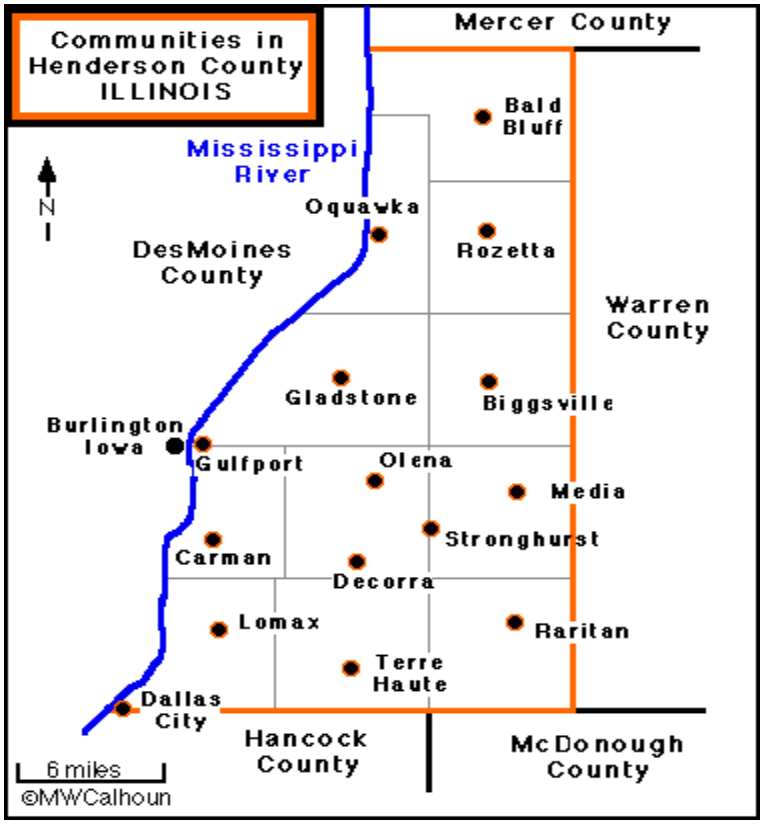

Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan

Village of Biggsville
Village of Gladstone
Village of Gulfport
Village of Lomax
Village of Media
Village of Oquawka
Village of Raritan
Village of Stronghurst

January 2010

Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan

Plan Author: University of Illinois Extension
With Assistance from: Illinois State Water Survey
Western Illinois Regional Council

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January 2010

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Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan Task Force

NAME	**REPRESENTING**
Alexander, James	Village of Gladstone
Bowman, Terri	Camden Township
Butler, Revonne	Henderson County Zoning
Clifton, Richard	Self Interest
Cochran, Brian	Village of Biggsville
Cole, Karen	Bridgeway Mental Health
Doran, Tom	Henderson County EDC
Eisenmayer, Curt	Village of Stronghurst
Ferguson, Alan	Henderson County Engineer
Ford, Douglas	Henderson County Drainage District
Good, Cathy	Henderson County Board
Hickman, Tom	Henderson County Engineer
Johnson, Richard	Biggsville Presbyterian Church
Kuster, Susan	Self Interest
Lafary, Marty	Henderson County Board
Link, Jenna	Henderson County Health Department
Meyer, Susan	Henderson County Treasurer
Monville, Jan	Henderson County EDC
Myers, Angela	Village of Stronghurst
Myers, Richard	Village of Gulfport
Myers, Terry	Village of Stronghurst
Parsons, Wendell	Village of Gladstone
Pence, Hugh	Self Interest
Peters, Kim	Village of Lomax
Peterson, Bob	Henderson County Board
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Reed, Mary	Henderson County Health Department
Renken, Albert	Village of Stronghurst
Roark, Nicholas	Village of Media
Royer, Christine	Henderson County Health Department
Russel, Gail	Village of Biggsville
Russel, Larry	Henderson County Drainage District
Seitz, Coral	Village of Oquawka
Sorenson, Heidi	SSBG Flood Relief
Stewart, Richard	Village of Gladstone
Tobias, Bill	Henderson County Emergency Management
Walters, Scott	Henderson County Drainage District

PURPOSE STATEMENT
Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan Task Force

The Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan identifies local hazard mitigation goals and objectives, and specific hazard mitigation actions to implement over the long term that will result in reduction in risk and potential for future losses associated with the occurrence of natural hazards.

The Task Force worked to reduce the impact of natural hazards on citizens, infrastructure, private property, and critical facilities through a combined effort of communities, institutions, and citizenry to develop a mitigation action plan that will be adopted and implemented by each participating community.

Natural Hazards Being Considered

Drought
Earthquake
Extreme Temperature
Flood
Severe Storm/Tornado
Severe Winter Storm

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Introduction

Why a Mitigation Plan?

Communities look to protect the health, safety, and welfare of their citizens. Related to natural hazard events this has traditionally meant responding to the needs of the community after an event occurs. Mitigation looks to reduce the need for response by permanently removing people and structures from harms way when a known area of impact can be identified (such as a floodplain) or significantly reducing the impact from a known risk (such as a tornado). This Plan provides an assessment of the risks to Henderson County from natural hazard events and a comprehensive range of mitigation projects to lessen the impact of these hazards on our communities. With the availability of mitigation grant funding from the Federal Government, communities have the opportunity to implement mitigation projects that would not otherwise be financially possible. The preparation of this plan follows the guidelines to make participating communities eligible to apply for mitigation grant funding.

Community Participation in Plan Development

The criteria that would constitute satisfactory jurisdictional participation in the planning process were established at the first meeting of the Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan Task Force. Figure 1 shows the required participation elements established. The City of Dallas City, which lies partially in Henderson County and partially in Hancock County was invited to participate in the Plan however they opted to participate in the Hancock County Plan which is currently going through the same process. All other communities met these requirements.

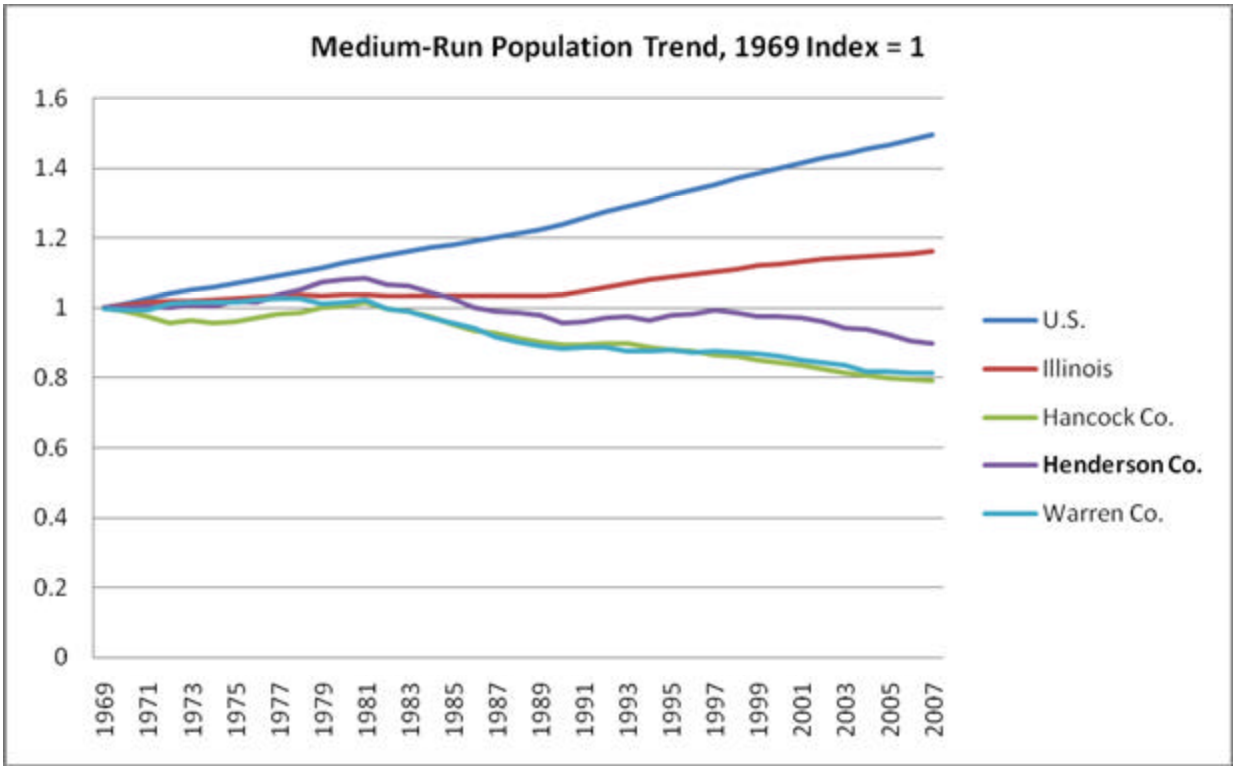
Figure 1: Participation Guidelines for Jurisdictions

Attend a minimum of 1 meeting
Submit a list of relevant community documents
Confirm hazards that affect the community
Confirm the list of critical facilities submitted by Hazus
Develop goals and projects for the community
Develop and prioritize mitigation actions for the community
Hosted opportunities for public involvement
Reviewed and commented on draft plan

Medium-Run Population Trend

Population in Henderson County declined from 8,425 in 1969 to 7,561 in 2007, a loss of about 10 percent. The population trend over this time period was generally a steady slow decline, although there was a small amount of growth in the 1970s. Similarly, Henderson's nearest neighbors Hancock and Warren counties both also saw shrinking populations over the same time period, though the percentage of population lost was greater in those two counties than in Henderson (see figure 2). Conversely both the State of Illinois and the nation grew in population over this time period.

Figure 2 Medium –Run Population



Source: Bureau of Economic Analysis, Regional Employment Information System

Age of the Population

Henderson County has an older population than its two near neighbors, the state, and the nation. It is estimated that 18.9 percent of Henderson's population is under the age of 18. This is the lowest percentage amongst all benchmark areas. Conversely, 18.4 percent of persons living in Henderson County are over the age of 65. This is a higher percentage of persons over 65 years of age amongst both the U.S. and Illinois. (see figure 3).

Figure 3 Estimated Population

2008 Estimated Percentage of Population Under 18 and Over 65

	U.S.	Illinois	**Henderson Co.**	Hancock Co.	Warren Co.
Under 18	24.42%	24.92%	**18.85%**	21.41%	20.91%
Over 65	12.71%	12.16%	**18.36%**	19.19%	17.51%

Source: Clartias 2008 Estimates

Henderson County Demographic Overview

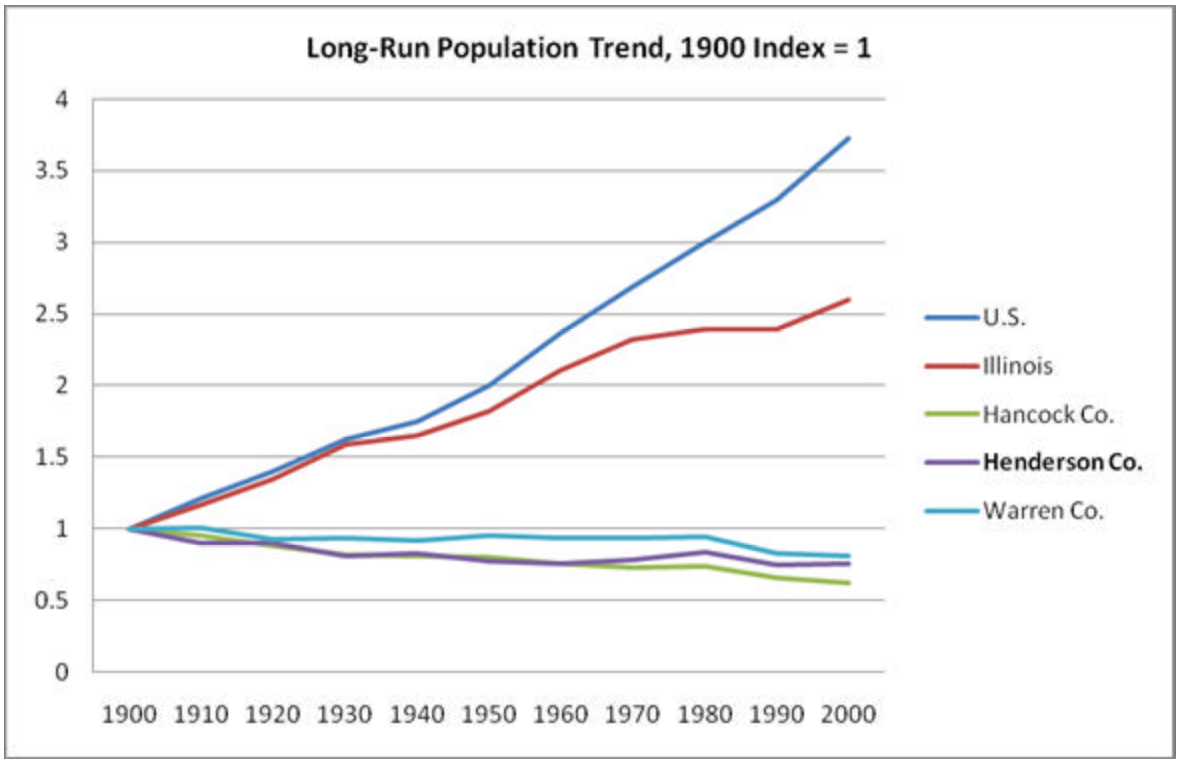
The following data is presented to provide an overview of Henderson County. All data are benchmarked against two near neighbors, Hancock and Warren counties, and when appropriate the State of Illinois and the nation.

Population Trends

Long-Run Population Trend

The population in Henderson County has fluctuated slightly decade by decade since 1900. There have been periods of small growth in population, but overall population decline has dominated. In 1900 the county had a population of 10,836 and by 2000 the county population had shrunk to 8,213, a decrease of 24 percent. In comparison, Henderson's loss of population was in between its neighbors Warren and Hancock counties. Over the same time period, Warren County lost 19 percent of its population, while Hancock County lost 38 percent (see figure 4).

Figure 4 Long Run Population Trend



Source: U.S. Census Bureau Decennial Census 1900-2000

Racial Make-up of the Population

Henderson County's population is predominantly white, and non-Hispanic. Whites comprise an estimated 98.1 percent of the population. Non-Hispanics of any race make up 98.9 percent of the total population. Henderson County has a similar racial population make-up as its two neighbors Hancock and Warren County, though Warren County does have a larger Hispanic population (see Figure 5).

Figure 5 Population Make-up

2008 Estimated Racial Make-up

	U.S.	Illinois	**Henderson Co.**	Hancock Co.	Warren Co.
White	72.72%	71.39%	**98.05%**	98.10%	92.71%
Black	12.43%	14.76%	**0.43%**	0.42%	2.33%
Other	14.85%	13.85%	**1.52%**	1.48%	4.96%

2008 Estimated Hispanic Population

	U.S.	Illinois	**Henderson Co.**	Hancock Co.	Warren Co.
Hispanic or Latino	15.24%	15.13%	**1.09%**	0.64%	5.38%
Not Hispanic or Latino	84.76%	84.87%	**98.91%**	99.36%	94.62%

Source: Clartias 2008 Estimates

Income

Median Household and Per Capita Income

In 2000, the median household income in Henderson County was $36,719. This was slightly higher than the median household income in Warren County which was $36,477, but lower than the median income in Hancock County which was $37,139. A more recent measure furnished by the Bureau of Economic Analysis tracks per capita income. In 2007, the per capita income in Henderson County was $28,445. Like median household income, Henderson's was a little higher than Warren County at $26,516, and a little lower than Hancock County at $28,743.

Poverty Rate

In 2007, 11.4 percent of Henderson County's population lived below the poverty line. The poverty rate amongst children under 18 was 17.9 percent. Henderson County's total population poverty rate was higher than its neighbors Hancock and Warren counties, but lower than state and national levels. The poverty rate among children in Henderson County was higher than all benchmark areas except the nation (see Figure 6).

Figure 6 Poverty Status

2007 Estimated Poverty Status

	U.S.	Illinois	**Henderson Co.**	Hancock Co.	Warren Co.
Population in Poverty	13.0%	11.9%	**11.4%**	10.8%	12.9%
Children in Poverty	18.0%	16.6%	**17.9%**	15.7%	17.1%

Source: U.S. Census Bureau, Small Area Income & Poverty Estimates

Housing and Households

Household Types

Married couple families are the largest household type group in Henderson County. While this is also the largest group in all of the benchmark areas, a greater proportion of Henderson County households are married couples (see Figure 7).

Figure 7 Households by Type

2008 Estimated Households by Type and Presence of Own Children*

	The United States		Illinois		**Henderson Co.**		Hancock Co.		Warren Co.	
Total Households	114,694,201		4,786,787		**3,199**		7,654		6,581	
Single Male Householder	13,067,150	11.39 %	553,697	11.57 %	**394**	**12.32 %**	844	11.03 %	713	10.83 %
Single Female Householder	16,999,226	14.82 %	735,190	15.36 %	**458**	**14.32 %**	1,265	16.53 %	1,094	16.62 %
Married-Couple Family	60,032,267	52.34 %	2,496,554	52.16 %	**1,906**	**59.58 %**	4,520	59.05 %	3,728	56.65 %
With own children	27,564,656	24.03 %	1,189,297	24.85 %	**706**	**22.07 %**	1,873	24.47 %	1,443	21.93 %
No own children	32,467,611	28.31 %	1,307,257	27.31 %	**1,200**	**37.51 %**	2,647	34.58 %	2,285	34.72 %
Male Householder	4,690,889	4.09%	191,940	4.01%	**127**	**3.97%**	225	2.94%	267	4.06%
With own children	2,358,947	2.06%	87,622	1.83%	**80**	**2.50%**	138	1.80%	157	2.39%
No own children	2,331,942	2.03%	104,318	2.18%	**47**	**1.47%**	87	1.14%	110	1.67%
Female Householder	13,575,547	11.84 %	567,244	11.85 %	**227**	**7.10%**	573	7.49%	568	8.63%
With own children	7,988,457	6.97%	318,719	6.66%	**129**	**4.03%**	329	4.30%	357	5.42%
No own children	5,587,090	4.87%	248,525	5.19%	**98**	**3.06%**	244	3.19%	211	3.21%
Nonfamily: Male Householder	3,704,076	3.23%	143,153	2.99%	**63**	**1.97%**	155	2.03%	140	2.13%
Nonfamily: Female Householder	2,625,046	2.29%	99,009	2.07%	**24**	**0.75%**	72	0.94%	71	1.08%

Source: Claritas 2008 Estimates

*In contrast to Claritas Demographic Estimates, "smoothed" data items are Census 2000 tables made consistent with current year estimated and 5 year projected base counts.

Owner Occupancy Rates

Henderson County has a high rate of owner occupancy. In 2008, an estimated 78.9 percent of occupied housing units were owner occupied. This owner occupancy rate was higher than all benchmark areas except Hancock County, which had an owner occupancy rate of 80.6 percent (see figure 8).

Figure 8 Occupancy Rates

2008 Owner vs Renter Occupancy Rates

	U.S.	Illinois	**Henderson Co.**	Hancock Co.	Warren Co.
Owner Occupied	67.1%	68.2%	**78.9%**	80.6%	74.4%
Renter Occupied	32.9%	31.8%	**21.1%**	19.4%	25.6%

Source: Claritas 2008 Estimates

Housing Type

Detached single-family homes are the predominant housing type in Henderson County. In 2008, an estimated 77.2 percent of housing units in Henderson County were detached single family homes. Henderson County had a lower proportion of detached single family homes than its two near neighbors Hancock and Warren counties. Conversely, Henderson had the highest proportion of mobile homes or trailers, which comprised 19.6 percent of the county's housing units (see figure 9).

Figure 9 Housing Units

2008 Estimated Housing Units by Units in Structure

	U.S.	Illinois	**Henderson Co.**	Hancock Co.	Warren Co.
1 Unit Attached	5.5%	5.1%	**0.4%**	0.7%	0.7%
1 Unit Detached	60.8%	58.4%	**77.2%**	83.2%	82.3%
2 Units	4.0%	6.6%	**0.9%**	2.4%	3.5%
3 to 19 Units	13.1%	16.6%	**1.6%**	4.9%	4.8%
20 to 49 Units	3.3%	3.9%	**0.1%**	0.1%	0.4%
50 or More Units	5.2%	6.2%	**0.0%**	0.0%	2.8%
Mobile Home or Trailer	7.9%	3.2%	**19.6%**	8.6%	5.5%
Boat, RV, Van, etc.	0.3%	0.1%	**0.1%**	0.1%	0.1%

Source: Claritas 2008 Estimates

Age of Structures

The median year that a structure was built in Henderson County was 1965. The dominant year that structures in Henderson County were built was 1939 or earlier. Henderson County's building stock is newer than its two neighbors Hancock and Warren counties (see figure 10).

Figure 10 Years structures built

Median Year and Dominant Year Structures Built

	U.S.	Illinois	**Henderson Co.**	Hancock Co.	Warren Co.
Median Year Built	1975	1966	1965	1956	1948
Dominant Year Built	1970 to 1979	1939 or Earlier	1939 or Earlier	1939 or Earlier	1939 or Earlier

Source: Claritas 2008 Estimates

Selected Data for Participating Jurisdictions

The following data covers selected demographics for jurisdictions in Henderson County which are participating in this mitigation plan.

Land Area and Population

All of the villages and cities in Henderson County lost population between 2000 and 2008 according to Claritas estimates (see figure 11).

Figure 11 Land Area

Land Area and Population

	Land Area (Sq Miles)	2000 Population*	2008 Population **
Biggsville village	0.332	343	323
Stronghurst village	0.887	896	839
Gladstone village	0.393	284	282
Gulfport village	1.505	207	182
Oquawka village	1.463	1,539	1,439
Raritan village	0.099	140	126
Media village	1.698	130	118
Lomax village	1.043	477	444

- - 2000 population data is from the U.S. Census Bureau 2000 Decennial Census

** - 2008 population data is from Claritas 2008 estimates

Age of the Population

In general the villages in Henderson County have older populations than the State of Illinois and the U.S. All places have a lower proportion of the population under the age of 18, and a higher proportion of the population over the age of 65 than the state and nation (see figure 12).

Figure 12 2008 Estimated Percentage of Population Under 18 and Over 65

	Pct Under 18	Pct Over 65
U.S.	*24.42%*	*12.71%*
llinois	*24.92%*	*12.16%*
Biggsville village	17.34%	18.89%
Stronghurst village	16.69%	26.10%
Gladstone village	19.15%	19.50%
Gulfport village	17.03%	14.84%
Oquawka village	21.26%	18.90%
Raritan village	18.25%	18.25%
Media village	11.02%	19.49%
Lomax village	22.52%	15.54%

Source: Claritas 2008 Estimates

Age of Structures

Most of the villages in Henderson County have older building stock. All of the municipalities except for Gulfport have structures which are generally older than state and national averages (see figure 13).

Figure 13

Median Year and Dominant Year Structures Built

	Median Year Built	Dominant Year Built
U.S.	1975	1970 to 1979
Illinois	1966	1939 or Earlier
Biggsville village	1956	1939 or Earlier
Stronghurst village	1947	1939 or Earlier
Gladstone village	1961	1939 or Earlier
Gulfport village	1972	1970 to 1979
Oquawka village	1970	1939 or Earlier
Raritan village	1946	1939 or Earlier
Media village	1956	1939 or Earlier
Lomax village	1961	1939 or Earlier

Source: Claritas 2008 Estimates

Major Employers in Henderson County

Employer	Product/Service	Employees	Year Established
CUSD 235	EDUCATION	175	2005
HENDERSON COUNTY	PUBLIC SERVICE	90	1841
THARPS CABLE	UNDERGROUND CABLE	20	1979
OAK LANE NURSING & REHAB CENTER	LONG TERM HLTH CARE	75	1989
CESSFORD CONSTRUCTION COMPANY BIGGSVILLE	GENERAL CONTRACTOR	11	1980
FISHER'S JACK & JILL OQUAWKA	GROCERY STORE	25	1992
TWOMEY COMPANY	GRAIN & FEED SERVICE	25	1945
HENDERSON COUNTY RURAL HEALTH CENTER	HLTH CARE PROVIDER	48	1979

Chapter 1 Planning Process

How the Plan Was Prepared

Preparation of the Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan was facilitated by the University of Illinois Extension CAD's Program and developed through the Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan Task Force. The Task Force met seven times, on the second Tuesday of the month in July-December 2009.

July- organizing to plan

- This meeting dealt with the scheduling of all future meetings, determining who was missing from the table that still needed to be invited, explaining the importance of jurisdictional representation and public participation, discussions of how to promote meetings and future actions and a discussion about how the county will provide the local match (25%) required for the project.

August- Jurisdictional risk assessment and critical facilities identification

- This meeting covered the significant impact of historical data based on natural hazards. The group discussed the hazards provided by the Illinois Water Survey and then ranked the hazards for each participating jurisdiction. Plans were devised for first public meeting.

September- Public Engagement Plan (i.e. meetings, either review or plan, and survey distribution) and Hazard Mitigation Goals

- This meeting dealt with the public survey that needed to be distributed throughout the county. The Boy Scout clubs were selected to hand deliver the surveys to the residents in the area. Also the group discussed the goals for the Hazard Mitigation Plan as well as the format for the upcoming public meeting.

October- Existing Plan reviews and Mitigation ideas by jurisdiction

- This meeting allowed the Task Force to work on creating objectives to go with their goals that had been established at a prior meeting. The group also discussed some potential projects and how they could each come up with project ideas for the different jurisdictions in the county.

November- Jurisdictional Priorities and Grid development, plan maintenance strategy

- The jurisdictional project grids were collected at this meeting. The group discussed the final county-wide project grid and accepted it. They also reviewed the county demographics that were provided to them. The survey was discussed and has been made available to the public. A goal was set to collect between 320-350 surveys.

December-Draft plan review

The Planning Team

Henderson County received a planning grant through the Hazard Mitigation Grant Program to prepare this plan. Henderson County contracted through the University of Illinois Extension's CADS program to assist in the planning process and to coordinate the plan preparation and participation. Carrie McKillip, CED Educator, led development at the Staff level.

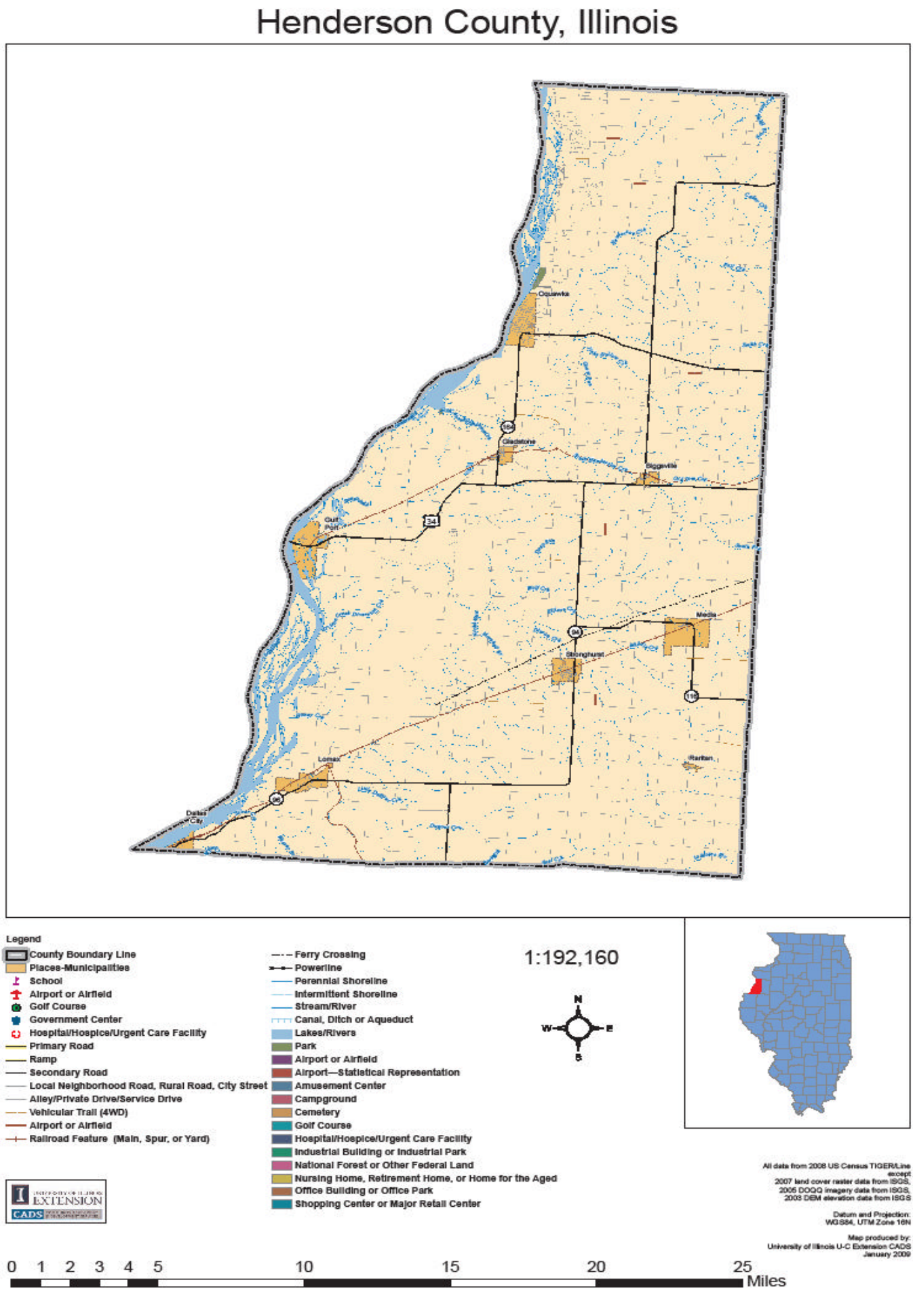
All communities in Henderson County were invited to participate in the Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan. (A small portion of the Dallas City is located in Henderson County and were invited to participate however chose not to do so because they are participating in the Hancock County Plan.) Following is a list of the communities.

Biggsville, Gladstone, Gulfport, Lomax, Media, Oquawka, Raritan, Stronghurst

Based upon the short timeline for Hazard Mitigation Planning in Henderson County, participation requirement for jurisdictional participation was kept at a minimum requirement. Each participating jurisdiction was required by the steering committee to attend at least one steering committee meeting.
The list of jurisdictional representatives is outlined below.

Henderson County:	Susan Meyer, Committee Chair, Henderson County Treasurer Cathy Good, Committee Co-chair, Henderson County Board
Biggsville:	Brian Cochran Richard Johnson
Lomax:	Kim Peters
Stronghurst:	Curt Eisenmeyer Terry Myers
Oquawka:	Coral Sietz
Gladstone:	Jim Alexander Marty LaFary
Gulfport:	Rich Myers
Raritan:	Richard Knapp
Media:	Nick Roarke

Figure 14 County Map



Public Participation

The importance of public participation in the planning process was recognized by the Task Force. Efforts to educate the public regarding creation of the plan and to provide opportunities for the public to have input on the plan were an integral part of the planning process. These efforts are discussed below.

Public Meetings were held in different locations throughout the county which allowed interested parties to view the risk assessments and jurisdictional projects and to discuss any ideas or concerns that they may have.

Representing a rural county without large media outlets, the Henderson County Hazard Mitigation utilized multiple methods to engage citizens of the county in the planning process. Press releases, public meeting, focus groups, and surveys were all used to gather public opinion and input. Throughout the process, steering committee members were also encouraged to explain and discuss the planning process with their friends and neighbors, and encourage their input.

As the formal planning process began in July 2009, over a year after flooding along the Mississippi River devastated the community of Gulfport, and over 25,000 acres of farm and residential land along the river, the Steering Committee held their first official meeting, which was covered by local newspaper, the Quill. Throughout the planning timeframe, multiple press releases have been sent out to area newspapers and radio stations explaining the process, promoting the public meetings, and encouraging survey participation.

In September of 2009, three public meetings were held throughout the county explaining the process, and encouraging public comment as to what could be done to permanently reduce the risk to life and property from natural disasters. The schedule for the meeting was as follows:

September 8, 2009	6PM Henderson County Health Department, Gladstone
September 22, 2009	6PM Oquawka Township Hall, Oquawka
September 29, 2009	6PM Stronghurst Fire Station, Stronghurst

The intent of scheduling three meetings at three separate location was to enable the greatest participation from all segments of the public. While attendance was small, discussion was lively at three locations, and significant input was gathered in this manner. (see public meeting minutes, appendix G).

To ensure that diverse groups were also included in the process, eight focus groups were held over the course of two full days to gather input from the following sectors:

Ag and Natural Resources
Health and Human Services
Transportation
Utilities
Public Safety
Government
Business and Development
Education

Community Survey

One element of public participation included in the Henderson County Hazard Mitigation Planning process was the utilization of a community survey. The survey (Appendix D) asked households a variety of questions to determine their depth of knowledge regarding the risks to them and their community from natural hazards. Also included were opportunities for participants to share their ideas for reducing the impact of natural hazards in an open ended format.

Distribution and collection of the survey was accomplished in multiple ways, due to the lack of comprehensive media coverage located in the county. A press release was sent to the media outlets that cover Henderson County, and articles were included in area newspapers indicating the online version of the survey, which was hosted on survey monkey. (See Appendix D). The news coverage not only informed the public of the survey, but also included information about the Hazard Mitigation Planning process in Henderson County. In addition to the press release, steering committee members were asked to send the link to the on-line survey to everyone who resides in Henderson County in their e-mail list.

In addition to the online survey, static hard copy survey distribution sites were set up around the county in public locations, including the Henderson County Health Department in Gladstone, the Public Library in Biggsville, the Henderson County Courthouse in Oquawka, and University of Illinois Extension Office in Stronghurst. Surveys were left at these locations with a collection envelope and picked up by steering committee members. These surveys were then entered into survey monkey in a batch format so that the results could be analyzed with other surveys.

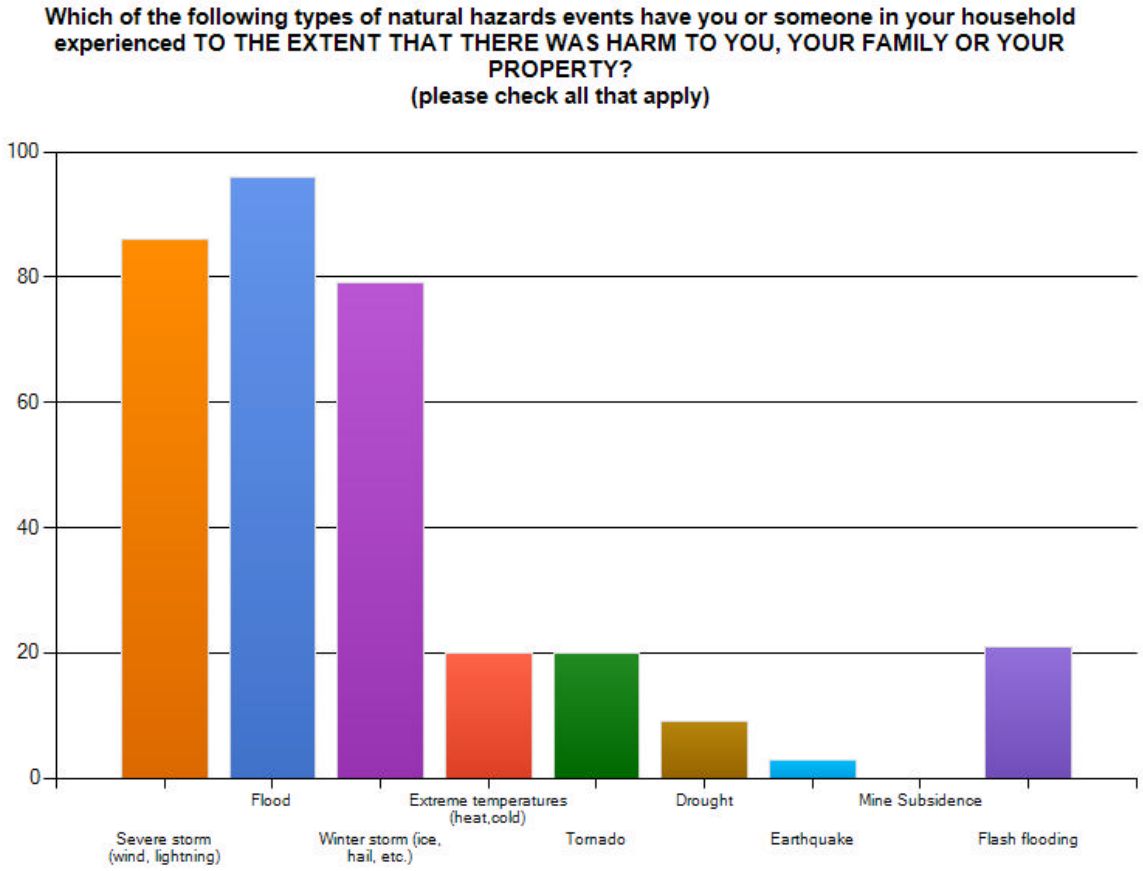
The final and ultimately most effective survey distribution method for Henderson County was the active distribution of the survey by steering committee members as well as community volunteers. The surveys were administered through a variety of active distribution events, including at parent teacher conferences at both the high school and middle school, through volunteer “ride along’s” for Meals-on-Wheels, and at the senior center bingo day. Volunteers also distributed and collected surveys by canvassing neighborhoods in both Lomax and Carmen, as well as employees a at the Henderson County Health Department, School district, Eagle View Health Center employees, and area banks and small businesses.

Survey Results

Of the 344 respondents to the Henderson County Hazard Mitigation Public Survey, 74.9% were female, and 64.1 % had lived in Henderson County 20 years or more. In addition, 84.7% own their own home. Three hundred and ten of the 344 respondents answered the question regarding age. Of those that responded, the average age was 49.4 years. While the sample was not random, this result is not unexpected, as it reflects the demographic profile of the county.

As expected, most respondents who experienced harm from a natural disaster experienced that harm from flooding, but the graph below shows that other natural disasters have affected the county in recent years.

Figure 15



While the flood of 2008 might have been primary in respondents minds, those experiencing damage for severe storms and winter storms are nearly as high. This is also consistent with the county risk assessment and historical data. Conversely, when asked about how concerned they were regarding all categories of natural disasters, those extremely concerned regarding floods far exceeded the same level of concern about winter storms and severe storms. The graph below illustrates the concern levels for each natural disaster.

Figure 16

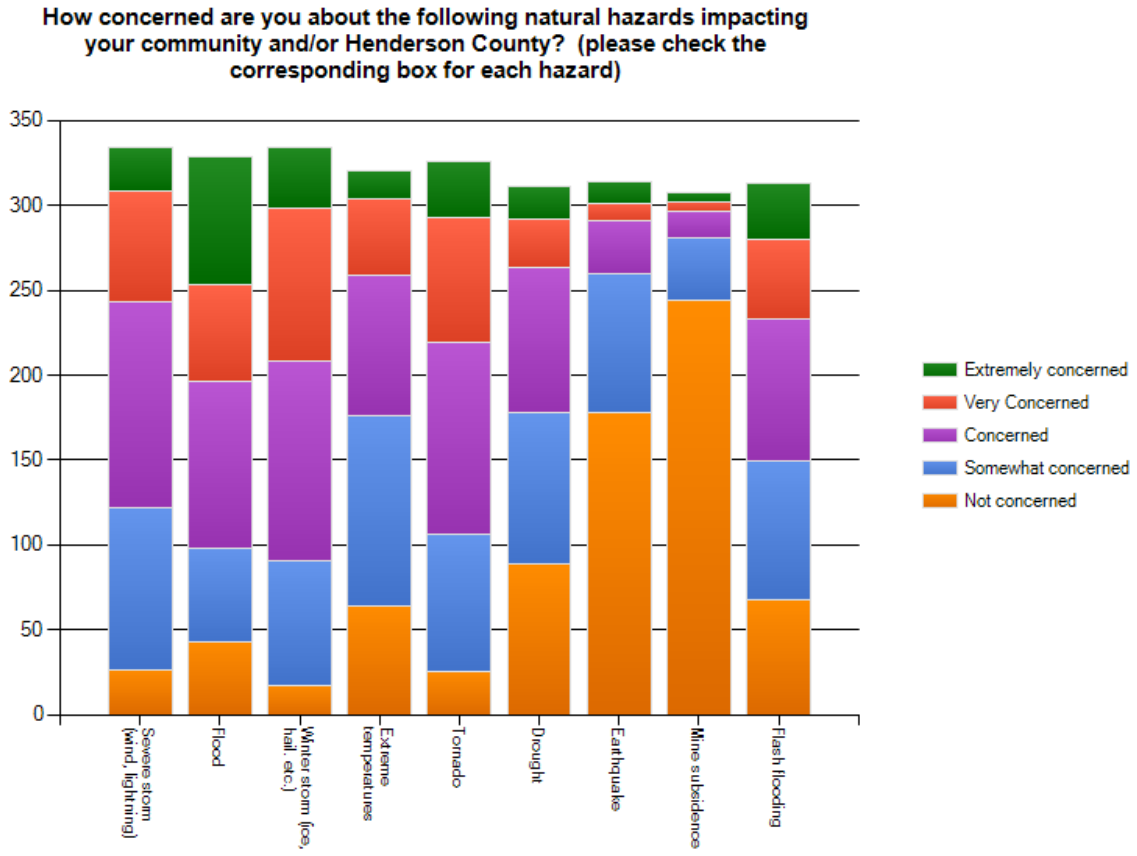
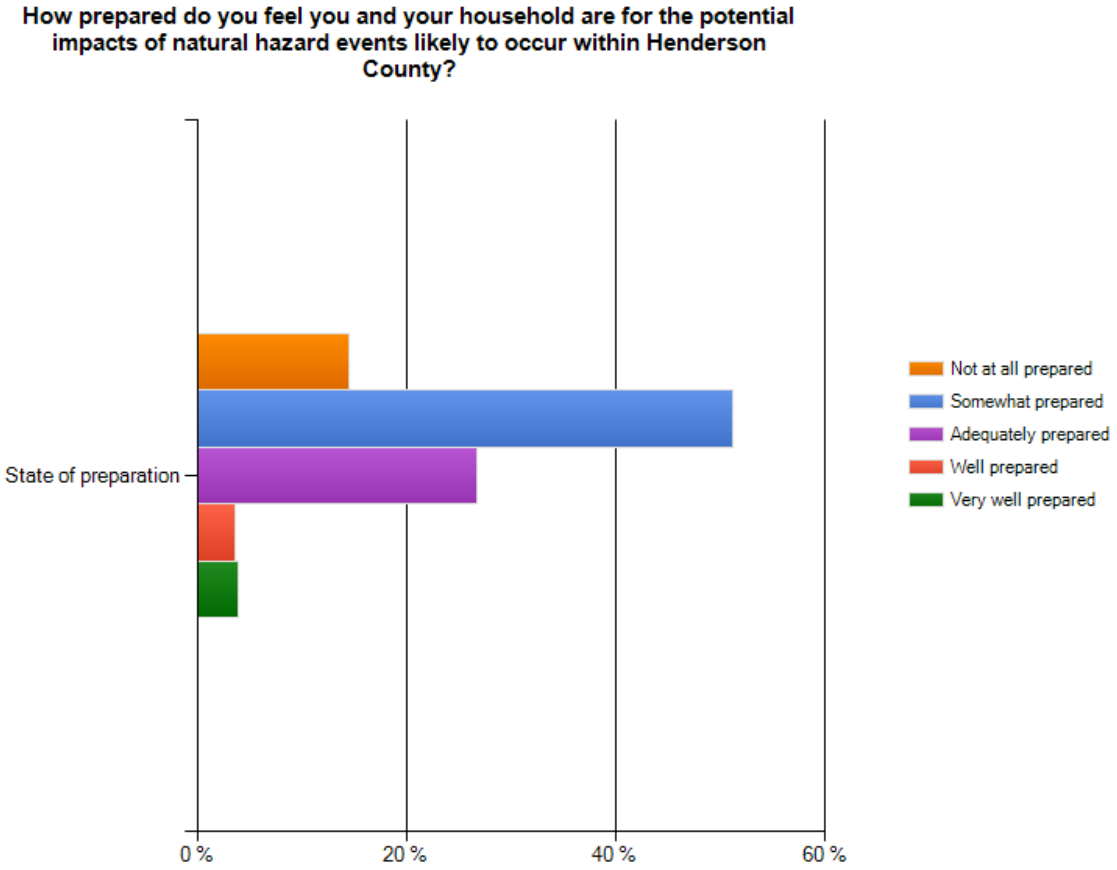
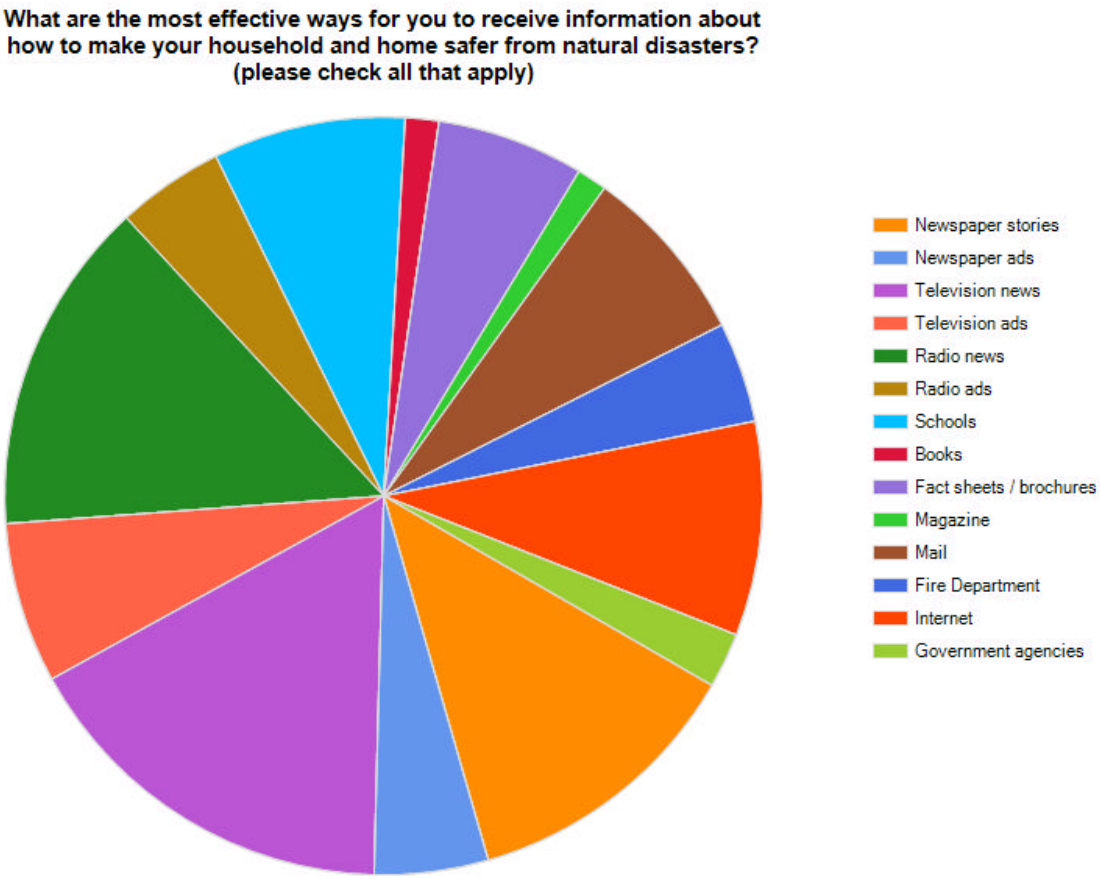


Figure 17


How prepared do you feel you and your household are for the potential impacts of natural hazard events likely to occur within Henderson County?
State of preparation
0 %
20 %
40 %
60 %
Not at all prepared
Somewhat prepared
Adequately prepared
Well prepared
Very well prepared

A question regarding the most effective way for citizens to receive information regarding how to make households and homes safer received a wide array of responses. A breakout of those responses is illustrated in the following pie chart.

Figure 18



While multiple methods of information delivery received relatively high rankings, traditional media such as Television, radio, and newspaper ranked as preferred methods of information distribution. Following closely behind this traditional media were the internet and schools. This result was surprising to steering committee members, due to the increasing age of the population and limited number of schools. The diversity of responses will help inform groups as to the wide array of information sources citizens may turn to in receiving critical education regarding natural disaster.

In response to questions regarding respondents' willingness to engage in personal mitigation efforts for their own homes, 62% indicated that the most effective incentive would be property tax breaks, while other high ranking incentives included both insurance premium discounts and low interest loans. In response to whether or not they would consider a buyout if their home were located in a designated high hazard area, only 13.7% indicated that they would not consider a buyout, while 33.3% said maybe, and the greatest percentage (53 %) indicated they would definitely consider a buyout.

A complete report of survey results, including respondents comments, is included in the attachment section.

Review and Incorporation of Existing Plans, Studies, Reports, and Technical Information

Western Illinois Regional Council was asked to assist the Planning Team by reviewing any and all existing plans within Henderson County. At the first Task Force meeting the community representatives were given a Documents Form to be completed in consultation with the leaders in their community, providing them with a list of plans and other documents that should be considered during preparation of the plan. Natural hazards mitigation can be incorporated into existing plans and ordinances during updates. If a community does not have particular regulations that would promote hazard mitigation, such as building codes, these could be considered for adoption. Other documents could provide helpful information for assessing risks or determining appropriate mitigation projects. A combined listing of community documents is shown in Figure 19.

Figure 19 Existing Community Documents

	Biggsville	Gladstone	Gulfport	Lomax	Media	Oquawka	Raritan	Stronghurst
Document		No			No		No	No
Comprehensive Plan								
Subdivision Ordinance			X					
Zoning Ordinance			X	X		X		
Building Codes						X		
Land Use Plan								
Existing Land Use Map						X		
Flood Ordinance			X			X		
Flood Insurance Rate Map			X					
Repetitive Flood Loss List								
Elevation Certificates for Bldgs								
Capital Improvement Plan								
Historic Preservation Ordinance								
Storm Water Management Plan								
Hazard Mitigation Plan						X		
Emergency Management Plan						X		
Drainage Ordinance			X					
Critical Facilities Map								
Hazard Vulnerability Analysis								
Infrastructure Map								
Topographic Map						X		
Other								
Community Website								
Commnity Action								
Siren	X	X		X	X	X	X	X
Weather Radio					X	X		
Storm Spotters	X	X	X		X	X	X	X
Local Weather Station								
Watershed Repairs								
Road Treatment	X	X		X		X	X	X

Chapter 2 Risk Assessment

Description of All Natural Hazards Affecting Henderson County

The 2007 Illinois Natural Hazard Mitigation Plan identifies seven hazards that affect Henderson County: droughts, earthquakes, extreme heat, floods, severe storms, tornados, and winter storms. The Steering Committee members reviewed the 2007 Illinois State Hazard Mitigation Plan, both for methodology and risk assessment for Henderson County. Additionally, historical data for weather related events in Henderson County was reviewed by jurisdiction. The committee also opted to combine the Severe Storm and Tornado Risk into one Category, since the consensus was that mitigation efforts for these two weather related events would be the same. The steering committee opted to adopt a simple approach of High, Moderate, or low risk as to each Natural Hazard.

Figure 20 Overall Summary of Henderson County's Vulnerability to Natural Hazards

Jurisdiction	Extreme Temperature	Flooding	Severe Storm/ Tornado	Drought	Earthquake	Severe Winter Storm
Henderson County	Moderate	High	Moderate	Low	Low	High
Biggsville	Moderate	Low	Moderate	Low	Low	High
Gladstone	Moderate	Moderate	Moderate	Low	Low	High
Gulfport	Moderate	High	Moderate	Low	Low	High
Lomax	Moderate	Moderate	Moderate	Low	Low	High
Media	Moderate	Low	Moderate	Low	Low	High
Oquawka	Moderate	Moderate	Moderate	Low	Low	High
Raritan	Moderate	Low	High	Low	Low	High
Moderate	Moderate	Low	Moderate	Low	Low	High

2007 Illinois Natural Hazard Mitigation Plan Ratings for Henderson County

The 2007 Illinois Natural Hazard Mitigation Plan identifies seven hazards that affect Henderson County: droughts, earthquakes, extreme heat, floods, severe storms, tornados, and winter storms. The Steering Committee members reviewed the 2007 Illinois State Hazard Mitigation Plan, both for methodology and risk assessment for Henderson County. The historical occurrence of natural hazards is one of four main criteria that were used in the Illinois Natural Hazard Mitigation Plan to create hazard ratings for each county in the state. Based upon Historical frequency and probability, vulnerability, severity of impact, and a population criterion, the plan includes a rating for each type of natural hazard for each county. Ratings (from low to high) of low, guarded, elevated, high and severe were assigned based upon the aforementioned criteria Henderson County was given the following ratings:

Hazard Ratings for Henderson County Assigned in the 2007 Illinois Natural Hazard Mitigation Plan

Severe Storms	Floods	Severe Winter Storms	Drought	Extreme Heat	Earthquake	Tornado
Severe	Elevated	High	Guarded	Elevated	Guarded	Elevated

Source: 2007 Illinois Natural Hazard Mitigation Plan

The Steering Committee also reviewed historical data for weather related events in Henderson County by jurisdiction. The committee also opted to combine the Severe Storm and Tornado Risk in to one Category since the consensus was the mitigation efforts for these two weather related events would be the same. In the 2007 Illinois State Hazard Mitigation Plan, vulnerability levels are defined as a percentage of people potentially impacted. (See table 22)

Figure 22

2) VULNERABILITY (percentage of people)

-The relationship of where people live in or near the hazard area
-The percentage of people that will be adversely affected should the hazard occur

Low (6)	Less than 10% of the total population of the jurisdiction
Medium (12)	10% to 25% of the total population of the jurisdiction
High (18)	More than 25% of the total population of the jurisdiction

The Steering committee identified the vulnerability of each jurisdiction for each natural hazard. This information is shown in Figure .23.

Figure 23

Figure 7 Overall Summary of Henderson County's Vulnerability to Natural Hazards

Jurisdiction	Extreme Temperature	Flooding	Severe Storm/ Tornado	Drought	Earthquake	Severe Winter Storm
Henderson County	Moderate	High	Moderate	Low	Low	High
Biggsville	Moderate	Low	Moderate	Low	Low	High
Stronghurst	Moderate	Low	Moderate	Low	Low	High
Gladstone	Moderate	Moderate	Moderate	Moderate	Low	High
Gulfport	Moderate	High	Moderate	Low	Low	High
Oquakwa	Moderate	Moderate	Moderate	Low	Low	High
Raritan	Moderate	Low	High	Low	Low	High
Media	Moderate	Low	Moderate	Low	Low	High
Lomax	Moderate	Moderate	Moderate	Low	Low	High

Federal Disaster Declaration History Since 1981

All of the federally declared disasters that Henderson has been a part of since 1981 have been flood events.

FEMA DR #871 - Henderson County was one of thirty Illinois counties that were a part of this 1990 declaration. Heavy rain in May and June caused widespread flooding across the state.

FEMA DR #997 – This 1993 known as the Great Flood of 1993 prompted a disaster declaration encompassing thirty-nine Illinois counties.

FEMA DR #1368 – In April of 2001 heavy flooding devastated ten Illinois counties. In May a federal disaster was declared for the ten counties affected, including Henderson County. In all over $1.2 million in federal and state disaster assistance was extended to residents of the ten counties. Disaster housing grants accounted for $506,000 while the Small Business Administration (SBA) made $711,000 in low-interest in disaster loans. 62 families in Henderson County were approved for disaster housing grants which totaled $51,494.

FEMA DR#1771 - The flooding of June 2008 caused massive damage across the state. In total eighteen Illinois counties, including Henderson, were part of this disaster declaration. Individual assistance extended in this disaster is in excess of $15 million. Henderson County had 398 approved assistance applications totaling just over $2 million.

Floods

FLOOD – Description

What is a flood?

(from: Illinois Natural Hazard Mitigation Plan)

The standard definition of a flood is "A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land". A simpler definition is too much water in the wrong place. Since water circulates from clouds to the soil to streams to rivers to the oceans and returns to the clouds, a scientific definition of a flood is an imbalance in the "hydrological system" with more water flowing through the system than the system can draw off.

Heavy rains in 2008 produced widespread flooding across the Midwest. According to statewide average precipitation totals, the period of March–June 2008 was the wettest in Iowa's recorded history and ranked as the 4th and 8th wettest in Indiana and Wisconsin, respectively. Total precipitation in June alone exceeded 14 inches in areas of southern Wisconsin, southwestern Iowa, and southeastern Indiana. These heavy rains contributed to record flooding in Illinois and along its border rivers. As a result of the June 2008 flooding, 25 Illinois counties were declared federal disaster areas per FEMA-1771-DR.

The 2008 flood peaks were either the highest or second highest on record at 12 of the 24 stations on the Mississippi River. Historic records were set at Keithsburg, Gladstone, and Burlington, Iowa exceeding the records set in 1993.

Although the flood heights experienced in 2008 for select locations along the Mississippi River were nearly as high or higher than those reached in 1993, the period of time above flood stage was much shorter. For example, the flood crest reached at Burlington in 2008 was over 0.5 feet higher than the 1993 flood crest of 25.10 feet, the previous record peak. The spring flooding that occurred (April-May) in both 1993 and 2008 were of similar duration at this location. However, the Burlington gauge was above flood stage for only one month in June-September of 2008 as compared to over three months during the same time period in 1993 (Figure 4-1). In Quincy, the 2008 flood crest was 1.3 feet lower than the 1993 flood crest of 32.13 feet, the record peak at that location. The length of time above flood stage in 2008 was also shorter than in 1993 .

Overall, the 1993 flood on the Mississippi River was more severe in terms of its magnitude, duration, spatial extent, and its impact on the region.

In Henderson County, however, the impact from the 2008 flood was far greater than the 1993 event. The levee failure immediately south of Gulfport (Directly across from Burlington Iowa) caused catastrophic damage to Henderson County, of which the long term economic impacts are yet to be known. Both the entire community of Gulfport and the adjacent portion of US Highway 34 were under water from the levee failure, causing devastating property loss to both Gulfport and the rural areas of Henderson County in the floodplain. In addition, US Highway 34, the major east/west transportation route for Western Illinois and Eastern Iowa was submerged by flood waters for several weeks, causing not only adverse transportation costs for detours, but business loss impacts for the entire region that remain difficult to quantify

A summary of the assistance provided to Henderson County Recipients and specific loss estimates are outlined in the table below:

Figure 24 - Henderson County Assistance and Loss Estimates related to FEMA 1771 Declaration

FEMA	
Individual Assistance	$ 2,364,755.00
Personal Assistance	$ 6,106,263.00
IDOT	
Adverse Transportation	$ 4,878,490.00
SBA	
Guaranteed Loans	$ 3,974,100.00
FCIC	
Crop Insurance Payments	$ 5,832,935.00
USACE	
Levee Repairs	$14,800,000.00
BUYOUT INITIAL REQUESTS	$ 9,453,280.00

While these numbers reflect the financial loss and/or repair costs related the Summer 2008 Floods, they in no way reflect the human cost to the residents of Henderson County, many of whom are still displaced eighteen months and more from the floods

Levees

More than 100 levees are located along the Mississippi River from Dubuque, Iowa to Cairo, Illinois. Most of these levees were built to protect agricultural land; notable exceptions include those in the St. Louis metro and Quad Cities areas, which were built to protect urban areas.

During the 2008 June floods, a number of levees overtopped or breached. It is important to note that overtopping is not considered a failure. Levees are designed and built for a certain level of protection. When flood conditions exceed that level, the levee has provided the intended level of protection and may then be overtopped per its design. Typically levees that protect primarily agricultural areas are designed for more frequent floods than those protecting urban or more highly populated areas.

In total, 26 levees overtopped or breached along the Mississippi River between Rock Island, Illinois and St. Louis, Missouri. Six of the 26 overtopped or breached levee systems are located in Illinois. Breached or overtopped levees along the Mississippi River impacted river levels at nearby locations, as well as downstream. On June 17 across the river from Burlington, Iowa, two levees near the Illinois community of Gulfport were overtopped. This caused a sudden drop in river levels near Henderson County and further downstream. The Des Moines River flows into the Mississippi River less than 3 miles downstream from the Keokuk gage. There were multiple levee overtoppings and breaches on both sides of the Mississippi River downstream of this location.

Figure xx shows the expected depths of flooding in Henderson County during an event with a 1% annual chance of occurrence. These depth grids were derived using data developed for the Federal Emergency Management Agency, Preliminary Digital Flood Insurance Rate Maps.

Figure 25

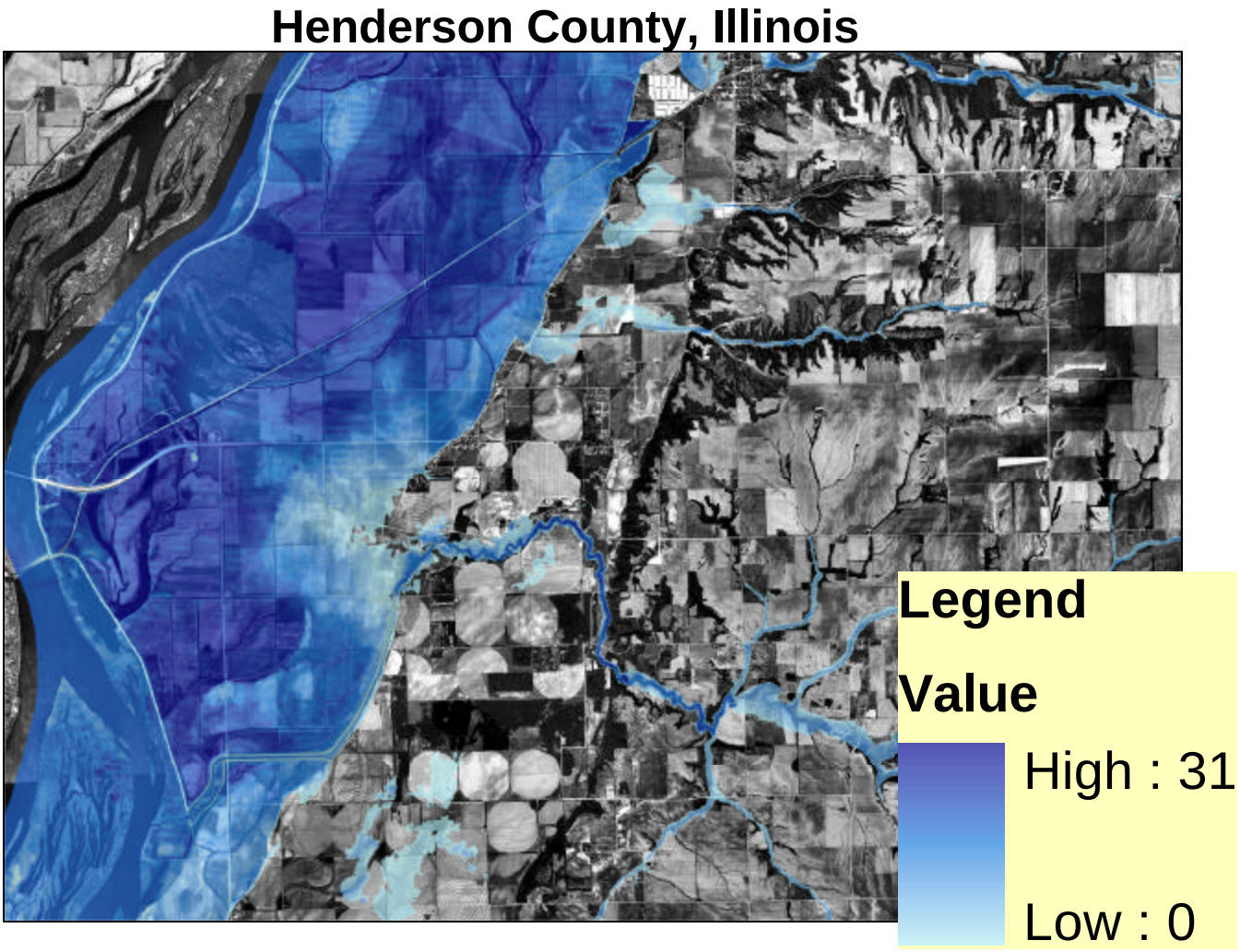
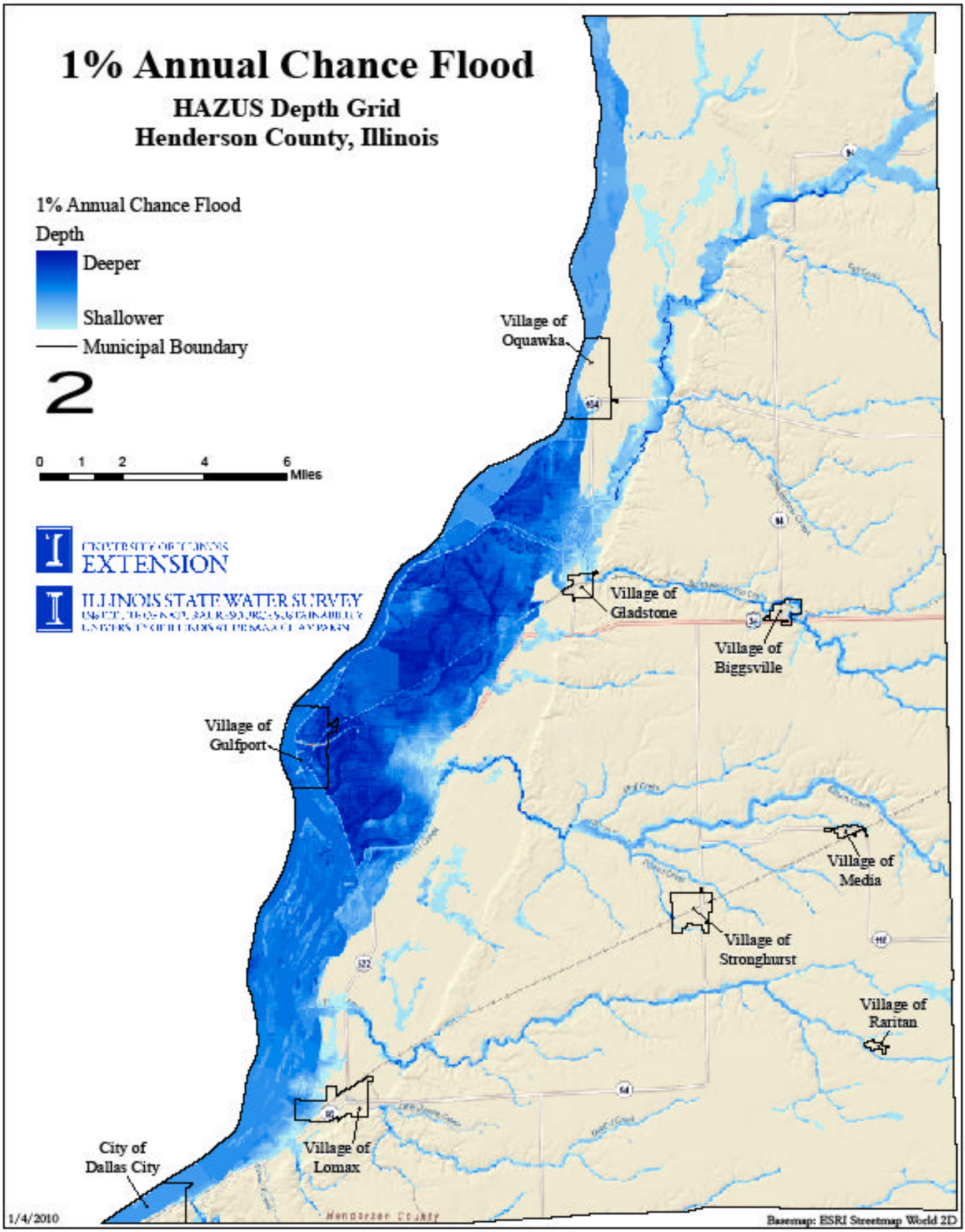


Figure 26


1% Annual Chance Flood
HAZUS Depth Grid
Henderson County, Illinois
1% Annual Chance Flood
Depth
Deeper
Shallower
Municipal Boundary
2
0 1 2 4 6
Miles
EXTENSION
ILLINOIS STATE WATER SURVEY
Village of Oquawka
Village of Gladstone
Village of Biggsville
Village of Gulfport
Village of Media
Village of Stronghurst
Village of Raritan
Village of Lomax
City of Dallas City
1/4/2010
Basemap: ESRI Streetmap World 2D

HAZUS Flood Hazard Analyses

The Federal Emergency Management Agency (FEMA) has developed and supports the use of HAZUS-MH methodology (http://www.fema.gov/plan/prevent/hazus) which uses Geographic Information Systems (GIS) tools and fiscal data to assess risk in terms of potential losses for a given flood event or other natural disaster scenario. This analysis helps to identify potential impacts of natural hazards for planning and mitigation. Flood Insurance Rate Maps (FIRMs) show the expected extent of flooding inundation. However, the risk exposure is a combination of the extent and depth of flooding combined with social and economic impacts. The HAZUS analyses conducted for Henderson County combines the computational power of HAZUS-MH with updated information for critical facilities and flood hazards to provide a solid, consistent framework to quantify the county's risk. The information generated can be used for planning mitigation efforts in order to reduce risk and for planning emergency response. Furthermore, the objective HAZUS-MH output will provide a baseline for evaluating success in reducing natural hazard risk exposure when conducting future assessments.

The HAZUS-MH assessment is highly data dependent; the accuracy of the analyses depends on a number of important datasets including critical facilities and general building stock inventories. Use of the national datasets is considered a Level 1 HAZUS-MH analysis. The Henderson County HAZUS work included an update of the Critical Facilities database and use of updated flood data for the Mississippi River. The HAZUS analysis was performed to investigate impact of the 1% annual chance flood (a.k.a. the 100-year flood).

The Mississippi River along the western border of Henderson County presents the county's greatest flood hazard. Mississippi River flood elevations were determined by the January 2004 Upper Mississippi River System Flow Frequency Study (UMRSFFS) (USACE, 2004). The UMRSFFS was developed by five Corps of Engineer Districts (St. Paul, Rock Island, Omaha, Kansas City, St. Louis) and coordinated through representatives from seven federal agencies and seven states. In the HAZUS analyses for flooding from the Mississippi River, a flood depth grid was manually generated and then input to HAZUS-MH for analysis. The flood depth grid was created using 1% annual chance flood elevations at cross sections from the 2004 U.S. Army Corps of Engineers (USACE) Upper Mississippi River Flow Frequency Study (UMRSFFS). The elevations at cross sections were made into a grid, and ground elevations were subtracted from this grid, creating a flood depth grid. The ground elevations were derived from topographic information supplied by the USACE specifically for their Mississippi River study.

For areas outside of the Mississippi River flood plain, HAZUS-MH generated the flood depth grid for a 1% annual chance flood for streams draining 1 square mile or more, based on the United States Geological Survey (USGS) 1/3 ArcSecond National Elevation Dataset (NED), or 10 meter Digital Elevation Model (DEM).

Critical facility data are an example of site-specific information used in HAZUS-MH for analysis. Critical facility data include schools, medical care facilities, emergency operation centers, police stations, and fire stations. The HAZUS-MH MR3 database was updated using community feedback from meetings, updated database information from HAZUS-MH MR4, and the National Geospatial-Intelligence Agency dataset. Locations of these facilities were confirmed using community feedback and Internet mapping services such as Google Maps. Potable water systems were also updated using well location information provided by the community.

The default HAZUS-MH MR4 General Building Stock (GBS) database used in the analysis includes residential, commercial, industrial, agricultural, religious, government, and educational buildings. Default databases in HAZUS include square footage by occupancy, building count by occupancy, and general occupancy mapping. These data for residential structures are derived from the Census 2000. Data for non-residential structures are derived from Dun & Bradstreet (D&B). Information in the default HAZUS-MH database was adjusted for regional differences using information from three reports from the Department of Energy (DOE). Characteristics such as number and size of garages, type of foundation, and number of stories are modified by region. U.S. Census Bureau data that are publically distributed do not include specific housing information; rather, the data provided are aggregated to the census track (which has about 4000 people), thus reducing the scale and resolution of flood damage estimates which are building specific.

Loss estimates from HAZUS-MH are based on both site-specific analysis as well as aggregate analysis. Aggregate loss estimates, including general building stock analysis, are based on the assumption that structures are evenly distributed across census blocks. It is possible to have underestimates of damage in some areas as well as overestimates of damage in other areas. These damage estimates are more reliable over larger areas than at the census block level. This analysis is meant to assess the risk of flood hazard at the county level in order to serve as a planning aid. Performing a flood analysis at the census block level with small numbers of buildings makes damage analysis estimates sensitive to rounding errors.

Damages to aggregate building stock are based upon regional models that categorize each building into a structural class. It is assumed that each structural class will respond in a similar way to specific flooding depths. Loss estimates for aggregate structural losses need to be viewed as averages for a group of similar buildings rather than as exact estimates to individual structures.

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software, which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific flood.

Results of the HAZUS-MH flood analyses are presented in the following tables.

Essential Facilities List

Figure 27 identifies the essential facilities that were used for the analysis. A complete list of the critical facilities is included as Appendix B. A map of all the critical facilities is included as on page 38.

Figure 27 Essential Facilities List

Facility	Number of Facilities
Medical Care Facilities	2
Emergency Centers	1
Fire Stations	8
Police Stations	2
Schools	4

Essential Facilities Damage

No essential facilities were flooded in the analysis. The updated critical facilities inventory did not include any facilities in the community of Gulfport that were damaged in the 2008 flood.

General Building Stock

HAZUS estimates that there are 5,527 buildings in Henderson County, which have an aggregate total replacement value of 510 million dollars (2006 dollars). Figure 28 and Figure 29 present the relative distribution of the replacement value with respect to the general occupancies for Henderson County and by the 1% Annual Chance Flood Scenario, respectively.

Figure 28

Building Exposure by Occupancy Type for Henderson County

Occupancy	Exposure ($1000)	Percent of Total
Residential	422,976	82.9%
Commercial	40,290	7.9%
Industrial	7,333	1.4%
Agricultural	13,144	2.6%
Religion	11,730	2.3%
Government	10,468	2.1%
Education	4,413	0.9%
Total	**510,354**	**100.00%**

Figure 29
Building Exposure by Occupancy Type for the 1% Annual Chance Flood Scenario

Occupancy	Exposure ($1000)	Percent of Total
Residential	228,680	83.3%
Commercial	15,746	5.7%
Industrial	5,195	1.9%
Agricultural	8,969	3.3%
Religion	5,470	2.0%
Government	7,593	2.8%
Education	2,820	1.0%
Total	**274,473**	**100.00%**

General Building Stock Damage

HAZUS estimates that about 331 buildings will be at least moderately damaged. This is more than 2% of the total number of buildings in the scenario. An estimated 224 buildings will be completely destroyed. Figure 30 below summarizes the expected damage by general occupancy for the buildings in Henderson County.

Figure 30: Expected Building Damage by Occupancy

	1-10		11-20		21-30		31-40		41-50		Substantially	
Occupancy	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**	**Count**	**(%)**
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	0	0.00	0	0.00	8	2.42	27	8.16	72	21.75	224	67.67
Total	**0**		**0**		**8**		**27**		**72**		**224**	

Building-Related Losses

The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents.

The total building-related losses were approximately 65.87 million dollars. Figure 31 below provides a summary of the losses associated with building damages.

Figure 31: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	34.04	1.32	0.42	1.52	37.31
	Content	17.97	3.68	0.68	5.73	28.07
	Inventory	0.00	0.10	0.16	0.25	0.50
	Subtotal	**52.01**	**5.10**	**1.26**	**7.50**	**65.88**

Shelter Requirements

HAZUS estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. HAZUS also estimates the number of displaced people that will require accommodations in temporary public shelters. The model estimates 303 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 275 people (out of a total population of 8,213) will seek temporary shelter in public shelters.

Debris Generation

HAZUS estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 13,450 tons of debris will be generated. Of the total amount, Finishes comprises 29% of the total, and Structure comprises 38% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 538 truckloads (@25 tons/truck) to remove the debris generated by the flood.

Bibliography:

Upper Mississippi River System Flow Frequency Study Final Report. January 2004, U.S. Army Corps of Engineers, Rock Island.

Figure 32

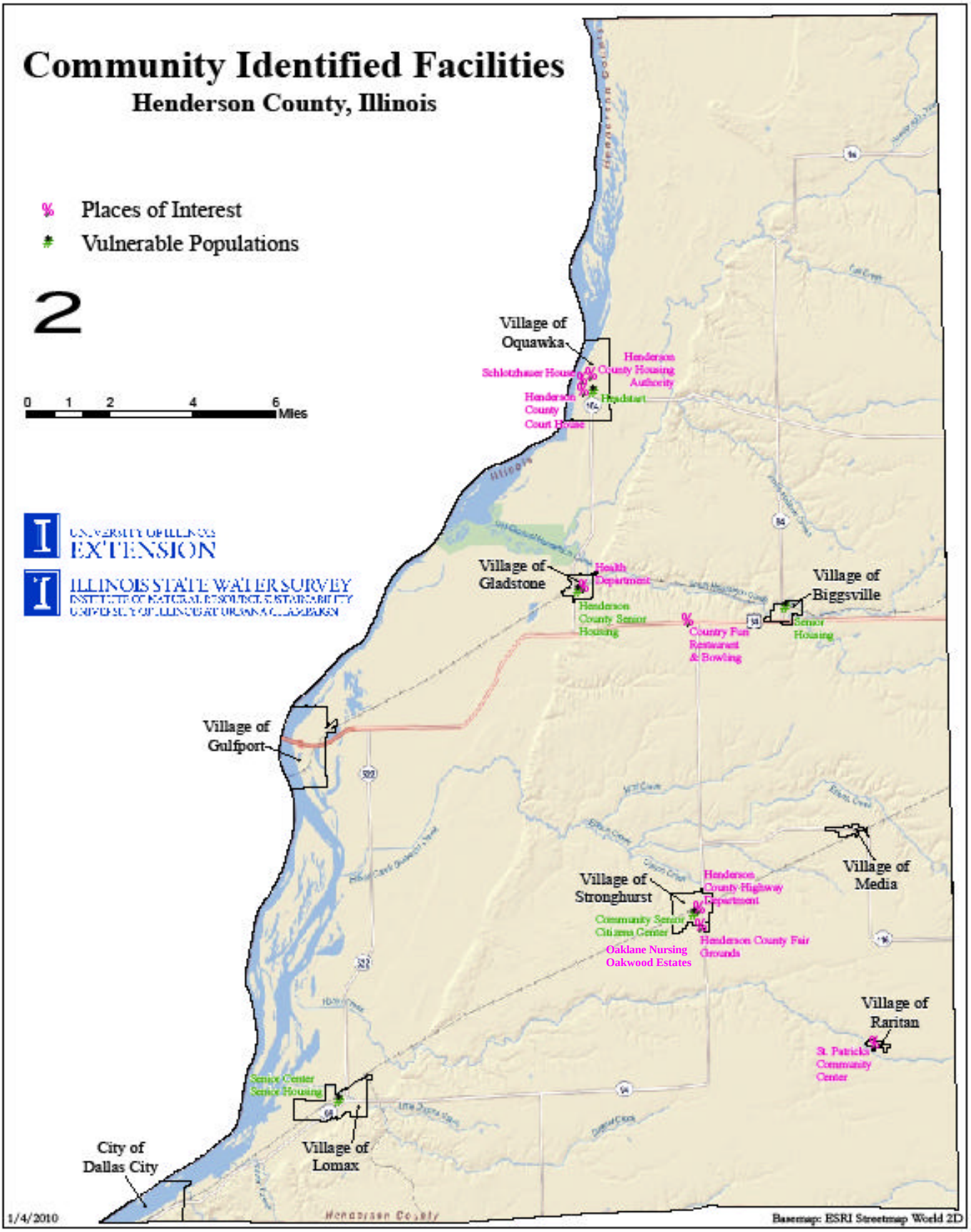

Community Identified Facilities
Henderson County, Illinois
Places of Interest
Vulnerable Populations
2
0 1 2 4 6 Miles
UNIVERSITY OF ILLINOIS EXTENSION
ILLINOIS STATE WATER SURVEY
Village of Oquawka
Schlotzhauer House
Henderson County Housing Authority
Headstart
Henderson County Court House
Village of Gladstone
Health Department
Henderson County Senior Housing
Village of Biggsville
Country Fun Restaurant & Bowling
Senior Housing
Village of Gulfport
Village of Media
Village of Stronghurst
Henderson County Highway Department
Community Senior Citizens Center
Henderson County Fair Grounds
Oaklane Nursing
Oakwood Estates
Village of Raritan
St. Patricks Community Center
Senior Center
Senior Housing
City of Dallas City
Village of Lomax
Henderson County
1/4/2010
Basemap: ESRI Streetmap World 2D

Figure 33

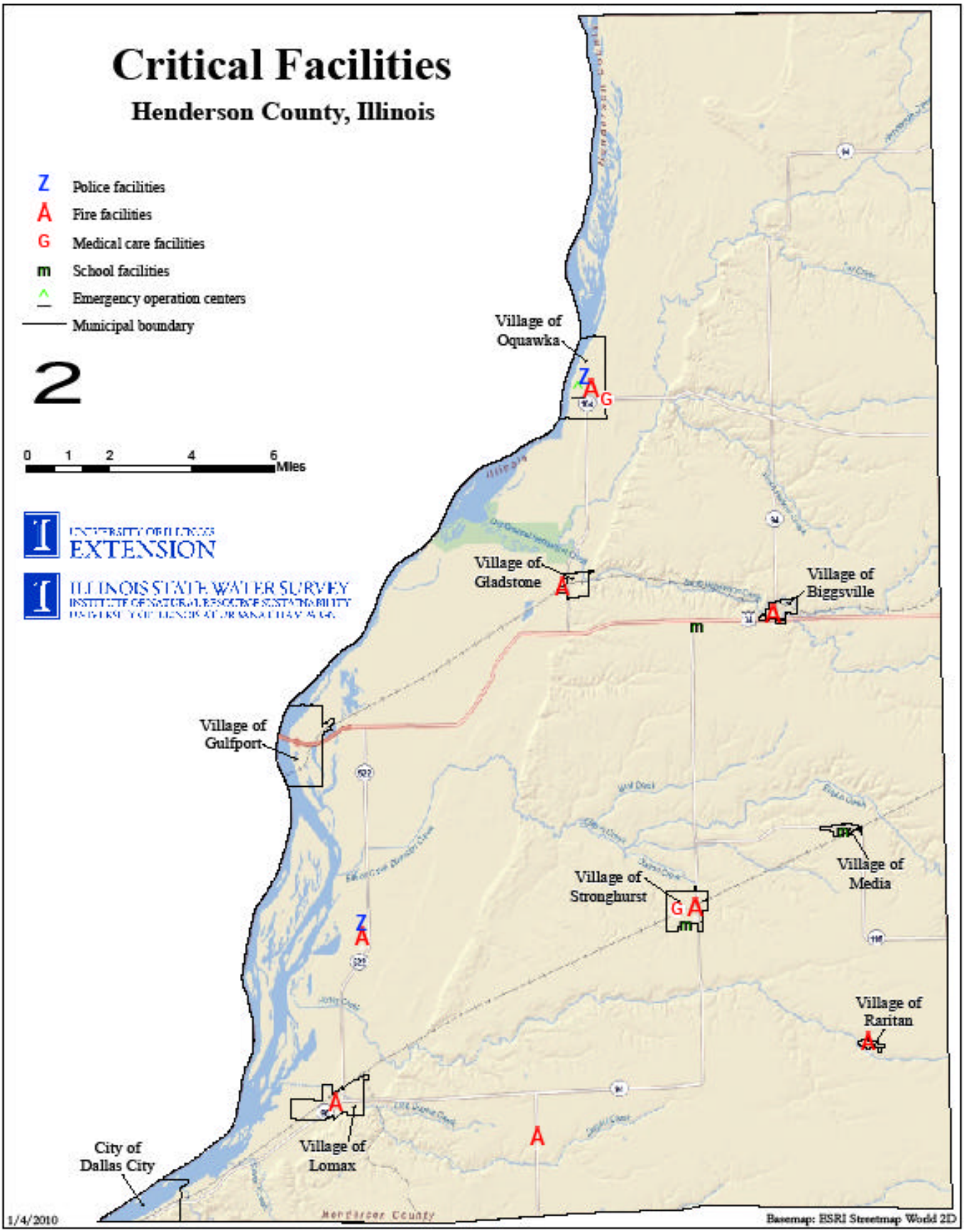
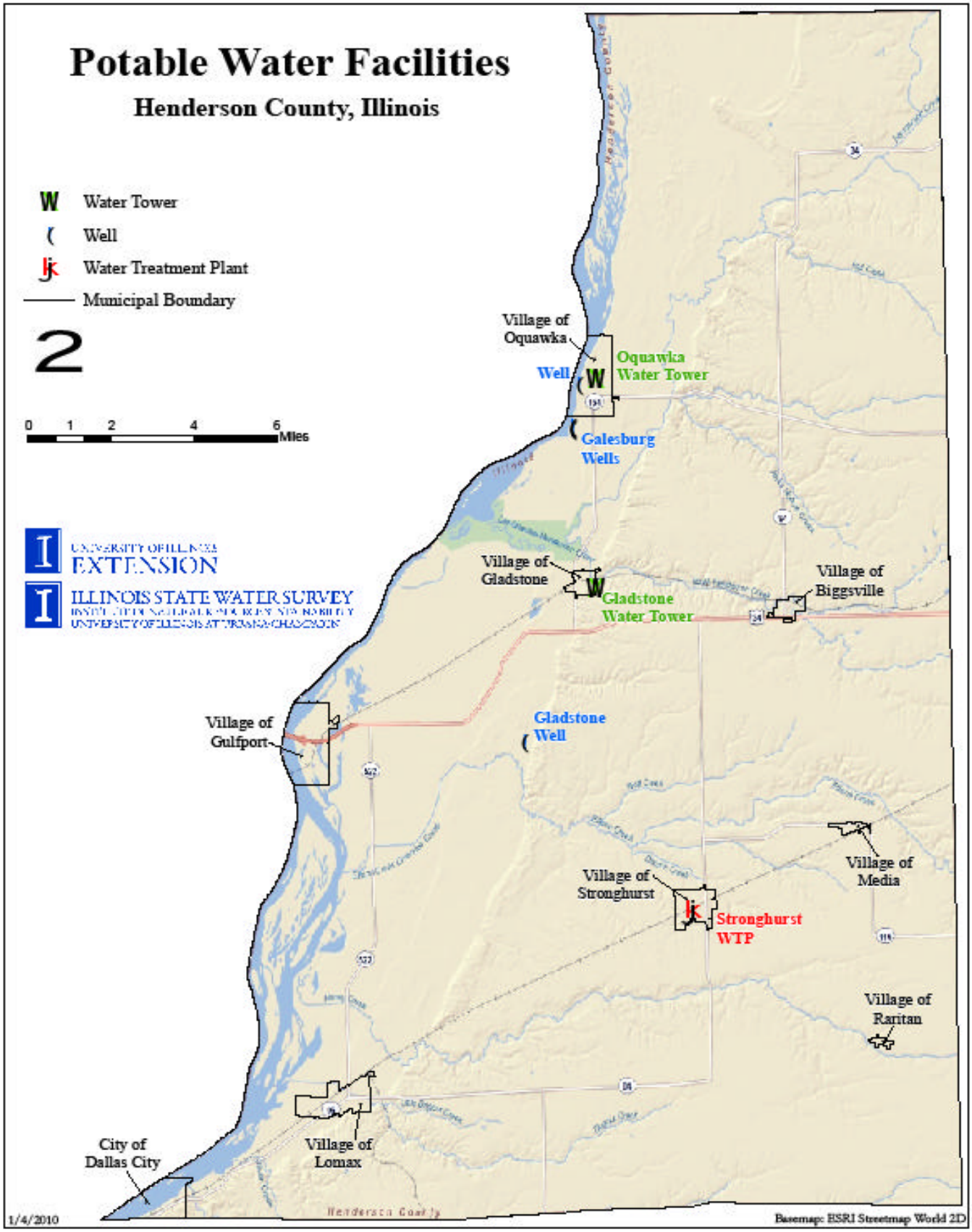

Critical Facilities
Henderson County, Illinois
Police facilities
Fire facilities
Medical care facilities
School facilities
Emergency operation centers
Municipal boundary
2
0 1 2 4 6 Miles
UNIVERSITY OF ILLINOIS EXTENSION
ILLINOIS STATE WATER SURVEY
Village of Oquawka
Village of Gladstone
Village of Biggsville
Village of Gulfport
Village of Media
Village of Stronghurst
Village of Raritan
Village of Lomax
City of Dallas City
Henderson County
1/4/2010
Basemap: ESRI Streetmap World 2D

Figure 34


Potable Water Facilities
Henderson County, Illinois
Water Tower
Well
Water Treatment Plant
Municipal Boundary
2
0 1 2 4 6 Miles
UNIVERSITY OF ILLINOIS EXTENSION
ILLINOIS STATE WATER SURVEY
Village of Oquawka
Oquawka Water Tower
Well
Galesburg Wells
Village of Gladstone
Gladstone Water Tower
Village of Biggsville
Gladstone Well
Village of Gulfport
Village of Media
Village of Stronghurst
Stronghurst WTP
Village of Raritan
City of Dallas City
Village of Lomax
Henderson County
1/4/2010
Basemap: ESRI Streetmap World 2D

SEVERE STORMS

(from: Federal Emergency Management Agency)
"All thunderstorms are dangerous. Every thunderstorm produces lightning. In the United States an average of 300 people are injured and 80 people are killed each year by lightning. Although most lightning victims survive, people struck by lightning often report a variety of long-term, debilitating symptoms."

Facts about thunderstorms:

- Thunderstorms may occur singly, in clusters, or in lines.

• Some of the most severe occur when a single thunderstorm affects one location for an extended time.

• Thunderstorms typically produce heavy rain for a brief period, anywhere from 30 minutes to an hour.

- Warm, humid conditions are highly favorable for thunderstorm development.

• About 10% of thunderstorms are classified as severe – one that produces hail at least ¾ of an inch in diameter, has winds of 58 miles per hour or higher, or produces a tornado.

Facts about lightning:

- Lightning's unpredictability increases the risk to individuals and property.

• Lightning often strikes outside of heavy rain and may occur as far as 10 miles away from any rainfall.

• "Heat lightning" is actually lightning from a thunderstorm too far away for thunder to be heard.

• Most lightning deaths and injuries occur when people are caught outdoors in the summer months during the afternoon and evening.

Facts about hail:

• As a thunderstorm grows, updrafts will push water droplets into a region of the atmosphere which is below the freezing temperature. These water droplets collide with other droplets just before freezing, which is why some hailstones can grow to several inches in diameter. The stronger the updraft associated with a thunderstorm, the larger the hail associated with the storm will be.

What is a tornado?

(from the Federal Emergency Management Agency)

Tornadoes are nature's most violent storms. Spawned from powerful thunderstorms, tornadoes can cause fatalities and devastate a neighborhood in seconds. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 300 miles per hour. Damage paths can be in excess of one mile wide and 50 miles long. Every state is at some risk from this hazard.

Some tornadoes are clearly visible, while rain or nearby low-hanging clouds obscure others. Occasionally, tornadoes develop so rapidly that little, if any, advance warning is possible. Before a tornado hits, the wind may die down and the air may become very still. A cloud of debris can mark the location of a tornado even if a funnel is not visible. Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

The following are facts about tornadoes:

- They may strike quickly, with little or no warning.

• They may appear nearly transparent until dust and debris are picked up or a cloud forms in the funnel.

• The average tornado moves southwest to northeast, but tornados have been known to move in any direction.

• The average forward speed of a tornado is 30 MPH, but may vary from stationary to 70 MPH.

- Waterspouts are tornadoes that form over water.
-

• Tornadoes are most frequently reported east of the Rocky Mountains during spring and summer months.

• Peak tornado season in the southern states is March through May; in the northern states, it is late spring through early summer.

- Tornadoes are most likely to occur between 3 p.m. and 9 p.m., but can occur at any time.

The National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center keeps a database of all severe weather events. With regard to severe storms the database keeps records of thunderstorm and high wind events, hail events, and tornados. According to the NCDC the Storm Events database keeps record of all thunderstorm and wind events, as well as hail events from 1955 forward. However, the lack of damage inducing thunderstorm and high wind events before 1997 and the lack of any recorded events before 1970 call into question the completeness of this data. The tornado events are reportedly tracked back to 1950. The following table displays all of the damage or injury inducing thunderstorm and high wind events in Henderson County that are listed in the NCDC Storm Events Database.

Figure 35 Thunderstorm and High Wind Events Causing Damage or Injury in Henderson County 1955-Present

Location or County	Date	Time	Recorded Wind-speed	Deaths	Injuries	Property Damage	Crop Dam-age
HENDERSON (1)	4/6/1997	8:00 AM	54 kts.	0	0	1.6 M	0
HENDERSON (1)	9/29/1997	11:00 AM	52 kts.	0	1	15 K	0
Biggsville	4/20/2000	12:00 AM	0 kts.	0	0	1 K	0
Gulfport	7/8/2003	12:40 PM	42 kts.	0	1	200 K	20 K
Countywide	7/9/2003	8:25 PM	55 kts.	0	0	100 K	10 K
Stronghurst	8/18/2004	5:37 PM	52 kts.	0	0	2 K	2 K
Gladstone	8/18/2004	6:47 PM	57 kts.	0	0	4 K	5 K
Countywide	6/8/2005	11:54 AM	52 kts.	0	0	10 K	20 K
Big River State Forest	9/18/2005	8:10 AM	57 kts.	0	0	2 K	0
Biggsville	8/23/2007	12:25 PM	70 kts.	0	0	35 K	0
Oquawka	6/8/2008	7:50 PM	56 kts.	0	0	15 K	0
Lomax	7/28/2008	6:56 PM	52 kts.	0	0	5 K	0

Source: National Climatic Data Center – Storm Events Database

Notes:

(1) denotes that this storm event affected an area larger than, but including Henderson County.

Not all of the damage displayed in the records with (1) necessarily occurred in Henderson County.

Hail is a major hazard in Illinois . Figure 37 from the Illinois State Climatologist web page http://www.isws.illinois.edu/atmos/statecli/General/hail.gif shows the pattern of hail days in Illinois between 1981 and 1994. Table XX. displays the number of hail events in Henderson County that are listed in the NCDC Storm Events Database

Figure 36

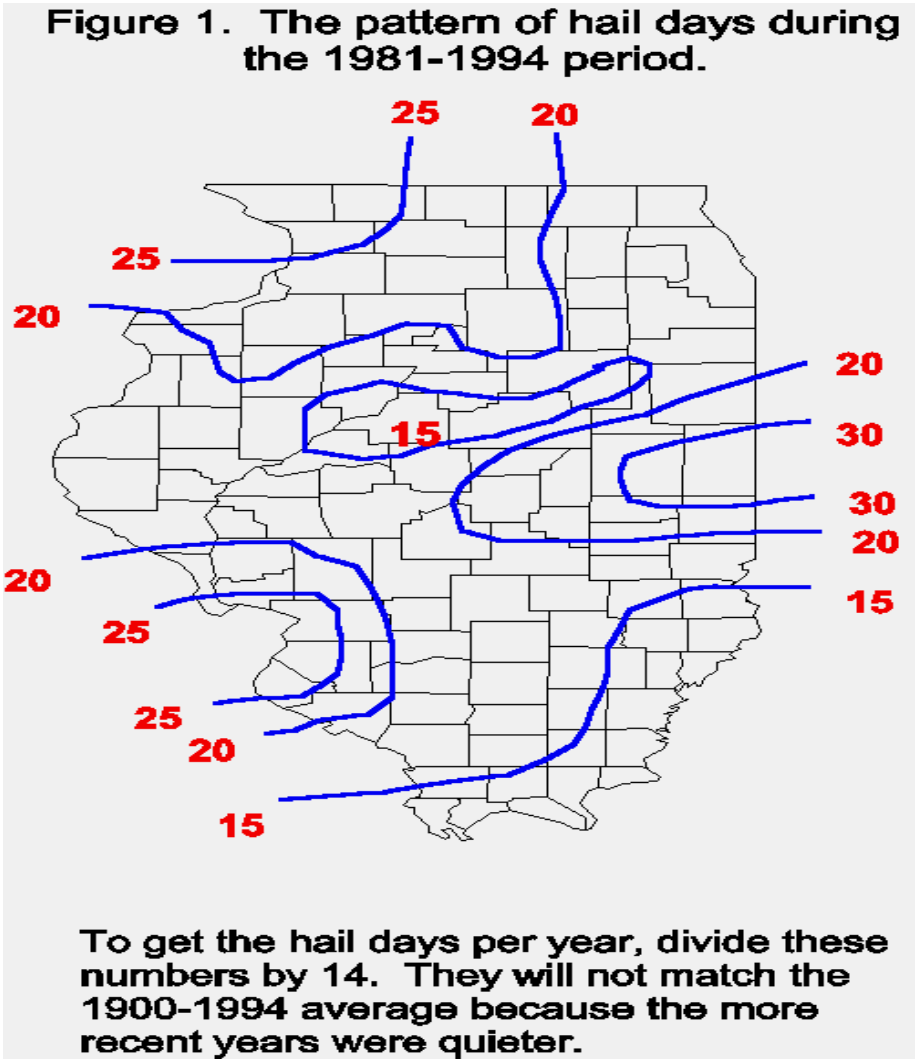


Figure 37

Number of Hail Events by Jurisdiction 1955-Present

Jurisdiction	Number of Hail Events
Unspecified - Henderson County	9
Biggsville	4
Raritan	1
Terre Haute	2
Stronghurst	8
Gladstone	5
Lomax	2
Gulfport	2
Oquawka	5
Carman	3
Media	1
Bald Bluff	1
Carthage Lake	1

Illinois is ranked high in the nation for the number of tornadoes and their impacts. In the 2007 Illinois State Hazard Mitigation Plan, Henderson County is ranked 50th for Illinois counties in terms tornadoes per square mile that were reported between 1950 and 2002. The State report lists total recorded dates loss at $8.34 million. The following table displays all of the damage or injury inducing tornado events in Henderson County that are listed in the NCDC Storm Events Database. (Note only 5 tornadoes are listed in the NCDC Storm Events Database but the State reports has 10 tornadoes reported between 1950 and 2002.)

Figure 38: Tornados Causing Injuries or Property Damage 1950-Present

Location or County1	Date	Time	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
HENDERSON	1/24/1967	4:40 PM	F2	0	0	25K	0
HENDERSON	4/29/1984	6:30 PM	F0	0	0	250K	0
Raritan & Terre Haute	5/11/1995	3:56 PM	F4	0	0	50K	0
Oquawka & Bald Bluff	4/19/1996	5:00 PM	F0	0	0	4 M	0
Bald Bluff	6/29/1998	3:35 PM	F1	0	0	15 K	0

Source: National Climatic Data Center – Storm Events Database
Note:

1 - "HENDERSON" in all capital letters refers to an unspecified location within Henderson County

Information about tornado activity in Illinois is posted at the Illinois State Climatologist Web site http://www.isws.illinois.edu/atmos/statecli/. Information posted includes tornado climatology; tornado maps, statistics, research and links to other sites. Below are excerpts from the Illinois State Climatologist web site.

Fujita Tornado Scale

Tornadoes were typically classified using the Fujita or F-scale, the higher the number the worse the damage. In recent years, the F-scale was changed to the EF-scale or "Enhanced Fujita"-scale. This was based on refinements to the original scale and is described in more detail by the NWS here and here. Below is the original scale.

Figure 39. Original Fujita Tornado Scale

SCALE	WIND SPEEDS	TYPICAL DAMAGE

F-0	40-72 mph	**Light damage:** some damage to chimneys; tree branches broken; sign boards damaged.
F-1	73-112 mph	**Moderate damage:** peels off some roofing; mobile homes pushed off foundation; moving cars blown off road.
F-2	113-157 mph	**Considerable damage:** roofs torn off houses; mobile home demolished; large trees snapped or uprooted; cars lifted off ground.
F-3	158-205 mph	**Severe damage:** roofs and walls blown down; trains overturned; most trees uprooted; cars lifted and tossed.
F-4	207-260 mph	**Devastating damage:** well-constructed buildings leveled; cars tossed some distance;
F-5	261-318 mph	**Incredible damage:** massive destruction; car-size objects thrown as far as 100 meters; most buildings leveled and swept away; incredible phenomena will occur.

Historically, most tornadoes in Illinois have occurred in April through June.

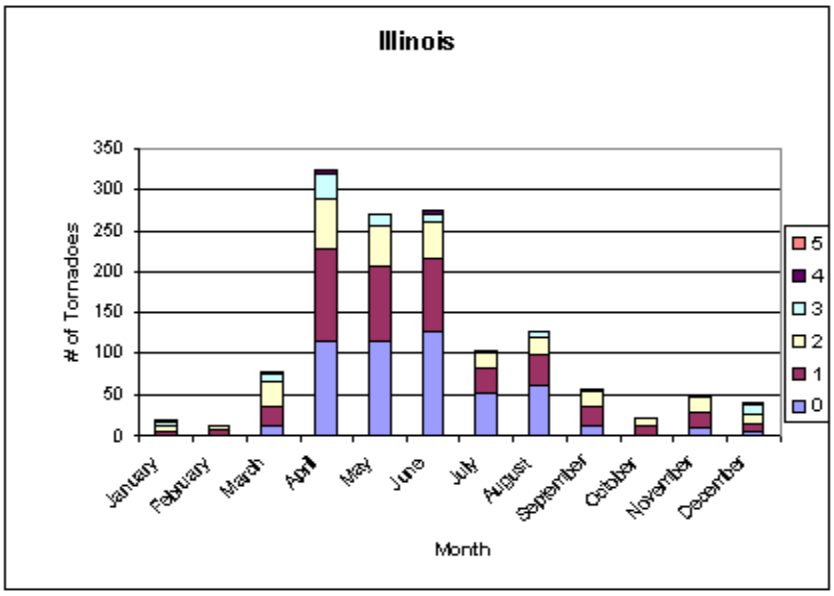
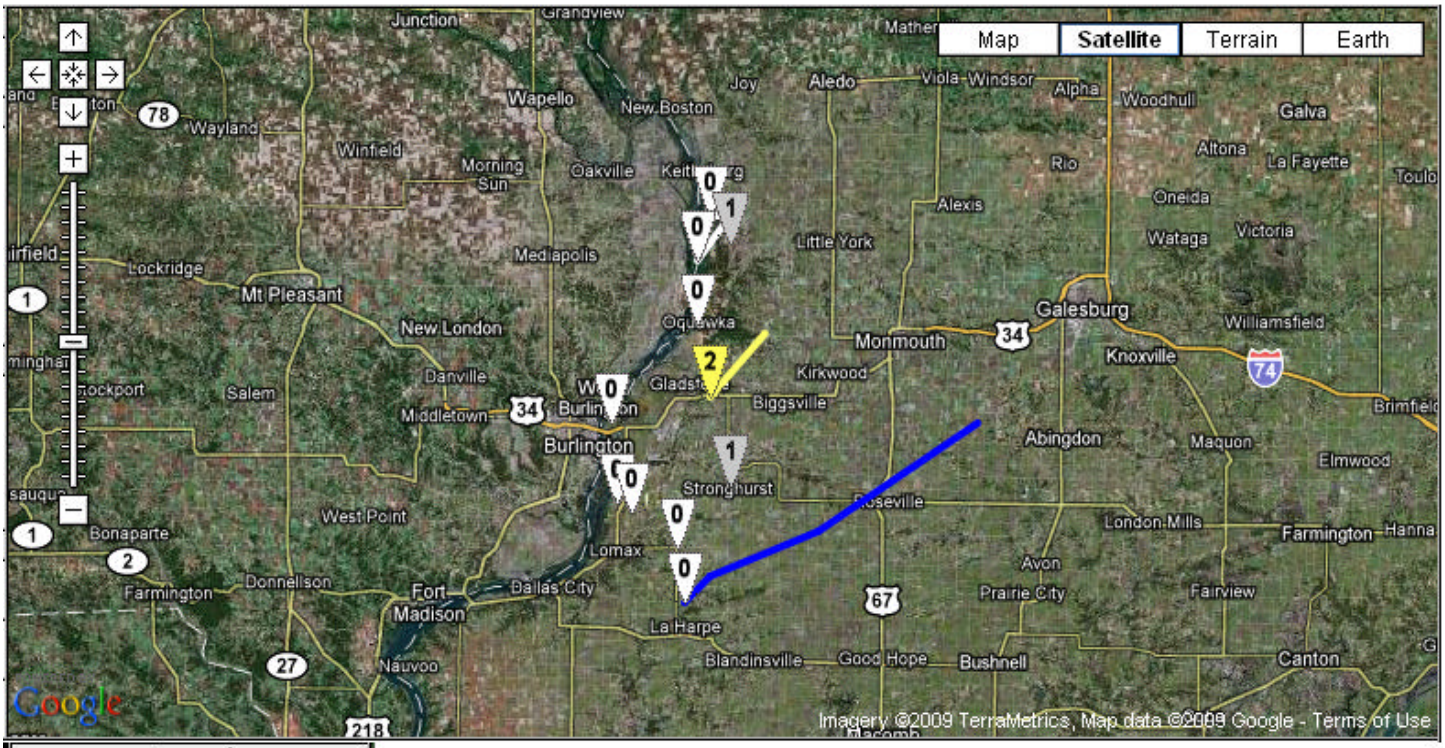


Figure 40. Tornado F-Scale versus Month by F scale in Illinois

Figure 41 Henderson County Tornados from 1950-2008



Legend		
? = F?	0 = F0	1 = F1
2 = F2	3 = F3	4 = F4
5 = F5	Fujita Scale	

Henderson County Tornados 1950 - 2008

Source: TornadoHistoryProject.com

Winter Storms

What is a winter storm?

Winter storms in Sangamon County consist of snow and ice and at times result in blizzard conditions. Winter storms can produce flooding, storm surge, closed highways, blocked roads, downed power lines and hypothermia.

Snowfalls are generally measured in inches but at times have reached over one foot. Blowing snow reduces visibility and is the cause of many vehicle accidents.

- A heavy snowstorm is one that produces at least 6" of snow within 48 hours.

• A blizzard is a winter storm with sustained winds or frequent gusts of 35 mph or greater and considerable falling or blowing snow reducing visibility to less than ¼ mile for three hours or longer. Drifting is a major concern with roadways being blocked and buildings and driveways becoming inaccessible.

Freezing rain and sleet create slippery roadways and sidewalks causing dangerous conditions and can weigh down tree limbs and power lines causing damage and power outages.

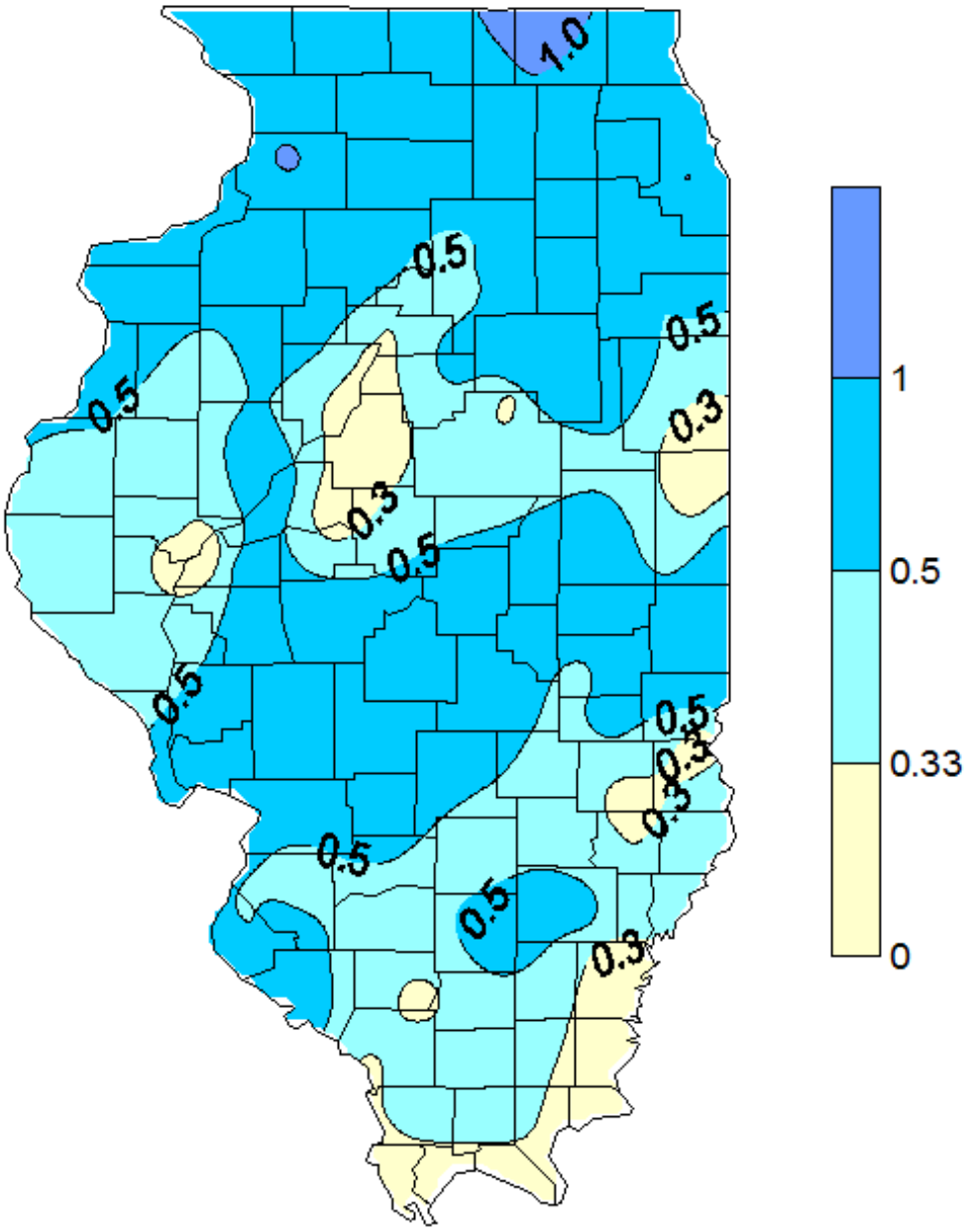
• Freezing rain is rain that freezes when it hits the ground, trees, power lines and buildings, creating a coating of ice.

• Sleet is rain that turns to ice pellets before reaching the ground and creates slippery conditions.

Severe Winter Storms

Winter storms in Illinois can be severe and cause extensive damage. Information about winter storms in Illinois can be found at the Illinois State Climatologist web site http://www.isws.illinois.edu/atmos/statecli/Winter/winter.htm. Below is a graphic from the web site showing the historical snowfall data. Henderson county has historically averaged on storm every 3 years

Figure 42 Average Snowfall



Average number of days with 6 or more inches of snowfall per winter (1971-2000)

"0.33 days per winter" means one storm every 3 years, on average
"0.5 days per winter" means one storm every other year, on average

From 1995 through 2008 there were 72 snow or ice events in Henderson County or 5.1 per year. The following table displays the number of winter storms that have occurred in Henderson County since 1995.

Figure 43 Snow and Ice Events in Henderson County 1995-Present

Date	Time	Type	Deaths	Injuries	Property Damage	Crop Damage
1/18/1995	6:00 PM	Heavy Snow	0	0	0	0
11/10/1995	4:00 AM	Snow/sleet/freezing Rain	0	0	0	0
11/27/1995	4:00 AM	Snow/sleet/freezing Rain	0	0	0	0
1/18/1996	4:30 AM	Winter Storm	0	0	0	0
12/27/1996	6:00 PM	Winter Storm	0	0	0	0
1/9/1997	4:00 AM	Winter Storm	0	0	0	0
1/15/1997	4:00 AM	Winter Storm	0	0	0	0
1/24/1997	4:00 AM	Winter Storm	0	0	0	0
2/3/1997	8:00 PM	Winter Storm	0	0	0	0
4/10/1997	6:00 AM	Heavy Snow	0	0	0	0
12/9/1997	5:00 PM	Heavy Snow	0	0	0	0
12/24/1997	11:00 AM	Heavy Snow	0	0	0	0
1/8/1998	10:00 AM	Winter Storm	0	0	0	0
3/8/1998	12:00 PM	Heavy Snow	0	0	0	0
12/30/1998	5:00 PM	Winter Storm	0	0	0	0
1/1/1999	5:17 AM	Winter Storm	0	0	0	0
1/18/1999	4:05 AM	Winter Storm	0	0	0	0
3/5/1999	3:00 PM	Winter Storm	0	0	0	0
3/8/1999	4:00 PM	Winter Storm	0	0	0	0
12/16/1999	7:00 PM	Winter Storm	0	0	0	0
12/19/1999	3:00 PM	Winter Storm	0	0	0	0
12/23/1999	2:00 PM	Winter Storm	0	0	0	0
1/3/2000	3:00 PM	Winter Storm	0	0	0	0
1/17/2000	8:00 AM	Winter Storm	0	0	0	0
1/19/2000	10:00 AM	Winter Storm	0	0	0	0
1/29/2000	3:00 PM	Winter Storm	0	0	0	0
2/17/2000	7:00 PM	Winter Storm	0	0	0	0
12/1/2000	2:00 AM	Snow	0	0	0	0
12/10/2000	10:00 PM	Winter Storm	0	0	0	0
12/13/2000	8:00 AM	Snow	0	0	0	0
12/15/2000	1:00 PM	Ice Storm	0	0	0	0
12/18/2000	4:00 AM	Snow/blowing Snow	0	0	0	0
12/20/2000	7:00 AM	Snow	0	0	0	0
12/28/2000	10:00 AM	Snow	0	0	0	0
1/26/2001	2:00 AM	Snow/blowing Snow	0	0	0	0
1/28/2001	10:00 AM	Ice Storm	0	0	0	0
4/14/2001	5:00 PM	Snowmelt Flooding	0	0	0	0
1/30/2002	5:00 AM	Winter Storm	0	0	0	0
3/1/2002	5:00 PM	Winter Storm	0	0	0	0
2/14/2003	4:00 PM	Winter Storm	0	0	0	0
3/4/2003	1:00 PM	Winter Storm	0	0	0	0
1/5/2005	3:00 AM	Ice Storm	0	0	80K	0
12/8/2005	3:00 AM	Winter Weather/mix	0	0	0	0

Snow and Ice Events in Henderson County 1995-Present Cont.

1/20/2006	1:30 PM	Winter Weather	0	0	3K	0
2/15/2006	9:00 PM	Winter Weather	0	0	10K	0
3/21/2006	2:00 AM	Winter Weather	0	0	10K	0
11/30/2006	8:00 PM	Winter Storm	0	0	0	0
12/1/2006	12:00 AM	Winter Storm	0	0	0	0
1/12/2007	7:30 AM	Ice Storm	0	0	0	0
1/20/2007	8:25 PM	Winter Weather	0	0	0	0
2/6/2007	5:30 AM	Winter Weather	0	0	0	0
2/12/2007	10:45 PM	Winter Storm	0	0	0	0
2/16/2007	4:00 PM	Winter Weather	0	0	0	0
2/24/2007	9:00 AM	Ice Storm	0	0	0	0
12/1/2007	7:30 AM	Ice Storm	0	0	0	0
12/6/2007	3:30 PM	Winter Weather	0	0	0	0
12/10/2007	10:30 PM	Ice Storm	0	0	0	0
12/15/2007	5:00 AM	Winter Weather	0	0	0	0
12/22/2007	8:00 PM	Winter Weather	0	0	0	0
12/31/2007	11:00 AM	Winter Weather	0	0	0	0
1/21/2008	1:00 PM	Winter Weather	0	0	0	0
1/29/2008	12:30 PM	Winter Weather	0	0	0	0
1/31/2008	12:45 PM	Winter Weather	0	0	0	0
2/1/2008	12:00 AM	Winter Storm	0	0	0	0
2/1/2008	12:00 AM	Winter Weather	0	0	0	0
2/3/2008	3:00 PM	Winter Weather	0	0	0	0
2/5/2008	10:00 PM	Winter Weather	0	0	0	0
2/25/2008	6:00 PM	Winter Weather	0	0	0	0
11/30/2008	1:00 AM	Winter Weather	0	0	0	0
12/3/2008	12:00 PM	Winter Weather	0	0	0	0
12/16/2008	9:15 AM	Winter Weather	0	0	0	0
12/18/2008	6:30 PM	Ice Storm	0	0	0	0
2/20/2009	11:30 PM	Winter Storm	0	0	0	0
Total			0	0	103K	0

DROUGHT

What is drought?
(from: Illinois State Climatologist Office)
"Drought is a complex physical and social phenomenon of widespread significance, and despite all the problems droughts have caused, drought has been difficult to define. There is no universally accepted definition because: 1) drought, unlike flood, is not a distinct event, and 2) drought is often the result of many complex factors acting on and interacting within the environment. Complicating the problem of drought is the fact that drought often has neither a distinct start nor end. It is usually recognizable only after a period of time and, because a drought may be interrupted by short spells of one or more wet months, its termination is difficult to recognize."

Drought is also a temporary feature of the climate of Illinois, and we know it occurs only when less than adequate precipitation exists for an extended period of time. Because of the complex nature of droughts, there are many definitions, often reflecting a specific area of concern of an individual, a city, or a region.

The most commonly used drought definitions are:

1. Meteorological or Climatological Drought – a period of well-below-average precipitation that spans from a few months to a few years.

2. Agricultural Drought – a period when soil moisture is inadequate to meet the demands for crops to initiate and sustain plant growth.

3. Hydrological Drought – a period of below-average streamflow and/or depleted reservoir storage.

How are droughts measured?
The Illinois State Climatologist Office website shows a method for estimating drought conditions on a state-wide basis.

Figure 44

Severity of Precipitation Drought Expressed as Percent of the State-wide Average Precipitation

Drought Duration	Moderate Drought	Severe Drought
3 months	45 to 60%	less than 45%
6 months	56 to 70%	less than 56%
12 months	70 to 80%	less than 70%
24 months	78 to 90%	less than 78%

Drought

According to the National Drought Mitigation Center there have been 82 reported impacts from droughts affecting Henderson County from 1970 to the present. These impacts fall into several categories. There were 37 agricultural impacts, 14 water/energy impacts, 5 environmental impacts, 4 social impacts, and 21 other impacts. It should be noted that a single drought event can have multiple impacts which fall into different impact categories. Henderson County was affected in many including crop damage, drinking water issues, and barge traffic congestion.

Henderson County was one of several counties affected by the drought of 2005-06. This drought started in June of 2005 and continued through March of 2006. The drought affected Bureau, Carroll, Hancock, Henderson, Henry, Jo Daviess, McDonough, Mercer, Putnam, Rock Island, Stephenson, Warren, and Whiteside counties. In total the drought did $228.5 million in crop damage. The NCDC provides descriptions of this drought:

> "The drought that began back in June 2005 continued through December 2005 and into January 2006. Since the growing season was now over, the main impacts on the drought were hydrologic. A report on the hydrologic conditions is supplied by the service hydrologist. Stream flows began the month with most locations reporting near normal (25th to 74th percentile) conditions. A few locations reported above normal (76th to 90th percentile) conditions and a few locations reported below normal (10th to 24th percentile) conditions. From the 2nd through the 6th most locations reported below normal conditions, with a few locations reporting much below normal (less than 10th percentile) conditions and a few locations reporting near normal conditions. After the 6th most locations returned to the same conditions they experienced when the month began. Aside from some minor day to day fluctuations, these conditions persisted through the end of the month. December's precipitation was below normal. Total precipitation for the month was 1.26 inches, or 0.61 inches below normal and 67% of normal. The six-month precipitation total was 11.71 inches, or 7.05 inches below normal and 62% of normal. December was the eleventh consecutive month with below normal precipitation. During this eleven-month period total precipitation has been 21.85 inches, or 13.08 inches below normal and 63% of normal. According to the U.S. Drought Monitor maps (http://drought.unl.edu/dm/), the drought conditions for the HSA did not change much during the month. By the end of the month, the eastern two-thirds of the HSA were in the Extreme Drought (D3) category. The western one-third of the HSA was in the Severe Drought (D2) or Moderate Drought (D1) category. According to the NOAA/NWS Climate Prediction Center, parts of the HSA have been extremely dry over the past year. In the northwest Illinois climate division the yearly precipitation total for 2005 was in the lowest 1% of all annual precipitation totals for 1895 through 2005. In the east central Iowa climate division the total for 2005 was in the lowest 4% of all annual precipitation totals for the same time period. Conditions have also been dry, albeit not as severe, over the past three years. In the northwest Illinois climate division the three-year precipitation total for 2003 through 2005 was in the lowest 4% of all three-year precipitation totals for 1897 through 2005. In the east central Iowa climate division the total for 2003 through 2005 was in the lowest 10% of all three year precipitation totals for the same time period."
>
> "The drought that began back in June 2005 continued through March 2006 but shrunk considerably in size and scope by the start of April 2006. This shrinkage was due to a persistent wet pattern that had set up during March 2006 and continued into April 2006. Since the growing season had yet to begin, the drought was essentially hydrologic in nature. A report of the hydrologic conditions is supplied by the service hydrologist. River Conditions Monthly stream flows for March averaged near normal (25th to 75th percentile) to below normal (10th to 24th percentile). All basins averaged below normal except for the lower Cedar-Iowa River basins and the entire Rock River basin, which averaged near normal. Stream flows began the month with most locations reporting stream flows that were below normal (10th to 24th percentile) or much below normal (less than 10th percentile). A few locations reported near normal (25th to 75th percentile) conditions and one location reported a record low flow for the day. Stream flows gradually decreased until moderate rainfall fell on the 5th. On the 6th, stream flows began increasing in response to this rainfall. Stream flows then remained nearly steady or increased slightly through the 13th when most locations reported near normal conditions. Some locations reported below normal (10th to 24th percentile) flows while other locations reported above normal (76th to 90th percentile) flows. Stream flows then gradually decreased into the late parts of the month but then rose on the last day of the month. On the 30th most locations reported below normal conditions while some locations reported near or much below normal flows. Moderate rainfall on the 30th resulted in flow increases on the 31st. On that day, half of the locations reported below or much below normal flows and half of the locations reported near or above below normal flows. Source: U.S. Geological Survey, WaterWatch Web site (http://water.usgs.gov/waterwatch/). Drought According to the U.S. Drought Monitor maps, minimal changes in the drought situation occurred during the month. Severe drought conditions (D2) continued to cover much of the HSA with moderate drought conditions (D1) across northwestern portions of the HSA."

Extreme Temperatures

What is extreme heat?

Extreme heat is a combination of high temperatures and high humidity. Conditions of extreme heat are dangerous and can cause injury and death.
The Heat Index is apparent temperature or a measure of how it feels when temperature and humidity are combined. It is the result of biometeorological studies and takes into account body size, core and body surface temperatures, clothing, the skin's resistance to heat and moisture transfer away from the body. The Heat Index assumes an average-sized adult with clothing in the shade with a 5-mph wind. Being in the full sun or in an area with little air movement can increase the apparent temperature.

What makes extreme heat dangerous?
(from the Illinois Climatologist Office-Illinois State Water Survey)

The body cools itself by sweating because the evaporation of moisture has a cooling effect. High humidity reduces this evaporation and hinders the body's effort to cool itself. The dew point temperature is a much more useful measure of the moisture content of the atmosphere than the commonly used relative humidity. During summer in Illinois, dew point temperatures in the 50s are generally comfortable. Most people begin to feel the humidity when dew point temperatures are in the 60s. Dew point temperatures in the 70s are rare and cause significant discomfort.

Effects of extreme heat.
Heat cramps**:** muscular pains and spasms due to heavy exertion. They usually involve the abdominal muscles or legs. It is generally thought that the loss of water from heavy sweating causes the cramps.

Heat exhaustion**:** occurs when people exercise heavily or work in a warm, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to vital organs. This results in mild shock.

Heatstroke/Sunstroke**:** LIFE THREATENING. The victim's temperature control system stops working as the body quits producing sweat. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly.

The following table includes all the extreme temperature entries for Henderson County in the NCDC database. It should be noted that these temperature extremes affected an area larger than just Henderson County

Figure 45 Temperature Extremes in Henderson County 1996-Present

Date	Time	Type	Deaths	Injuries
1/30/1996	8:00 PM	Extreme Cold	0	0
2/1/1996	12:00 AM	Extreme Cold	0	0
1/10/1997	4:00 AM	Extreme Windchill	0	1
1/17/1997	4:00 AM	Extreme Windchill	0	0
7/25/1997	4:00 AM	Excessive Heat	0	0
7/19/1999	4:00 AM	Excessive Heat	1 (1)	0
8/31/2000	4:21 AM	Excessive Heat	0	0
12/16/2000	2:00 PM	Extreme Windchill	0	0
12/21/2000	4:00 AM	Extreme Windchill	0	0
12/23/2000	10:00 PM	Extreme Windchill	0	0
2/2/2007	4:00 AM	Extreme Cold/wind Chill	0	0
1/14/2009	11:00 PM	Extreme Cold/wind Chill	0	0

Source: National Climatic Data Center – Storm Events Database

Note: (1) - The person who passed away was not a Henderson County resident, they lived in Kewanee.

EARTHQUAKE –

What is an earthquake?

(from: 2007 Illinois Natural Hazard Mitigation Plan)

“Earthquakes occur when rocks forming the earth's crust slip past each other along a fault. This slippage occurs when the buildup of stresses gets to the point that they are greater than the strength of the locked up section of rocks along the fault plane. When faulting takes place, the sudden release of energy produces vibrations or seismic (shock) waves that radiate from the main fault movements. These waves cause the shaking or ”quaking” that lasts tens of seconds to a few minutes, depending on the magnitude of the event (energy released) and what kinds of rocks they travel through and the stiffness or lack of stiffness of the soils at a site. Where the faulting starts, at some depth below the Earth's surface, is the hypocenter (focus) of an earthquake. The point on the surface directly above the focus is the epicenter.”

How are earthquakes measured?

There are two ways to measure earthquakes.

The magnitude is a calculation of the seismic energy released and is measured through ground vibrations with a seismograph. The familiar Richter Scale is one way of reporting magnitude. The increments of magnitude are logarithmic. An increase of 0.2 on the Richter Scale indicates a doubling of the amount of energy released. For example, a magnitude 7 earthquake releases about 32 times more energy than a magnitude 6 earthquake. A single magnitude number is calculated for each earthquake event.

The intensity relates to the effects of an earthquake and is based on descriptions provided by people experiencing the event rather than readings from an instrument. The intensity decreases when moving away from the epicenter. The type of soil influences intensity which will be stronger through the thick, loose, saturated soils found along river valleys. The Modified Mercalli Intensity Scale is used in the United States to report earthquake intensities. Many intensities are indicated for each earthquake event based on distance from the epicenter and soil type.

There is no record of significant earthquake damage in Henderson County.

Figure 46
Shaking Hazard Map
(from: the US Geological Survey)

The U.S. Geological Survey shaking-hazard maps for the United States are based on current information about the rate at which earthquakes occur in different areas and on how far strong shaking extends from earthquake sources. Colors on this particular map show the levels of horizontal shaking that have a 1-in-50 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of g (g is the acceleration of a falling object due to gravity).

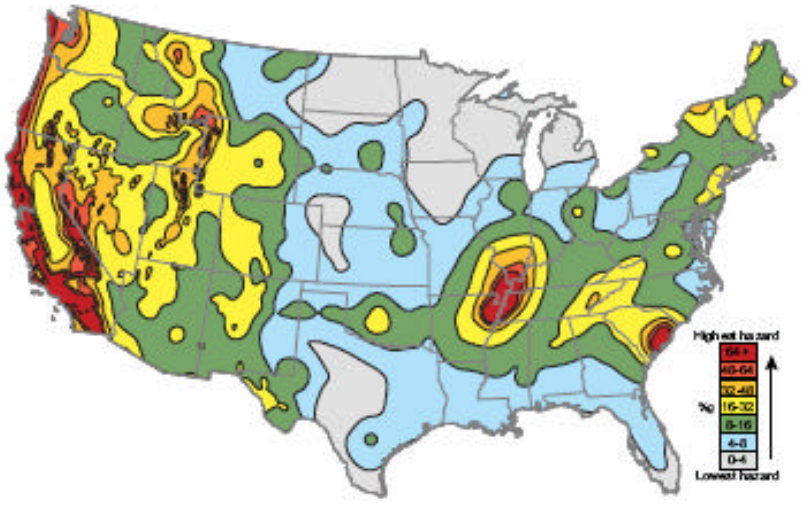


Figure 467 Earthquakes In Illinois Over The Past 200 Years

(from: 2007 Illinois Natural Hazard Mitigation Plan)

Chapter 3 Mitigation Strategy

HAZARD MITIGATION GOALS

After having reviewed the risk assessments for each hazard and the results of the citizen survey, documented existing plans and ordinances, identified critical facilities, and confirmed socioeconomic data the Task Force met to formulate goals and objectives for the plan.

GOALS, OBJECTIVES, AND MITIGATION ACTIONS

Goal 1- Protecting Life and Property

Minimize the risk to people, property, and animals of Henderson County from natural disasters.

Objective 1. Establish shelter locations throughout the county for people and animals that do not have safe locations from natural disasters.

Objective 2. Develop early warning system throughout the county.

Objective 3. Insure that all county residents are protected from potential flood events.

Goal 2- Communication and Education

Maintain and improve communication, cooperation, and education among and between Henderson County Residents, Emergency Responders, and Local Officials.

Objective 1. Establish a county wide public education on responses to emergency warnings.

Objective 2. Establish a broader network of emergency responders.

Objective 3. Maintain adequate communication between emergency responders.

Goal 3- Protect and minimize Damage to infrastructure

Minimize Damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, bridges, roads, railways, locks and dams, and levees.

Objective 1. Insure that all infrastructures are safe and up to current code.

Objective 2. Insure a safe and adequate water supply throughout the county.

Objective 3. Insure the safety of all small bridges and township roads.

Objective 4. Establish and evaluate watershed management issues.

Objective 5. Investigate and incorporate alternative power sources throughout the county.

Goal 4- Emergency Services Coordination

Ensure that all emergency responders, relief workers, and officials understand and can implement a coordinated response plan.

Objective 1. Establish a better communication network.

Objective 2. Establish comprehensive county wide training systems.

Objective 3. Establish disaster documentation procedures.

Goal 5- Protect Future Development

Incorporate Natural Hazard Mitigation into Community Plans, Zoning, and Development Activities to minimize the potential damage from natural hazards.

It was agreed that no objectives were needed to be created.

Projects Related to the Goals and Objectives

The list of project samples were presented to the Task Force. It was suggested to the community representatives that the list be used as a basis for discussion with community leaders on projects that would be appropriate for their village or city. The project ideas came from people who had spent several months considering the subject of natural hazards. Of course, communities were not limited to the projects on the list.

MITIGATION ACTIONS - PRIORITIES AND IMPLEMENTATION

The projects were prioritized within the county by using the following method. It is important to recognize that the implementation of all actions is desirable regardless of prioritized order. Actions assigned to Priority A have a permanent or more far-reaching affect than actions under Priority B, although both address the most significant natural hazards in the County. Priority C actions all address the less significant natural hazards. Priority J actions are ready for implementation within the next year and can be accomplished within existing budgets. All actions will aid in the mitigation effort and should be implemented as opportunities arise.

Project Prioritization Method

Priority A projects permanently eliminate property damages and/or eliminate or reduce injuries and deaths in a specific area OR have a high probability to systematically reduce property damages, injuries and deaths across a wide area. Priority A projects address the most significant natural hazards – extreme heat, flood, severe storm, tornado, and winter storm.

Priority B projects reduce property damages in a specific area OR have the potential to reduce property damages, injuries and deaths across a wide area OR educate the public on disaster preparedness and mitigation. Priority B projects address the most significant natural hazards – extreme heat, flood, severe storm, tornado, and winter storm.

Priority C projects eliminate or reduce property damages, injuries and deaths from the less significant natural hazards OR educate the public on disaster preparedness and mitigation related to the less significant natural hazards – dam failure, drought, earthquake and mine subsidence.

Priority J projects can “just be done” without requiring outside funding and are able to be implemented within one year of Plan adoption. These can be one-time projects or ongoing projects and may address any hazard.

COST/BENEFIT ANALYSIS

A cost/benefit analysis will be needed for any of these projects to be implemented. A cost/benefit analysis will be performed at the time of project selection.

Following is a table of the final community projects developed by the various participating jurisdictions..

Figure 48 Jurisdictional Project Grid

Goal	Community	Project Type	Hazard Type	Possible Funding	Project Description	Priority	Lead Implementer/Contact	Proposed Schedule	Benefit / Cost
1.1	Oquawka	Shelter	Tornado/Severe Storms/Extreme Temperatures	FEMA	Develop a multi-use shelter for Tornado, heating and cooling center.	A	Village Board/ ESDA	2010-2015	High/High
5	Oquawka	Emergency Management	All Hazard	Local	Adopt policies and procedures for chain of command in the event of an emergency situation. Include an educational component for city works employees, city officials, and community volunteers as to the protocol for emergency situations.	J	ESDA Director/ Village Board	2010	High/Low
1	Oquawka	Social Service	All Hazard	Local	Coordinate a neighborhood emergency contact to check on elderly during disasters.	J	Village Board/ Health Department	2010	High/Low
2.1	Oquawka	Education	All Hazard	Local	Develop a public education campaign to inform the community on what to do and where to go in the event of an emergency.	J	ESDA Director/ Health Department/ Extension	2010-2015	High/Low
1	Oquawka	Policy/ Infrastructure	All Hazard	Local/ CDAP	Develop a water contingency plan to ensure safe adequate water in the event of an emergency.	J	Village Board	2010-2015	Medium/ Medium
4	Oquawka	Emergency Management	All Hazard	Local	Participate in County Wide Mutual Aide Agreement, and Multi-jurisdictional Hazard Mitigation/Long term Recovery Committee	J	Emergency Response Departments/ESDA	2010	Medium/Low
1.1	Biggsville	Shelter	Tornado/Severe Storms/Extreme Temperatures	FEMA	Develop a multi-use shelter for Tornado, heating and cooling center.	A	Village Board/ ESDA	2010-2015	High/High
4	Biggsville	Emergency Management	All Hazard	Local	Participate in County Wide Mutual Aide Agreement, and Multi-jurisdictional Hazard Mitigation/Long term Recovery Committee	J	Emergency Response Departments/ESDA	2010	Medium/Low
1.1	Gladstone	Shelter	Tornado/Severe Storms/Extreme Temperatures	FEMA	Develop a multi-use shelter for Tornado, heating and cooling center.	A	Village Board/ ESDA	2010-2015	High/High
4	Gladstone	Emergency Management	All Hazard	Local	Participate in County Wide Mutual Aide Agreement, and Multi-jurisdictional Hazard Mitigation/Long term Recovery Committee	J	Emergency Response Departments/ESDA	2010	Medium/Low

Figure 48 Jurisdictional Project Grid Cont.

Goal	Community	Project Type	Hazard Type	Possible Funding	Project Description	Priority	Lead Implementer/Contact	Proposed Schedule	Benefit / Cost
1.1	Gulfport	Shelter	Tornado/Severe Storms/Extreme Temperatures	FEMA	Develop a multi-use shelter for Tornado, heating and cooling center.	A	Village Board/ ESDA	2010-2015	High/High
4	Gulfport	Emergency Management	All Hazard	Local	Participate in County Wide Mutual Aide Agreement, and Multi-jurisdictional Hazard Mitigation/Long term Recovery Committee	J	Emergency Response Departments/ESDA	2010	Medium/Low
1.2	Gulfport	Acquisition/ Elevation/ Relocation	Flooding	DCEO/ FEMA/ LOCAL	Review all potential options for severe flood loss properties, including acquisition, elevation, relocation, and any other option that may present through FEMA, HUD, or other recovery funding streams	A	Village Board	2010	High/High
1.1	Lomax	Shelter	Tornado/Severe Storms/Extreme Temperatures	FEMA	Develop a multi-use shelter for Tornado, heating and cooling center.	A	Village Board/ ESDA	2010-2015	High/High
4	Lomax	Emergency Management	All Hazard	Local	Participate in County Wide Mutual Aide Agreement, and Multi-jurisdictional Hazard Mitigation/Long term Recovery Committee	J	Emergency Response Departments/ESDA	2010	Medium/Low
1.1	Media	Shelter	Tornado/Severe Storms/Extreme Temperatures	FEMA	Develop a multi-use shelter for Tornado, heating and cooling center.	A	Village Board/ ESDA	2010-2015	High/High
4	Media	Emergency Management	All Hazard	Local	Participate in County Wide Mutual Aide Agreement, and Multi-jurisdictional Hazard Mitigation/Long term Recovery Committee	J	Emergency Response Departments/ESDA		
1.1	Raritan	Shelter	Tornado/Severe Storms/Extreme Temperatures	FEMA	Develop a multi-use shelter for Tornado, heating and cooling center.	A	Village Board/ ESDA	2010-2015	High/High
4	Raritan	Emergency Management	All Hazard	Local	Participate in County Wide Mutual Aide Agreement, and Multi-jurisdictional Hazard Mitigation/Long term Recovery Committee	J	Emergency Response Departments/ESDA	2010	Medium/Low
1.1	Stronghurst	Shelter	Tornado/Severe Storms/Extreme Temperatures	FEMA	Develop a multi-use shelter for Tornado, heating and cooling center.	A	Village Board/ ESDA	2010-2015	High/High
4	Stronghurst	Emergency Management	All Hazard	Local	Participate in County Wide Mutual Aide Agreement, and Multi-jurisdictional Hazard Mitigation/Long term Recovery Committee	J	Emergency Response Departments/ESDA	2010	Medium/Low

Figure 48 Jurisdictional Project Grid Cont.

Goal	Community	Project Type	Hazard Type	Possible Funding	Project Description	Priority	Lead Implementer/ Contact	Proposed Schedule	Benefit/ Cost
1	Henderson County	Coordination	All Hazard	Local	Establish Multi-Jurisdictional Long Term Recovery/Mitigation Committee to coordinate and guide long term recovery efforts and mitigation activities within the county. Responsibilities will include, but are will not be limited to: 1) Host annual Mitigation Plan Meeting as required by FEMA; 2) Meet quarterly to review progress, identify new funding streams and projects being initiated within the county; 3) coordinate and lead the long term economic recovery of the county from the floods of 2008.	J	County Board Chair	2010	High/Low
1.3	Henderson County	Buyout/Elevation	Flooding	FEMA/ DCEO	Facilitate and support buyout/elevation projects for severe repetitive loss properties throughout the county.	A	County Board/FEMA	2010	High/High
1.2	Henderson County	Emergency Management	All Hazard	TBD	Establish a county wide early warning system for natural hazards.	B	ESDA Director	2010-2011	High/Medium
2.1	Henderson County	Education	All Hazard	Local	Develop and conduct a citizen awareness campaign regarding protection from natural hazards	B	ESDA Director/Health Department/Extension	2010-2015	High/Low
4.1	Henderson County	Emergency Management	All Hazard	TBD	Identify and implement an improved emergency response communication system	B	ESDA Director/ Emergency Responders	2010-2012	High/Medium
1.1	Henderson County	Shelter	Tornado/ Severe Storm/ Extreme Temperatures	FEMA/ Federal	Ensure the development of multipurpose Shelter Facilities for areas of dense rural population.	A	County Board/ Townships/ESDA	2010-2015	High/High
3.1	Henderson County	Infrastructure	Flooding	TBD	Establish and implement inspection and maintenance policies and procedures for the levee system throughout the county.	B	County Board/Drainage District	2010-2012	High/Medium
3.1	Henderson County	Infrastructure	Flooding/ Flash Flooding	Local	Identify and permanently mark roadways that flood frequently with appropriate signage.	B	County Highway Department	2011	High/Medium

Figure 48 Jurisdictional Project Grid Cont

Goal	Community	Project Type	Hazard Type	Possible Funding	Project Description	Priority	Lead Implementer/ Contact	Proposed Schedule	Benefit/ Cost
1	Henderson County	Policy/Social Service	All Hazard	Local	Establish "check-in" policy and procedure for vulnerable populations in the event of extreme weather and/or power outage.	J	Social Service Agencies/ Health Department	2010	High/Low
3.4	Henderson County	Infrastructure	Flooding/Flash Flooding	TBD	Evaluate/Update Watershed/Drainage System throughout the county and establish and adopt best practices policies and procedures	B	County Board/Drainage District	2013	High/High
1.3	Henderson County	Emergency Management	All Hazard	TBD	Secure and place portable defibrillators throughout the county; encourage countywide training on their usage; map locations	B,C	ESDA/ Emergency Response Agencies	2012-2015	High/Medium
5	Henderson County	Policy/Planning	All Hazard	TBD	Establish and maintain a Comprehensive Plan for the county, incorporating mitigation activities and Brownfield assessment into the planning.	J	County Board	2013	Medium/ Medium
3.2	Henderson County	Infrastructure	Drought	Local	Map water mains throughout the county to establish points where connections may be made to ensure potable water throughout the county.	J	Water Providers/ESDA Director	2012	Medium/Low
4	Henderson County	Emergency Management	All Hazard	Local	Establish an enhanced Mutual Aide Agreement throughout the county.	J	ESDA Director/Emergency Response and other Agencies	2010	Medium/Low
4.2	Henderson County	Policy/Emergency Management	All Hazard	Local	Update NIMS Training for elected officials.	J	ESDA Director/County Officials	2010	High/Low
4.3	Henderson County	Policy	All Hazard	Local	Establish "Best Practices" policies and procedures for documenting volunteer hours in disaster response.	J	ESDA Director	2010-2011	High/Low
5	Henderson County	Policy	All Hazard	Local	Maintain NFIP Participation Status.	J	County Board	Ongoing	High/Low
5	Henderson County	Policy	All Hazard	Local	Review and update Building Codes to ensure that newly constructed dwellings, infrastructure, and public facilities are designed and built to be disaster resistant.	B,C	County Board	2010-2015	High/Low

Chapter 4 Monitoring, Evaluating, Plan maintenance Strategy

The Natural Hazards Mitigation Plan is an action document based on the assessment of risks to the participating communities. It contains projects to be implemented but also serves as a tool to integrate the concept of natural hazards mitigation into comprehensive planning efforts and regulatory structures.

The Henderson County Multi-Jurisdictional Hazard Mitigation Plan is intended to be a "living" document that will guide the participating jurisdictions towards reducing their risks from natural hazards. As such, each jurisdiction will look towards implementing their identified goals, but also continually look to other projects and ideas that could permanently reduce the risk to life and property from natural hazards.

As outlined in the Henderson County Project Grid, the Henderson County Board will set up a committee whose responsibilities will include:

1) Host annual Mitigation Plan Meeting as required by FEMA;

2) Meet quarterly to review progress, identify new funding streams and projects being initiated within the county;

3) Coordinate and lead the long term economic recovery of the county from the floods of 2008.

Membership in this committee will include a representative from each incorporated jurisdiction within the county, as well as representative from other entities that have a vested interest in the project, including but not limited to: Henderson County Drainage District, Henderson County Economic Development Corporation, Henderson County Health Department, Law Enforcement, and County Engineering. This group will also be able to monitor the plan in relationship to any changing circumstances that develop in the county, for example the status of the levee system certification, etc.

Each quarter the group will take minutes of the progress being made on implementation of the plan, new projects underway, economic recovery efforts, and priorities. These notes will then be utilized at the annual meeting to make the community aware of the progress made in the previous year. The Annual Meeting will be open to the public, and public input will be gather and maintained for review at the time the plan is updated. Every five years, the Plan will be updated, utilizing the annual meeting notes, changing circumstances and risks. This process will begin early enough to ensure that updates are complete prior to the plan expiration dates.

The County Board, through the Long Term Recovery Committee will remain in charge of monitoring, updating, and evaluating the plan. This will include County Board Chair, EMA/ESDA Director, County Treasurer, Mayors/Village Board Presidents or their representatives, and others as appointed by the County Board Chair .

In addition, the public will continue to be a very important part or the planning, updating, evaluating process by participating in various opportunities. For example, the annual plan review meeting will be open to the public, and a press release will be sent out regarding the progress on the plan after each annual meeting. New project ideas, project status, and success of projects will be included in the report out of each annual meeting. This information will be maintained by the Long Term Recovery Committee for utilization at the five year plan update.

Lastly, all mitigation related activities will be compiled for the annual meeting by the Long Term Recovery Committee, and the committee, with representatives from each participating jurisdiction, will maintain records for updating the plans of each jurisdiction. It will be the responsibility of each jurisdiction to maintain membership and attendance at the annual meetings, as well as the Five year plan reviews. Nongovernmental organizations who have an interest or role in mitigation efforts may also participate in the annual plan meetings (i.e. social service agencies, health care facilities, etc.).

Appendix A - Adoption Resolution

RESOLUTION _____

WHEREAS, the Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan has been prepared by the University of Illinois Extension through the Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan Task Force; and,

WHEREAS, the Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the Village of _____ is a local unit of government that has afforded the citizens an opportunity to comment and provide input to the Plan and the actions in the Plan; and,

WHEREAS, the _____ Village Board has reviewed the Plan and affirms to participate in the Workgroup that will review the Plan every year and update it no less than every five years;

NOW THEREFORE, BE IT RESOLVED by the _____ Village Board that the Village of _____ adopts the Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan as this jurisdiction's Multi-hazard Mitigation Plan, and resolves to execute the actions in the Plan.

ADOPTED this _____ day of _____, 2008 at the meeting of the _____ Village Board.

_____
_____, President

Appendix B -Listing of Critical Facilities and Community-Identified Structures

Police Facilities

Name of Facility	Community
Gulfport Police Department	Carman
County Sheriff	Oquawka
Stronghurst Police Dept.	Stronghurst

Fire Facilities

Name of Facility	Community
Biggsville Fire Protection District	Biggsville
Gulfport-Gladstone Fire Dist	Gladstone
Dallas Rural Fire Protection District	Lomax Station
LaHarpe Fire Prot. District Station 2	Terre Haute
Oquawka Fire Dept	Oquawka
Raritan Fire Protection District	Raritan
Media-Stronghurst-Terre Haute Fire Protection	Stronghurst
MST Station 2	Media

Medical Facilities

Name of Facility	Community
Eagle View Community Health System	Oquawka
Eagle View Community Health System	Stronghurst

School Facilities

Name of Facility	Community
West Central High School	Biggsville
West Central Elementary School	Biggsville
West Central Early Childhood	Media
West Central Middle School	Stronghurst

Ambulance Services

Name of Facility	Community
Henderson County Ambulance Service	Biggsville
Ambulance Emergency Responder	Gladstone
Lomax Ambulance Service Incorporated	Lomax
Henderson County Ambulance Service	Oquawka
Henderson County Ambulance Service	Stronghurst

Emergency Operations Center

Name of Facility	Community
Henderson County Civil Defense	Oquawka

Potable Water Facilities

Name of Facility	Community
Gladstone Water Tower	Gladstone
Gladstone Well	Henderson County
Galesburg Well 1	Oquawka
Galesburg Well 2	Oquawka
Galesburg Well 3	Oquawka
Oquawka Water Tower	Oquawka
Well	Oquawka
Stronghurst Water Treatment Plant	Stronghurst

Vulnerable Populations

Name of Facility	Community
Henderson County Senior Housing	Biggsville
Henderson County Senior Housing	Stronghurst
Henderson County Senior Housing	Gladstone
Henderson County Senior Housing	Lomax
Headstart	Oquawka
Community Senior Citizens Center	Stronghurst
Henderson County Housing Authority	Oquawka
Oaklane Nursing Home	Stronghurst
Oakwood Assisting Living	Stronghurst

Places of Interest

Name of Facility	Community
Country Fun Restaurant & Bowling	Biggsville
Health Department	Gladstone
Schlotzhauer House	Oquawka
Henderson County Courthouse	Oquawka
St Patrick's Community Center	Raritan
Henderson County Fairgrounds	Stronghurst
Henderson County Highway Department	Stronghurst

Appendix C - Flood Demolition

DEMOLITION OF PROPERTIES AFTER FLOOD OF 2008

The demolition process is coming to an end. I thought the board would like to be informed of how many properties were demolished by Henderson County.

AS OF DECEMBER 7, 2009:

RURAL PROPERTIES	12	
CARTHAGE LAKE	7	
STEVENSON LAKE	12	
GULFPORT	50	
	+ 1	This will be demolished December 21st weather permitting
TOTAL	82	Demolished by Henderson County

The 10 point check list required by FEMA was completed for each property.

ADDITIONAL INFORMATION:
Gulfport---Approximately 10 residences did their own demolition.
Gulfport--- 5 residence did not want to be in the demolition process. Those five have cleaned and are repairing their properties with the intent of moving back in them

Stevenson Lake—3 houses are still standing. Those three are cleaning and repairing the properties with the intent of moving back in them.
Stevenson Lake---1 house did his own demolition.

Grant funds received by Henderson Co Health Dept. have paid for demolition of the Rural Properties.

FEMA money will pay for the rest of the demolitions. That final total will soon be completed.

I am unsure of how many rural homes and cabins that were torn down or repaired by the owner.

Coral Seitz

Appendix D - Community Survey

Public Survey

Citizens of Henderson County –

Tornados, severe storms, floods, and other natural hazards in Henderson County have caused death, injuries, and millions of dollars in property damage in the last 60 years. Mitigation of natural hazards means reducing the damage to property and hardship to people that can result from them occurring.

Your input is needed in the development of a plan to lessen the impact of natural hazard events on residents and communities of Henderson County. The information gathered from this survey will assist the Steering Committee working on this plan to determine activities that should be implemented to protect lives and property in the event of a natural hazard event. **Your experiences and ideas are a very important part of this effort.**

Please complete this survey and return it to either your survey facilitator (who is delivering it to you), or where you received the survey. Additionally, survey collection boxes will be conveniently located in the Henderson County Courthouse in Oquawka, the Henderson County Health Department in Gladstone, and the Henderson County University of Illinois Extension Office in Stronghurst.

Thanks in advance for your time in completing and returning this survey. But don't stop there – encourage your friends, family, neighbors and co-workers to do the same. That is, of course, as long as they are also Henderson County residents.

If you have any questions about the survey, the process, or the reasons behind this project, do not hesitate to contact me (309-867-4141; hctreas@mchsi.com) or Carrie McKillip, a University of Illinois Extension staff member working with us to develop this plan (309-342-5108; mckillip@illinois.edu).

Best wishes for a great fall,

Susan Meyer
Henderson County Treasurer
Chair, Henderson County Hazard Mitigation Steering Committee

1. What is your zip code? _____

2. Do you live in a community with others (in town) or in the country? ___ town ___ country

3. In the past 10 years, have you or someone in your household experienced a natural disaster within Henderson County such as severe storms, floods, winter storms, extreme temperatures, tornado, drought, earthquake, mine subsidence, or other natural disasters TO THE EXTENT THERE WAS HARM TO PEOPLE (YOU, A FAMILY MEMBER) OR YOUR PROPERTY?

   o1 Yes (*go to question #4*) o2 No (*go to question #5*)

4. Which of the following types of natural hazards events have you or someone in your household experienced TO THE EXTENT THERE WAS HARM TO YOU, A FAMILY MEMBER OR YOUR PROPERTY? (please check all that apply)

   o1 Severe storm (wind, lightning) o2 Flood o3 Winter storm (ice, hail, etc.)
   o4 Extreme temperatures (heat, cold) o5 Tornado o6 Drought
   o7 Earthquake o8 Mine Subsidence (sinking) o9 Flash flooding
   o10 Other (please specify): _____

5. On a scale of 1 to 5, how prepared do you feel you and your household are for the potential impacts of natural hazard events likely to occur within Henderson County?

1 Not at all prepared	*2 Somewhat prepared*	*3 Adequately prepared*	*4 Well prepared*	*5 Very well prepared*
o1	o2	o3	o4	o5

6. How concerned are you about the following natural hazards impacting your community and/or Henderson County? (please check the corresponding box for each hazard)

Natural Hazard	*Not concerned*	*Somewhat concerned*	*Concerned*	*Very concerned*	*Extremely concerned*
a. Severe storm (wind, lightning)	o1	o2	o3	o4	o5
b. Flood	o1	o2	o3	o4	o5
c. Winter storm (ice, hail. etc.)	o1	o2	o3	o4	o5
d. Extreme temperatures	o1	o2	o3	o4	o5
e. Tornado	o1	o2	o3	o4	o5
f. Drought	o1	o2	o3	o4	o5
g. Earthquake	o1	o2	o3	o4	o5
h. Mine subsidence (sinking)	o1	o2	o3	o4	o5
i. Flash flooding	o1	o2	o3	o4	o5
j. Other (please specify):	o1	o2	o3	o4	o5

7. What are the most effective ways for you to receive information about how to make your household and home safer from natural disasters? (please check all that apply)

o1 newspaper stories o2 newspaper ads o3 television news
o4 television ads o5 radio news o6 radio ads o7 schools
o8 books o9 fact sheet/brochure o10 magazine o11 mail
o12 fire department o13 Internet o14 government
o15 Other (please specify): _____

8. To the best of your knowledge, is your property located in a designated floodplain?

o1 Yes o2 No

9. To the best of your knowledge, is your property located in close proximity (less than 1 mile) to an earthquake fault line?

o1 Yes o2 No

10. Do you have flood insurance? o1 Yes o2 No

11. Do you have earthquake insurance? o1 Yes o2 No

12. How vulnerable to damage is the infrastructure (streets, water, sewer, electricity, etc) that serves your home and/or community?

Natural Hazard	*Minimally Vulnerable*	*Moderately Vulnerable*	*Severely Vulnerable*	*Don't Know*
a. Severe storm (wind, lightning)	o1	o2	o3	o99
b. Flood	o1	o2	o3	o99
c. Winter storm (ice, hail. etc.)	o1	o2	o3	o99
d. Extreme temperatures	o1	o2	o3	o99
e. Tornado	o1	o2	o3	o99
f. Drought	o1	o2	o3	o99
g. Earthquake	o1	o2	o3	o99
h. Mine subsidence (sinking)	o1	o2	o3	o99
i. Flash flooding	o1	o2	o3	o99
j. Other (please specify):	o1	o2	o3	o99

13. How vulnerable to damage are the critical facilities (police stations, fire stations, emergency operation centers, etc.) within your community?

Natural Hazard	*Minimally Vulnerable*	*Moderately Vulnerable*	*Severely Vulnerable*	*Don't Know*
a. Severe storm (wind, lightning)	o1	o2	o3	o99
b. Flood	o1	o2	o3	o99
c. Winter storm (ice, hail. etc.)	o1	o2	o3	o99
d. Extreme temperatures	o1	o2	o3	o99
e. Tornado	o1	o2	o3	o99
f. Drought	o1	o2	o3	o99
g. Earthquake	o1	o2	o3	o99
h. Mine subsidence (sinking)	o1	o2	o3	o99
i. Flash flooding	o1	o2	o3	o99
j. Other (please specify):	o1	o2	o3	o99

14. What actions do you think could be taken by individuals or the community to reduce damages and hardships caused by natural hazard events?

_____

_____

_____

15. Did you consider the impact that the possible occurrence of a natural disaster would have on your home before you purchased or moved in?

o1 Yes o2 No o3 Don't recall

16. Was the presence of a natural hazard risk zone (flood zone, fault zone, etc.) disclosed to you by a real estate agent, seller, or landlord before you purchased or moved into your home?

o1 Yes o2 No o3 Don't recall

17. Would the disclosure of this type of information influence your decision to purchase or move into a home?

o1 Yes o2 No o3 Maybe

18. Would you be willing to spend money to modify or retrofit your current home from the impacts of future natural disasters? (Examples of retrofitting are: elevating a flood prone home; bolting a foundation for seismic impacts; improving home exteriors to withstand higher winds; and so on)?

o1 Yes o2 No o3 Maybe

19. Which of the following incentives would help to encourage you to spend money to retrofit your home for the possible impacts of natural disasters? (please check all that apply)

o1 low interest rate loan o2 insurance premium discount o3 mortgage discount
o4 property tax break o5 grant funding (with cost share) o6 none
o7 Other (please specify): _____

20. If your property were located in a designated high hazard area or had received repetitive damages from a natural event, would you consider a buyout or relocation offered by a public agency?

o1 Yes o2 No o3 Maybe

GENERAL INFORMATION

21. How old are you? _____

22. Are you…? o1 Male o2 Female

23. How long have you lived in Henderson County?
o1 Less than 1 year o2 1 – 4 years o3 5 – 9 years
o4 10 – 19 years o5 20 years or more

24. Do you have access to the Internet? o1 Yes o2 No

25. Do you own or rent your home? o1 Own o2 Rent

26. What type of structure do you live in?

o1 single family home o2 duplex o3 apartment (3-4 units in structure)
o4 apartment (5 or more units in structure) o5 condominium / townhouse
o6 manufactured home o7 trailer
o8 Other (please specify): _____

Appendix E— Newspaper Article

Henderson County residents' opinions needed for hazard mitigation planning

Daily Review Atlas

Thu Nov 12, 2009, 02:30 PM CST

OQUAWKA — The Henderson County Hazard Mitigation Steering Committee is asking Henderson County residents for their input in the development of a plan to lessen the impact of natural disasters on residents and communities in Henderson County.

"It is clear to us that we need the opinions of those who live and work in the County, and this survey will help us gather that information," said Susan Meyer, Henderson County Treasurer and Steering Committee Chair.

Henderson County is subject to floods, tornadoes, winter storms, drought, and thunderstorms. It is also in a risk zone for earthquakes.

"The intent of the committee is to gain insight through the community survey as to how to best prepare for any of these natural disasters before they happen," Meyer continued. Mitigation activities reduce the physical, social and economic impact to residents and property when a natural disaster occurs.

Surveys can be filled out online by going to http://cads.extension.uiuc.edu/ and clicking on the Surveys tab. Then click on the Henderson County Hazard Mitigation Planning Survey. One may also access the survey by visiting University of Illinois Extension Henderson-Mercer-Warren Unit's website at www.extension.illinois.edu/hmw.

Residents of Henderson County may also contact Meyer at the Henderson County Treasurer's Office at (309) 867-4141 if they would like a paper copy of the survey to complete.

Once completed, Henderson County's hazard mitigation plan will comply with Federal Emergency Management Agency regulations, allowing the County and participating cities and villages to apply for federal and state funding specifically earmarked for hazard mitigation. Many of the mitigation strategies will also provide useful information to local residents and businesses on how to reduce their potential hazard risks.

A Steering Committee, comprised of members from the city and village departments, county officials and others has been meeting on a monthly basis. Town hall meetings have been held in various communities, as were sessions with industry sectors, including health and human services, agriculture and natural resources, transportation, business and development, arts and culture, government and education. Planning efforts are being led by the Henderson County Board that has retained the services of University of Illinois Extension CADS Program to facilitate and the development of the plan.

Appendix F - Public Flier for Meetings

Henderson County

Hazard Mitigation Community Meetings

PLANNING FOR THE FUTURE IN THE EVENT OF A DISASTER

WE NEED YOUR INPUT AND IDEAS

Please try to attend one of the following meetings in a community near you and share **your ideas** about weather related incidents, natural hazards, and community preparedness.

GLADSTONE Tuesday September 8 6:00pm
Henderson County Health Department

OQUAWKA Tuesday September 22 6:00pm
Oquawka Township Building, Schuyler and 4th

STRONGHURST Tuesday September 29 6:00pm
Stronghurst Fire Department

All Henderson County Residents and Stakeholders Welcome!!

For more information call U of I Extension Office at 309.734.5161

Henderson County

Hazard Mitigation Community Meeting

FINAL PLAN REVIEW

Henderson County Draft Plan

All Henderson County Residents and Stakeholders are invited to attend to view the Hazard Mitigation Plan, learn about the process, and make public comments.

Tuesday, January 26, 2010
Henderson County Health Department
Gladstone
6 PM

All Henderson County Residents and Stakeholders Welcome!!

For more information call U of I Extension Office at 309.734.5161

Appendix G - Minutes from Committee Meetings

Henderson County Hazard Mitigation Steering Committee
Tuesday, July 14, 2009 at 11:00 a.m.
MINUTES

Present:

Carman Township: Terri Bowman
Henderson County: Jim Alexander, Revonne Butler, Karen Cole, Tom Doran, Alan Ferguson, Cathy Good, Tom Hickman, Marty Lafary, Susan Meyer, Jan Monville, Robert Peterson, Bill Tobias, Jenna Link, Curt Eisenmayer, Pat Quick
Village of Gulfport: Rich Myers
ADM: Brian Cochran
Other Committee Members: Coral Seitz, Richard Clifton, Heidi Sorenson
University of Illinois Extension: Carrie McKillip, Al Kulczewski
IEMA: Lisa Graff, Jarod Owen

Carrie McKillup reviewed that we are required to show a 25% match ($7,500) match for Henderson County. We will do so by tracking volunteer time either at each Committee member's salary rate or at the allowed $10 per hour rate if member is not working outside of their home. Carrie asked that everyone introduce themselves and the jurisdiction that they were representing at the meeting.

Each jurisdiction must have a representative on the HMP Steering Committee, and attendance will be tracked at these meetings. Attendance at the Steering Committee meetings is required for the jurisdicition to adopt the plan. Only those jurisdictions adopting the plan are eligible for future FEMA grants.

Jarod Owen reported commented that FEMA would like for each county plan to rank projects by priority and jurisdiction.

Lisa Graff reported that Henderson County is participating in the Illinois State Water Survey, and IEMA is doing the Hazards US (HAZUS) analysis for the County. HAZUS is a software program that estimates potential disasters including earthquakes, floods, and hurricanes. HAZU has critical facilities for Henderson County already loaded in the software. The steering committee will need to review and update this database.

Carrie commented that we will devote the next meeting in August to risk assessment. The next steps after that include: conduct of focus groups and public meetings followed by another round of public meetings to show the proposed HM plan. After the HM plan is adopted by FEMA, then it will go to the individual jurisdictions for their adoption of the plan.

Susan Meyer reminded everyone that future steering committee meetings will be held on the second Tuesday of each month at 11:00 a.m. at the Henderson County Health Department in Gladstone. The steering committee also needs people present representing the Villages of Gladstone, Lomax, Raritan and Stronghurst.

Carrie reported that 8 focus groups need to be scheduled for the following categories, with each meeting lasting approximately 90 minutes:

- Agriculture and Natural Resources
- Public Safety
- Health & Human Services
- Utilities
- Business and Development
- Transportation

Government

Education, Cultural & Historical

It was suggested that we schedule 3 meetings per evening, with meetings on each evening to be held at 5:00 p.m., 6:30 p.m., and 8:00 p.m.

It was agreed to conduct three public meetings on the following dates:

August 18 – in the gymnasium at the Henderson County Health Department in Gulfport.
August 25
September 8

The last two meetings will be held in Oquawka and Stronghurst.

Suggestions were made on ways to promote the public meetings.

Create informational flyers
Send the flyer to all churches
Distribute news releases to all area media
Post the meetings on web sites

Carrie distributed a draft of the questions that are on a survey that will be collected from the public. It was suggested that the survey be posted as a link on the University of Illinois Extension website. Carrie asked the steering committee members to review the survey and suggest any other questions that might be added to the survey. A copy of the survey should also be given to the Henderson County Sherriff's Office.

Carrie asked that she be provided with a copy of planning documents prepared for each jurisdiction and Henderson County. She also would like a copy of all ordinances and documents that have reference to the National Flood Insurance Program.

The next Steering Committee meeting is scheduled to be held on Tuesday, August 11th at 11:00 a.m. at the Henderson County Health Department, Gladstone.

Henderson County Hazard Mitigation Steering Committee
Tuesday, August 11, 2009 at 11:00 a.m.
MINUTES

Present:

Henderson County: Jim Alexander, Revonne Butler, Karen Cole, Tom Doran, Cathy Good, Tom Hickman, Marty Lafary, Susan Meyer, Robert Peterson, Curt Eisenmayer, , Heidi Sorenson, Douglas Ford, Mary Reed, Albert Renken, Christine Royer, Gail Russell, Larry Russell, Scott Walters
Village of Biggsville: Brian Cochran
Village of Oquawka: Coral Seitz
Village of Lomax: Kim Peters, Hugh Pence
Village of Gladstone: Wendell Parsons, Richard Stewart
Village of Stronghurst: Terry Myers
University of Illinois Extension: Carrie McKillip, Al Kulczewski
Illinois State Water Survey: Kingsley Allan, Brad McVey

Carrie McKillip thanked everyone for attending and reminded everyone to fill out the match card and also to record any work done outside the steering committee meetings.

Carrie reported that today's activity would be to look at historical weather-related damage that has taken place in the past in Henderson County. Carrie distributed copies of a document prepared by the Illinois State Water Survey that summarizes previous natural hazards that have taken place in Henderson County. Steering Committee members were then asked to scale each category of natural hazard for each incorporated jurisdiction in Henderson County using categories of high, moderate or low risk. The ratings determined by the committee are listed in the table below.

Jurisdiction	Extreme Temperature	Flooding	Severe Storm/ Tornado	Drought	Earthquake	Severe Winter Storm
Henderson County	Moderate	High	Moderate	Low	Low	High
Biggsville	Moderate	Low	Moderate	Low	Low	High
Stronghurst	Moderate	Low	Moderate	Low	Low	High
Gladstone	Moderate	Moderate	Moderate	Moderate	Low	High
Gulfport	Moderate	High	Moderate	Low	Low	High
Oquawka	Moderate	Moderate	Moderate	Low	Low	High
Raritan	Moderate	Low	High	Low	Low	High
Media	Moderate	Low	Moderate	Low	Low	High
Lomax	Moderate	Moderate	Moderate	Low	Low	High

In reviewing the document two comments were noted:

A tornado occurred in Raritan on the Saturday before Mother's Day in 1995
The report notes that extreme heat was recorded in 1999 as happening at 4:00 a.m. Should this actually be 4:00 p.m.?

Carrie then shared that the Illinois State Water Survey printed maps of each incorporated jurisdiction in Henderson County. Steering Committee members were then directed to look at each map and identify critical facilities on each map using colored sticky notes by the following categories:

Vulnerable populations – purple
Emergency responders – green
Places of large assembly – pink
Emergency shelter facilities – blue

Carrie announced that the steering committee had planned to conduct the first in a series of three public meetings to be held at the Henderson County Health Department in Gladstone on Tuesday evening, August 18th. But she then asked that the committee consider delaying this meeting until the Illinois State Water Survey team had updated the jurisdiction maps using the information shared at this meeting. It was agreed to postpone the public meeting to Tuesday evening, September 8th at 6:00 p.m.

The next Steering Committee meeting will be held on Tuesday, August September 8th at 11:00 a.m. at the former VFW Building in Gladstone. Carrie announced that at the meeting a survey will be available for distribution throughout Henderson County.

Henderson County Hazard Mitigation Steering Committee
Tuesday, September 8, 2009 at 11:00 a.m.
MINUTES

Present:

Henderson County: Jim Alexander, Revonne Butler, Karen Cole, Cathy Good, Marty Lafary, Susan Meyer, Robert Peterson, Curt Eisenmayer, Coral Seitz, Gail Russell, Larry Russell, Jan Monville, Pat Quick
Village of Biggsville: Richard Johnson, Brian Cochran
Village of Gladstone: Richard Stewart
Village of Stronghurst: Angela Myers
Village of Media: Nick Roark
Village of Gulfport: Rich Myers
University of Illinois Extension: Carrie McKillip, Al Kulczewski

Carrie McKillup reviewed the process for public meetings which will include the following steps:

Carrie will begin with a 10 minute overview of the planning process
She will then discuss the planning process for each jurisdiction
She will then ask the people present at the public meeting to express their ideas. These ideas will then be reviewed by the steering committee and used to set the goals for each jurisdiction.

Carrie reported that focus groups will be conducted on September 30th and October 2nd at the VFW in Gladstone. The information collected at the focus groups will then be shared with the steering committee at the next meeting.

Carrie then reviewed the public survey distribution plan. We are looking for a variety of youth groups (Boy Scouts, Girl Scouts, 4-H, FFA) volunteer to distribute a survey door-to-door to homes in each community in Henderson County on one day in the fall. It was suggested that this be done on Saturday, October 31st. The purpose of the survey is to learn from people across the county what they perceive to be the greatest natural hazard risks. Cathy Good volunteered to help coordinate this survey process. It was also suggested that surveys could be dropped at post offices in rural communities.

Carrie shared that the steering committee must now establish a set of hazard mitigation planning goals. She distributed to the committee members a list of goals that had been adopted by five different counties in three states and suggested that the steering committee create three to five goals for Henderson County. The steering committee then drafted the following goals:

Goal 1- Protecting Life and Property
Minimize the risk to people, property, and animals of Henderson County from natural disasters.

Goal 2- Communication and Education
Maintain and improve communication, cooperation, and education among and between Henderson County Residents, Emergency Responders, and Local Officials.

Goal 3- Protect and minimize Damage to infrastructure
Minimize Damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, bridges, roads, railways, locks and dams, and levees.

Goal 4- Emergency Services Coordination
Ensure that all emergency responders, relief workers, and officials understand and can implement a coordinated response plan.

Goal 5- Protect Future Development
Incorporate Natural Hazard Mitigation into Community Plans, Zoning, and Development Activities to minimize the potential damage from natural hazards..

The next Steering Committee meeting will be held on Tuesday, October 13th at 11:00 a.m. at the former VFW Building in Gladstone. Carrie announced that the steering committee will review at that meeting the project ideas collected at the public and focus group meetings. The final plan that is created and adopted by the participating jurisdictions will then need to be updated every five years to remain eligible for future hazard mitigation grant funding.

Henderson County Hazard Mitigation Steering Committee
Tuesday, October 13, 2009 at 11:00 a.m.
MINUTES

Present:

Henderson County: Karen Cole, Cathy Good, Susan Meyer, Curt Eisenmayer, Coral Seitz, Gail Russell, Jan Monville, Doug Ford, Susan Kuster, Christine Royer, Heidi Sorenson, Bill Tobias
Village of Lomax: Clarence Roark
Village of Gulfport: Rich Myers
Village of Stronghurst: Terry Myers
University of Illinois Extension: Carrie McKillip, Al Kulczewski

Carrie McKillip welcomed everyone to the meeting. She shared that all public meetings and focus groups have now been completed in Henderson County. The next step is for the steering committee to create a project grid and the county and each jurisdiction. Carrie also shared that the 2000 U.S. Census reports that there were 3,365 households in Henderson County.

Carrie then facilitated a discussion to establish objectives for each of the goals that were drafted at the last steering committee meeting.

Goal 1- Protecting Life and Property

Minimize the risk to people, property, and animals of Henderson County from natural disasters.

Objective 1. Establish shelter locations throughout the county for people and animals that do not have safe locations from natural disasters.

Objective 2. Develop early warning system throughout the county.

Objective 3. Insure that all county residents are protected from potential flood events.

Goal 2- Communication and Education

Maintain and improve communication, cooperation, and education among and between Henderson County Residents, Emergency Responders, and Local Officials.

Objective 1. Establish a county wide public education on responses to emergency warnings.

Objective 2. Establish a broader network of emergency responders.

Objective 3. Maintain adequate communication between emergency responders.

Goal 3- Protect and minimize Damage to infrastructure

Minimize Damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, bridges, roads, railways, locks and dams, and levees.

Objective 1. Insure that all infrastructures are safe and up to current code.

Objective 2. Insure a safe and adequate water supply throughout the county.

Objective 3. Insure the safety of all small bridges and township roads.

Objective 4. Establish and evaluate watershed management issues.

Objective 5. Investigate and incorporate alternative power sources throughout the county.

Goal 4- Emergency Services Coordination

Ensure that all emergency responders, relief workers, and officials understand and can implement a coordinated response plan.

Objective 1. Establish a better communication network.

Objective 2. Establish comprehensive county wide training systems.

Objective 3. Establish disaster documentation procedures.

Goal 5- Protect Future Development

Incorporate Natural Hazard Mitigation into Community Plans, Zoning, and Development Activities to minimize the potential damage from natural hazards. It was agreed that no objectives were needed to be created.

Carrie then shared that the project ideas that had been collected at the focus groups and public meetings were summarized and copies distributed to everyone present at the meeting today. The next step is to create a grid of project ideas for each jurisdiction. It was suggested that one project idea to be included in each jurisdictional grid is the formation of tornado/storm shelters at each jurisdiction. Another suggested project idea is that Henderson County develop a comprehensive public information campaign to educate the public regarding potential natural hazards.

Carrie then asked each person present to take the data home that had been distributed to them and work to create a grid of project ideas for their local jurisdiction and bring these ideas back to the next steering committee meeting.

It was suggested that in the future the term “disaster preparedness plan” be used to publicize to the community the process that is taking place rather than hazard mitigation.

The next Steering Committee meeting will be held on Tuesday, November 10th at 11:00 a.m. at the former VFW Building in Gladstone.

Henderson County Hazard Mitigation Steering Committee
Tuesday, November 10, 2009 at 11:00 a.m.
MINUTES

Present:

Henderson County: Karen Cole, Cathy Good, Susan Meyer, Jan Monville, Susan Kuster, Heidi Sorenson, Bill Tobias, Revonne Butler
Village of Oquawka: Coral Seitz
University of Illinois Extension: Carrie McKillip, Al Kulczewski

Carrie McKillip welcomed everyone to the meeting. She reviewed with the committee the representatives for each of the jurisdictions. They are as follows:

Henderson County – Susan Meyer & Cathy Good
Village of Biggsville – Richard Johnson & Brian Cochran
Village of Stronghurst – Terry & Curt Eisenmayer
Village of Gladstone – Jim Alexander & Marty Lafary
Village of Gulfport – Rich Myers
Village of Oquawka – Coral Seitz
Village of Raritan – Richard Knapp
Village of Media – Nick Roark
Village of Lomax – Clarence Roark

Carrie then asked the steering committee to review the Goals and Objectives that were created at the October 13th meeting. The committee offered no changes and accepted the goals and objectives as written.

Carrie distributed to everyone present a document titled "Henderson County Demographic Overview" and reviewed the contents of the data in this document with the steering committee.

Carrie reported that she had met last week with Cathy Good and Susan Meyer and together they created a Henderson County jurisdictional project grid for Henderson County. Carrie distributed copies of the grid to everyone present. After reviewing the contents of the grid with the steering committee Carrie asked for any suggestions for additions to the county-wide grid. Note: One comment made was that in certain times of the year there exists the risk of wild fires.

Carrie then shared that the Community Survey is now available to complete on-line and can be found at the HMW Extension web site. Also, copies of the survey have been distributed to date at area schools, the health department, library, and courthouse. The goal is to have 320 to 350 surveys completed by the end of November. It was also suggested that copies of the survey be distributed at local businesses in each community.

Carrie then collected completed Community Project Grids from members of the steering committee who have completed the grids.

The next Steering Committee meeting will be held on Tuesday, December 8th at 11:00 a.m. at the former VFW Building in Gladstone. It was agreed that at that meeting a date would be set to conduct a county-wide public meeting to be held on an evening in January 2010. Carrie also shared that we would need to invite people from neighboring jurisdictions (Hancock, McDonough, Warren and Mercer Counties in Illinois and Burlington, Iowa)to the public meeting.

Henderson County Hazard Mitigation Steering Committee
Tuesday, December 8, 2009 at 11:00 a.m.
MINUTES

Present:

Henderson County: Karen Cole, Cathy Good, Susan Meyer, Jan Monville, Susan Kuster, Heidi Sorenson, Larry Russell, Robert Peterson, Tom Hickman
Village of Oquawka: Coral Seitz
Village of Gladstone – Jim Alexander
Village of Stronghurst – Albert Renken
Village of Biggsville – Gail Russell
WIU Small Business Development Center – Carol Stombaugh
University of Illinois Extension: Carrie McKillip, Al Kulczewski

Carrie McKillip Distributed to everyone present a summary of the community surveys that have been completed to date. A total of 272 surveys have been received and more were given to Al Kulczewski at this meeting. Our goal is to have at least 350 surveys completed.

Carrie introduced Carol Stombaugh who works for the Small Business Development Center at Western Illinois University. Carol shared that the SBA has been charged to create a disaster recovery program and plan for each county in Illinois that was affected by recent flooding. The data being collected now by the Hazard Mitigation Steering Committee will benefit the SBA in this process for Henderson County. The plan is for the SBA to provide workshops for households and businesses to prepare for future potential foods.

Carrie then distributed a rough draft of the Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan. Carrie reviewed with everyone the list of Projects Related to the Goals and Objectives presented in the plan. She asked everyone to review the list of projects and to suggest any changes that need to be made. Several typing errors were found and these will be corrected. It was reported that there are currently 12 homes in Gulfport – 4 stick-built homes and the rest are either modular homes or trailers. It was reported that FEMA is willing to provide buy-outs even if the levy recertification is not approved until the future (it was suggested that it might e 2 to 3 years to obtain approval). Carrie will contact Rich Myers to find out where the Village of Gulfport stands on buy-outs.

Carrie then reviewed with the steering committee the Jurisdictional Project Grid in the Plan. Carrie asked that if anyone has additional information to add to the grid that they e-mail her with their ideas.

Carrie then reported that additional pieces still to be inserted in the Plan include:

Maps of all jurisdictions which are presently being formatted
HAZUS analysis
Review of existing plans. U of I Extension has contracted with the Western Illinois Regional Council to conduct this review.
Attachments including notes, reviews, surveys, etc. from all meetings held.

Henderson County Hazard Mitigation Steering Committee
Tuesday, January 12, 2010 at 11:00 a.m.
MINUTES

Present:

Henderson County: Susan Meyer, Jan Monville, Heidi Sorenson, Larry Russell, Robert Peterson, Tom Hickman, Revonne Butler, & Bill Tobias
Village of Oquawka: Coral Seitz
Village of Gladstone – James Alexander
Village of Stronghurst – Albert Renken & Curt Eisenmeyer
Village of Biggsville – Gail Russell
Village of Lomax – Kimberly Peters
University of Illinois Extension: Carrie McKillip, Al Kulczewski

Carrie McKillip distributed to everyone present the final rough draft of the Henderson County Multi-jurisdictional Natural Hazards Mitigation Plan. Carrie reported that the plan will be placed on the Henderson-Mercer-Warren Extension web site and that IEMA is currently reviewing the plan.

Carrie then asked for input regarding the public meeting scheduled to be held on Tuesday evening, January 19, 2010 at 6:00 pm in Gladstone. A press release to publicize this meeting to the public has not yet been released. Following conversation it was the consensus of the steering committee to move this meeting back one week to Tuesday, January 26, 2010 at 6:00 p.m. at the Henderson County Health Department building in Gladstone. Carrie will prepare a news release that will be distributed tomorrow to all local media including daily newspapers in Burlington, Monmouth and Galesburg as well as Current and the Quill, weekly newspapers in Henderson County.

Carrie asked everyone to take a look at the draft plan. Some changes suggested included:

(page 11) List Kim Peters as the Jurisdictional representative for the Village of Lomax rather than Clarence Roarke
(page 59) Move the listing of the Henderson County Housing Authority in Oquawka from "Places of Interest" to "Vulnerable Populations"
(page 11) add to the category of "Vulnerable Populations" the following:
Oaklane Nursing Home – Stronghurst
Oakwood Assisting Living – Stronghurst

Following discussion, Jan Monville moved, Gail Russell seconded a motion to accept the plan as presented with the changes suggested and pending any other changes that might be suggested by IEMA and FEMA. Motion carried.

Carrie suggested that an e-mail message be sent to the mayors of all the jurisdictions to advise of them of the location of the plan posted on the University of Illinois web site. Carrie will also prepare a poster to advertise the public meeting on January 26th and see that it is e-mailed to all steering committee members.

Appendix H - County Local Match

Below is a summary of the match that has been documented to date for the Henderson County Hazard Mitigation Planning process. This record does not reflect the time Committee Members have spent outside the actual events listed working on this project. Many members of the committee (especially Susan) have spent a great deal of time on this project, including survey distribution and collection, project identification, etc. Hopefully, once all of that information is collected, and we have another steering committee meeting in December, public review of the plan meeting, we will easily meet the $7500 match to be provided by the county.

Henderson Match Log-EVENTS

(? Time X Duration) (?Miles Traveled X $ .55)

Date	EVENT	ATT	Volunteer Time $	Travel $	Event Total	
7/14/2009	Steering Committee 1	22	$ 329.25	$ 122.10	$ 451.35	
8/11/2009	Steering Committee 2	28	$ 549.16	$ 103.40	$ 652.56	
9/8/2009	Steering Committee 3	19	$ 367.83	$ 118.25	$ 486.08	
10/13/2009	Steering Committee 4	15	$ 395.78	$ 143.00	$ 538.78	
11/10/2009	Steering Committee 5	9	$ 141.48	$ 66.00	$ 207.47	
12/8/2009	Steering Committee 6	14	$ 308.88	$ 96.80	$ 405.68	
1/12/2010	Steering Committee 7	14	$ 200.81	$ 86.00	$ 286.81	
9/8/2009	Gladstone Public Meeting	12	$ 242.69	$ 52.25	$ 292.94	
9/22/2009	Oquawka Public Meeting	7	$ 119.42	$ 8.25	$ 127.67	
9/29/2009	Stronghurst Public Meeting	7	$ 168.30	$ 86.90	$ 255.20	
1/26/2009	Public Final Draft Review					
9/30/2009	Health and Human Ser FG	5	$ 81.91	$ -	$ 81.91	
9/30/2009	Transportation FG	4	$ 97.06	$ 49.50	$ 146.56	
9/30/2009	Utilities FG	5	$ 156.27	$ 105.60	$ 261.87	
9/30/2009	Public Safety FG	10	$ 319.00	$ 168.30	$ 487.30	
10/2/2009	Government FG	15	$ 335.60	$ 125.40	$ 461.00	
10/2/2009	Business FG	5	$ 174.54	$ 42.90	$ 217.44	
10/2/2009	Education FG	4	$ 130.23	$ 105.60	$ 235.83	
10/2/2009	Ag and Natural Res FG	4	$ 115.00	$ 41.25	$ 156.25	
					$ 5,752.70	**TOTAL**

Other Match

Individual Time	$1,154.55		
Student time			
Copies	$150.00		
Milage	$33.50	$1,338.05	$ 7,090.75

Donated Space

6 Meetings at Gladstone VFW			
	2 hrs each	$150	
2 Full Days Focus Groups			
Gladstone VFW		$100	$250

Appendix I - Jurisdictional Maps

Biggsville, Henderson County

Legend
- County Boundary Line
- Places-Municipalities
- School
- Airport or Airfield
- Golf Course
- Government Center
- Hospital/Hospice/Urgent Care Facility
- Primary Road
- Ramp
- Secondary Road
- Local Neighborhood Road, Rural Road, City Street
- Alley/Private Drive/Service Drive
- Vehicular Trail (4WD)
- Airport or Airfield
- Railroad Feature (Main, Spur, or Yard)
- Ferry Crossing
- Powerline
- Perennial Shoreline
- Intermittent Shoreline
- Stream/River
- Canal, Ditch or Aqueduct
- Lakes/Rivers

1:6,510

N W E S

All data from 2008 US Census TIGER/Line except
2007 land cover raster data from ISGS,
2005 DOQQ imagery data from ISGS,
2003 DEM elevation data from ISGS

Datum and Projection:
WGS84, UTM Zone 16N

Map produced by:
University of Illinois U-C Extension CADS
January 2009

0 100 200 300 400 500 600 700 800 900 1,000 Meters

Gladstone, Henderson County

1:6,442

Legend

- County Boundary Line
- Places-Municipalities
- School
- Airport or Airfield
- Golf Course
- Government Center
- Hospital/Hospice/Urgent Care Facility
- Primary Road
- Ramp
- Secondary Road
- Local Neighborhood Road, Rural Road, City Street
- Alley/Private Drive/Service Drive
- Vehicular Trail (4WD)
- Airport or Airfield
- Railroad Feature (Main, Spur, or Yard)
- Ferry Crossing
- Powerline
- Perennial Shoreline
- Intermittent Shoreline
- Stream/River
- Canal, Ditch or Aqueduct
- Lakes/Rivers

University of Illinois Extension CADS

0 100 200 300 400 500 600 700 800 900 1,000 Meters

All data from 2008 US Census TIGER/Line except
2007 land cover raster data from ISGS,
2005 DOQQ imagery data from ISGS,
2003 DEM elevation data from ISGS

Datum and Projection:
WGS84, UTM Zone 16N

Map produced by:
University of Illinois U-C Extension CADS
January 2009

Gulfport, Henderson County

1:13,811

Legend

- County Boundary Line
- Places-Municipalities
- School
- Airport or Airfield
- Golf Course
- Government Center
- Hospital/Hospice/Urgent Care Facility
- Primary Road
- Ramp
- Secondary Road
- Local Neighborhood Road, Rural Road, City Street
- Alley/Private Drive/Service Drive
- Vehicular Trail (4WD)
- Airport or Airfield
- Railroad Feature (Main, Spur, or Yard)
- Ferry Crossing
- Powerline
- Perennial Shoreline
- Intermittent Shoreline
- Stream/River
- Canal, Ditch or Aqueduct
- Lakes/Rivers

University of Illinois Extension CADS

All data from 2008 US Census TIGER/Line except
2007 land cover raster data from ISGS,
2005 DOQQ imagery data from ISGS,
2003 DEM elevation data from ISGS

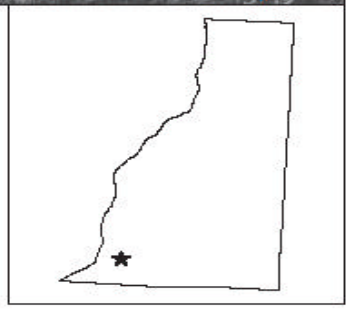
Datum and Projection:
WGS84, UTM Zone 16N

Map produced by:
University of Illinois U-C Extension CADS
January 2009

0 300 600 900 1,200 1,500 1,800 2,100 2,400 2,700 3,000 Meters

Lomax, Henderson County

1:13,242



Legend

- County Boundary Line
- Places-Municipalities
- School
- Airport or Airfield
- Golf Course
- Government Center
- Hospital/Hospice/Urgent Care Facility
- Primary Road
- Ramp
- Secondary Road
- Local Neighborhood Road, Rural Road, City Street
- Alley/Private Drive/Service Drive
- Vehicular Trail (4WD)
- Airport or Airfield
- Railroad Feature (Main, Spur, or Yard)
- Ferry Crossing
- Powerline
- Perennial Shoreline
- Intermittent Shoreline
- Stream/River
- Canal, Ditch or Aqueduct
- Lakes/Rivers

University of Illinois Extension CADS

All data from 2008 US Census TIGER/Line except
2007 land cover raster data from ISGS,
2005 DOQQ imagery data from ISGS,
2003 DEM elevation data from ISGS

Datum and Projection:
WGS84, UTM Zone 16N

Map produced by:
University of Illinois U-C Extension CADS
January 2009

0 300 600 900 1,200 1,500 1,800 2,100 2,400 2,700 3,000 Meters

Media, Henderson County

1:10,667

Legend

- County Boundary Line
- Places-Municipalities
- School
- Airport or Airfield
- Golf Course
- Government Center
- Hospital/Hospice/Urgent Care Facility
- Primary Road
- Ramp
- Secondary Road
- Local Neighborhood Road, Rural Road, City Street
- Alley/Private Drive/Service Drive
- Vehicular Trail (4WD)
- Airport or Airfield
- Railroad Feature (Main, Spur, or Yard)
- Ferry Crossing
- Powerline
- Perennial Shoreline
- Intermittent Shoreline
- Stream/River
- Canal, Ditch or Aqueduct
- Lakes/Rivers

University of Illinois Extension CADS

All data from 2008 US Census TIGER/Line except
2007 land cover raster data from ISGS,
2005 DOQQ imagery data from ISGS,
2003 DEM elevation data from ISGS

Datum and Projection:
WGS84, UTM Zone 16N

Map produced by:
University of Illinois U-C Extension CADS
January 2009

0 200 400 600 800 1,000 1,200 1,400 1,600 1,800 2,000 Meters

Oquawka, Henderson County

1:13,051

Legend

- County Boundary Line
- Places-Municipalities
- School
- Airport or Airfield
- Golf Course
- Government Center
- Hospital/Hospice/Urgent Care Facility
- Primary Road
- Ramp
- Secondary Road
- Local Neighborhood Road, Rural Road, City Street
- Alley/Private Drive/Service Drive
- Vehicular Trail (4WD)
- Airport or Airfield
- Railroad Feature (Main, Spur, or Yard)
- Ferry Crossing
- Powerline
- Perennial Shoreline
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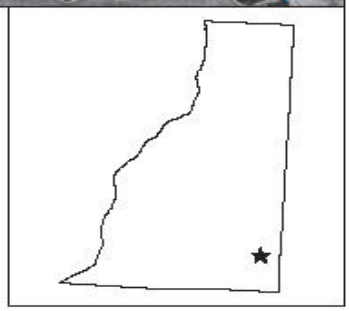
January 2009

0 300 600 900 1,200 1,500 1,800 2,100 2,400 2,700 3,000 Meters

Raritan, Henderson County

1:4,256



Legend

- County Boundary Line
- Places-Municipalities
- School
- Airport or Airfield
- Golf Course
- Government Center
- Hospital/Hospice/Urgent Care Facility
- Primary Road
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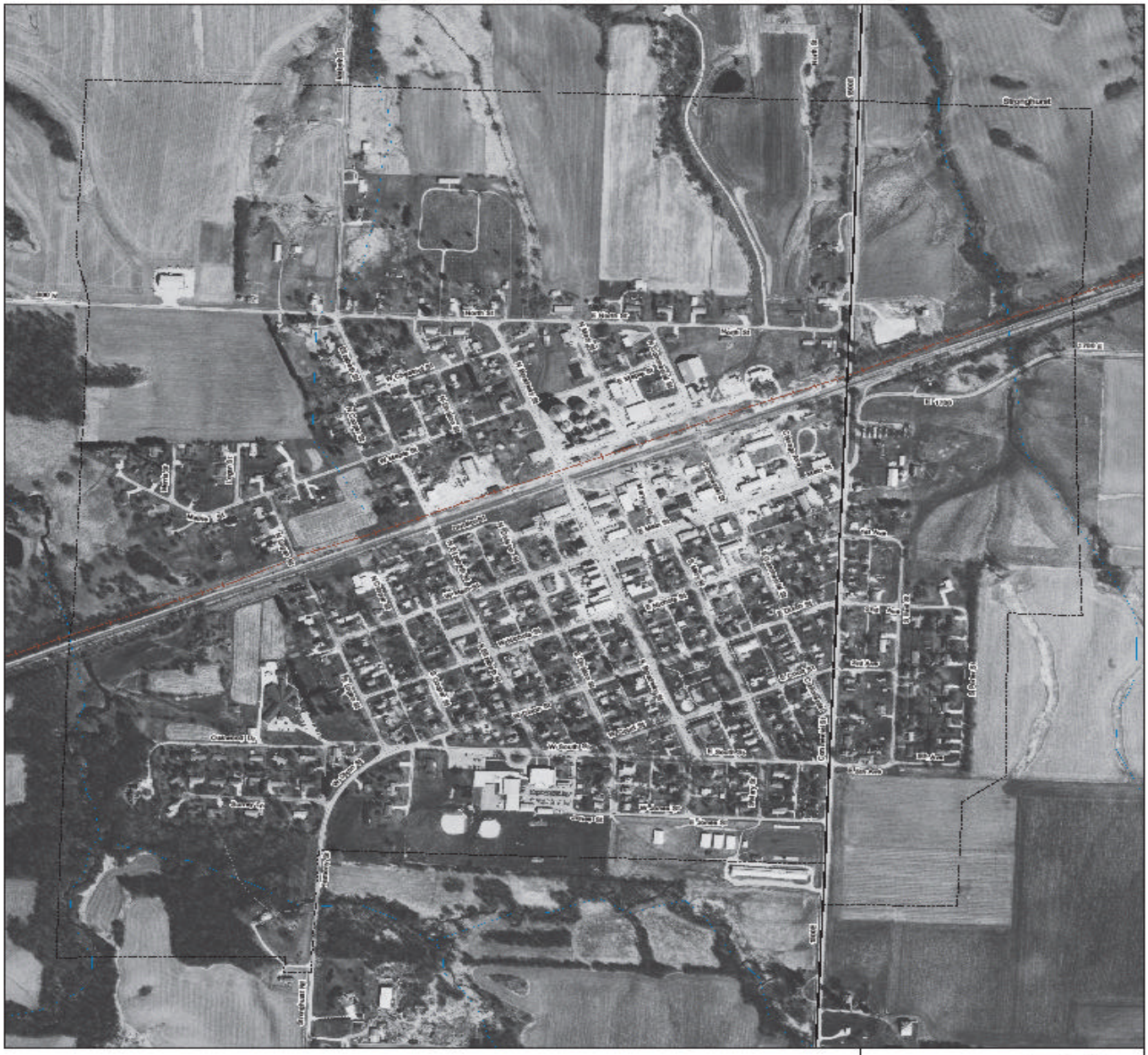
2003 DEM elevation data from ISGS

Datum and Projection:
WGS84, UTM Zone 16N

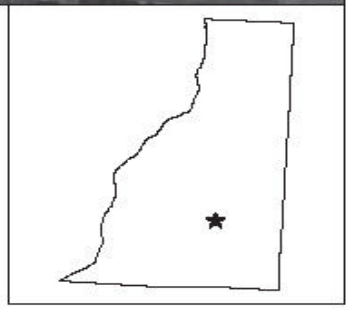
Map produced by:
University of Illinois U-C Extension CADS
January 2009

0 100 200 300 400 500 600 700 800 900 1,000 Meters

Stronghurst, Henderson County



1:6,891



Legend

- County Boundary Line
- Places-Municipalities
- School
- Airport or Airfield
- Golf Course
- Government Center
- Hospital/Hospice/Urgent Care Facility
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January 2009

0 150 300 450 600 750 900 1,050 1,200 1,350 1,500 Meters

Appendix J - State and Local Capability Assessment

This section provides details on the State and local capabilities when dealing with hazard mitigation. The State and local capabilities are referenced in order to show what plans, documents and regulations are already in place and are ready to be used in the event of a natural disaster occurring.

State Capability Assessment:
The Illinois Natural Hazard Mitigation Plan (INHMP) compiled by the state and dated October 2007 looks at the State's ability to respond in the event of a natural disaster. A selection from the "Purpose" section of the document is provided below:

"The contents of this Illinois Natural Hazard Mitigation Plan (INHMP) are intended to provide the framework for hazard mitigation not only during the recovery and reconstruction process, but on a year-round basis to identify current and proposed mitigation projects which will reduce the potential for future losses and decrease the costs to the taxpayers."

Local Capability Assessment*:*
The local capability assessment has an overview of existing communities and their respective plans, documents and regulations that are currently in place or being created to mitigate some of the devastating effects of natural disasters.

Mitigation measures in place or being implemented
The following are mitigation measures that communities either have in place or are currently working on for the county-wide hazard mitigation plan.

Weather Warning Systems
All communities with the exception of Gulfport have a siren in town or at the fire station that signals residents when a strong storm, tornado or other hazard is present.

Emergency Warning Radios
A few households may have emergency warning radios but most village and city halls or police and fire departments in the communities do not have a weather radio. Only three communities, Media, Oquawka and Stronghurst had weather radios in a public space and kept them turned on.

Severe Weather Spotters
Most communities have volunteer firemen from a department or district. Often these are the people who will be assigned to look out for inclement weather and report back to the police. Many of the smaller communities in Henderson County with populations under 200 do not have an official "storm-spotter."

Stormready Communities
There are zero Stormready Communities in Henderson County

Building Code Standards
There is only one community with assigned building codes, Oquawka.

Local Media Outreach
There are radio stations in Carthage, IL and Burlington or Keokuk, IA. There are no communities with their own radio station in Henderson County.

Road Treatment in Advance of Expected Ice Conditions

All but two communities, Gulfport and Media, plan on using cinder, salt or sand to prevent slippage during icy conditions in the communities. This work is most often done by the communities themselves but may also be done by the county if the road is a county road or if the community cannot budget for such preventative measures.

Overview of Safety Measures

	Biggsville	Gladstone	Gulfport	Lomax	Media	Oquawka	Raritan	Stronghurst
Community Action								
Siren	X	X		X	X	X	X	X
Weather Radio					X	X		
Storm Spotters	X	X	X		X	X	X	X
Local Weather Station								
Watershed Repairs								
Road Treatment	X	X		X		X	X	X

References

2007 Illinois Natural Hazards Mitigation Plan
http://iema.illinois.gov/iema/planning/Documents/Plan_IllMitigationPlan.pdf