best shade trees went down," said a resident of Fairmeadows, a subdivision across the highway from the Earl Hanson property. The trees fell across the road and Hanson had to make a new path through a fence in order to get out.

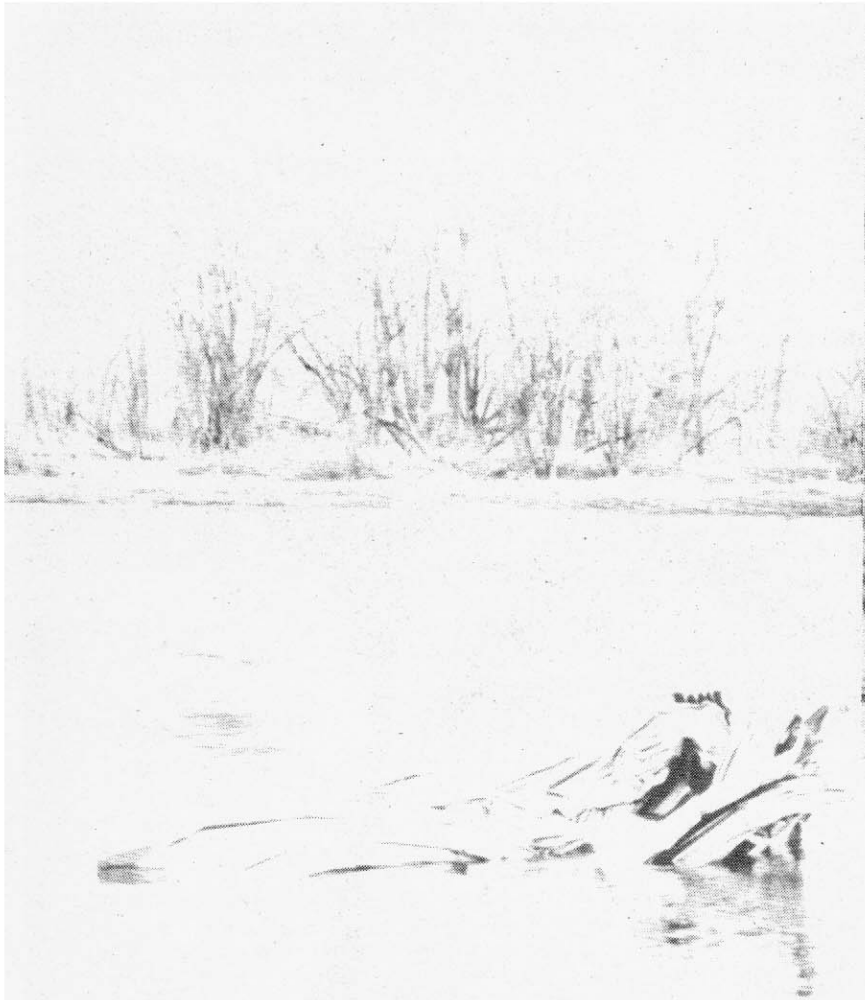
BABE LAWRENCE, an employee at Thermogas in Prophetstown looks over a box of papers Monday after the storm. The paper she is holding was still laying on top of the stack while pieces of wood were piled underneath. "How did that paper stay on top and how did the wood get under it," she wondered. Thermogas has been declared totally destroyed although the large gas tank nearby remained on its stand. The windows in the main office were blown out and a piece of plywood got nailed to a wall. Manager, Bob Schultz has estimated damage at $100,000 although many such estimated damage figures are nothing more than guesses.

A LARGE PIECE OF storage bin tin hangs in a tree some 200 or more yards from where the bin was blown apart.

WHITESIDE COUNTY Sheriff Butch Kimmell stands with an unidentified deputy Sunday night during the blockade portion of the storm. Behind the two men is Prophetstown Fire Chief David Fisk. Area law enforcement officials coordinated efforts to bring the town through the crisis in an orderly fashion.



THE BACK OF THE ROOF on Tom McRell's house came over the top of the house and ended up in the front yard when the tornado struck Sunday evening. McRell was probably more involved than most in the Sunday storm. The place he lives was damaged, the place he works was destroyed and earlier his car was moved some three feet on the road as he drove through the storm. McRell was in the car.

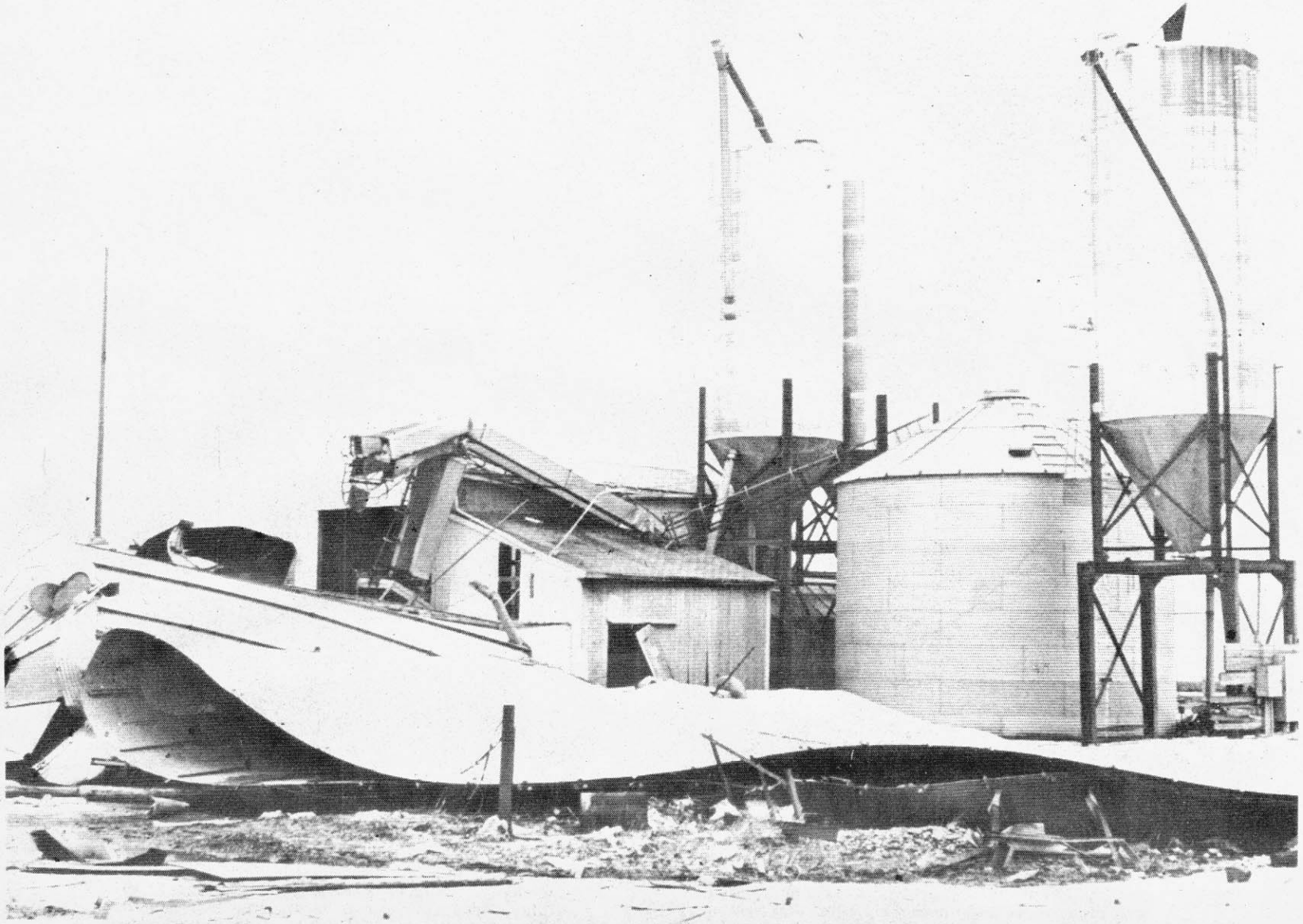


According to Jim Wiggins of the National Weather Service at the Moline Airport, the tornado, based on a damage comparison with a similar tornado which struck Reynolds, Ill., in 1974, hit speeds of approximately 300 rotational miles per hour. It's forward motion was estimated at approximately 35 mph. Wiggins, 2nd from left, came to Prophetstown Monday and is here shown looking over damage with Ken Murphy, left, Whiteside County Civil Defense Director, Chief Larry Van Dyke and Darrell Driessens, director of the Prophetstown Emergency and Disaster Agency.

According to Driessens, the 13 volunteer members of the ESDA group worked nearly around the clock, assisting police, firemen and utility crews.

THE TWISTED AND MANGLED roof of a 175,000 grain bin sits in the middle of Rock River, thrown there by the storm. While this picture does not adequately show the mangled condition of the bin, the metal can still be seen by tourists looking down the river. As of now, much of the damage has been cleaned-up and corn stored at the site has been moved to other Rock River facilites.

Rock River Lumber & Grain



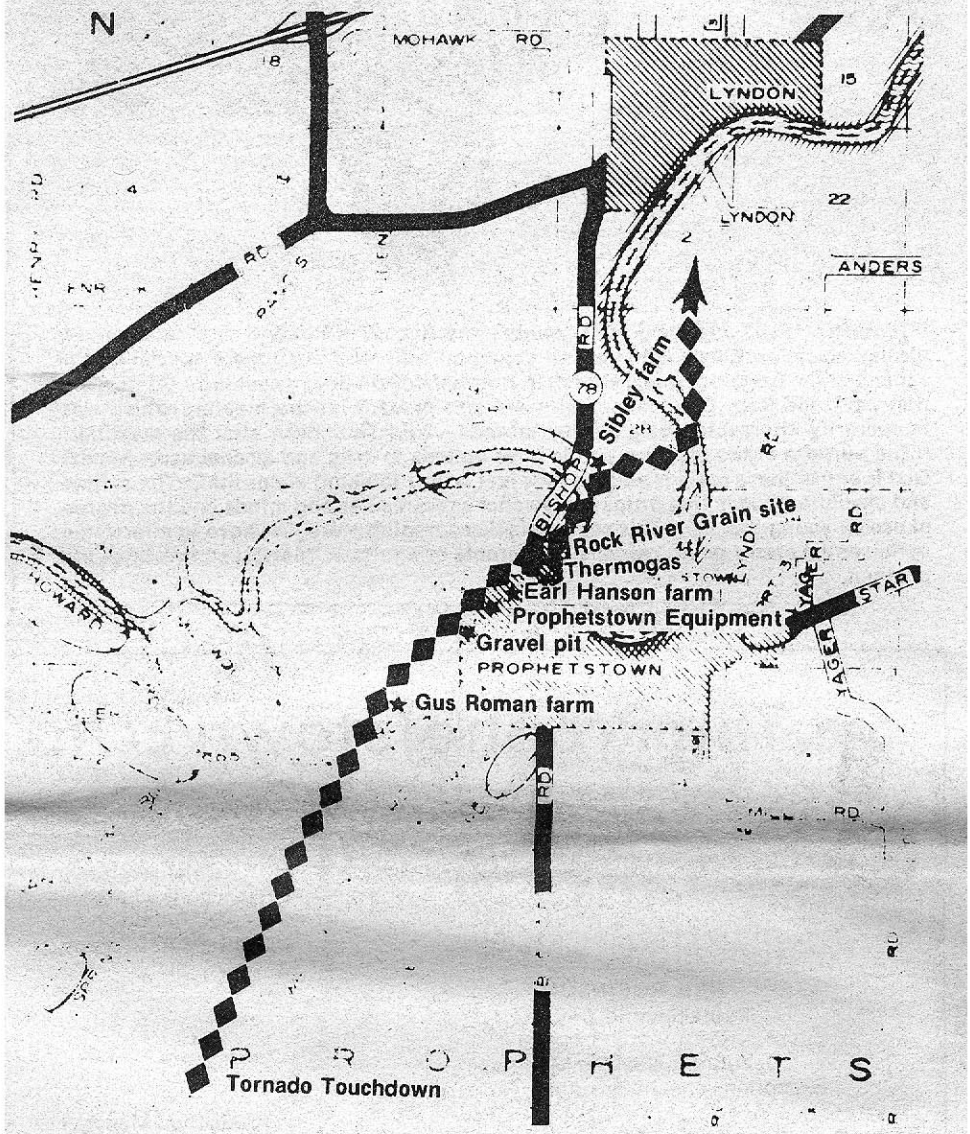
MASSIVE DESTRUCTION that could run into a million plus dollars was the result at the Rock River Lumber and Grain storage area along Rt. 78 Sunday evening. Two 175,000 bushel grain storage bins were destroyed, the top of one being blown into the rock river nearby. In this picture it can be seen that the structure on top of the storage area is no longer there. In front is a flattened seciton of one of the grain bins. The other one remained standing with the top gone and the side caved in. "I was watching it from my house in Fairmeadows," said Tom Rentschler. "When the tornado hit the grain bins it looked like a giant fire as the yellow corn was sucked up into the funnel." Officials at Rock River have indicated that the facility would be back in operation certainly in time for the fall harvest.

When the storm struck, the Sibley's were entertaining guests. Children warned them of the storm and all headed for the basement except for Mrs. Sibley who raced to get her three-month old baby who was in another room. She snatched up the child and rode out the storm in a ground floor doorway, the baby covered by her body. "It was terrible," said Mrs. Sibley who was uninjured.

Tornado route timetable

The story accompaning this map is a minute-by-minute record of the events of Sunday evening as a tornado, moving through the northwestern part of Prophetstown, brought huge amounts of property damage to seven farmsteads and/or businesses.

The dark arrow on the map traces the path of the storm as it was viewed by more than 100 people in and around Prophetstown. Damaged or destroyed, beginning on the southwest part of town, were: Gus Roman's farm, Collinson Sand and Gravel, Prophetstown Equipment, Earl Hanson's farm, Thermogas, Rock River Grain site and the Kenneth Sibley farm just across the river.



List of times and events concerning Sunday Evening's Tornado, March 29, 1981 in Prophetstown.

6:15 p.m. A citizen of Prophetstown, Warren Long of North Street, called the Prophetstown Police Department and reported to Chief Larry Van Dyke that he saw a tornado headed right for Prophetstown.
6:15 p.m. Prophetstown Police Officer, Robert Farran, was dispatched to the west part of the city to investigate.
6:15 p.m. Prophetstown Emergency Services & Disaster Agency Director, Darrell Driessens, was notified by Lynda Van Dyke of the reported tornado and advised to report to the Police Department.
6:17 p.m. Prophetstown Police Officer, Robert Farran, radioed Chief Van Dyke and confirmed a tornado on the ground was headed right for the City of Prophetstown.
6:17 p.m. Chief Van Dyke arrives at the Police Station and radioes the Whiteside County Sheriff's Department that he was activating the tornado warning siren as a tornado was on the ground and headed right for the city at 6:18 p.m.
6:19-21 p.m. Tornado warning siren was activated by Chief Larry Van Dyke at the City Hall.

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6:19-21 p.m. Tornado warning siren was activated by Chief Larry Van Dyke at the City Hall.
6:21 p.m. City's electricity goes out - siren stops.
6:22 p.m. Illinois State Police are telephoned by Chief Van Dyke - tornado hits Prophetstown and assistance is requested from Illinois State Police.
6:25 p.m. Police Officer Richard Gluff arrives at Police Department and is directed to the north part of the city to assist Officer Farran.
6:30 p.m. Report received of heavy damage and a possible gas leak at Thermogas Company at the north edge of the city. Prophetstown Fire Department is dispatched to the scene.
6:30 p.m. National Weather Service in Moline, Illinois calls Police Department and confirms the tornado. Weather Service issued tornado warning for Whiteside County.
6:30 p.m. Police Matron, Barb Gluff, reports to Police Department to assist with phones and calling of E.S.D.A. members.
6:35 p.m. Mayor Marvin Scott arrives at the Police Department and assists with phone answering and calls.
6:40 p.m. E.S.D.A. members called and were advised to report to the Police Station. Many members reported in before being called.
6:45 p.m. Road blocks were set up by Prophetstown Police, Whiteside County Sheriff's Department, Illinois State Police, and Prophetstown E.S.D.A. at various locaitons to secure area and to protect citizens from downed power lines, etc. Road blocks were set up at Mosher Drive & Rt. 78, Riverside Drive & Rt. 78, and Ferry Street & Riverside Drive, as well as at Rt. 78 & Moline Road, Yager Road & Star Road, and at Springhill blacktop & Washington Road.
6:45-11:30 p.m. The damaged area was secured by police and E.S.D.A. members while utility crews and the Fire Department members worked.

No injuries were reported to police officers. The electricity was restored in most parts of the city at around 8:15 p.m.

Prophetstown Police answered approximately 150 phone calls within a 24 hour period beginning at 6:15 p.m. Sunday evening.

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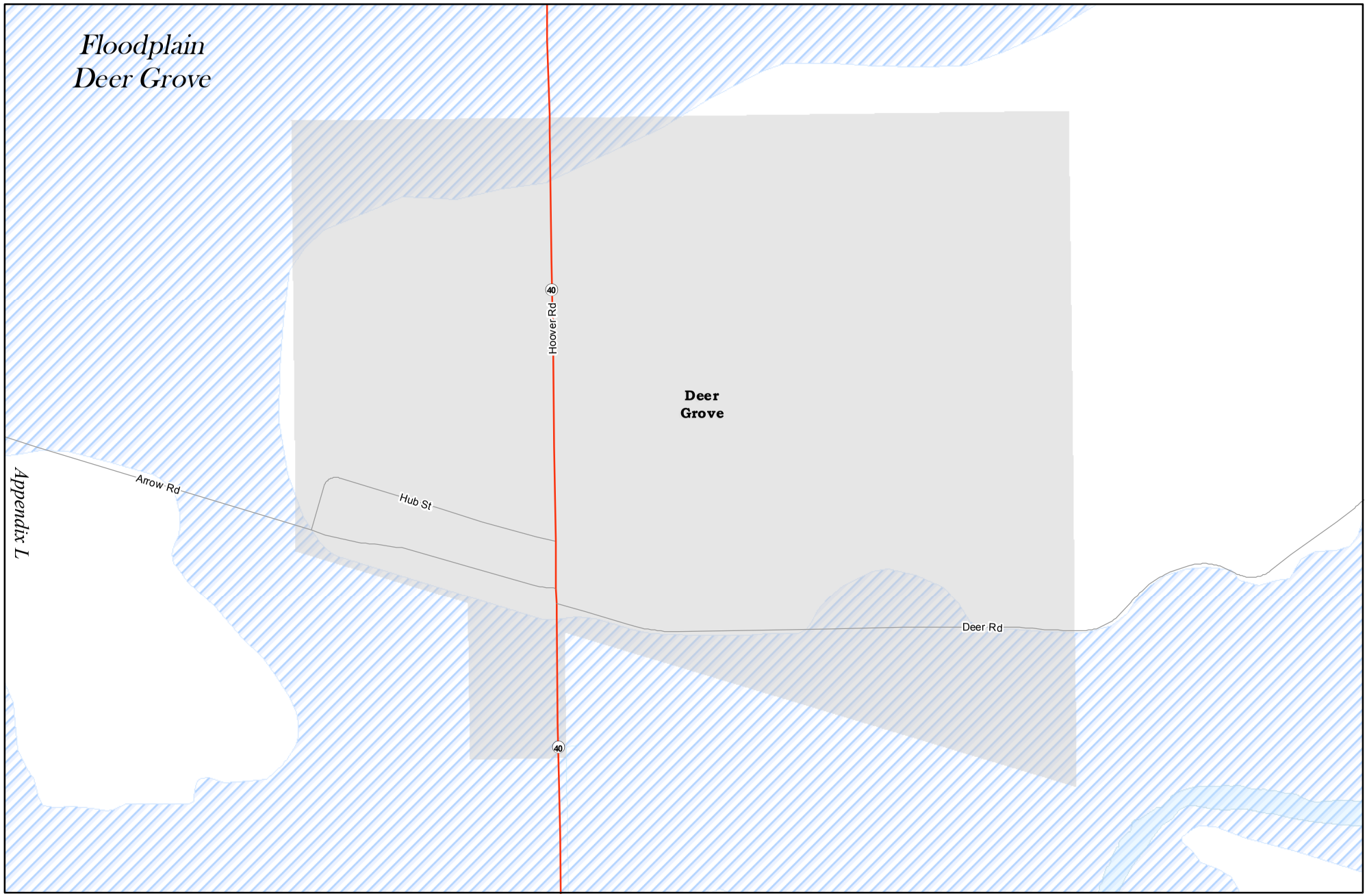
FLOODPLAIN MAPS FOR PARTICIPATING MUNICIPALITIES

APPENDIX L

Floodplain
Deer Grove



Appendix L

0 0.025 0.05 0.1 0.15 0.2
Miles

Lauren Lee
GIS Office
Whiteside County
ESRI - ArcGIS
Date 12/16/2014

Whiteside County GIS

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Legend

Flood Hazard

Flood Zone

- 0.2 PCT ANNUAL CHANCE
- A
- AE
- AH
- X
- X PROTECTED BY LEVEE

N

Floodplain
Erie

Appendix L

Albany Rd
Albany St
Moline Rd
Lakeside Dr
Golfview Ct
16th Av
13th St
14th St
13th Av
Highland Av
Pine St
Oak St
11th Av
Main St
East St
8th St
12th Av
12th St
West St
Erie
12th Av B
12th Av A
10th Av
9th Av
11th St
Private Dr
Highway Ct
8th Av
School Ct
6th St
5th St
6th Av
5th Av
4th St
Kelly Ct
Cordova Rd
7th Av
Moline Rd
River Rd
Erie Rd

0 0.05 0.1 0.2 0.3 0.4 Miles

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Legend

Flood Hazard

Flood Zone

0.2 PCT ANNUAL CHANCE

A

AE

AH

X

X PROTECTED BY LEVEE

City Limits

N

Floodplain
Fulton

Appendix L

Rose Ln
Melody Hills St
N 4th St
N 6th St
Middle Rd
Fowler Rd
N 10th St
N 12th St
1st Av
2nd Av
3rd Av
4th Av
5th Av
6th Av
7th Av
8th Av
9th Av
10th Av
11th Av
12th Av
13th Av
14th Av
15th Av
16th Av
16th Pl
17th Av
18th Av
19th Av
20th Av
22nd Av
21st Av
24th Av
25th Av
31st Av
8th St
9th St
12th St
13th St
16th St
1st St
3rd St
5th St
6th St
7th St
11th St
14th St
17th St
4th St
Lincoln St
Park Dr
Waller Rd
Elston Rd
Cattail Rd
Schafer Rd
Fulton Rd
Sand Rd
Chase Rd
Indian Hills Dr
Fulton
136
84
30

Whiteside County
Illinois est. 1836

0 0.075 0.15 0.3 0.45 0.6 Miles

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Date 8/25/2015

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Legend

Flood Hazard

Flood Zone

0.2 PCT ANNUAL CHANCE

A

AE

AH

X

X PROTECTED BY LEVEE

City Limits

N

Floodplain Morrison

Appendix L

Morrison

Lincoln Rd
Carroll Rd
Norton Rd
Janson St
North St
Union St
Garden Plain Rd
Locust Ct
Pleasant St
Burr Rd
Liberty St
Browns Rd
Crosby Rd
Norrish Rd
Ridgewood Dr
Greenland Dr
Diamond Ct
Hilltop Dr
Hazel Rd
Strawberry Rd
Milnes Dr
Hillandale Dr
W Lincolnway Rd
Prospect St
Towne St
N Orange St
N Base St
N Genesee St
W High St
E High St
Johnson St
E North St
Keith Dr
Glenwood Dr
Jenkran St
N Jackson St
Kimmel Dr
Cross Creek Ct
Grandview Dr
Oak St
Willow St
Larch St
W Wall St
W Market St
E Market St
E Knox St
N Clinton St
Bishop Rd
Sunset Dr
Hickory Hill Dr
Florence St
S Hall St
S Grape St
S Orange St
S Base St
S Genesee St
E Morris St
E Lincolnway Rd
E Wall St
Henry Rd
Deer Trace Dr
W Winfield St
Andy Brands Dr
E Park St
S Clinton St
E South St
E Winfield St
Park Court Ln
Pine St
Cedar St
Maple Av
Elm St
Lincoln Rd
Schipper Ln
Genesee Av
Academic Dr
Portland Av
Klimstra Ct
Sawyer Rd
Treva Dr
Prairie Center Rd
Genesee Ct
Tech Dr
Dixie Dr
Shelly Dr
Vegter Rd
Feldman Rd
Robertson Rd
Lister Rd
Crosby Rd

0 0.075 0.15 0.3 0.45 0.6 Miles

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Legend

Flood Hazard

Flood Zone

0.2 PCT ANNUAL CHANCE

A

AE

AH

X

X PROTECTED BY LEVEE

N

Floodplain Prophetstown

Appendix L

Mickley's Dr
Bishop Rd
78
Fair Ln
Meadow Ln
Mosher Dr
North St
Birch St
W Riverside Dr
Dairy Ln
Johnson Dr
College Av
Ferry St
W 2nd St
Elm St
Lafayette St
E Riverside Dr
Park Av
High St
Prophetstown State Park
W 3rd St
Lincoln St
Prophetstown
E 3rd St
Star Rd
Tree Ln
Creek Ln
Yager Rd
Grove St
Adams St
Emery St
W 5th St
Short St
Elm Ct
Walnut St
Maple St
Dale Av
Prairie
Park Dr
Esta Dr
Buttercup Ln
W 6th St
Locust St
Washington St
Market St
East Av
East St
Rita Ct
Spring Hill Rd
Jackson St
W 7th St
E 6th St
Douglas St
A St
Woodlawn Dr
Pettit Ln
Lawrence Ln
Lyndon Rd
W 8th St
Sunset Ln
W 9th St
Swanson Dr
Washington Rd
Kiner Rd
Bishop Rd
78

0 0.05 0.1 0.2 0.3 0.4 Miles

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ESRI - ArcGIS
Date 12/16/2014

Whiteside County GIS

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Legend

Flood Hazard

Flood Zone

0.2 PCT ANNUAL CHANCE

A

AE

AH

X

X PROTECTED BY LEVEE

N

Floodplain Rock Falls

Appendix L

Sterling

Rock Falls

Rock Falls

Fisher St
Mc Cue Rd
Emerson Rd
West Av
Oak Av
Elm Av
Ash Av
East Av
Douglas Dr
Harvey Dr
S Lynn Blvd
W 13th St
Dixon Ct
Commerce
Maple Ln
Dillon Av
Griswold Av
Woodburn Av
Yost Ct
Avenue L
Avenue K
Avenue J
Avenue I
Avenue E
Avenue D
Avenue C
W Lincolnway
W 4th St
W 3rd St
W 13th St
W 12th St
W 11th St
W 10th St
W 8th St
W 7th St
W 6th St
W 5th St
E 12th St
E 11th St
E 10th St
E 9th St
E 7th St
E 6th St
E 13th St
E 3rd St
E 1st St
1st Av
Locust St
Brinks Cir
6th Av
5th Av
7th Av
8th Av
Broadway Av
11th Av
12th Av
13th Av
14th Av
15th Av
16th Av
17th Av
18th Av
19th Av
Sinnissippi Rd
Shore Acres Rd
Franklin St
Ann St
Minkel St
Kloss St
Lincoln St
Garfield St
Swallow Ct
Verio Ct
Quail Ct
Arland St
Charles St
Cardinal St
Martin Rd
Emmons Av
Haskell Av
River View Dr
Humber Ln
Luke Ln
Oak St
Hill Dr
Scott St
Myrtle St
Hoffman Dr
Dixon Av
Wallace St
Pike St
Bridge
1st Av
Avenue G
Lawrence Pk
W 1st St
W 2nd St
W 3rd St
3rd Av
4th Av
Leroy Av
E 2nd St
Ada St
Wood Av
Avenue B
Avenue C
Avenue F
E 5th St
E 6th St
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E 9th St
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W 19th St
W 20th St
W 21st St
W 23rd St
W 24th St
6th Av
Galt Av
5th Av
1st Av
Avenue A
Avenue D
Avenue E
Keith Dr
Marty Av
Marsha Ln
Wiker Dr
Mary Av
B Ct
A Ct
Bennett Dr
15th Av
Grace Av
11th Av
10th Av
9th Av
8th Av
7th Av
12th Av
Flock Av
14th Av
13th Av
Roberts St
Wike Dr
Lindy Av
Canal St
4th Av
Beltway St
New High St
Mc Neil Rd
English St
E Yeoward St
Walnut St
Pine St
Spruce St
E French St
Hoover Rd
Buell Rd
W French St
Riverdale Rd
Hickory Hills Rd
Teresa St
Yates St
Lenore St
Antec Rd
Clearwater Dr
Rose St
Clover St
Regan Rd
W Rock Falls Rd
E Rock Falls Rd
Prophet Rd
A St
B St
C St
D St
Maple Ln
30
40
2

Lauren Lee
GIS Office
Whiteside County
ESRI - ArcGIS
Date 12/16/2014

Whiteside County GIS

These maps have been drawn for assessment purposes only. No liability is assumed by Whiteside County for their use by any person(s) for any purpose(s) other than assessment purposes.

Legend

Flood Hazard

Flood Zone

0.2 PCT ANNUAL CHANCE

A

AE

AH

X

X PROTECTED BY LEVEE

00.075 0.15 0.3 0.45 0.6 Miles

N

Floodplain Sterling

Appendix 1

Sterling

Rock Falls

Rock Falls

Holly Rd
Ridge Rd
Hickory Hills Rd
Noel Rd
Hillcrest Ln
Spencer Dr
W Science Ridge Rd
W Science
Pennington Rd
Hoover Rd
Freeport Rd
Polo Rd
John Wayne Rd
River Rd
Mc Cue Rd
W Lynn Blvd
E Lynn Blvd
Florence Ln
W 29th St
E 29th St
E 28th St
E 26th St
25th St
E 41st St
E 39th St
E 38th St
E 37th St
E 36th St
E 35th St
E 25th St
E 24th St
E 23rd St
W 23rd St
W 21st St
E 20th St
E 19th St
E 18th St
E 18th Pl
E 16th St
E 15th St
E 14th St
E 13th St
E 12th St
E 7th St
E 1st St
W 20th St
W 19th St
W 18th St
W 16th St
W 15th St
W 14th St
W 13th St
W 12th St
W 10th St
W 9th St
W 7th St
W 6th St
W 5th St
W 4th St
W 3rd St
W Miller Rd
E Miller Rd
W LeFevre Rd
Industrial Dr
Enterprise Dr
Wallace St
Leroy Av
W 1st St
W 2nd St
E 2nd St
E 5th St
E 7th St
E 8th St
E 9th St
Dixon Av
Lincolnway
E Lincolnway
W Lincolnway
Locust St
Bridge
Pike St
Grace Av
Avenue G
Avenue E
Avenue D
Avenue C
Avenue B
Avenue A
Avenue F
Avenue J
Avenue K
Avenue L
Oak Grove Av
Griswold Av
Woodburn Av
Yost Ct
Dillon Av
Maple Ln
Dixon Ct
Westwood Dr
Pine Av
Plant Dr
Harvey Dr
Douglas Dr
S Lynn Blvd
Commerce Dr
Howard St
Hunter St
Wilson St
Fisher St
Birch St
West Av
Oak Av
Elm Av
Ash Av
East Av
Rose St
Regan Rd
Antec Rd
Broadway Av
Park Pl
Long Ct
North St
Sinnissippi Rd
Sinnissippi Park Rd
N 31st Ave
E 35th Av
E 23rd St
Reno Rd
Timberlane Dr
Parkview Rd
Riverview Rd
Crestview Rd
Winn Rd
43rd Av
45th Av
39th Av
37th Av
Shore Acres Rd
Kloss St
Ann St
Minkel St
Garfield St
Verio Ct
Quail Ct
Cardinal St
Martin Rd
Emmons Av
Haskell Av
River View Dr
Humber Ln
Steven St
Scott St
Hoffman Dr
Hill Dr
Keith Dr
Marsha Ln
1st Av
2nd Av
3rd Av
4th Av
5th Av
6th Av
7th Av
8th Av
9th Av
10th Av
11th Av
12th Av
13th Av
14th Av
15th Av
16th Av
17th Av
18th Av
19th Av
20th Av
21st Av
22nd Av
7th Av
9th Av
15th Av
13th Av
11th Av
9th Av
7th Av
5th Av
3rd Av
1st Av
15th Av
14th Av
13th Av
12th Av
11th Av
10th Av
9th Av
8th Av
7th Av
E 4th St
E 6th St
E 15th Av
14th Av
13th Av
12th Av
11th Av
9th Av
6th Av
40
2
2
40

0 0.1 0.2 0.4 0.6 0.8 Miles

Lauren Lee
GIS Office
Whiteside County
ESRI - ArcGIS
Date 12/16/2014

Whiteside County GIS

These maps have been drawn for assessment purposes only. No liability is assumed by Whiteside County for their use by any person(s) for any purpose(s) other than assessment purposes.

Legend

Flood Hazard

Flood Zone

0.2 PCT ANNUAL CHANCE

A

AE

AH

X

X PROTECTED BY LEVEE

N

HAZARD EVENT PHOTOGRAPHS

APPENDIX M

March 29, 1981 Tornado
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

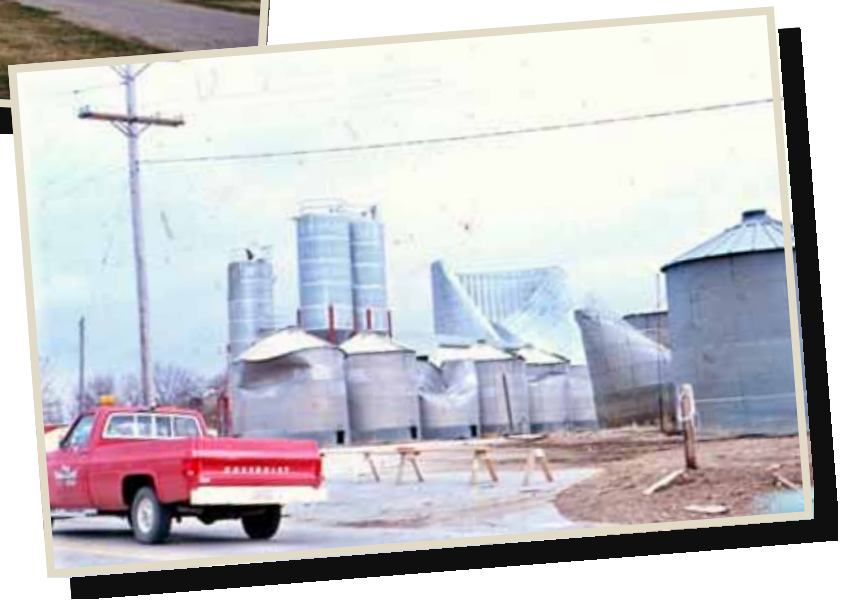
March 29, 1981 Tornado
Rock River Lumber & Grain
Prophetstown, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Rock River Lumber & Grain
Prophetstown, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Rock River Lumber & Grain
Prophetstown, Illinois



Photographs provided by Bruce Franks

March 29, 1981 Tornado
Rock River Lumber & Grain
Prophetstown, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Sibley Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Sibley Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Sibley Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Sibley Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Sibley Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Sibley Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Sibley Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Roman Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Roman Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Roman Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Roman Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Roman Farm
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Thermogas
Unincorporated Whiteside County, Illinois

Photographs provided by Bruce Franks

March 29, 1981 Tornado

Photographs provided by Bruce Franks

March 29, 1981 Tornado

Photographs provided by Bruce Franks

March 29, 1981 Tornado
Tree Damage

Photographs provided by Bruce Franks

PLAN ADOPTION RESOLUTIONS

APPENDIX N

Coleta, Illinois
Resolution of Adoption
of the
Whiteside Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, Coleta IL is subject to natural and man-made hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, the Coleta IL desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, Coleta IL has participated in developing the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Whiteside County:

NOW THERFORE, be it resolved that the Coleta IL hereby:

1. Adopts the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of Coleta IL ; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on February 8, 2016

CERTIFIED by Sally Douglas
Sally Douglas Village President)

ATTESTED by Barbara Gettle
Barbara Gettle, Village Clerk)

City of Fulton, Illinois
Resolution #261
Adoption of the
Whiteside Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, the City of Fulton, Illinois is subject to natural and man-made hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, the City of Fulton, Illinois desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, the City of Fulton, Illinois has participated in developing the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Whiteside County:

NOW THERFORE, be it resolved that the City of Fulton, Illinois hereby:

1. Adopts the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of the City of Fulton, Illinois; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on February 16, 2016

CERTIFIED by Howard Van Zuiden (SEAL)
Howard Van Zuiden,
Mayor Pro Tem

ATTESTED by Lindsey Renkes
Lindsey Renkes
City Clerk

Resolution 2016-732

City of Rock Falls, Illinois
Resolution of Adoption
Of the
Whiteside Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, the City of Rock Falls, Illinois is subject to natural and man-made hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, the City of Rock Falls, Illinois desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, the City of Rock Falls, Illinois has participated in developing the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Whiteside County:

NOW THERFORE, be it resolved that the City of Rock Falls, Illinois hereby:

1. Adopts the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of the City of Rock Falls; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on February 16, 2016

CERTIFIED by William B. Wescott
William B. Wescott,
Mayor

ATTESTED by
Eric Arduini, City Clerk

City Of Morrison, Illinois
Resolution 16-03
Adoption of the
Whiteside Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, City of Morrison is subject to natural and man-made hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, the City of Morrison desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, City of Morrison has participated in developing the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Whiteside County:

NOW THERFORE, be it resolved that the City of Morrison hereby:

1. Adopts the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of City of Morrison and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on 3/1/16

CERTIFIED by _____ (SEAL)
Mayor

ATTESTED by _____
City Clerk

RESOLUTION NUMBER 2016-1

Village of Erie, Illinois
Resolution of Adoption
of the
Whiteside Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, the Village of Erie is subject to natural and manmade hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, the Village of Erie desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, the Village of Erie has participated in developing the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Whiteside County:

NOW THERFORE, be it resolved by the Board of Trustees of the Village of Erie, Whiteside County, Illinois as follows:

1. Adopts the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of the Village of Erie, and
2. Agrees to participate in the annual and 5-year updates to this Plan.

PASSED by the Mayor and Board of Trustees of the Village of Erie, Whiteside County, Illinois, on the 8th day of March, 2016, and deposited and filed in the office of the Village Clerk in said Village on that date pursuant to roll call vote as follows:

AYES: 5 PASSED

NAYES: 0

ABSENT: 1

APPROVED by the Mayor of the Village of Erie, Illinois, this 8th day of March, 2016

Marcia Brill
Mayor of the Village of Erie, Illinois

ATTEST:

Marilyn Blair
Village Clerk of the Village of Erie, Illinois

Published in pamphlet form this 8th day of March, 2016.

Whiteside County, Illinois #3
Resolution of Adoption
of the
Whiteside Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, Whiteside County is subject to natural and man-made hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, Whiteside County desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, Whiteside County has participated in developing the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Whiteside County:

NOW THERFORE, be it resolved that the Whiteside County Board hereby:

1. Adopts the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of Whiteside County; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on March 16, 2016

CERTIFIED by _____ (SEAL)
James Duffy, Chairman

ATTESTED by _____
Dana Nelson, County Clerk

The Village of Deer Grove, Illinois
Resolution of Adoption
of the
Whiteside Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, Deer Grove is subject to natural and man-made hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, the Village of Deer Grove desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, Deer Grove has participated in developing the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Whiteside County:

NOW THEREFORE, be it resolved that the Village of Deer Grove hereby;

1. Adopts the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of Deer Grove; and

2. Agrees to participate in the annual and 5-year updates to the plan.

ADOPTED on March 21, 2016

CERTIFIED by [signature] SEAL
VILLAGE PRESIDENT

ATTESTED by Janis Thompson
Village Clerk

RESOLUTION #R2016-6-13

Sterling, Illinois
Resolution of Adoption
of the
Whiteside Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, CITY OF STERLING is subject to natural and man-made hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, the CITY OF STERLING desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, CITY OF STERLING has participated in developing the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Whiteside County:

NOW THERFORE, be it resolved that the CITY OF STERLING hereby:

1. Adopts the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of CITY OF STERLING; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

Adopted on this 6th day of June, 2016

Charles L. "Skip" Lee
Mayor

Attest:

Marie Rombouts
City Clerk

#07122016

City of Prophetstown
Resolution of Adoption
of the
Whiteside Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, City of Prophetstown, is subject to natural and man-made hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, the City of Prophetstown, Desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, City of Prophetstown, has participated in developing the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Whiteside County:

NOW THERFORE, be it resolved that the City of Prophetstown, hereby:

1. Adopts the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of Whiteside County: and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on July 12th, 2016

CERTIFIED by Danny Baker
Mayor Pro-tem

ATTESTED by Constance S Jensen
City Clerk

OFFICIAL SEAL
CONSTANCE S JENSEN
NOTARY PUBLIC-STATE OF ILLINOIS
MY COMMISSION EXPIRES
APRIL 1, 2018

The Village of Tampico, Illinois
Resolution of Adoption
of the
Whiteside Multi-Jurisdictional All Hazards Mitigation Plan

WHEREAS, the Village of Tampico is subject to natural and man-made hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, the Village of Tampico desires to prepare and mitigate for such natural and man-made hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, the Village of Tampico has participated in developing the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan covering member jurisdictions of Whiteside County:

NOW THERFORE, be it resolved that the Village of Tampico hereby:

1. Adopts the Whiteside Multi-Jurisdictional All Hazards Mitigation Plan as the official Hazard Mitigation Plan of the Village of Tampico; and
2. Agrees to participate in the annual and 5-year updates to this Plan.

ADOPTED on July 19, 2016

CERTIFIED by Kathy A Leathers
Kathy A. Leathers
Village Clerk

ATTESTED by Kathy A Leathers
Kathy A. Leathers
Village Clerk

SE