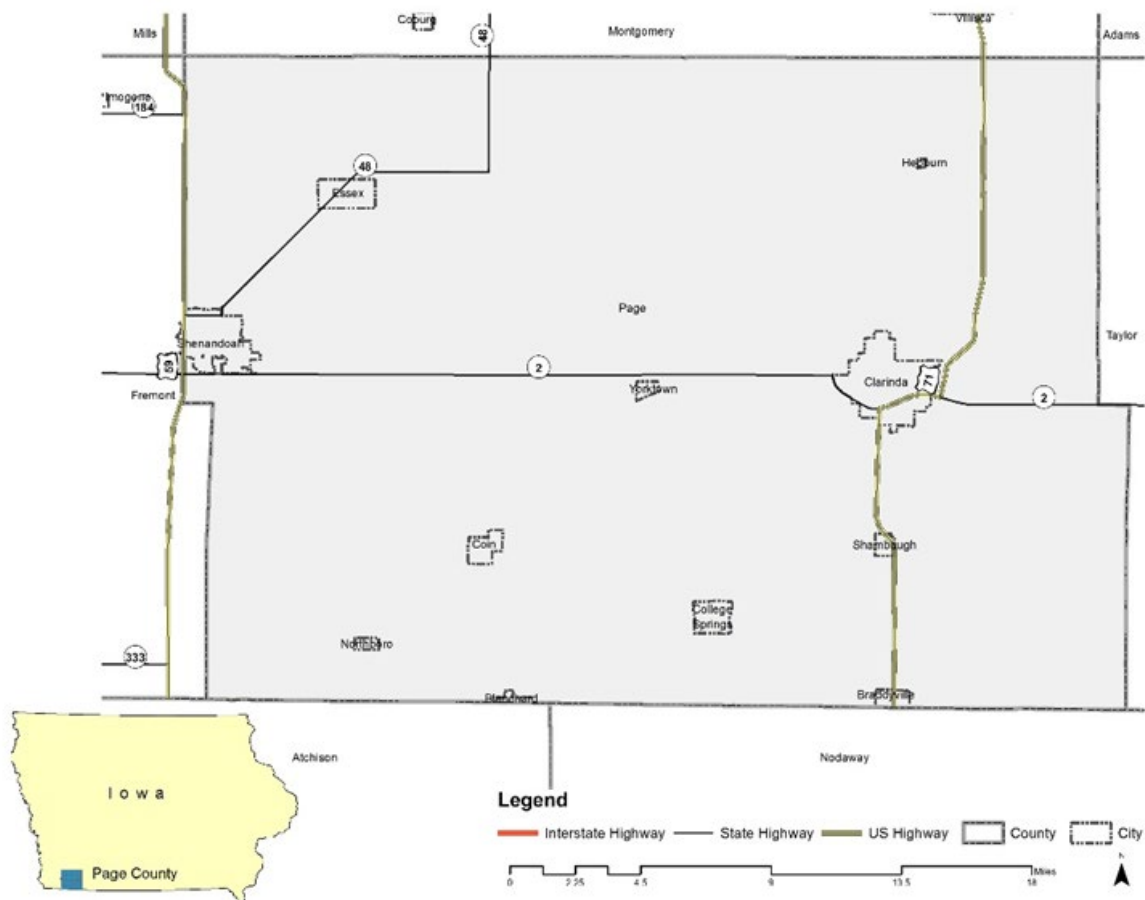


Page County

Multi-Jurisdictional Hazard Mitigation Plan



Approved by FEMA April 19, 2017

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Page County

Multi-Jurisdictional

Hazard Mitigation Plan

Page County (Unincorporated)

City of Blanchard

City of Braddyville

City of Clarinda

City of Coin

City of College Springs

City of Essex

City of Northboro

City of Shambaugh

City of Shenandoah

City of Yorktown

Clarinda Community Schools

Essex Community Schools

Shenandoah Community Schools

South Page Community Schools

This plan was funded in part through grant[s] from the U.S. Federal Emergency Management Agency and Iowa Homeland Security and Emergency Management Division. The views and opinions of the authors [or agency] expressed herein do not necessarily state or reflect those of FEMA and/or IHSEMD.

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Section I: Plan Organization

Executive Summary

Purpose and Scope

Natural and man-made hazards are part of the world around us. Severe winter storms, tornados, severe thunderstorms, flooding, extreme heat, drought, earthquakes, wildfires, and agricultural animal disease are examples of hazards that can and do occur. Their occurrence is natural and inevitable, and there is little we can do to control their force and intensity. While the threat posed by hazards may never be fully eliminated, there is much we can do to lessen their potential impact. Reducing the risks associated with known hazards is referred to as hazard mitigation planning.

The Disaster Mitigation Act of 2000 provides a legal basis for FEMA mitigation planning requirements for State, local and Indian Tribal governments as a condition of mitigation grant assistance. This act was intended to facilitate cooperation between state and local authorities and established a new requirement for local mitigation plans. Jurisdictions are challenged to identify methods and implement procedures to prevent damages prior to the event of a disaster.

This Hazard Mitigation Plan has been prepared in order to:

- Comply with both Federal and State Hazard Mitigation plan requirements;
- Provide a comprehensive hazard analysis/risk assessment that best defines the hazards most likely to impact Page County, Iowa;
- Quantify the monetary value of hazard mitigation activities, which would lessen or eliminate the effects of the identified hazards;
- Outline a strategy for the implementation of hazard mitigation projects and;
- Replace the current FEMA approved hazard mitigation plans for Page County Hazard Mitigation Plan. This new plan will bring the Hazard Mitigation Plan into FEMA compliance.

The overall goal of the Page County Multi-Jurisdictional Hazard Mitigation Plan (from here on to be referred to as the “Page County Hazard Mitigation Plan”, or just “the Plan”) is to identify potential hazards that could affect the county for the purposes of mitigation planning. It is important to note that the focus of mitigation is on reducing long-term risks of damage or threats to public health and safety caused by natural hazards and their effects.

In 2010, Iowa Homeland Security and Emergency Management began to recommend cities and counties work together, through leadership of county emergency management agencies, in the establishment of multi-jurisdictional plan, rather than individual planning efforts. Multi-jurisdictional hazard mitigation plans are an effective tool to incorporate resiliency best practices into the day-to-day activities of county and municipal governments. These plans recommend specific actions designed to protect residents, as well as the built

environment, from hazards that pose great risk. Our identified mitigation actions go beyond only recommending structural solutions to reduce existing vulnerability. Important additional actions intended to reduce vulnerability include local policies on growth and development, incentives tied to natural resource protection, and public awareness and outreach activities. Emergency planning helps to strongly position communities against the threat of hazards. Vulnerability is reduced through services like emergency management training and exercises, flood risk reduction studies, flood plain management, drought management planning, and dam inundation mapping. This plan will replace the current FEMA approved Multi-jurisdictional plans. Listed below are the cities and the date of approval of each:

- Page County (Unincorporated) –
- City of Blanchard –
- City of Braddyville –
- City of Clarinda –
- City of Coin –
- City of College Springs –
- City of Essex –
- City of Hepburn –
- City of Northboro –
- City of Shambaugh –
- City Shenandoah –
- City of Yorktown –

The planning process followed for this plan update was similar to that followed for the prior hazard mitigation plan. The mitigation planning process followed a methodology prescribed by FEMA:

- Describing the planning process
- Developing and reviewing risk assessments to analyze natural and manmade hazards statewide
- Developing and reviewing the mitigation strategy for reducing the losses identified in the risk assessment
- Establishing a plan maintenance process

Planning Process

The hazard mitigation planning process has four general steps, which include: organization of resources; assessment of risks; development of mitigation strategies; and, implementation and annual monitoring of the plan's progress. The mitigation planning process is rarely a linear process. It is not unusual that ideas developed during the initial assessment of risks may need revision later in the process, or that additional information may be identified while developing the mitigation plan or during the implementation of the plan that may result in new goals or additional risk assessment.

- Organization of Resources
 - Focus on the resources needed for a successful mitigation planning process. Essential steps include:
 - Organizing interested community members
 - Identifying technical expertise needed
- Assessment of Risks
 - Identify the characteristics and potential consequences of the hazard. Identify how much of the jurisdiction can be affected by specific hazards and the impacts they could have on local assets.

- The hazard identification portion of the hazard analysis and risk assessment is an inventory of all the hazards that could potentially impact Page County. Each hazard profile was reviewed for accuracy and updated using the best available data.
- Mitigation Plan Development
 - Determine priorities and identify possible solutions to avoid or minimize the undesired effects. The result is a hazard mitigation plan and strategy for implementation.
 - While the method used for prioritizing hazard mitigation measures is effective, it must be recognized that disaster specific events and associated disaster response and recovery actions can result in the prioritization of specific mitigation measures that contribute to the disaster recovery process.
- Plan Implementation and Progress Monitoring
 - Bring the plan to life by implementing specific mitigation projects and changing day-to-day operations. It is critical that the plan remains relevant to succeed. Thus, it is important to conduct periodic evaluations and revisions, as needed.

Plan Update Process

Page County began the process of securing funding for their multi-jurisdictional hazard mitigation plan in May of 2022. SWIPCO was contracted on December 6, 2022, to guide and facilitate the planning process and assemble the multi-jurisdictional hazard mitigation plan update. For the planning area, SWIPCO staff led the development of the plan and served as the primary point-of-contact throughout the project. The project kick-off meeting with Page County and SWIPCO provided an overview of the work to be completed over the following three months: including the identification of and coordination with the planning team; determination of number and location of future public meetings; assessment of the attendance requirements; and, discussion of what types of information would need to be developed and collected to successfully complete the plan.

The first activity in the development process for the Page County HMP update was coordination of efforts with local, state, and federal agencies and organizations.

Coordination

In order to write the plan for Page County, Southwest Iowa Planning Council worked with a number of local organizations, government officials and agencies in obtaining information relevant to the plan and the communities. The planning team at SWIPCO studied hazards relevant to the area, local inventories, and capabilities of local agencies to develop this plan. All of the meetings and public input during the plan development were done with the intent to be part of a multi-jurisdiction plan.

Under the recommendation of the Iowa Homeland Security and Emergency Management, Page County Emergency Management Agency (EMA) and Southwest Iowa Planning Council worked together to develop a multi-jurisdictional plan. The Page County EMA helped to coordinate efforts to involve officials, stakeholders and residents of local jurisdictions. The Page County EMA also provided information pertaining to the plan and reviewed documentation.

To develop a multi-jurisdictional plan a local point of contact for each community was identified, consisting of local officials, stakeholders, and residents. These participants provided information, comments and suggestions

regarding the plan. They also worked with members from their local jurisdiction during the planning process in providing requested information and reviewing the plan.

SWIPCO also contacted and coordinated with various local organizations to provide additional resources that were required, relevant and/or beneficial to the planning process and plan creation. This was done by either identifying the local organizations that held that particular information relevant to the plan or by determining how or what information found would enhance the planning process and/or document.

Community Profile

An important component to the planning process for the Page County Hazard Mitigation Plan was to develop a community profile for the county. Climate and weather, geography, land use and other conditions that define Page County were studied to create an initial profile. Identification of these items were utilized in the determination of goals for local jurisdictions when addressing individual hazards.

History

Page County was named for Captain John Page, killed at Palo Alto in the Mexican War. The land was surveyed in 1845, becoming a county in 1847. An error caused a strip 8 miles wide to be claimed by both Missouri and Iowa, the matter finally being settled in favor of Iowa. The county contains 528 square miles and is approximately 22 miles square.

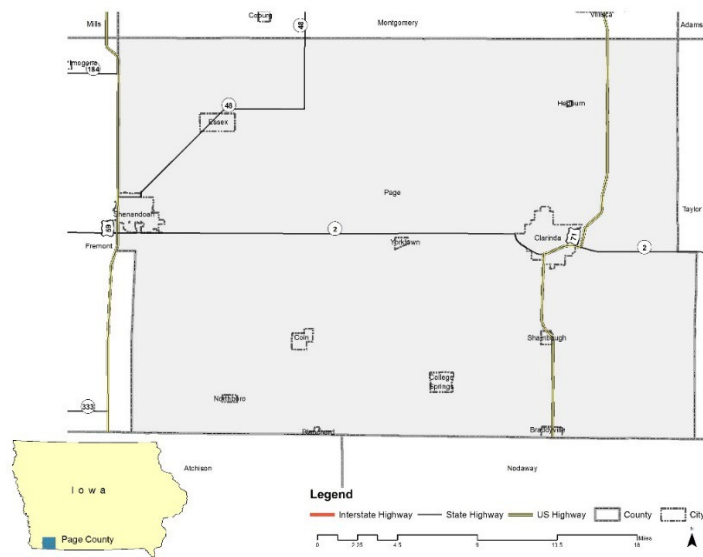
Geography and Environment

Page County is a rural county located in Southwest Iowa, approximately 81 driving miles southeast of Omaha, 85 driving miles north of St. Joseph, Missouri, and 136 driving miles southwest of Des Moines. The seat of Page County is the City of Clarinda located in the east-central portion of the county. There are 10 incorporated communities located within Page County: Blanchard, Braddyville, Clarinda, Coin, College Springs, Essex, , Northboro, Shambaugh, Shenandoah, and Yorktown. Page County is divided into 16 townships including Amity, Buchanan, Colfax, Douglas, East River, Fremont, Grant, Harlan, Lincoln, Morton, Nebraska, Nodaway, Pierce, Tarkio, Valley and Washington.

Page County is bounded by Montgomery County to the north, Fremont County to the west, Atchison County and Nodaway County Missouri to the south, and Taylor County to the east.

The following map shows the location of Page County and its incorporated cities as well as the neighboring counties and communities:

Map 1:1 - Page County Location



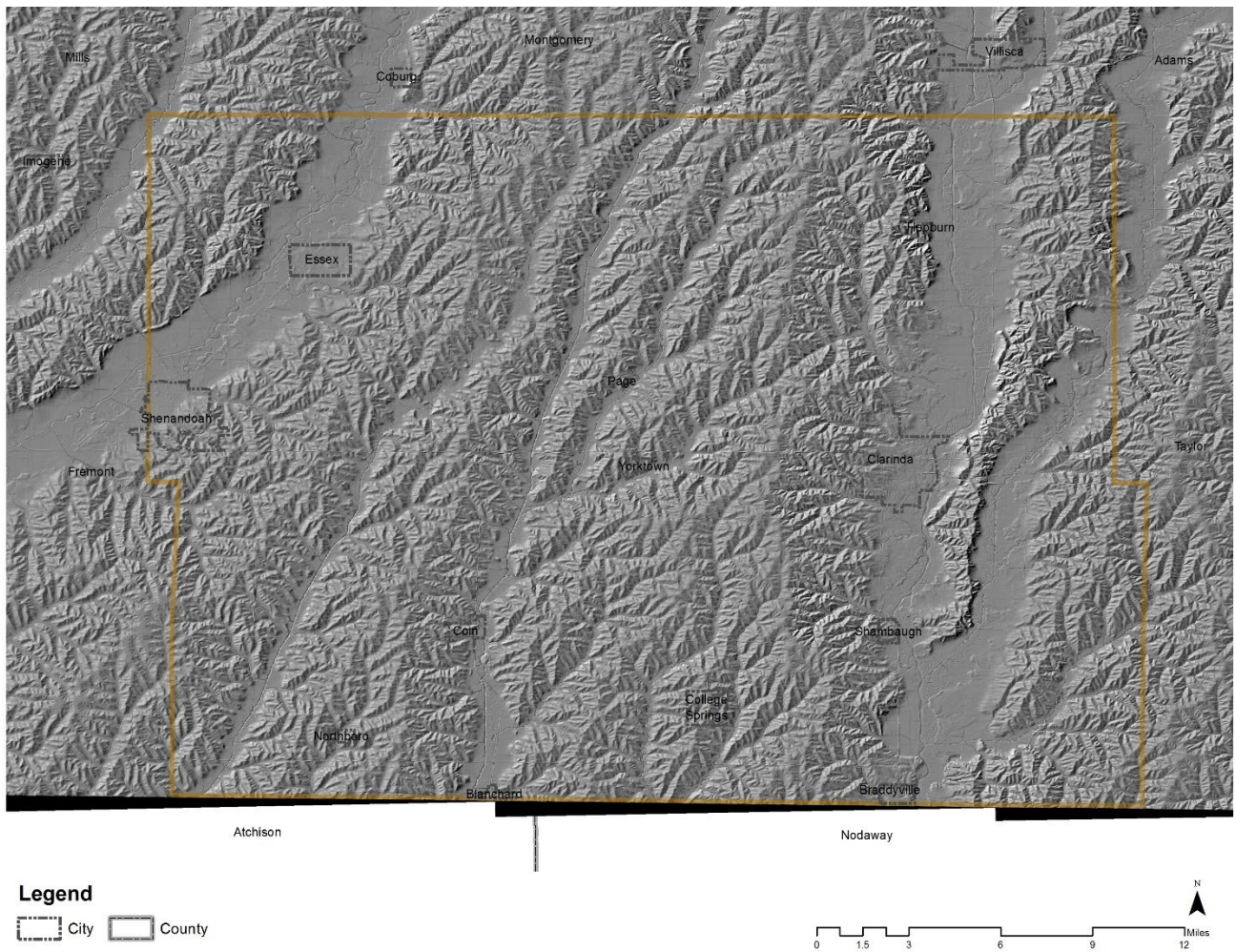
Source: Iowa Department of Natural Resource

Elevation

The topography of Page County is generally rolling. The uplands consist of smooth and rounded hills that have even slopes and are cut by various streams, tributaries, and intermittent drainage ways. The uplands near the rivers and main streams have steeper more abrupt slopes and the hills are narrower and less rounded. The benches, or second bottom lands, which are in the valley of the East Nishnabotna River, are nearly level to gently sloping. They generally are $\frac{1}{2}$ to 1 mile wide. The first bottomlands are nearly level, and along the major streams, they are one to two miles wide. The elevations in Page County range from 932 ft. to 1,257 ft.

Gully erosion in the county has become a very serious problem. Intense row crop production has made it difficult to maintain sod waterways. Stream bank erosion has also become a difficult problem. The straightening of streams has played an important role in contributing to the problem.

Map 1:2 - Page County Shaded Relief



Source: Iowa Department of Natural Resources

Table 1:1 - Elevation by Populated Places

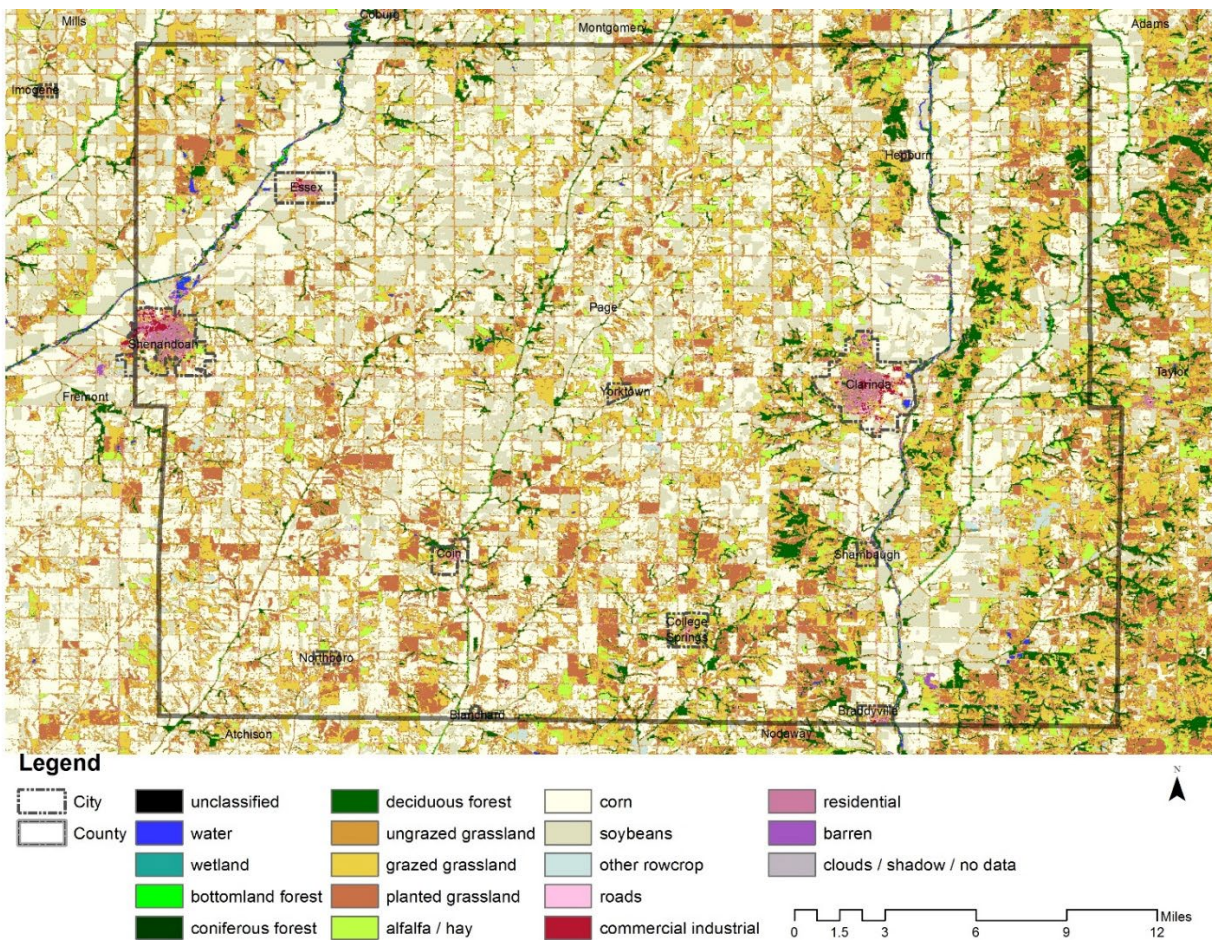
Blanchard	1014 ft	Essex	991 ft
Braddyville	984 ft	Northboro	1089 ft
Clarinda	1043 ft	Shambaugh	984 ft
Coin	991 ft	Shenandoah	981 ft
College Springs	1152 ft	Yorktown	1089 ft

Source: TopoQuest

Zoning Land Use

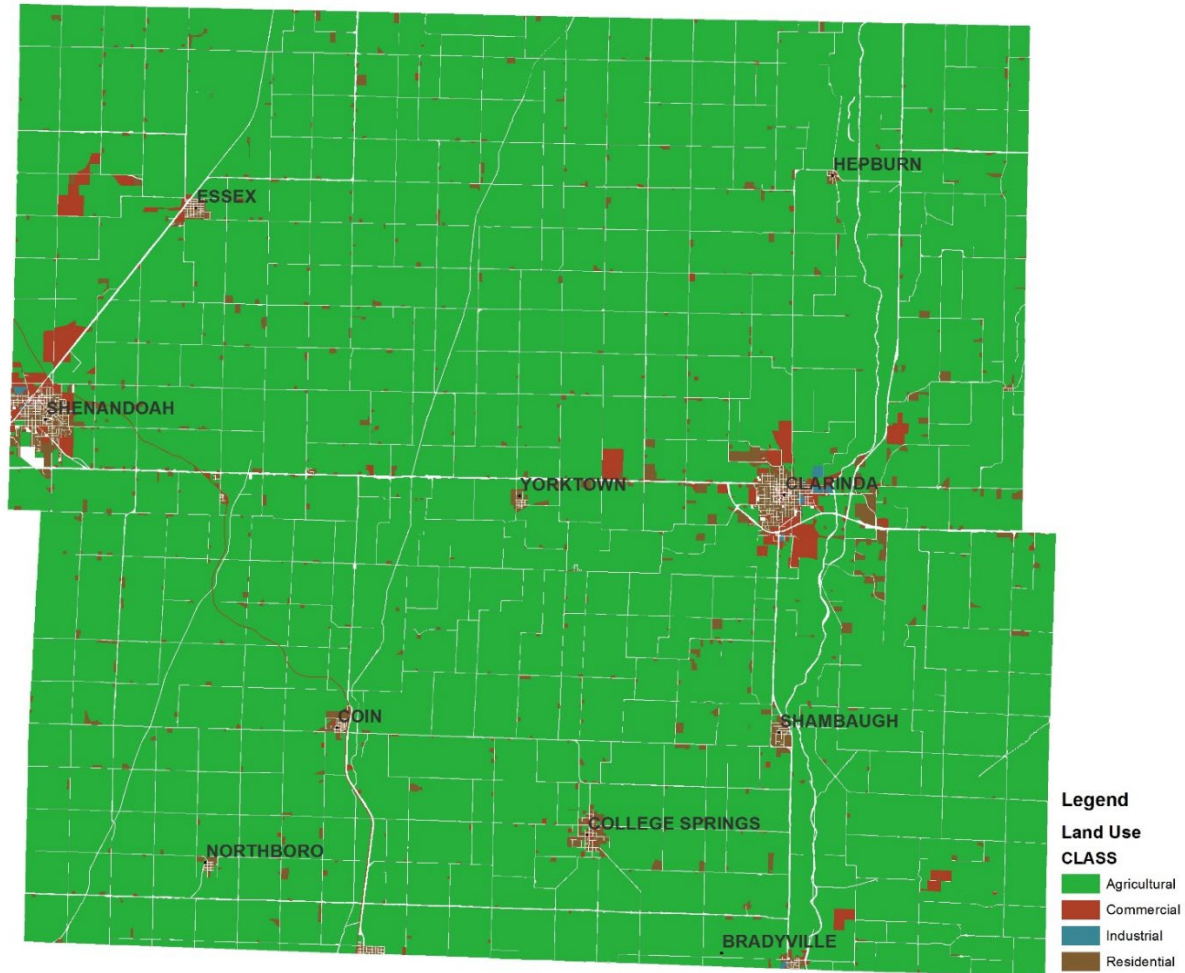
Land use in Page County is predominantly tied to the agricultural industry with over 85 percent of the land used for agricultural purposes. Corn and soybean production make up the majority of agriculture farming in the county with 32.59 percent and 30.31 percent respectively and is dispersed evenly throughout the county. Pasture and grasslands make up the third largest area at 18.42 percent and is scattered throughout the county as well. Forest accounts for only 7.16 percent of the area, while open water and wetlands account for about 1 percent and are located primarily in the northern half of the county. Incorporated urban areas make up 6.29 percent of the land use in the county. This highlights the importance of the agricultural industries to the county. The land cover map illustrates the distribution of land use throughout the county.

Map 1:3 - Page County Land Cover (2000)



Source: United States Department of Agriculture, Natural Resources Conservation Service

Table 1:4 Page County Land Use



Source: Page County

Rivers, Streams, and Lakes

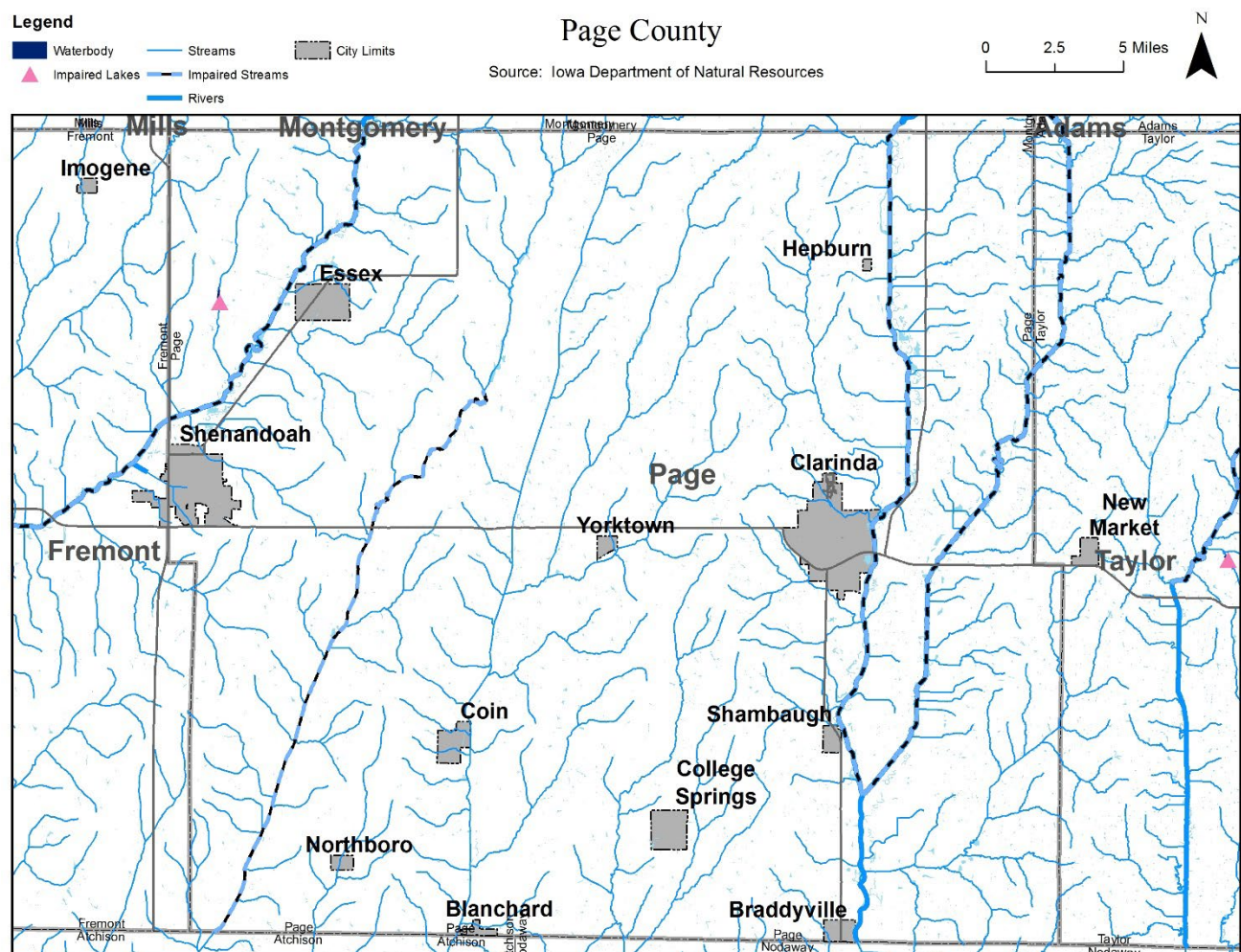
The major types of waters in Page County include lakes, ponds streams, rivers and wetlands. Rivers and streams in the county channel water that runs off the land and eventually merge or combine to create larger rivers and streams. These water bodies are crucial for both natural and agricultural plant and animal life in the county. Communities in Page County rely on underground water sources through shallow wells that tap into aquifers near the existing streams or rivers.

Rivers in the county are subject to sudden fluctuations due to the nature of the soils, topography, land use and weather. All rivers and streams have a riparian zone (floodplain). River source or headwaters of rivers or streams are usually quite clear and less subject to water fluctuations while lower stream reaches are more turbid and subject to greater agricultural and industrial pollution. Streams and rivers naturally meander and change course, often during or shortly after large amounts of precipitation upstream. Channelization (straightening of a stream

or river), replacement or destruction of surrounding natural vegetation and the creation of impermeable surfaces all contribute to the elimination of habitat and, thus, aquatic life in the area. Water in channelized streams flows faster, increasing erosion and deepening the channel. This can result in more severe floods that can inflict greater damage to infrastructure and communities. Vegetation is also important to the safety of cleanliness of water by trapping sediment, animal waste and chemicals. This is vital to the region as waste and chemicals can often find their way into the water from the large amount of agricultural activities that take place in the county.

Major rivers and creeks within Page County include the East Nishnabotna River, West Tarkio River, Tarkio River, and The Nodaway and East Nodaway River. The Nishnabotna River flows in a southwesterly direction in the north western corner of Page County until it connects with the West Nishnabotna River in Fremont County. The West Tarkio and Tarkio River run parallel from north to south in the middle of the county. The Nodaway River runs north to south on the east side of the county. Southeast of Shambaugh the East Nodaway branches off of the Nodaway.

Map 1:5 - Page County Rivers, Streams, and Water bodies



Ponds and Wetlands

Ponds and wetlands are scattered throughout the county and provide a reliable water source for livestock and wildlife as well as allow for an abundance and variety of vegetation to grow. These sources of water, including lakes, can also hold water during dry periods and lessen the effect of drought in the region. At the same time, these areas can become reservoirs and buffers during periods of heavy precipitation and can lessen the impact of flooding. Wetlands help moderate the speed and quantity of water during precipitation events through its capacity to store and release excess water, without which more intensive flooding would occur. Where appropriate, wetlands are a cost-effective alternative to expensive dams, levees, and other man-made controls. Vegetation around these areas also play a key role in water retention, soil erosion and absorbing pollutants.

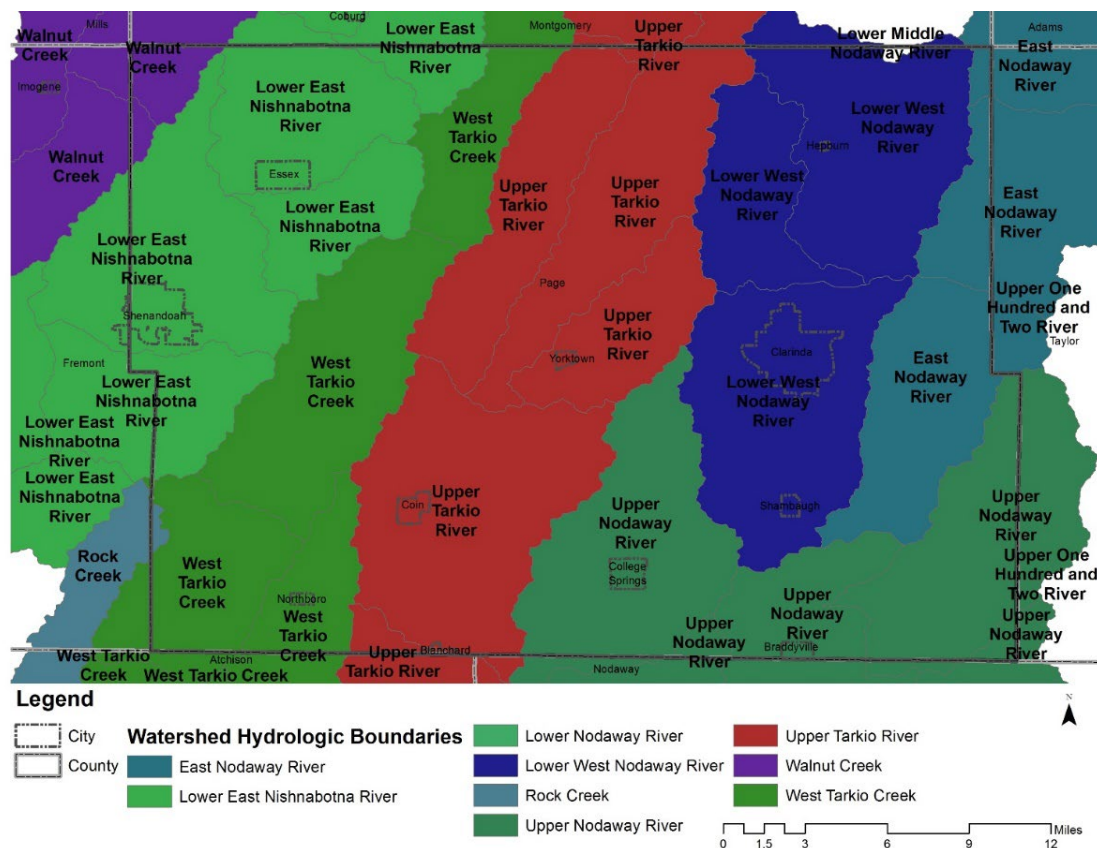
Watersheds

The area of land where all water sources are linked and eventually combine into a single water source is defined as a watershed. The State of Iowa maintains three different hydrologic watershed boundary datasets and are useful for a number of water-resource management and planning activities, particularly for site-specific and localized studies. These data sets were then used to define the stream watershed layer for the State of Iowa. These stream watersheds represent the watershed boundaries of Iowa's rivers and streams.

Page County is mainly drained by the East Nishnabotna River, Tarkio River, East and West Tarkio Creeks, and the Nodaway and East Nodaway Rivers. Some of the important smaller streams are Buchanan Creek, Fisher Creek, Mill Creek, Neele Branch, Pierce Creek, Rocky Branch, Smoke Creek and Walnut Creek. These streams drain to the south.

The overlay in map 1:6 shows that Page County has 2 main hydrologic watershed boundaries.

Map 1:6 - Page County Watersheds

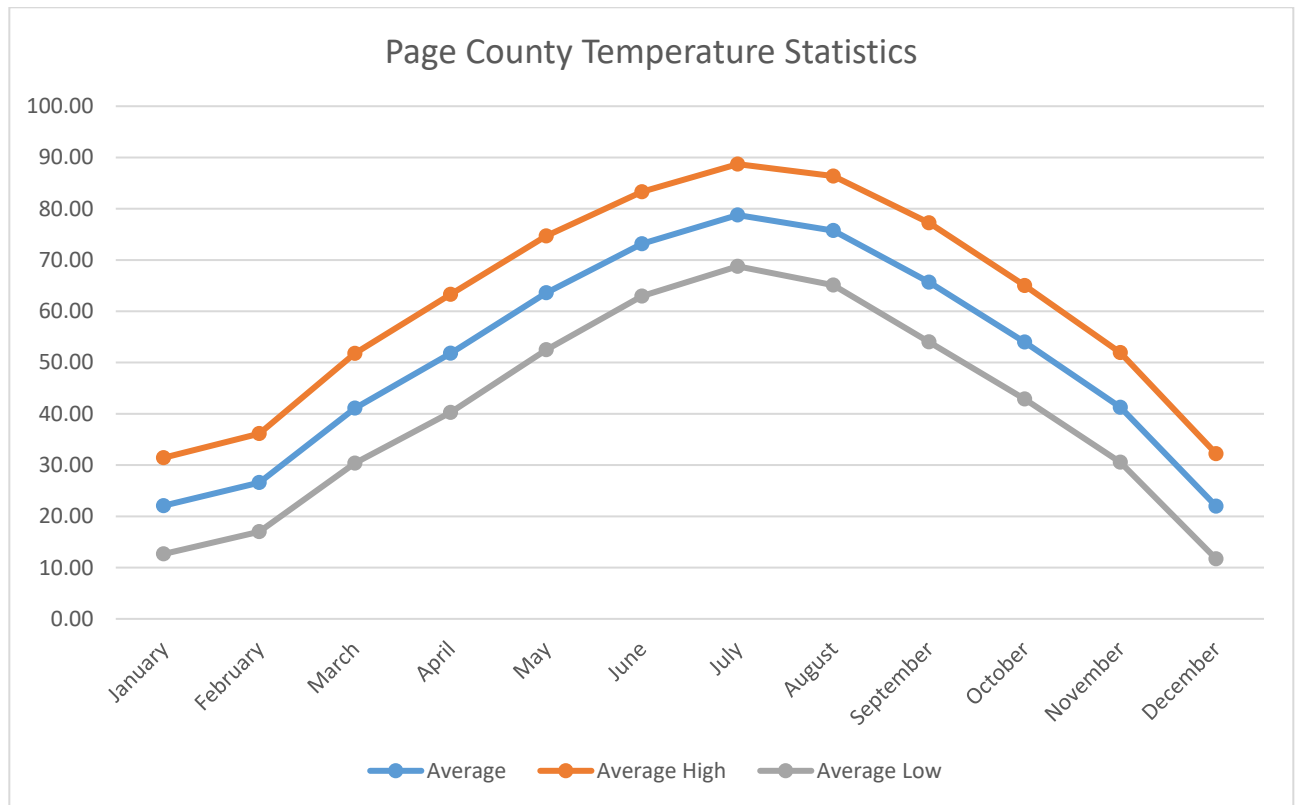


Source: Iowa Department of Natural Resources

Climate and Weather

Page County has a four season climate that ranges from hot and humid summers to cold and dry winters. January winter temperatures average between a high of 31°F and a low of 12°F. July summer temperatures average between a high of 88°F and a low of 68°F. The annual average precipitation for the county is 36.96 inches. The spring and summer months of May, June and July see the highest average precipitation between 4.88 and 5.87 inches per month. Flood risk is at its highest during these three months and thunderstorms are common in the spring and summer months. It is also during the warm summer months that severe drought can occur causing major widespread crop losses. The lowest months of precipitation occur during December, January and February, each having a monthly average of less than 1.5 inches in precipitation. Although precipitation is at its lowest during the winter months, snowstorms, ice storms and blizzards are common.

Figure 1:1 - Page County Historic Temperature Records



Source: weather.com

Population and Households

Page County reached its peak population period around the year 1900, when the population was over 24,000 people. Since then the county population has been on a steady decline. The 2020 census put the population at 15,211, down 5.5% since the 2010 Census.

Between 2010 and 2020, no cities within Page County gained population. The decrease in population over the course of the last century can largely be attributed to factors common in rural areas, including but not limited to a decrease in manufacturing employment, decreasing number of farms and related agriculture employment, and the decline in population of young adults. Furthermore, as farms become fewer in number they become much larger in size.

Table 1:3 below shows Page County's population trends as compared to the State of Iowa. Page County ranks 50th in population of the 99 counties in the State of Iowa, carrying only 0.47 percent of the total population for the State.

Table 1:3 - Population Trends for the State of Iowa and Page County, 2010-2020

	2010	2020	% Change 2010-2020
Page County Total	16,095	15,211	-5.5%
State of Iowa Total	3,046,355	3,190,369	4.7%

Source: U.S. Census 2020

Clarinda and Shenandoah are the two largest communities with a population around or over 5,000 with the largest being Clarinda at 5,369. The third largest city is Essex with a population of 722. Each of the remaining communities have a population under 200. All jurisdictions have had an overall loss in population since the 2020 while the population in unincorporated Page County increased by 2.1%.

Table 1:4 - Population Trends for All Jurisdictions within Page County, 2010-2020

	2010	2020	% Change 2010-2020
Blanchard	60	29	-51.7%
Braddyville	159	147	-7.5%
Clarinda	5,566	5,369	-3.5%
Coin	253	176	-30.4%
College Springs	230	172	-25.2%
Essex	886	722	-18.5%
Northboro	89	52	-41.6%
Shambaugh	167	159	-4.8%
Shenandoah	5,150	4,925	-4.4%
Yorktown	108	60	-44.4%
Unincorporated Page County	3,331	3,400	2.1%
Page County Total	16,095	15,211	-4.7%

Source: U.S. Census 2020

Page County is largely comprised of persons considering themselves White or Caucasian, totaling 91.1 percent of the population, which is significantly higher than the State of Iowa's 84.5 percent. Persons of two or more races represent the largest non-Caucasian population in Page County while persons of Hispanic decent represent the second largest group in the State of Iowa. These facts are illustrated in Table 1:5 below.

Table 1:5 - Page County Jurisdictions and State of Iowa Populations by Race and Hispanic/Latino 2020

Percent Population by Race and Hispanic/Latino	White	Black or African American	American Indian and Alaska Native	Asian	Hawaiian and Other Pacific Islander	Some other race	Two or more races	Hispanic/Latino (includes all of the previous races)
Blanchard	89.7%	0.0%	0.0%	3.4%	0.0%	6.9%	0.0%	3.4%
Braddyville	94.6%	0.0%	0.0%	0.0%	0.0%	1.4%	4.1%	2.0%
Clarinda	86.6%	6.1%	0.6%	1.2%	0.0%	0.6%	4.9%	3.5%
Coin	90.3%	0.6%	0.0%	0.0%	0.0%	0.6%	8.5%	0.6%
College Springs	94.8%	0.0%	0.0%	0.6%	0.0%	1.2%	3.5%	2.3%
Essex	94.7%	0.3%	1.2%	0.4%	0.0%	0.0%	3.3%	1.1%
Northboro	92.3%	0.0%	0.0%	0.0%	0.0%	3.8%	3.8%	3.8%
Shambaugh	97.5%	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	0.6%
Shenandoah	91.6%	0.3%	0.3%	0.8%	0.0%	2.1%	4.9%	4.5%
Yorktown	88.3%	0.0%	0.0%	0.0%	0.0%	3.3%	8.3%	3.3%
Page County Total	91.1%	2.4%	0.4%	0.8%	0.0%	1.0%	4.3%	3.1%
State of Iowa	84.5%	4.1%	0.5%	2.4%	0.2%	2.8%	5.6%	6.8%

Source: U.S. Census 2020

Page County's median age rate is 43.4 years, substantially higher than the State of Iowa's at 38.6 years. This illustrates the County as having an aging population. All of the jurisdictions in Page County have a higher median age than the state. Median ages run from 40 years in Clarinda to 52.2 in Blanchard.

Table 1:6 - Page County Jurisdictions and State of Iowa Populations by Age, 2020

Percent Population by Age	0-5 years	Under 20 years	20-64 years	65+ years	Median age
Blanchard	6.9%	0%	61.9%	31.0%	52.2
Braddyville	8.8%	15.6%	48.3%	27.2%	47.2

Clarinda	4.7%	16.6%	58.1%	20.7%	40.0
Coin	2.3%	22.2%	47.8%	27.8%	47.8
College Springs	8.7%	16.9%	45.4%	29.0%	51.0
Essex	4.8%	17.8%	50.9%	26.3%	45.8
Northboro	1.9%	17.3%	53.6%	26.8%	48.5
Shambaugh	5.7%	17.0%	57.9%	19.4%	51.6
Shenandoah	5.5%	17.8%	51.8%	24.7%	44.3
Yorktown	0.0%	23.4%	56.5%	20.0%	44.0
Page County Total	5.2%	17.5%	54.0%	23.2%	43.3
State of Iowa	6.0%	20.2%	55.9%	18.0%	38.6

Source: U.S. Census 2020

Page County is largely a rural county with 35 percent of its population living in rural areas in 2000 and remained about the same in 2010. Although the percentage of urban and rural population stayed about the same, both urban and rural areas lost population from 2000 to 2010. The population in urban areas in Page County declined by 38 people whereas the population of rural areas declining by 83 between 2000 and 2010. By contrast, the State of Iowa has over 60 percent of its population in the urban areas and has seen an increase in population in its urban areas. The primary reason for the increase in population in the urban areas for the State of Iowa are due to the large growth in large metropolitan areas and the larger cities making up for the small decline in population that many of Iowa's small town communities have experienced.

The U.S. Census measures households and families separately. A household is composed of one or more people who occupy a housing unit, whereas family households consist of two or more individuals who are related by birth, marriage, or adoption, although they may include other unrelated people. There were an estimated 6,393 households in Page County in 2010. Of these households, 64.2 percent represent families, and 35.8 percent represent non-family households. These figures are consistent with the State of Iowa data. The average size of Page County's households is 2.26 persons, comparable to the state average of 2.41. The average family size in Page County is 2.81, just slightly under the state average of 2.97.

Table 1:7 - Page County Jurisdictions and State of Iowa Households, 2020

Households by Type	Total Households	Percent Family Households	Percent Non-Family Households	Percent Householder living alone	Average Household Size (estimates)	Average Family Size (estimates)
Blanchard	14	85.7%	14.3%	14.3%	3.57	3.57
Braddyville	68	73.5%	26.5%	19.1%	2.34	2.86

Clarinda	1,899	57.6%	42.4%	37.8%	2.18	2.92
Coin	76	61.8%	38.2%	31.6%	2.08	2.78
College Springs	78	65.4%	34.6%	26.9%	2.18	2.93
Essex	339	61.1%	38.9%	34.5%	1.9	2.94
Northboro	28	42.9%	57.1%	57.1%	1.82	1.83
Shambaugh	74	60.8%	39.2%	35.1%	2.15	2.73
Shenandoah	2,241	55.2%	44.8%	39.5%	2.17	2.82
Yorktown	23	73.9%	26.1%	21.7%	2.85	3.08
Page County Total	6,212	60.9%	39.1%	34.4%	2.19	2.88
State of Iowa	1,288,560	63.0%	37.0%	30.0%	2.40	2.98

Source: U.S. Census, 2020, American Community Survey 5-year Estimates, 2020

Housing

Nearly half of the housing units in Page County were built before 1940 (40%). This is higher than the 26.7% of the housing units in the State of Iowa that were built in 1939 or earlier. This shows an aging housing stock in Page County, many of which were built prior to many building code requirements. This leads to a risk of deteriorating housing structures and a risk of possible lead based paint exposure as lead based paint was often used in housing prior to the 1970's. The aging housing stock is also reflected in the table below with the housing age of each of the cities in Page County. Many of the cities also represent a high percentage of older housing units than the state average. These numbers would have improved slightly since 1990 with additional housing units being constructed during the 1990's in many of these areas. However, this still shows an aging housing stock within Page County.

Table 1:9, below, shows that 40 percent of the housing units in Page County were built before 1939. This is higher than the state as a whole with 26.7 percent of the housing units that were built in 1939 or earlier. The high percentage of older housing can be attributed to a lower amount of residential development when compared to the urban regions of the State. These regions bring in newer development, thus increasing the number of new structures. The tables below show that all of the incorporated cities and the unincorporated areas in Page County have an aging housing stock with at least a third or more of housing built before 1940. Over half of the communities in the county have over 40 percent of housing built before 1940. Most of these structures were built prior to any building code requirements, leading to a risk of deteriorating housing structures. In addition, the older housing stock poses a threat of possible lead-based paint and asbestos exposure, since both substances were widely used in many building products for housing construction prior to the 1970's.

Table 1:8 - Year structures have been built within Page County and State of Iowa, 2021

Year Structure Was Built	State of Iowa		Page County	
	#	%	#	%
Total	1,407,100		7,015	
2020 or later	2,406	0.2%	26	0.4%
2010-2019	104,748	7.4%	121	1.7%
2000-2009	152,309	10.8%	247	3.5%
1990-1999	146,025	10.4%	482	6.9%
1980-1989	101,234	7.2%	375	5.3%
1970-1979	199,152	14.2%	1,015	14.5%
1960-1969	140,013	10.0%	454	6.5%
1950-1959	140,461	10.0%	883	12.6%
1940-1949	69,256	4.9%	527	7.5%
1939 or earlier	351,496	25.0%	2,885	41.1%

Source: American Community Survey 5-year Estimates, 2021

Table 1:9 - Year structures have been built within Blanchard, Braddyville, Clarinda, Coin, College Springs, and Essex, 2021

Year Structure Was Built	Blanchard		Braddyville		Clarinda		Coin		College Springs		Essex	
	#	%	#	%	#	%	#	%	#	%	#	%
Total	18		71		2,133		131		114		451	
2020 or later	3	16.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
2010-2019	0	0.0%	0	0.0%	33	1.5%	0	0.0%	5	4.4%	0	0.0%
2000-2009	0	0.0%	5	7.0%	28	1.3%	2	1.5%	6	5.3%	7	1.6%
1990-1999	0	0.0%	7	9.9%	194	9.1%	5	3.8%	0	0.0%	35	7.8%
1980-1989	0	0.0%	6	8.5%	201	9.4%	6	4.6%	6	5.3%	17	3.8%
1970-1979	4	22.2%	7	9.9%	362	17.0%	0	0.0%	1	0.9%	85	18.8%
1960-1969	0	0.0%	0	0.0%	186	8.7%	4	3.1%	2	1.8%	23	5.1%
1950-1959	1	5.6%	4	5.6%	248	11.6%	10	7.6%	4	3.5%	39	8.6%
1940-1949	2	11.1%	0	0.0%	138	6.5%	7	5.3%	2	1.8%	36	8.0%
1939 or earlier	8	44.4%	42	59.2%	743	34.8%	97	74.0%	88	77.2%	209	46.3%

Source: American Community Survey 5-year Estimates, 2021

Table 1:10 - Year structures have been built within Northboro, Shambaugh, Shenandoah, and Yorktown, 2021

Year Structure Was Built	Northboro		Shambaugh		Shenandoah		Yorktown	
	#	%	#	%	#	%	#	%
Total	36		76		2,530		16	
2010 or later	0	0.0%	0	0.0%	22	0.9%	0	0.0%
2010-2019	1	2.8%	0	0.0%	68	2.7%	0	0.0%
2000-2009	0	0.0%	3	3.9%	103	4.1%	0	0.0%
1990-1999	2	5.6%	10	13.2%	123	4.9%	0	0.0%

1980-1989	0	0.0%	9	11.8%	79	3.1%	2	12.5%
1970-1979	6	16.7%	14	18.4%	312	12.3%	1	6.3%
1960-1969	4	11.1%	0	0.0%	161	6.4%	2	12.5%
1950-1959	0	0.0%	0	0.0%	417	16.5%	0	0.0%
1940-1949	0	0.0%	3	3.9%	204	8.1%	0	0.0%
1939 or earlier	23	63.9%	37	48.7%	1,041	41.1%	11	68.8%

Source: American Community Survey 5-year Estimates, 2021

Similar to the rural and urban population trends between 2000 and 2010, Page County has a larger rural housing stock whereas the State of Iowa has a larger urban housing stock. Unlike the population trends between rural and urban areas in the county, the number of housing units between 2000 and 2010 increased in the rural areas. The number of urban housing units decreased in Page County.

Home ownership in Page County is at 69.1 percent, 2.5 percent lower than the State of Iowa. Page County as a whole, Clarinda and Shenandoah all fall under 70 percent owner occupied, while the remaining jurisdictions are over 70 percent. Median rent ranges from a low of \$488/month in Essex to a high of \$920/month in Braddyville. The county's median rent is \$151 lower than that of the state at \$845.

Table 1:11 - Home Ownership and Median Rent, 2021

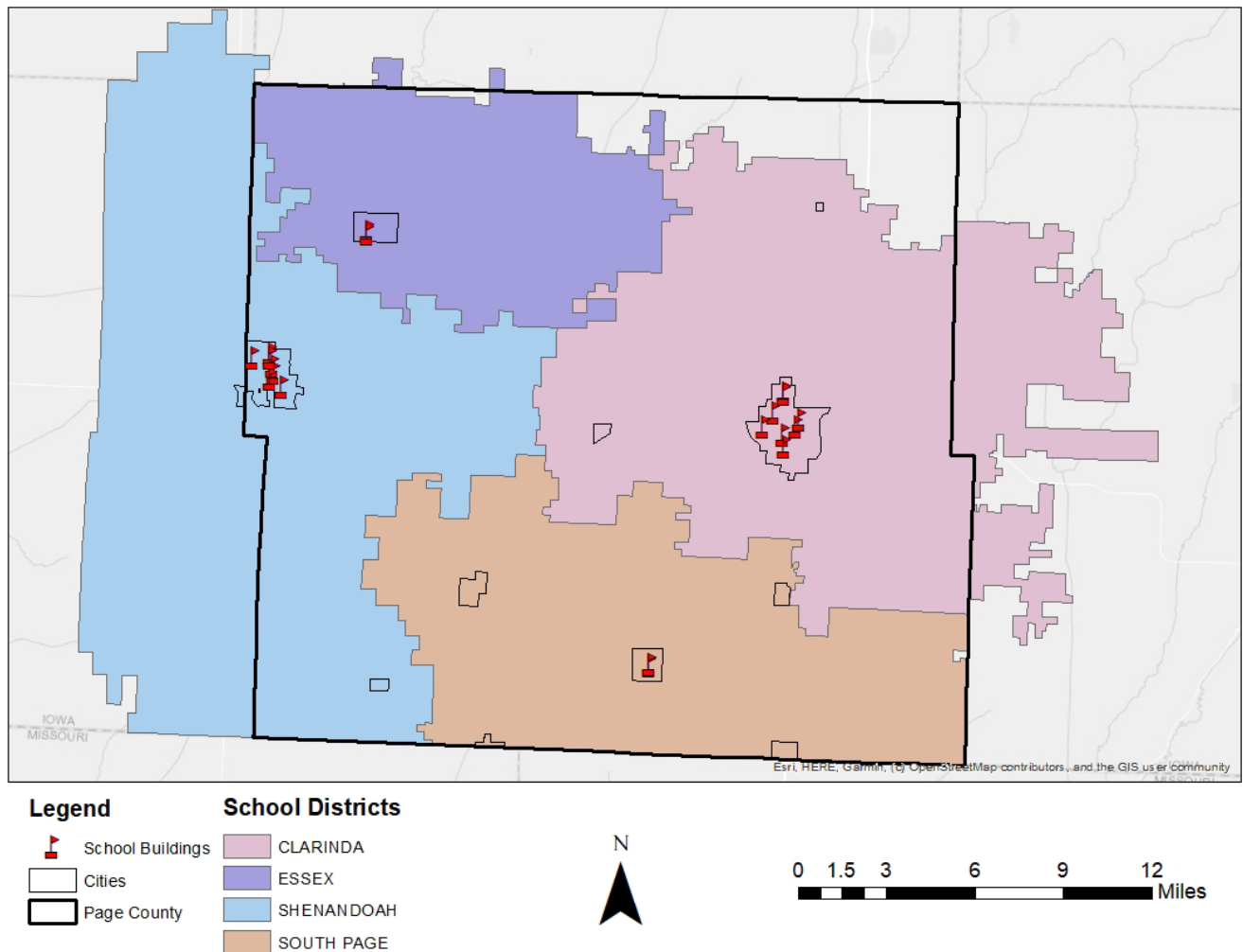
Jurisdiction	# Occupied	# Owned	% Owned	Rented	% Rented	Median Rent
Blanchard	7	7	100.0	0	0.0	\$ -
Braddyville	56	40	71.4	16	28.6	\$ 920
Clarinda	1,937	1,225	63.2	712	36.8	\$ 645
Coin	104	81	77.9	23	22.1	\$ 575
College Springs	114	111	97.4	3	2.6	\$ 688
Essex	424	349	82.3	75	17.7	\$ 488
Northboro	32	31	96.9	1	3.1	\$ -
Shambaugh	73	67	91.8	6	8.2	\$ 825
Shenandoah	2,112	1,286	60.9	826	39.1	\$ 707
Yorktown	16	15	93.8	1	6.3	\$ -
Page County Total	6,171	4,265	69.1	1,906	30.9	\$ 694
State of Iowa	1,275,893	912,969	71.6	362,924	28.4	\$ 845

Source: American Community Survey 5-year Estimates, 2021

School Districts

Page County is served by four main school districts. Clarinda Community School District serves the city of Clarinda, and Yorktown. Essex Community School District serves the cities of Essex. Shenandoah Community School District serves the city of Shenandoah, Northboro, and Farragut (Fremont County). South Page Community Schools Districts serves College Springs, Coin, Blanchard, Braddyville, and Shambaugh in Page County.

Map 1:7 - Page County School Districts



Income

Income in Page County is lower than the State of Iowa's. The median household income in Page County is \$52,108 in 2021, \$13,321 less than the State. Over one third of the households have a household income between 35,000 and 75,000, similar to the State. The mean income in the county is lower than the State by \$22,749.

Table 1:12 - Household Income in the Past 12 Months for State of Iowa and Page County, 2021 Estimates

Income level	State of Iowa	Page County
Less than \$10,000	4.7%	6.8%
\$10,000 to \$14,999	3.8%	6.0%
\$15,000 to \$24,999	8.2%	11.5%
\$25,000 to \$34,999	8.6%	9.3%
\$35,000 to \$49,999	12.6%	15.3%
\$50,000 to \$74,999	18.8%	20.9%
\$75,000 to \$99,999	14.2%	13.5%
\$100,000 to \$149,999	17.0%	11.0%
\$150,000 to \$199,999	6.4%	4.1%
\$200,000 or more	5.8%	1.6%
Median household income (dollars)	\$65,429	\$52,108
Mean household income (dollars)	\$84,948	\$62,199

Source: American Community Survey 5-year Estimates, 2021

The table below shows the median household income, mean household income and per capita income for Page County as compared to the State of Iowa for the years of 2017-2021. The median household income and the per capita income in Page County has trailed the State of Iowa's in the last 5 years. The greatest difference between the County and State is \$13,321 for the median income in 2021 and \$22,749 for the mean income in 2021. The per capita income in the county has caught up to the State's per capita income in the last five years. In 2020 and 2021, the county's per capita income has decreased, widening the difference between the state and county.

Table 1:13 - Median Household and Per Capita Income for the State of Iowa and Page County, 2017-2021 Estimates

Year	State of Iowa			Page County		
	Median Household Income	Mean Household Income	Per Capita Income	Median Household Income	Mean Household Income	Per Capita Income
2021	\$65,429	\$84,948	\$34,817	\$52,108	\$62,199	\$26,770
2020	\$61,386	\$80,316	\$33,021	\$51,196	\$63,487	\$26,930
2019	\$60,523	\$78,411	\$32,176	\$51,867	\$64,066	\$27,390
2018	\$58,580	\$75,951	\$31,085	\$49,974	\$62,411	\$26,767
2017	\$56,570	\$73,510	\$30,063	\$46,708	\$60,121	\$25,739

Source: American Community Survey 5-year Estimates, 2017-2021

Business and Industry

According to the 2022 Annual County Profile report, Page County's average weekly wage for all industries was \$929. This was a change of -1.6 percent since 2021. The highest average weekly wage for a sector in Page was Utilities, averaging \$1,950. The average weekly wages statewide for this sector was \$1,959. Page's next highest average weekly wage by sector was management of companies and entrepreneurship with an average weekly wage of \$1,363.

At the end of 2022, Page County's largest private sector on average was manufacturing representing 25 percent (1,570) of the county's average employment of 6,287. The county's total employment changed by 1.67 percent since the end of 2021, and the average annual wage changed by 4.5 percent to \$46,853 for all industries. The top businesses in Page County by employment with 100 employees or more include:

- Lisle Corporation
- NSK Corporation
- EZ Way
- Shenandoah Medical Center
- Shenandoah Outpatient Clinic
- Clarinda Regional Health
- Westridge Quality Care & Rehab
- H & H trailers
- Hy-Vee
- Walmart

Per capita retail sales in Page County are lower than the State of Iowa. This is due to both the agricultural activities as the primary economic industry and the nature of the smaller communities' ability to only sustain small downtown shopping districts. Shenandoah is the only jurisdiction in Page County with a per capita retail sale that is higher than the State of Iowa.

Table 1:14 - Per Capita Retail sales by Jurisdiction

	FY2021	FY2020	FY2019	FY2018	FY2017
State of Iowa	\$ 13,685	\$ 12,812	\$ 13,052	\$ 13,067	\$ 13,244
Blanchard	-	-	-	-	-
Braddyville	-	-	-	-	-
Clarinda	\$ 11,946	\$ 11,653	\$ 11,835	\$ 11,983	\$ 12,054
Coin	-	-	-	-	-
College Springs	-	-	-	-	-
Essex	\$ 4,080	\$ 3,948	\$ 4,003	\$ 4,016	\$ 3,940
Northboro	-	-	-	-	-
Shambaugh	-	-	-	-	-

Shenandoah	\$ 15,047	\$ 14,282	\$ 13,118	\$ 12,977	\$ 12,941
Yorktown	-	-	-	-	-
Page County	\$ 9,125	\$ 8,989	\$ 8,406	\$ 8,409	\$ 8,529

Source: Iowa State University, Iowa Community Indicators Program, 2021

The nominal total taxable retail sales provides a greater picture of the location of the largest economic centers within the County. Shenandoah and Clarinda share most of the taxable retail sales within Page County, which shows its importance of the two cities in Page County.

Table 1:15 – Nominal Total Taxable Retail Sales by Jurisdiction

	FY 2021	FY 2020	FY 2019
State of Iowa	43,666,627,999	40,822,173,552	41,475,694,404
Blanchard	-	-	-
Braddyville	-	-	-
Clarinda	\$ 64,043,266	\$ 61,311,022	\$ 61,703,447
Coin	-	-	-
College Springs	-	-	-
Essex	\$ 2,941,855	\$ 2,801,944	\$ 2,830,765
Northboro	-	-	-
Shambaugh	-	-	-
Shenandoah	\$ 74,000,005	\$ 68,969,781	\$ 62,887,503
Yorktown	-	-	-
Page County	\$ 138,602,845	\$ 134,058,666	\$ 124,382,748

Source: Iowa State University, Iowa Community Indicators Program, 2021

Labor Force

Page County's unemployment rate is higher than that of the State as a whole. The communities of Blanchard, Braddyville, Northboro, and Shambaugh all report unemployment rates of 0 percent. All of the remaining communities have unemployment rates higher than that of the State. Table 1:18 shows employment and unemployment rates for the State of Iowa, Page County, and all ten of Page County's incorporated communities.

Table 1:16 - Employment Statistics for the Population 16 Years and over for the State of Iowa, Page County, and Page County Jurisdictions, 2021 Estimates

Population 16 years and over	Total	Percentage In labor force	Employed Rate	Unemployment Rate
State of Iowa	2,523,649	66.9%	64.2%	2.6%
Blanchard	30	20.0%	20.0%	0.0%
Braddyville	121	65.3%	65.3%	0.0%
Clarinda	4,587	53.8%	48.8%	5.0%
Coin	205	43.9%	35.6%	8.3%
College Springs	192	69.3%	62.0%	7.3%
Essex	754	52.5%	49.9%	2.7%
Northboro	56	83.9%	83.9%	0.0%
Shambaugh	120	58.3%	58.3%	0.0%
Shenandoah	3,861	63.1%	58.7%	4.4%
Yorktown	29	41.4%	31.0%	10.3%
Page County Total	12,646	58.9%	54.7%	4.2%

Source: American Community Survey 5-year Estimates, 2021

Page County's occupational statistics are very similar to the state as a whole, with education, health care, and social assistance being the largest sector of private employment, employing almost a quarter of the civilian populations. As of 2021, Page County's largest private sector was educational services, health care and social assistance, representing 23.1 percent (1,599) of the county's total covered employment of 6,921. The next highest employment sector is manufacturing with 1,568 jobs or 22.7 percent.

Table 1:17 - Industry by Occupation for the Civilian Employed Population 16 Years and Older for the State of Iowa and Page County, 2021 Estimates

Private Employment	State of Iowa		Page County	
	#	%	#	%
Total	1,620,796		6,921	
Agriculture, forestry, fishing and hunting, and mining	59,850	3.7%	429	6.2%
Construction	108,302	6.7%	277	4.0%
Manufacturing	240,629	14.8%	1,568	22.7%
Wholesale trade	44,676	2.8%	138	2.0%
Retail trade	189,043	11.7%	1,287	18.6%
Transportation and warehousing, and utilities	81,066	5.0%	254	3.7%
Information	23,698	1.5%	53	0.8%
Finance, insurance, real estate, and rental and leasing	124,930	7.7%	154	2.2%
Professional, scientific, management, administrative, and waste management services	121,124	7.5%	246	3.6%
Educational services, and health care and social assistance	392,076	24.2%	1,599	23.1%
Arts, entertainment, recreation, accommodation and food services	115,503	7.1%	305	4.4%
Other services (except public administration)	68,951	4.3%	270	3.9%
Public administration	50,948	3.1%	341	4.9%

Source: American Community Survey 5-year Estimates, 2021

Table 1:18 - Industry by Occupation for the Civilian Employed Population 16 Years and Older for Blanchard, Braddyville, Clarinda, Coin, College Springs and Essex, 2021 Estimates

Private Employment	Blanchard		Braddyville		Clarinda		Coin		College Springs		Essex	
	#	%	#	%	#	%	#	%	#	%	#	%
Total	6		79		2,237		73		119		376	
Agriculture, forestry, fishing and hunting, and mining	0	0.0%	7	8.9%	33	1.5%	9	12.3%	34	28.6%	18	4.8%
Construction	3	50.0%	0	0.0%	89	4.0%	3	4.1%	3	2.5%	15	4.0%

Manufacturing	0	0.0%	41	51.9%	681	30.4%	23	31.5%	14	11.8%	73	19.4%
Wholesale trade	1	16.7%	0	0.0%	69	3.1%	0	0.0%	1	0.8%	0	0.0%
Retail trade	0	0.0%	1	1.3%	420	18.8%	3	4.1%	24	20.2%	91	24.2%
Transportation and warehousing, and utilities	0	0.0%	6	7.6%	34	1.5%	12	16.4%	3	2.5%	15	4.0%
Information	0	0.0%	1	1.3%	9	0.4%	7	9.6%	0	0.0%	3	0.8%
Finance, insurance, real estate, and rental and leasing	0	0.0%	0	0.0%	10	0.4%	0	0.0%	0	0.0%	19	5.1%
Professional, scientific, management, administrative, and waste management services	1	16.7%	0	0.0%	106	4.7%	2	2.7%	0	0.0%	13	3.5%
Educational, health and social services	0	0.0%	18	22.8%	554	24.8%	8	11.0%	26	21.8%	80	21.3%
Arts, entertainment, recreation, accommodation and food services	0	0.0%	2	2.5%	77	3.4%	4	5.5%	1	0.8%	16	4.3%
Other services (except public administration)	0	0.0%	0	0.0%	42	1.9%	1	1.4%	7	5.9%	23	6.1%
Public administration	1	16.7%	3	3.8%	113	5.1%	1	1.4%	6	5.0%	10	2.7%

Source: American Community Survey 5-year Estimates, 2021

Table 1:19 - Industry by Occupation for the Civilian Employed Population 16 Years and Older for Northboro, Shambaugh, Shenandoah, and Yorktown, 2021 Estimates

Private Employment	Northboro		Shambaugh		Shenandoah		Yorktown	
	#	%	#	%	#	%	#	%
Total	47		70		2,268		9	

Agriculture, forestry, fishing and hunting, and mining	0	0.0%	0	0.0%	57	2.5%	0	0.0%
Construction	0	0.0%	0	0.0%	63	2.8%	1	11.1%
Manufacturing	23	48.9%	25	35.7%	488	21.5%	2	22.2%
Wholesale trade	14	29.8%	4	5.7%	34	1.5%	0	0.0%
Retail trade	0	0.0%	3	4.3%	474	20.9%	0	0.0%
Transportation and warehousing, and utilities	1	2.1%	0	0.0%	82	3.6%	2	22.2%
Information	0	0.0%	7	10.0%	19	0.8%	0	0.0%
Finance, insurance, real estate, and rental and leasing	2	4.3%	1	1.4%	56	2.5%	2	22.2%
Professional, scientific, management, administrative, and waste management services	0	0.0%	0	0.0%	70	3.1%	2	22.2%
Educational, health and social services	3	6.4%	18	25.7%	593	26.1%	0	0.0%
Arts, entertainment, recreation, accommodation and food services	1	2.1%	0	0.0%	140	6.2%	0	0.0%
Other services (except public administration)	2	4.3%	8	11.4%	107	4.7%	0	0.0%
Public administration	1	2.1%	4	5.7%	85	3.7%	0	0.0%

Source: American Community Survey 5-year Estimates, 2021

Public and Private Infrastructure

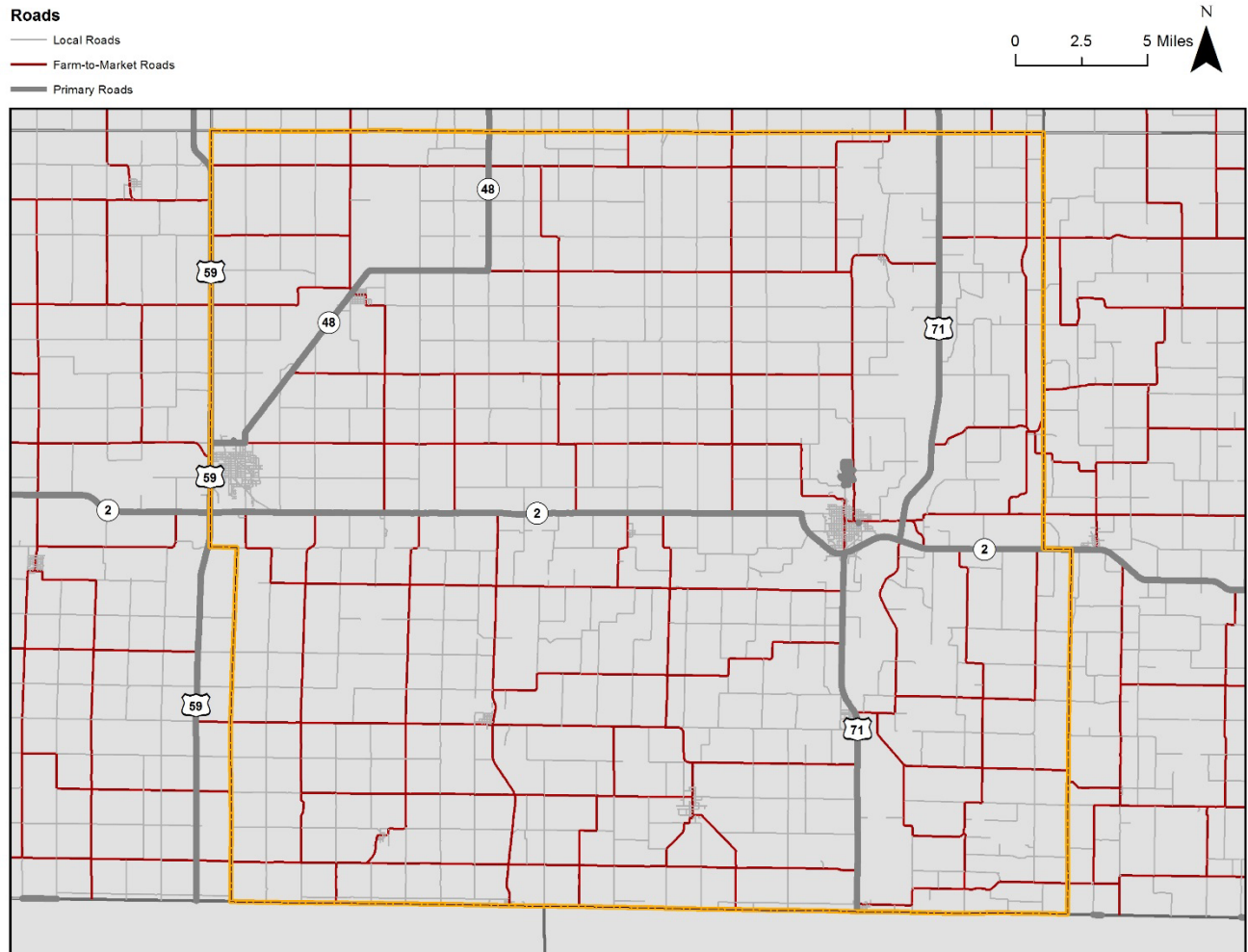
Highway and Roads

Highways and roads are essential to the communities within Page County as a primary mode of commuting and for freight transportation. Page County has over 2,000 miles of urban and rural roadways connecting its communities to resources and industries located inside and out of the county. These roads are vital in moving goods and services throughout the region. Roadways are classified by their use and the volume of traffic they can handle. Principal arterials and major or minor collector roads, such as those listed below, are responsible for moving traffic throughout the region as well as to adjacent communities and consist of mainly state highways and interstates. They are designed to move traffic quickly over medium to long distances. Within the network of these highways and interstates are local roads that allow access to the smaller communities and rural homes and businesses located within the county as well as make up the network of roadways within the cities. These roads are vital to a smaller population, though equally important to the communities that they are located in. A number of state highways cross through the county connecting it with adjacent counties and providing quick access to local communities. Four major transportation routes cross through the county: US Highway 71, US Highway 59, State Highway 2, and State Highway 48.

- **US Highway 71** – This highway runs north/south through the eastern portion of the county crossing through Braddyville, Shambaugh, and Clarinda.
- **US Highway 59** – This highway is found on the western border of the county and runs north/south, passing through Shenandoah.
- **State Highway 2** – State Highway 2 runs east/west through the middle of the county and passes through Clarinda and Shenandoah.
- **State Highway 48** – State Highway 48 runs north/south and northeast/southwest in the northwestern corner of the county. It passes through Essex and terminates in Shenandoah.

The map below shows the highways and roads running in and through the county. The location of major roads and farm-to-market roads have been highlighted showing the location of vital routes throughout the county.

Map 1:8 - Page County Highways and Roads

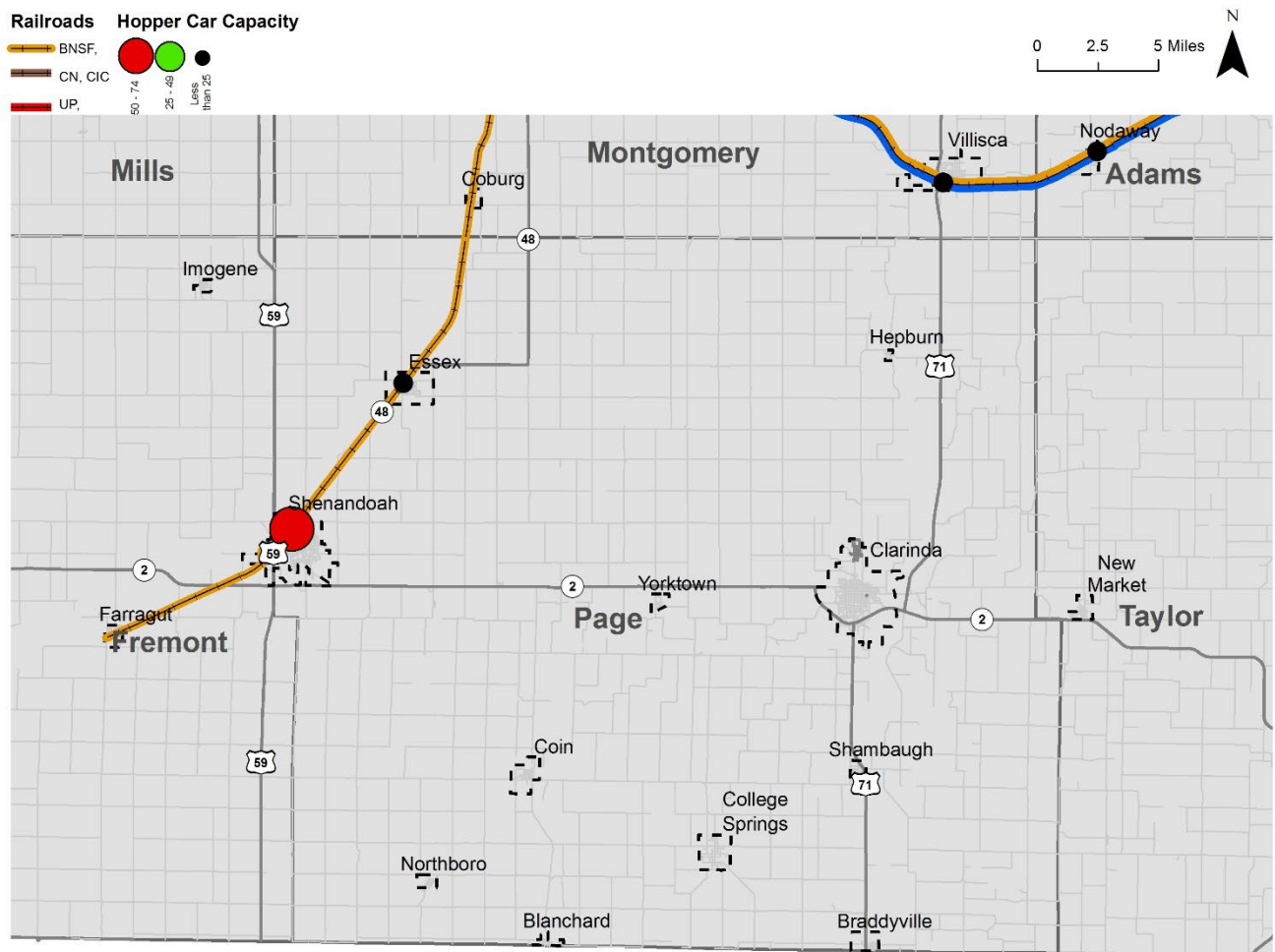


Source: Iowa Department of Transportation

Rail

Page County has almost 30 miles of railroad track within its county border. Iowa Interstate Railroad travels through Page County, with facilities in Shenandoah and Essex. The map below illustrates the locations and routes of the hopper car locations and rails. Through Page County, the Iowa Interstate Railroad carries 3-4.99 million gross tons per mile. Each of these lines has increased usage over the past 5 years.

Map 1:9 - Page County Railroads



Source: Iowa Department of Transportation

Airports

There is one municipal airport in Page County, the Clarinda Municipal Airport (ICL) just south of Clarinda. The Shenandoah Municipal airport provides most of its service to Page County affairs, but is located in Fremont County just west of the City. Both are designed to only handle small planes and do not offer any scheduled commercial airline service. There are two heliports located in Page County. One is in Clarinda at the Clarinda Regional Health Center the other is located in Shenandoah at the Memorial Hospital. EMS heliports in Iowa are used to transport healthcare professionals, organs, blood, and medical equipment. Pilots, mechanics, support staff and medical crews are ready to fly at any moment.

Map 1:10 - Page County Airports



Source: Iowa Department of Transportation

Utilities

Electricity

Electricity in Page County is provided by MidAmerican, Alliant Energy, REC, and Atchison Holt.

- Blanchard-MidAmerican Energy
- Braddyville-MidAmerican Energy
- Clarinda-Mid American Energy
- Coin-Mid American Energy
- College Springs-Mid American Energy
- Essex- Mid American Energy
- Northboro- Mid American Energy
- Shambaugh- Mid American Energy
- Shenandoah- Mid American Energy
- Yorktown- Mid American Energy

Natural Gas

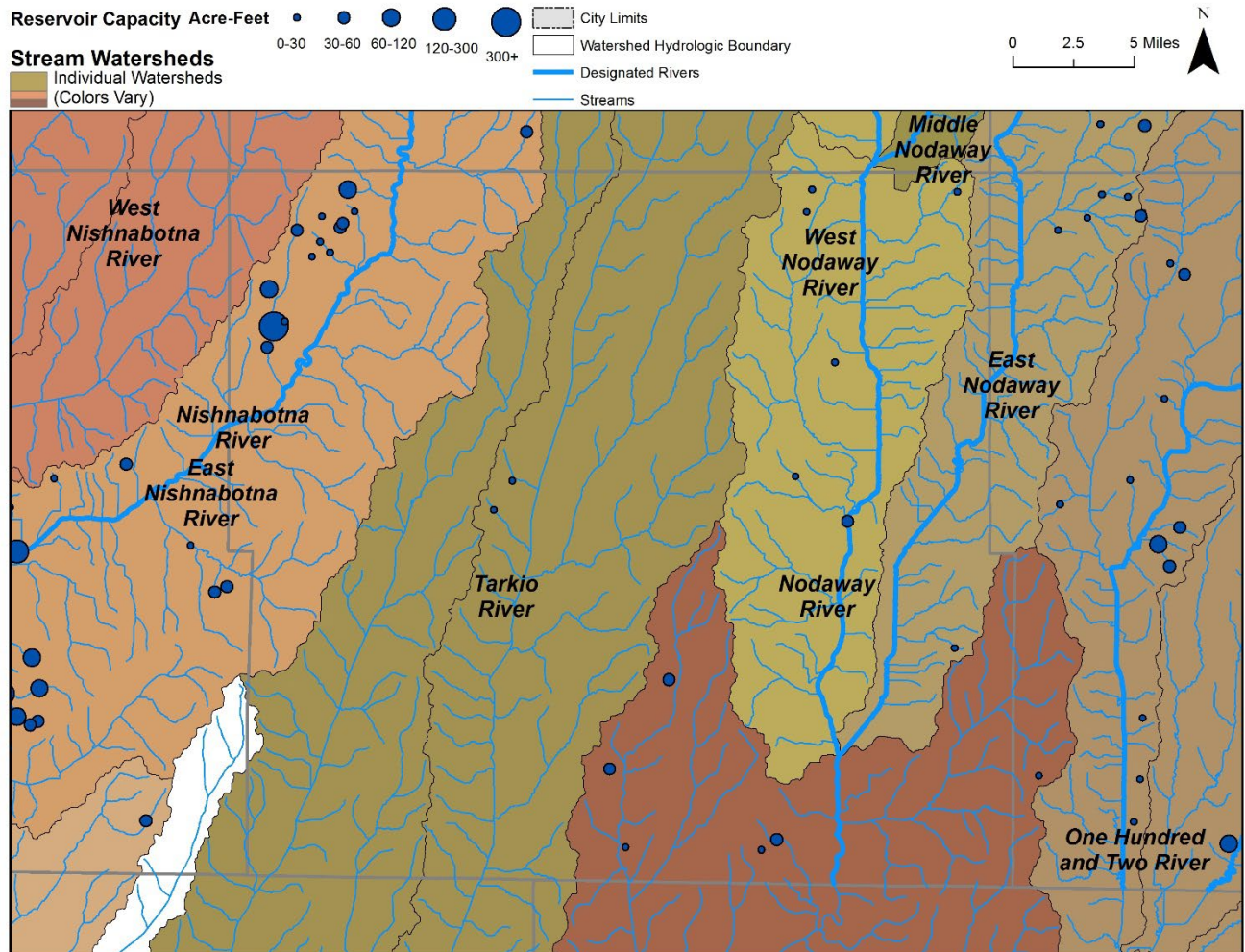
Alliant Energy and Mid-American Energy Corporation provide natural gas to various areas within the county. User fees pay for the normal maintenance and repair of the systems. Capital expansion is completed only after proper assessment of the user base.

- Blanchard-N/A
- Braddyville-N/A
- Clarinda-Alliant
- Coin-Holt
- College Springs-NA
- Essex- Mid American Energy
- Northboro-Sapp Bros.
- Shambaugh-N/A
- Shenandoah- Mid American Energy
- Yorktown-N/A

Dams

Dams in Page County are stretched across the county in primarily the north western corner. There are a total of 26 dams located in Page County with the majority of them located in the East Nishnabotna watershed. Of the three possible ratings given for dam risk, high, significant or low, there is one dam with a rating of significant and one with a rating of high.

Map 1:11 - Page County Dams and Waterways



Source: Iowa Department of Natural Resources

Source Water

The quality and quantity of water provided in a community greatly affects community living conditions and potential. Quality water in adequate amounts is needed for domestic use, industrial purposes, and fire protection. The communities of Page County recognize the importance to provide quality water treatment and distribution to the citizens of the county.

The county has three types of water supply systems; private, regional, and municipal. Below is a listing of how water is supplied to each of the 11 communities in Page County as well as its unincorporated areas:

- ***Unincorporated Page County*** – Private wells provide much of the potable water used in the rural areas of the county. This resource is declining with the decline in the number of farmsteads, and with the expansion and availability of rural water supplies. Southwest Regional Water serves a large part of the county, and Southern Iowa Rural Water Association has brought some infrastructure into Page County serving mainly the southeastern region. It is very important that this resource be protected through a vigilant permit and inspection process. Furthermore, it is imperative for wells that are no longer in use be properly abandoned and capped.
- ***Blanchard*** – Potable water in the City of Blanchard is supplied by the Southwest Rural Water District through a 3” main. The water is piped to a 55,000 gallon elevated storage tank.
- ***Braddyville*** – The potable water in Braddyville is supplied by two shallow gravel packed wells located immediately east of the Braddyville City limits. The water is piped to a 30,000 gallon pressurized holding tank. Currently Braddyville is in the process of joining Southwest Rural Water District. River flooding from the West Nodaway River in 2008 caused water infiltration into the wells and waterlines which can partially be attributed to the fact that the waterline to the well travels underneath the West Nodaway River. In 2014 the city acquired federal and state funding to improve its water system. Waterlines were replaced and new meters installed.
- ***Clarinda*** – The City of Clarinda utilizes a municipal water utility. Clarinda’s potable water is supplied by the Nodaway River. The water is piped to a 450,000 gallon elevated tower and a 480,000 gallon standpipe. The City of Clarinda constructed a new Water Treatment Plant that became operational in 2007.
- ***Coin*** – The City of Coin is connected to and utilizes Southwest Rural Water District. The city also uses a 40,000 gallon elevated storage tank for distribution and pressure. Currently the city is considering having Page Rural Water take over all water maintenance.
- ***College Springs*** – The City of College Springs currently utilizes a municipal water system. The City’s potable water is provided by two gravel packed, shallow wells that draw water from a surficial aquifer. Peak usage is 22,800 gallons per day. Treatment consists of the addition of chlorine. The water is stored in a 33,000 gallon elevated storage tank. College Springs is in the process of hooking on to Southwest Rural Water District for their potable water needs.
- ***Essex*** – The City of Essex utilizes a municipal water system with two shallow wells supplying the water. The City also uses a 65,000 gallon elevated storage tank for distribution and pressure.
- ***Northboro*** – The City of Northboro is connected to and utilizes Southwest Rural Water District for both supply and operation of the water system.
- ***Shambaugh*** – The City of Shambaugh utilizes a municipal water system. Shambaugh’s potable water is supplied by a series of three shallow wells. The water is piped to a 35,000 gallon standpipe.
- ***Shenandoah*** – The City of Shenandoah utilizes a municipal water system initially installed prior to 1910. The city has made many improvements to the distribution system that now consists of approximately 52 miles of mains ranging from 2” to 12”. The City obtains its water supply from 9 shallow wells. Storage and system pressure is through a 500,000 gallon elevated storage tank and 900,000 gallon reservoir. Water treatment, consistent with IDNR standards, consists of water softening, the addition of chlorine and fluoride, and the removal of iron. This occurs at the water treatment plant located on Ferguson Road. Average daily water usage for the City of Shenandoah is 818,000 gallons with a daily peak usage reaching 1,300,000 gallons. The water system is considered to be in good condition. Shenandoah is planning to increase their water capacity to allow for an additional 1.4 million gallons of water per day by constructing new wells. The project is currently in the planning stages.
- ***Yorktown*** – The City of Yorktown is connected to and utilizes Southwest Rural Water District for both supply and operation

Wastewater

The wastewater systems in Page County are similar to the potable water systems. Braddyville, Clarinda, Coin, Essex, Shambaugh, and Shenandoah all operate municipal wastewater systems. These systems are considered to be in good condition. Wastewater in the remaining communities is treated by individual septic tanks, cesspools, etc. Below is a description of each jurisdiction's wastewater system.

- ***Unincorporated Page County*** – The residents of unincorporated Page County utilize private wastewater systems including septic tanks, cesspools, and leaching fields. The state of Iowa has recently put into law a requirement that once a home is sold, the septic tank must be examined and replaced if it does not meet the state's code.
- ***Blanchard*** – Sanitary sewer is provided by individual septic tanks, clarification pits, or cesspools.
- ***Braddyville*** – The City of Braddyville wastewater system consists of a two-cell lagoon. It has recently been redone due to flooding from the West Nodaway River in 2008.
- ***Clarinda*** – The city operates a trickling filter wastewater collection system that discharges into the Nodaway River. The City of Clarinda constructed a new Wastewater Plant that became operational in 2022.
- ***Coin*** – The City operates a gravity fed wastewater collection system that discharges into a controlled discharge three-cell wastewater stabilization lagoon. The city has recently made many changes to the wastewater collection system. The sewer lines have been relined and sealed to help prevent storm water inflow. The lagoon has also been relined.
- ***College Springs*** – College Springs is not served by a municipal sewer system. Each household treats wastewater with an individual septic system. The city would like to install a sanitary sewer system, but this project will be expensive and difficult due to how spread apart residential properties are.
- ***Essex*** – Essex's community wastewater system utilizes a 2-celled aerobic lagoon. It is in the process of being upgraded. Recently a new line has been built to the lagoon and several others are planned.
- ***Northboro*** – The city does not have a wastewater treatment facility and treats wastewater through individually owned septic systems.
- ***Shambaugh*** – The City of Shambaugh operates a gravity fed wastewater collection system that discharges into a controlled discharge, 3-celled waste stabilization lagoon.
- ***Shenandoah*** – Wastewater in the City of Shenandoah is collected through a series of gravity collection mains and is then pumped to a trickling filter plant located on the west side of the city on 190th Street. The trickling filter plant received several repairs and improvements in 1988 and 2017. The plant has a design capacity of 8,000,000 gallons per day.
- ***Yorktown*** – Yorktown does not have a wastewater treatment facility. Wastewater is treated by individual septic systems.

Communications

Telephone and internet services are supplied by a variety of companies throughout Page County. Landline telephone services are offered through the following companies:

- Blanchard-IAMO
- Braddyville-IAMO and Windstream
- Clarinda-Windstream/Mediacome/FMTC/Farmers/IAMO
- Coin-IAMO Communications

- College Springs-Windstream
- Essex-Farmers Telephone
- Northboro-IAMO
- Shambaugh-Windstream
- Shenandoah-SWIFT, Mediacome, Century Link
- Yorktown-Windstream

Internet service providers to the region are offered by the following companies:

AT&T Mobility LLC
Broadband Provider 64978

BitWind Communications, LLC
Broadband Provider 64979

CenturyTel, Inc.
Broadband Provider 64980

Farmers Mutual Telephone
Broadband Provider 64981

Farmers Telephone Company
Broadband Provider 64983

Hughes Network Systems, LLC
Broadband Provider 64984

IAMO Telephone Company, Inc.
Broadband Provider 64986

MCC Iowa LLC
Broadband Provider 64987

RSA 1 Limited Partnership & Iowa RSA No. 2
Limited Partnership
Broadband Provider 64988

Skycasters
Broadband Provider 64989

Spacenet, Inc.
Broadband Provider 64990

Sprint Nextel Corporation
Broadband Provider 64991

United States Cellular Corporation
Broadband Provider 64992

ViaSat
Broadband Provider 64993

Villisca Farmers Telephone Company
Broadband Provider 64994

Windstream Iowa Communications, Inc.
Broadband Provider 64995

Emergency Services

Emergency Management

The Office of Emergency Management is governed by Chapter 29C State Code of Iowa and enforced by the Page County Emergency Management Commission consisting of Chair and Vice Chair positions selected from the commission members which consist of the Mayors of the corporate cities within Page County, a Board of Supervisor member and the Page County Sheriff.

Page County EMA is responsible for county emergency planning requirements developed by the Iowa Homeland Security and Emergency Management Division under Chapter 29C and works in cooperation with the emergency response agencies within Page County to develop emergency response planning, response and recovery guidance, and serves as the initial contact and liaison for Iowa Homeland Security issues at the state and federal levels.

Fire Protection and Rescue

Page County is served by six fire departments, four of which have volunteer rescue services. Each fire department in Page County operates with a fire chief and a number of local volunteer fire fighters and emergency response personnel to respond to emergencies. All of the fire departments within the county as well as the Page County Emergency Management are members of the Southwest Iowa Mutual Aid Association. The intent of this association is to coordinate fire protection and rescue response between each fire department and discuss issues relating to rescue services. The association also promotes fire and EMS training for its emergency response personnel. As members of the association, local fire departments have established multilateral agreements with one another to provide emergency response in the event that an incident would exceed local resources. All calls for emergency assistance are handled by the Page County Communications Center. The Communications Center notifies and dispatches the appropriate department.

Each city in Page County has been rated using the countrywide classification system used by the Insurance Services Office to rate local fire protection capabilities. This advisory organization serves the property and casualty insurance industry by providing inspection services and statistical information relating to fire protection and safety. ISO classifies city from a score of 1 (best) to 10 (worst) based on their Fire Suppression Rating Schedule. This schedule grades water distribution, fire department equipment and personnel and fire alarm facilities to determine each score. The fire insurance ratings (ISO) for each city in Page County are as follows:

- Blanchard – The City of Blanchard does not operate a fire department. They rely on the departments in the Cities of Coin or Braddyville to assist in times of emergency.
ISO Rating = 8
- Braddyville – The City of Braddyville Fire Department is currently composed of 10 firefighters. Currently four are EMTs. All volunteer fire fighters are trained to operational level II hazardous material.
ISO Rating = 9

- Clarinda – The City of Clarinda currently operates a volunteer fire department consisting of 29 firefighters. Of these 29 firefighters, six are EMTs, and all are trained to operational level II hazardous materials. The fire station is located at 13th and Washington Streets and responds to approximately 160 calls per year.
ISO Rating = 6
- Coin – The City of Coin is served by a volunteer fire department consisting of 21 members. Four personnel are EMTs, one is an Advanced EMT. Coin's fire department has agreements with the Cities of Northboro and Blanchard to serve as their main fire departments as neither city has its own fire departments anymore. Coin Fire department also serves the townships of Washington, Lincoln, Morton and Colfax. They also mutual aid with Shenandoah. All volunteer fire fighters are trained to operational level II hazardous material.
ISO Rating = 8
- College Springs – The City of College Springs operates its own fire department. They have 7 members total with one EMT. They have mutual aid agreements with Coin, Braddyville and Clarinda.
ISO Rating = 8
- Essex – The City of Essex operates a volunteer fire department that consists of approximately 21 volunteers. Four of these are EMTs, 4 are Paramedics and 1 RN and all are trained to operational level II hazardous materials.
ISO Rating = 7
- Northboro – The City of Northboro no longer operates its own fire department. The City has an agreement with the Coin Fire Department to provide services when an emergency call is made in Northboro.
ISO Rating = 9
- Shambaugh – The city of Shambaugh does not currently operate a city fire department. In times of emergency, the fire departments from Clarinda or Braddyville will respond.
ISO Rating = 9
- Shenandoah - The City of Shenandoah operates a combination fire department located at 400 W Sheridan Street. The fire department provides service for Shenandoah and surrounding rural areas including the Townships of Fischer, Grant, Page, Tarkio, Lincoln, Morton, Pierce, Monroe, Walnut, Prairie, and Locust Grove. The department is a member of mutual aid agreements with all neighboring districts, including the City of Red Oak. The department staffs 3 full time fire truck engineers and 1 paid fire chief. 31 volunteers serving as firefighters and company officers make up most of the personnel on the department. All volunteer fire fighters are trained to operational level II hazardous material.
ISO Rating = 6
- Yorktown – Yorktown does not have a fire department and relies on the Clarinda Fire Department in times of emergency.
ISO Rating = 9
- Unincorporated Page County – The unincorporated parts of Page County are served by one of the above fire departments depending on where in the county the emergency is located. Since the rural areas do not have their own fire departments, and some areas are hard to reach, the ISO Rating for unincorporated Page County is a 10.

Law Enforcement

The Page County Sheriff provides law enforcement throughout Page County for all municipalities and unincorporated areas with the exception of the cities of Clarinda, Essex, and Shenandoah where law enforcement is provided through their own local police department. The Page County Sheriff is the coordinator of any countywide operations and is in charge of law enforcement throughout the unincorporated areas of the county as well as the Cities of Blanchard, Braddyville, Coin, College Springs, Northboro, Shambaugh, and Yorktown. Iowa State Troopers have a daily presence in Page County and provide support to the Sheriff's Office. Federal and state law enforcement agencies are also available to support the Sheriff in time of emergency.

In Shenandoah, public safety is provided by the Shenandoah Police Department located at 400 W Sheridan Ave. The Police Department is staffed by a full-time Police Chief and ten officers serving 5,600 citizens. Shenandoah has two full-time and one part-time Police Clerks to help handle calls.

The City of Clarinda Police Department is located at 200 South 15th Street. It is served by a police chief and nine officers. The Clarinda Police Department serves 5,400 citizens.

In Essex, public safety to 900 citizens is provided by the Shenandoah Police Department through an 28E Agreement.

Medical and Hospitals

Page County is served by two hospitals, Shenandoah Medical Center and Clarinda Regional Health Center. Both offer the standard services of a typical hospital with the exception of the capability to transport via helicopter. Also, only Shenandoah offers nuclear medicine services.

Clarinda Regional Health Center currently has a general surgeon, several family practice physicians, a pediatrician, three internal medicine physicians, one PA-C, one CRNA, and five nurse practitioners on staff to service an area of 15,000 residents. CRHC's primary service area includes central and eastern Page and western and central Taylor counties, portions of Montgomery and Adams counties in Iowa, as well as several communities in NW Missouri.

For more information in regards to emergency situations, call Shenandoah Medical Center at 712-246-1230 and Clarinda Regional Health Center at 712-542-2176.

Both hospitals have a back-up generator that allows the facility to operate up to two days before needing to be refueled.

Section II: Prerequisite

Adoption Assurances

The Page County Multi-jurisdictional Hazard Mitigation Plan in accordance with FEMA requirements, must be formally adopted by each participant through the approval of a resolution. The approval and formal adoption of this plan by each jurisdiction will create responsibility and evidence of the participant's full commitment to implementation of the Plan's goals, objectives, and action items and authorizes the appropriate responsible agencies to perform their responsibilities. The Page County Multi-Jurisdictional Hazard Mitigation Plan demonstrates the county and each jurisdiction's commitment to reducing risks from hazards and serves as a guide for the commitment of resources and duties to reducing these effects.

This plan shall be made available to any party that requests to see it. A copy of the mitigation plan will be available for public view at Southwest Iowa Planning Council located at 1501 S.W. 7th Street, Atlantic, Iowa 50022. The mitigation plan shall be distributed to County and local jurisdictions that have participated in the writing of the plan or are assigned hazard mitigation duties.

The following jurisdictions have adopted the Page County Multi-jurisdictional Hazard Mitigation Plan:

Table 2:1 - Plan Adoption by Jurisdiction

Jurisdiction	Date of Adoption
City of Blanchard	
City of Braddyville	
City of Clarinda	
City of Coin	
City of College Springs	
City of Essex	
City of Northboro	
Page County (Unincorporated)	
Clarinda Community Schools	
Shenandoah Community Schools	
Essex Community Schools	
South Page Community Schools	

Section III: The Planning Process

Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their impacts. This process has unique and distinguished actions in comparison to response and recovery actions from a disaster. Hazard mitigation is the only planning phase of emergency management specifically dedicated to long term changes and seeks to prevent and mitigate impacts caused by hazardous events. This planning phase creates more resilient communities that limits or removes hazard risk and strengthens community response to hazard events. The hazard mitigation planning process contains four core steps:

1. Organize Resources
2. Assess Risks
3. Develop a Mitigation Strategy
4. Implement a Plan and Monitor Progress

Resource Organization

Page County began the process of developing a multi-jurisdictional hazard mitigation plan in the summer of 2022. The county contracted with Southwest Iowa Planning Council, located in Atlantic, Iowa, to facilitate the planning process and create the plan. Jill Harvey, Page County Emergency Management Coordinator, was the primary point of contact during the planning process. The process for jurisdictional meetings are as follows:

Meeting 1 – The first planning meeting was held with all jurisdictions on January 30, 2023 at the EMA office in Clarinda. The meetings highlighted the purpose and scope of mitigation planning by describing the planning process then the formation of a planning team took place. Discussion of the planning committee explained the roles that the community would take on to participate in the hazard mitigation plan process. This included how the public would be involved and steps the city should take to announce to the public about the planning process. A timeline of future meetings and important dates was discussed as well as the agenda for the next meeting. Lastly, representatives from each jurisdiction assisted in the completion on the county risk assessment.

Meeting 2 – The second meeting was held on February 27, 2023 at the EMA office in Clarinda. The second meeting involved reviewing the purpose of hazard mitigation planning, creating a community profile for each jurisdiction and discussing future meetings. Each jurisdiction reviewed data collections sheets and determined critical facilities, vulnerable populations and completed risk assessments for their jurisdictions.

Meeting 3 – The third meeting was held on May 23, 2023 at the Clarinda Library. At this meeting, jurisdictions reviewed mitigation actions established in the previous plan and provided updates on current status and priority levels. Jurisdictions also reviewed and amended their implementation plans.

In November of 2023, the final draft of the Page County Multi-Jurisdictional Hazard Mitigation Plan was sent to all jurisdictions and individuals involved in the planning process for review. Members of the planning committee were responsible for reviewing the respective community capabilities, critical facilities, hazard rankings and mitigation actions. Revisions were then sent to SWIPCO for inclusion. After this review, the final draft was sent to neighboring communities to provide them with an opportunity to submit any feedback.

Opportunity for Public Involvement

Public involvement was a vital component in developing the multi-jurisdictional plan for Page County. Elected officials, key stakeholders, and residents from each community were identified to participate in the planning process. These participants served as ‘experts’ in identifying historical occurrences of hazards, establishment of goals and objectives and determining potential mitigation action items. To encourage participation in the planning process, the following actions were taken:

- Jurisdictions were encouraged to include interested members of the public on their planning teams
- Agendas for each meeting were sent to individual jurisdictions to comply with Iowa’s Open Meetings Law and to encourage public participation
- Emails were sent out several times during the planning process for dissemination to planning team members and those interested in participating

To establish a high priority of public involvement in the planning process, meeting attendance requirements were established at the beginning of the planning process. In order to participate in the plan, at least one representative from each jurisdiction had to be present at the designated public meetings. To accommodate the most people, meetings were held in person and also had a virtual option.

Following the completion of the final draft, notice was published in area newspapers encouraging the public to review the Page County Hazard Mitigation Plan and provide comments.

Participating Jurisdictions and Representatives

The Page County Multi-Jurisdictional Hazard Mitigation Plan was developed through a collective effort by Page County, City of Blanchard, City of Braddyville, City of Clarinda, City of Coin, City of College Springs, City of Essex, City of Northboro, Shenandoah CSD, South Page CSD, and Essex CSD. The list of the planning team members for each jurisdiction can be found on the following table:

Table 3:1 - Page County Planning Team Members

Name	Title	Organization
Jill Harvey	Emergency Management Director	Page County Emergency Management
Jeff Brownfield	Mayor	Blanchard
Kim Gotschall	Mayor	Braddyville
Gary McClarnon	City Manager	Clarinda
Craig Hill	Mayor	Clarinda
Roger Williams	Fire Chief	Clarinda Fire Department
Keith Brothers	Police Chief	Clarinda Police Department
Jeff Priva	Superintendent	Clarinda Community School District
Nancy McKinnon	Director of Finance	Clarinda Community School District

Amie Johnson	Clerk	Coin
Paula Owens	Mayor	College Springs
Mary Ohnmacht	Clerk	Essex
Calvin Kinney	Mayor	Essex
Robert Brecht	Principal	Essex Community School District
Mike Wells	Superintendent	Essex Community School District
Mary Cutler	Clerk	Northboro
Clint Wright	Mayor	Northboro
Denise Rope	Clerk	Shambaugh
Ron Peterman	Mayor	Shambaugh
AJ Lyman	City Administrator	Shenandoah
Karla Gray	City Clerk	Shenandoah
Nelson, Dr. Kerri	Superintendent	Shenandoah Community School District
Rob Addy	Director of Maintenance	Shenandoah Community School District
Tim Hood	Superintendent	South Page Community School District
Rhonda Sheldon	Principal	South Page Community School District
Denise Rope	Clerk	Yorktown

Opportunity for Neighboring Communities

Efforts were taken to inform and extend opportunity for public involvement beyond Page County. Counties adjacent to Page County as well as neighboring communities were contacted and invited to provide comments or feedback. Refer to Appendix C for information sent to the neighboring communities.

The following neighboring communities were sent information regarding the Page County Hazard Mitigation Plan:

Adams County
Montgomery County
Mills County
Fremont County

Atchison County MO.
Nodaway County MO.
Taylor County

Risk Assessment

The Page County risk assessment was established by conducting research on each hazard type and through the local knowledge of elected officials, key stakeholders and residents. Information for each hazard was presented to each jurisdiction during meetings and included definitions and data on historical occurrences. Historical data on weather related incidents was obtained from the National Oceanic Atmospheric Administration. During the meetings, each hazard was discussed individually with participants ranking each hazard independently pertaining to their individual jurisdictions and collectively to assess each hazard on a county-wide basis. Risk assessment information from local jurisdictions was gathered from participants through the distribution of worksheets at local meetings and follow up packets requesting review and additional information were sent to designated team members.

All hazards named in the State Hazard Mitigation Plan were reviewed and participants decided to focus on natural hazards that pose a risk to Page County. Each hazard was discussed then ranked individually by each jurisdiction in order to determine and understand the risk a hazard poses to each local jurisdiction. The methodology used to rank the hazards was the same methodology used in the State Hazard Mitigation Plan, and included the following components: History, Probability, Magnitude/Severity, Warning Time, and Duration. Specific hazards that were addressed included:

- | | |
|---------------------------------|---------------------------------|
| 1. Animal/Crop/Plant Disease | 11. Infrastructure Failure |
| 2. Dam/Levee Failure | 12. Landslide |
| 3. Drought | 13. Radiological |
| 4. Earthquake | 14. River Flooding |
| 5. Expansive Soils | 15. Severe Winter Storm |
| 6. Extreme Heat | 16. Sinkholes |
| 7. Flash Flood | 17. Terrorism |
| 8. Grass/Wild Land Fire | 18. Thunderstorm/Lightning/Hail |
| 9. Hazardous Materials Incident | 19. Transportation Incident |
| 10. Human Disease | 20. Tornado/Windstorm |

Each individual risk assessment provided by the participants are found in Section IV: Multi-Jurisdictional Hazard Analysis/Risk Assessment. Each table represents the individual assessment made by each jurisdiction prior to a county-wide assessment. Individual assessments vary by jurisdiction as the risk for each community is different due to geographical location, accessibility of resources relating to each hazard as well as personal opinion. Communities less likely to be affected by a hazard or had the resources to respond or prevent a hazard typically ranked them lower whereas communities more likely to be affected by a hazard and did not have the resources to respond or prevent the hazard ranked them higher. These factors as well as historical occurrences and personal accounts contributed to the ranking of hazards, thus the outcome of the hazard rankings based on fact-based analysis of risk.

Jurisdictional Inventory

A structural inventory survey was performed to assess the value of each jurisdiction that has the potential or possibility of being affected in the event of a hazard incident. The survey evaluated the number of structures and total value of all structures in each jurisdiction, the total population of each jurisdiction and a crop value inventory. Using FEMA floodplain data, an analysis of the number of structures, total value of structures and crop value that could be affected in the event of river flooding, was performed for each jurisdiction. Inventories were conducted using the corporate limits of Blanchard, Braddyville, Clarinda, Coin, College Springs, Essex,

and Northboro, as well as for the unincorporated area of Page County. Structure inventories were also conducted for each school district which included all the property and replacement costs according to their insurance policies.

Structural inventories were conducted using data obtain through the Page County Assessor and the Iowa DNR. Page County Assessor data included building values while Iowa DNR data was used to categorize structures by land use. Data was processed using ArcGIS to categorize structures and to determine structures located in the flood plain using FEMA floodplain data. Due to the number of important structures, such as schools and government buildings, not included in the Assessor's data, additional research was done to obtain many of those missing valuations by contacting owners or representatives of the structures. The attempt was made to collect as many missing values as possible. Structures were categorized by the following classifications:

- Residential
- Multi-Residential
- Commercial
- Industrial
- Agricultural

A population inventory was conducted to determine the number of people in a jurisdiction. U.S. census data was used to show populations of each community, the unincorporated area, and the county total. The population of each community was the most detailed information that could be obtained to define vulnerable populations in each jurisdiction. This provides important information on the largest number of people potentially affected by each hazard.

Due to the importance of agriculture in Page County a crop inventory was conducted. This provided valuable information that could identify potential losses to one of the most important economic resources to the county. United States Department of Agriculture land use data was used to determine the number of acres per crop, then a per-acre crop production estimate calculated by Iowa State University Extension and Outreach was used to determine an estimate of crop value located within each jurisdiction. Crops were categorized by the following classifications:

- Corn
- Soybeans
- Alfalfa
- Other crops
- Cattle
- Other animals (including animal products)

Mitigation Strategy

The mitigation strategy are the goals, objectives and actions that a jurisdiction follows to prevent or mitigate the effects of potential hazards in the area. Jurisdictions first discussed mitigation strategies that focused on determining mitigation goals. Participants readily agreed to use the same three goals for the Page County Multi-Jurisdictional Hazard Mitigation Plan as found in the State Hazard Mitigation Plan. These goals were broad enough to cover all aspects of protecting the communities and ensuring safety from not only the identified hazards but for those that were not identified or are unknown. Following the establishment of the goals, objectives and actions were created to outline the steps to ensure progress towards reaching those goals. The hazard analysis and risk assessment helped in identifying objectives and actions that would create steps addressing the needs and issues of each jurisdiction.

Resources: General Plans, Documents and Information

A number of resources were used during the development of the Page County Hazard Mitigation Plan. Information and resources used in the plan are as follows:

Table 3:2 - Resource Documentation

Resource/Document	Source	Description
Federal Emergency Management Agency	http://www.fema.gov	Hazard Mitigation Materials and Information
Iowa Homeland Security & Emergency Management	www.homelandsecurity.iowa.gov	Hazard Mitigation Materials and Information
Iowa State Hazard Mitigation Plan	HSEMD	State of Iowa Hazard Mitigation Plan (2013)
Page County Hazard Mitigation Plans	SWIPCO	Previously approved Page County Hazard Mitigation plans
Local/County Hazard Mitigation Plans	Respective County Website	Current local hazard mitigation plans
Page County Website	https://pagecounty.iowa.gov/	County Website
Page County Assessor	www.beacon.schneidercorp.com	Building and Structure Information
Page County Emergency Management	Meetings, email, phone	Emergency Management and Community Information
Beacon GIS Portal	www.beacon.schneidercorp.com	Assessor parcels and structure data
Iowa Department of Natural Resources (IDNR)	http://www.iowadnr.gov	State agency that manages Iowa's natural resources
Iowa Geospatial Data	https://geodata.iowa.gov/	Portal for GIS Data
'Local Mitigation Plan Review Guide, 2011 and Local Mitigation Planning Handbook, 2013	https://www.fema.gov/sites/default/files/2020-06/fema-local-mitigation-plan-review-guide_09_30_2011.pdf	Guidebook to develop, update and implement local mitigation plans
Unified Hazard Mitigation Assistance Grant Programs	https://www.fema.gov/grants/mitigation	HMA Grant Programs
National Flood Insurance Program (NFIP)	http://www.fema.gov	NFIP program information
National Climatic Data Center (NCDC)	www.ncdc.noaa.gov	Archive of weather data and historical weather incidents
National Resources Conservation Service (NRCS)	http://www.nrcs.usda.gov/	Soil, water and other natural resource conservation service
Shenandoah Medical Center	https://www.smchospital.com/	Health Care Services
U.S. Fish & Wildlife Service	www.fws.gov/refuge/Desoto/about.html	Wildlife habitat and water body information
U.S. Department of Commerce: U.S. Census Bureau	https://data.census.gov/cedsci/	U.S. Census and American Community Survey Estimates

Iowa State University Extension and Outreach	https://www.icip.iastate.edu/	Iowa Community Indicators Program
Iowa Department of Transportation (IDOT)	www.iowadot.gov	Transportation Infrastructure and GIS Data
Iowa Workforce Development	https://www.iowaworks.gov/vosnet/Default.aspx	Employment Information
The Weather Channel	www.weather.com	Weather reports and related historical weather statistics
TopoZone	http://www.topozone.com/	Elevation Data
IA GenWeb Project	http://iagenweb.org/	Historical Information

Section IV: Multi-Jurisdictional Hazard Analysis/Risk Assessment

The purpose of the Hazard Analysis and Risk Assessment is to identify and prioritize threats and hazards that pose a risk to the health and safety of the citizens, property and economy within the jurisdiction. This material creates an informative resource for emergency management professionals and stakeholders to utilize in the event of a disaster. The information includes a clear understanding of the potential threats and impact a hazard can have on a community and is the basis for determining the need for hazard mitigation planning. The hazard analysis and risk assessment is divided into four steps: first identify the hazard, then create hazard profiles for each hazard, next create a community profile to assess vulnerability and lastly estimate potential impacts. Hazards need to be first identified to put focus in the hazard mitigation planning process and target hazards that create the most risk in each jurisdiction. A hazard profile is created for each jurisdiction to identify and understand the nature and characteristics of each hazard and to explain how each hazard can affect the community. A community profile then will illustrate the scope or size of the potential risk or value that a hazard can have on a community. Potential losses are estimated to give an indication at the amount of loss the jurisdiction could experience due to a disaster or emergency resulting from the identified hazard.

A comprehensive hazard analysis and risk assessment seeks to identify the potential threats and costs of hazards that can occur within the identified jurisdiction. While the plan includes information on several hazards and covers those that would most likely occur or impact the community, it does not provide specific information on all hazards. Instead, the document can be used as a tool by adapting the basic procedures explained in this section to any hazard. It will answer who or what will be affected by the hazard, such as what particular buildings or infrastructure could be damaged and the amount of damage done, which populations will be affected and are there any vulnerable populations within the hazard area or are there unique or symbolic characteristics that could be adversely impacted.

Hazards Identification

Identified Hazards

For the purpose of the Page County plan, hazards were identified and prioritized to focus on those that would impact the communities located in the jurisdiction. In the Iowa Hazard Mitigation Plan, 14 natural, 5 technological, and one man-made disasters were identified as possible threats to the state of Iowa. For the Page County Plan, it was determined to include all hazards, natural, man-made and technological, that could affect the county. Seven of these hazards were considered countywide and ranked as such. These hazards are highlighted in the following list.

The potential hazards identified for Page County are as follows:

- Animal/Crop/Plant Disease
- Dam/Levee Failure

- Drought
- Earthquake
- Expansive Soils
- Extreme Heat
- Flash Flood
- Grass or Wild Land Fire
- Hazardous Materials Incident
- Human Disease
- Infrastructure Failure
- Landslide
- Radiological
- River Flooding
- Severe Winter Storm
- Sinkholes
- Terrorism
- Thunderstorms/Lightning/Hail
- Transportation Incident
- Tornado/Windstorm

Hazard Risk and Vulnerability Assessment

The Page County Hazard Mitigation Plan utilizes a hazard risk assessment methodology to assess the potential risk and vulnerability of the entire planning area and of each participating jurisdiction. The risk assessment methodology utilizes a combination of: public input and information provided by elected officials, key stakeholders, and residents throughout the planning area; historical reported occurrences; and, other sources of information where available. The data source utilized for individual hazards varies based on the best and most appropriate source of information. The NCDC was utilized for many of the natural hazards, but it should be noted that the NCDC is not an all-inclusive, or exhaustive, source for historical weather data. Often data records for short-term local hazard events are more detailed and readily accessible than data for long-term regional events.

In order to understand the risk associated with each individual jurisdiction, historical data was collected and analyzed then, a hazard ranking analysis was performed by asking planning team members from each jurisdiction to assess and rate hazard risk in their jurisdiction. Each team member was able to provide local input into the risk analysis through the hazard ranking analysis. Participants were encouraged to consider: both provided data and recollection of local knowledge; historic events; probability of future events; specific vulnerable populations; properties that may be at higher levels of risk related to hazards; potential impacts to critical facilities and critical services; and potential economic losses. In making their hazard analysis and risk assessment, the Page County Planning Committee considered the following:

- Probability
- Magnitude/Severity
- Warning Time
- Duration

The following table defines each factor and the rating scale that was used to assess the hazards risk to the community.

Table 4:1 - Hazard Risk Assessment Criteria

Probability: likelihood of the hazard occurring again in the future based on historical occurrences and projected likelihood.		
Score	Description	
1	Unlikely	Less than 10% probability in any given year (up to 1 in 10 chance of occurring). History of events is less than 10% likely or the event is unlikely, but there is a possibility of its occurrence.
2	Occasional	Between 10% and 20% probability in any given year (up to 1 in 5 chance of occurring), history of events is at least than 10% but no more than 20% the event is likely to occur.
3	Likely	Between 21% and 33% probability in any given year (up to 1 in 3 chance of occurring), history of events is at least than 21% but no more than 33% the event is likely to occur.
4	Highly Likely	More than 33% probability in any given year (event has a 1 in 1 chance of occurring), history of events is greater than 33% likely or the event is highly likely to occur.
Magnitude/Severity: severity in terms of injuries and fatalities, personal property, and infrastructure, and the degree with which the hazard affects the jurisdiction		
Score	Description	
1	Negligible	Less than 10% of property severely damaged, shutdown of facilities and services for less than 24 hours, and/or injuries/illnesses treatable with first aid.
2	Limited	10% to 25% of property severely damaged, shutdown of facilities and services for more than a week, and/or injuries/illnesses that do not result in permanent disability
3	Critical	26% to 50% of property severely damaged, shutdown of facilities and services for at least 2 weeks, and/or injury/illnesses that result in permanent disability.
4	Catastrophic	More than 50% of property severely damaged, shutdown of facilities and services for more than 30 days, and/or multiple deaths
Warning Time: rating the potential amount of warning that is available before the hazard occurs		
Score	Description	
1	More than 24 hours warning time	
2	12 to 24 hours warning time	
3	6 to 12 hours warning time	
4	Minimal or no warning time (up to 6 hours warning)	
Duration: measure of the time the hazard will affect the jurisdiction		
Score	Description	

1	Less than 6 hours
2	Less than 1 day
3	Less than 1 week
4	More than 1 week

Each category was given a weighted score similar to the weighted score used in the State of Iowa Hazard Mitigation Plan. The weighting criteria allows for state priorities to be reflected in the final scoring of the hazards and to allow for a higher priority on hazards that have a higher occurrence and potential for adverse impacts. Once each category of a hazard was ranked, the weighted values were added to determine the hazard score. The hazard score, when compared to each of the hazards, gave the ranking for that jurisdiction. Using the weighted values as previously described, the following equation was used to determine the score:

$$(\text{Probability} \times .45) + (\text{Magnitude/Severity} \times .30) + (\text{Warning Time} \times .15) + (\text{Duration} \times .10) = \text{Score}$$

Based on the hazard overall weighted score, the hazards are categorized as follows: High Risk (3.0-4.0), Moderate Risk (2.0-2.9), and Low Risk (1.0-1.9)

These terms relate to the level of planning analysis to be given to the particular hazard in the risk assessment process and are not meant to suggest that a hazard would have only limited impact. In order to focus on the most critical hazards, those assigned a level of high or moderate were given more extensive attention in the remainder of the risk assessment, while those with low planning significance were addressed in more general qualitative ways.

An overview of the hazard ranking scores for the planning area as a whole were determined. The results of this overview are provided below. Additionally, the hazard ranking overview is provided in each of the hazard profile and vulnerability section.

Ranking Reasoning

The above ranking is based on the following information provided by each jurisdiction while looking at the hazards as a whole. Jurisdictions differ from the county ranking are also outlined.

The county saw severe wind and tornadoes as the greatest hazard threat. This is due to the magnitude in which this hazard can cause damage. The county maintains over 2,000 miles of roadway making these incidents also very expensive to cleanup. For similar reasons drought, thunderstorms, and severe winter storms were all a concern for all jurisdictions as moderate ranked hazards. The whole county is equally susceptible to these hazards causing damage to property and crops. Similarly, the county is vastly agricultural and highly susceptible to drought conditions.

River Flooding was ranked differently county-wide. Differing elevations for jurisdictions account for the varying degrees of ranking. Flash Flooding ranking varies as well for the county overall. Some cities within

Page County have flash flooding higher ranked because their elevations are lower than others and stormwater drainage is inadequate.

Extreme Heat and wild fire were low risk hazards for the county. There are very little data and events reported on these two hazards. Dam/Levee Failure ranked low as well and remained less of a concern for the jurisdictions because of the moderate to low risk dams located in the county. Some jurisdictions did not rank this because they are not in close proximity to a levee or dam that would affect them. There are not any high risk dams in the county according to the Iowa Department of Natural Resources.

Presidential Disaster Declaration History

A Presidential Disaster Declaration is an action by the President to make U.S. federal funding available for emergency relief and reconstruction assistance. Once a disaster has occurred, and a state has declared an emergency, the State will evaluate their recovery capabilities and determine if the damage is beyond their recovery capability. If it is deemed that recovery is beyond their capabilities, the governor then sends a request letter to the President requesting relief. After a presidential declaration has been made, FEMA will designate the area eligible for assistance and announce the type of assistance available. The table below summarizes historic presidential disaster declarations involving Page County where either or both individual and public assistance was given.

Table 4:2 - Historical Presidential Disaster Declarations affecting Page County

Declaration Date	Disaster Number	Description
March 23, 2020	DR-4483	Biological (COVID-19)
March 13, 2020	EM-3480	Biological (COVID-19)
March 23, 2019	DR-4421	Flooding
February 25, 2010	DR-1877	Severe Winter Storms and Snowstorm
January 4, 2008	DR-1737	Severe Winter Storm
May 25, 2007	DR-1705	Severe Storms, Flooding, and Tornadoes
May 25, 2004	DR-1518	Severe Storms, Tornadoes, and Flooding
July 2, 1998	DR-1230	Severe Weather, Tornadoes and Flooding
July 9, 1993	DR-996	Flooding and Severe Storms
December 26, 1991	DR-928	Ice Storm
July 17, 1987	DR-795	Storms, Flash Flooding
September 26, 1972	DR-354	Severe Storms, Flooding
April 22, 1965	DR-193	Flooding

Source: FEMA/U.S. Department of Homeland Security

Hazard Profile and Risk Assessment

The Hazard Profile and Risk Assessment provides information that identifies and explains how a hazard can impact the community. The hazard profile defines the characteristics and possible conditions associated with the hazard. Each hazard then includes a ranked assessment from each jurisdiction based on probability, magnitude and severity, warning time and duration to illustrate how each jurisdiction views the risk associated with each hazard.

FEMA Requirement §201.6(c)(2)(ii) (B) suggests that when the appropriate data is available, hazard mitigation plans should also provide an estimate of potential dollar losses for structures in vulnerable areas. This risk assessment methodology includes an overview of assets at risk and provides historic average annual dollar losses for all hazards for which historic event data is available. Additional loss estimates are provided separately for those hazards for which sufficient data is available. These estimates can be found within the relevant hazard profiles.

As a part of the risk assessment, it is critical to consider the effects of climate change and how that can impact future hazards and the increase/decrease in severity and occurrence. While it is difficult to predict exactly what impact climate change may have on the hazard covered in this plan, it is an environmental aspect that must be considered in hazard planning.

Animal/Crop/Plant Disease

Animal/Plant/Crop Disease occurs when a disease is transmitted from animal to animal or plant to plant causing an outbreak amongst a population or area. A disease outbreak can have severe economic and public health implications.

The following table shows how Page County ranked animal/plant/crop disease in their hazard score analysis.

Table 4:3- Animal/Plant/Crop Disease Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Blanchard	1	1	1	4	1.3	Low
Braddyville	1	1	1	4	1.3	Low
Clarinda	1	1	1	4	1.3	Low
Coin	1	1	1	4	1.3	Low
College Springs	1	1	1	4	1.3	Low
Essex	1	1	1	4	1.3	Low

Northboro	1	1	1	4	1.3	Low
Shambaugh	1	1	4	4	1.75	Low
Shenandoah	1	2	1	4	1.6	Low
Yorktown	1	1	4	4	1.75	Low
Page County (unincorporated)	2	1	1	4	1.75	Low

Dam/Levee Failure

Many of Iowa's community settlements were founded along rivers and streams due to their reliance on water resources. Often, these streams or rivers later needed a dam for flood control or a reservoir for a constant water source. Dam/Levee failure is the uncontrolled release of water resulting from a structural failure in a dam, wall, dike, berm, or area of elevated soil that causes flooding. Possible causes of the breach could include flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, terrorism, erosion, piping, saturation, or under seepage.

Dam Profile

Dams are constructed for a variety of uses, including flood control, erosion control, water supply impoundment, hydroelectric power generation, and recreation. A dam is defined as a barrier constructed across a watercourse for the purpose of storage, control, or diversion of water. The Iowa Department of Natural Resources classifies all dams in Iowa with a height of at least 25 feet or a total storage of at least 50 acre-feet of water. The inventory excludes all dams less than six (6) feet high regardless of storage capacity and dams less than fifteen (15) acre feet of storage regardless of weight. The 3 classifications of risk include: High Hazard, Moderate Hazard and Low Hazard. These classifications do not describe the current condition of the dam, rather the risk of destruction and loss of life if it were to fail. Higher risk dams are required to meet higher standards when being constructed or modified. High Hazard class dams are inspected on a 2 year cycle and are required to meet the state of Iowa's highest level of standards. A dam's classification may change due to development downstream that puts more risk if the dam were to fail. Older dams may not have been built to the standards of its new classification. The hazard classifications defined by Iowa Department of Natural Resources are below.

- **High Hazard** – Dams are classified as High Hazard when it is located in an area where dam failure may create a serious threat of loss of human life.
- **Moderate (Significant) Hazard** – A Moderate Hazard Dam is where failure may damage isolated homes or cabins, industrial or commercial buildings, moderately traveled roads, interrupt major utility services, but are without substantial risk of loss of human life. Dams are also classified as Moderate Hazard where the dam and its impoundment are themselves of public importance, such as dams associated with public water supply systems, industrial water supply or public recreation or which are an integral feature of a private development complex.

- Low Hazard – Low Hazard dams are classified as such where damages from a failure would be limited to loss of the dam, livestock, farm outbuildings, agricultural lands and lesser used roads and where loss of human life is considered unlikely.

The majority of dams and levees located in and around Page County are of low risk and outside of urban or developed areas. In the event of a dam or levee failure, this would result in the loss of the dam or levee, agricultural losses and lesser used roads. A small number of dams and levees are located near urban and developed areas. There is one moderate risk dam located along the East Nishnabotna River in the northwest portion of Page County that should be monitored. None of these dams are located within an incorporated area, so all are documented to be in unincorporated areas. Two of these dams, should they fail, could affect the City of Clarinda. However, if either of these dams would overflow, it would be through an area with little development and would not impact the majority of the city. At most it would cause flooded basements or lawns to approximately 20 residential properties. The Iowa Department of Natural Resources tracks all dams in the state of Iowa with a height of at least 25 feet or a total storage of at least 50 acre feet of water. The inventory excludes all dams less than 6 feet high regardless of storage capacity and dams less than 15 acre feet of storage regardless of height.

Currently there are twenty six dams in Page County with a low or moderate hazard rating and none with a high hazard rating. A description of each of these dams can be found in the table below:

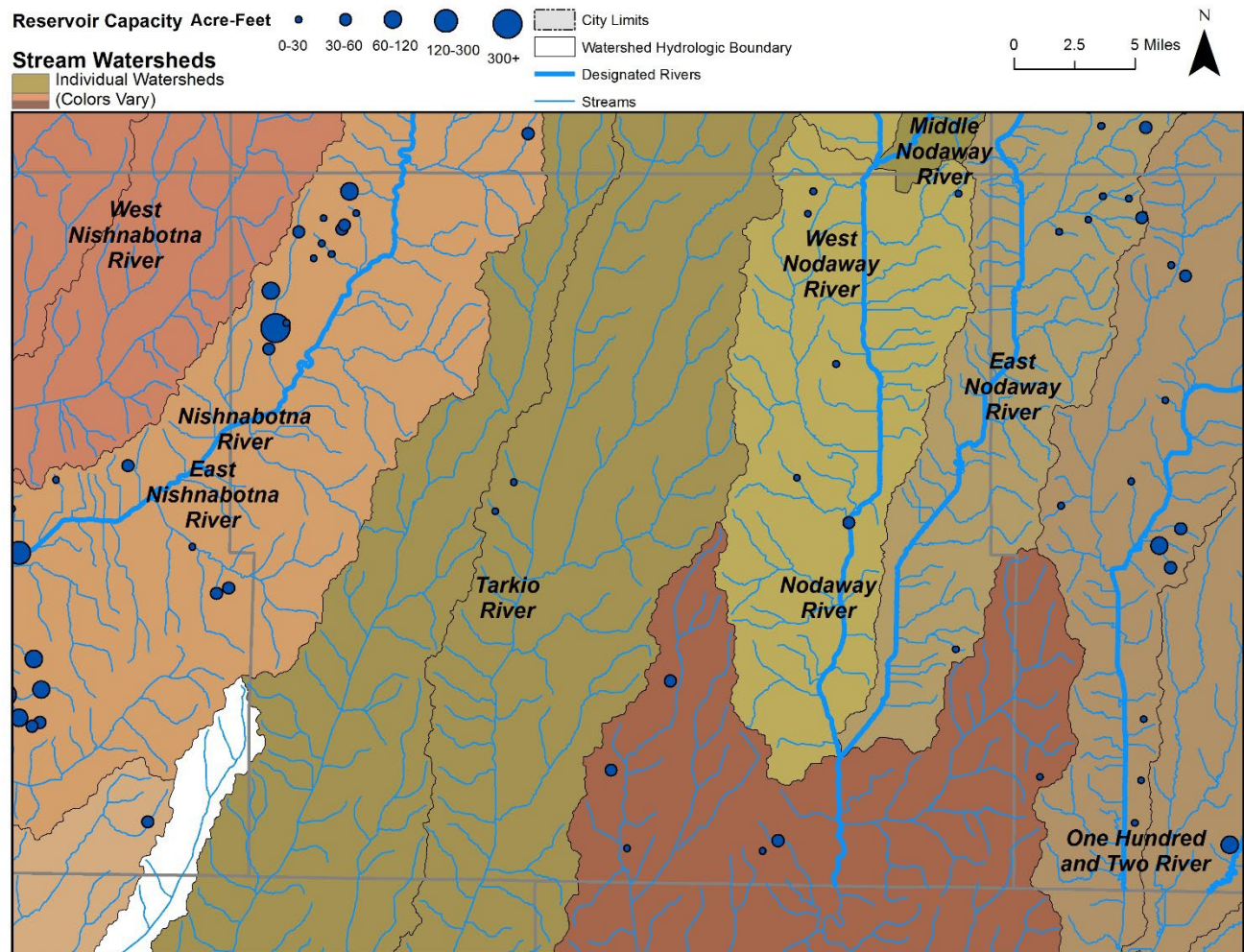
Table 4:4 Page County Dam Inventory

<u>Dam Name</u>	<u>Owner Type</u>	<u>All Purposes</u>	<u>River</u>
PIERCE CREEK NO 1 WATERSHED SITE 16	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR-EAST NISHNABOTNA RIVER
PIERCE CREEK NO 1 WATERSHED SITE 12	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR-EAST NISHNABOTNA RIVER
PIERCE CR. NO. 2 SITE J-6	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR- E. NISHNABOTNA R.
PIERCE CR. NO. 2 SITE J-4	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR- E. NISHNABOTNA R.
PIERCE CR. NO. 2 SITE J-1	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR- E. NISHNABOTNA RIVER
PIERCE CR. NO. 2 SITE H-1	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR- E. NISHNABOTNA R.
PIERCE CR. NO. 2 SITE K-1	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR- E. NISHNABOTNA R.

PIERCE CR. NO. 2 SITE J-2	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR- E. NISHNABOTNA R.
PIERCE CREEK NO 1 WATERSHED SITE 5	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR-EAST NISHNABOTNA RIVER
PIERCE CR. NO. 2 SITE L-2	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR- E. NISHNABOTNA R.
PIERCE CR. NO. 2 SITE J-5	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR- E. NISHNABOTNA R.
PIERCE CREEK NO 1 WATERSHED SITE 10	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR-EAST NISHNABOTNA RIVER
PIONEER PARK POND DAM	Local Government	Recreation	TR-MIDDLE TARKIO RIVER
PIERCE CREEK NO 1 WATERSHED SITE 1	Local Government	Fire Protection, Stock, Or Small Fish Pond	TR-EAST NISHNABOTNA RIVER
CLARINDA MHI DAM	State	Fire Protection, Stock, Or Small Fish Pond	TR-WEST NODAWAY RIVER
WILLIAMS DAM	Private	Fire Protection, Stock, Or Small Fish Pond	TR-WEST NODAWAY RIVER
WILLIAMS DAM	Private	Fire Protection, Stock, Or Small Fish Pond	TR-WEST NODOWAY RIVER
HALLIDAY DAM	Private	Fire Protection, Stock, Or Small Fish Pond	TR-NODAWAY RIVER
VAN FOSSEN DAM	Private	Fire Protection, Stock, Or Small Fish Pond	TR-NODAWAY RIVER
POSTEN DAM	Private	Fire Protection, Stock, Or Small Fish Pond	TR-NODAWAY RIVER
MC CUNN DAM	Private	Fire Protection, Stock, Or Small Fish Pond	TR-NODAWAY RIVER
WARNER DAM	Private	Fire Protection, Stock, Or Small Fish Pond	TR-BUCHANAN CREEK
MILLER DAM	Private	Fire Protection, Stock, Or Small Fish Pond	TR-MIDDLE TARKIO RIVER
CHRISTENSEN DAM	Private	Fire Protection, Stock, Or Small Fish Pond	TR- WEST MILL CREEK

HATFIELD PARTNERSHIP	Private	Fish and Wildlife Pond	TRIB TO MILL CREEK
BITTING / CARLSON DAM	Private	Fire Protection, Stock, Or Small Fish Pond	TR- WEST MILLLL CREEK

Map 4:1 - Page County Dams and Waterways



Source: Iowa Department of Natural Resources

Levee Profile

The failure of a levee can be attributed to the loss of structural integrity of a wall, dike, berms, or elevated soil by erosion, piping, saturation, or under seepage causing water to inundate normally dry areas. Levees constructed of compacted clay with a high plasticity tend to crack during cycles of long dry spells, during heavy rainfalls following the dry spells; water fills the cracks and fissures. In addition to increasing the hydrostatic forces, the water is slowly absorbed by the clay causing an increase in the unit weight of the clay as well as a decrease in its shear strength. This results in a simultaneous increase of the slide (driving) forces and a decrease of the resisting (shear strength) forces.

Another way a levee failure can often occur is when the levee overtops the crest of the levee. This happens when the flood waters simply exceed the lowest crest elevation of the levee. An overtopping can lead to significant erosion of the backside of the levee and can result to a breach and thus a levee failure. Levees constructed of compacted clay with a high plasticity tend to crack during cycles of long dry spells. During heavy rainfalls that

follow the dry spells, water fills the cracks and fissures. In addition to increasing the hydrostatic forces, the water is slowly absorbed by the clay. The effect of the absorbed water is an increase in the unit weight of the clay as well as a decrease in its shear strength. This results in a simultaneous increase of the slide (driving) forces and a decrease of the resisting (shear strength) forces. Furthermore, the cyclic shrink/swell behavior of the cracked clay zone results in a progressive reduction of the shear strength of the clay, perhaps approaching its residual strength. It also results in deepening of the cracked clay zone. The end result may be a sloughing failure following a heavy rainfall.

The following table shows that Page County did not rank levee failure in their hazard score analysis because there are no significant levees documented.

Table 4:5 – Dam/Levee Hazard Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Blanchard	1	1	4	3	1.65	Low
Braddyville	1	1	1	1	1	Low
Clarinda	1	3	4	4	2.35	Moderate
Coin	1	1	4	3	1.65	Low
College Springs	1	1	4	3	1.65	Low
Essex	1	1	1	4	1.3	Low
Northboro	1	1	4	3	1.65	Low
Shambaugh	1	1	4	3	1.65	Low
Shenandoah	1	2	2	4	1.75	Low
Yorktown	1	1	4	3	1.65	Low
Page County (unincorporated)	1	1	4	3	1.65	Low

Drought

Drought is defined as a period of prolonged abnormally low precipitation producing severe dry conditions. Droughts are a normal, reoccurring feature of climate that occurs in all climatic zones, though characteristics vary by region. While droughts are generally associated with extreme heat, droughts can and do occur during cooler months. There are four types of drought conditions relevant to Iowa:

- Meteorological drought, which refers to precipitation deficiency resulting in less percolation and ground water recharge and/or high temperatures with increase evaporation;
- Agricultural drought, which refers to soil water deficiencies;
- Hydrological drought, which refers to declining surface and groundwater supplies;
- Socioeconomic drought, which refers to when physical water shortages begin to affect people directly or indirectly.

The highest occurrences of drought conditions with recorded events in Iowa are associated with agricultural and meteorological drought as a result of either low soil moisture or a decline in recorded precipitation.

Droughts can be spotty or widespread and last from a few weeks to a period of years. Prolonged periods of drought can have a serious impact on a community's water supply and economy when water supplies become low or are depleted. Two conditions that go hand and hand that are the cause of communities running low on their water supplies are; a) when water storage is not planned adequately to accommodate drought conditions, or b) when drought conditions continue long enough to prevent the replenishing of water supplies. In either or both cases, communities may use or be forced to use restrictions on water usage which can cause strain to the health of those living in the community and the community's economy.

The Palmer Drought Severity Index (PDSI) and Crop Moisture Index (CMI) are meteorological drought indices of relative dryness or wetness. PDSI measures the prolonged and abnormal moisture deficiencies while the CMI gives the short-term or current status of a drought or moisture surplus. Both indices indicate general conditions and not local variations. The table illustrates the different classifications of drought measured using the Palmer Drought Index and the possible impacts in the corresponding drought conditions.

Figure 3 - Drought Severity Classifications

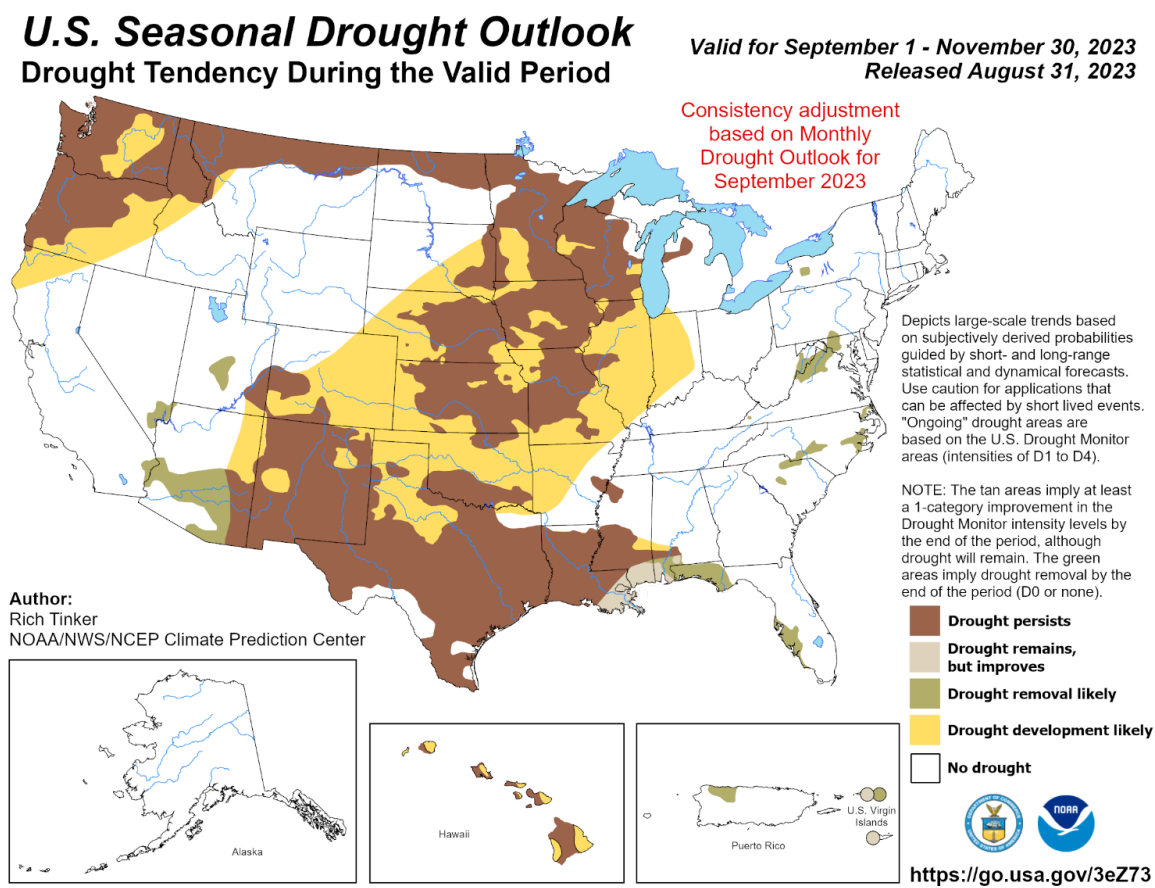
Category	Description	Ranges					
		Possible Impacts	Palmer Drought Index	CPC Moisture Model (Percentiles)	Soil USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Short and Long-term Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30	21-30	-0.5 to -0.7	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested	-2.0 to -2.9	11-20	11-20	-0.8 to -1.2	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10	6-10	-1.3 to -1.5	6-10

D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5	3-5	-1.6 to -1.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2	0-2	-2.0 or less	0-2

Source: NOAA

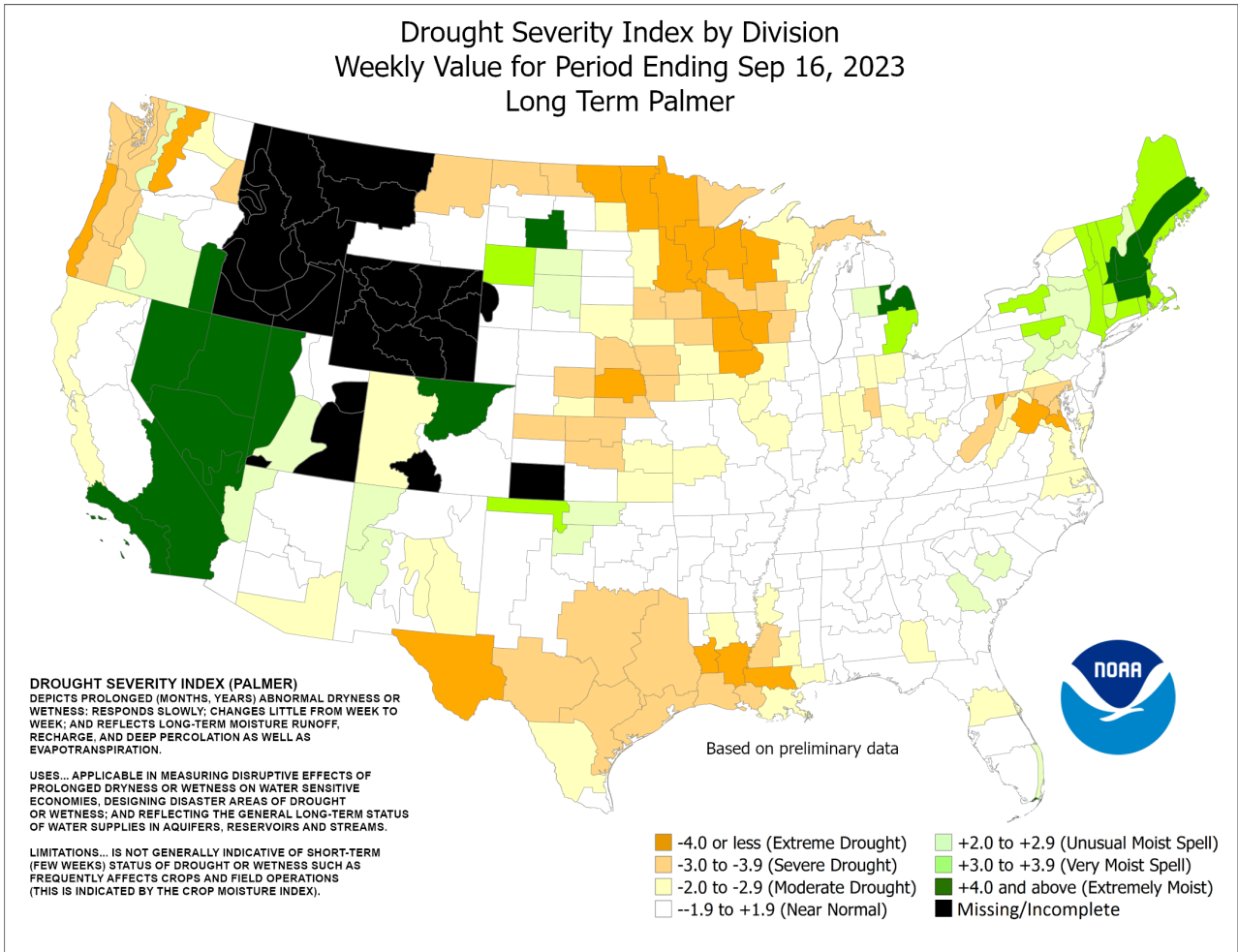
Typically, the Midwest, including Iowa, sees an abundant amount of rainfall, although droughts can occur in the region. The large presence of agricultural activity in the county leaves it significantly vulnerable in the event of a drought. The agricultural activity is highly dependent on precipitation to provide water to the crops and maintain water supplies for livestock. Agricultural output may decline if agricultural production is damaged or destroyed by the loss of crops or livestock from a drought. Regional droughts, if both severe and large enough, can even cause food shortages. A severe drought would likely affect, not only Page County, but most of Iowa if not the Midwest as a whole. The following map displays the U.S. seasonal drought outlook for October 31-July 16, 2015 followed by the Palmer drought index percentiles based upon historical data.

Map 4:2 - US Seasonal Drought Outlook for September 1, 2023-November 30, 2023



Source: NOAA Climate Prediction Center

Map 4:3 – Palmer Drought Index Percentiles by Division (Weekly Value for Period Ending September 16, 2023 – Records Began in 1895)



Source: NOAA

Drought is considered a county-wide hazard meaning that jurisdictions helped to establish a county-wise risk score for it that all communities used.

Table 4:6 - Drought Hazard Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Page County	4	4	1	4	3.55	High

Mitigation Strategy

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of drought. Some of these strategies are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document, *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*. Additional information regarding drought mitigation and drought planning can be found in the National Drought Mitigation Center's *Drought-Ready Communities: A Guide to Community Drought Preparedness*. Once the full extent of damages from the Drought of 2012 is known, this information should be incorporated into the update to this plan in 5 years.

- Assess Drought Vulnerability (identify factors that affect drought severity for local jurisdictions)
- Establish monitoring procedures for municipal water supply and distribution systems
- Establish municipal water conservation programs
- Establish agricultural policies (agricultural irrigation standards, grazing policies, etc.)
- Educate farmers on soil and water conservation practices that foster soil health and improve soil quality to help increase resiliency and mitigate the impacts of droughts.
- Participate in the Tree City USA program
- Encourage agricultural businesses to purchase crop insurance as appropriate to cover potential losses to drought
- Drought education programs (residential and agricultural)
- Establish a Drought Monitoring Board and drought reporting procedures
- Develop drought specific plans (this may include water conservation plans, drought preparedness plans, and wellhead protection plans)
- Enhanced residential landscape standards (xeriscaping, irrigation systems requirements, etc.)
- Enhanced building codes to require low-flow fixtures in new construction
- Incentives to retrofit structures with low-flow fixtures
- Incorporate permeable surfaces into municipal designs
- Investigate alternative water supply options

Earthquake

An earthquake is a geological event in which the ground shakes. Earthquakes are often a result of tectonic plate movement, though in some instances can also be man-made. USGS rates the area as located in low risk zones for an earthquake. There have been very few earthquakes events in the State of Iowa with only 13 recorded events since 1897. The nearest recorded earthquake events, 3 total since 1897, have all been located in Fremont county with the largest measuring a level IV on the Mercalli scale which very rarely causes damage.

Earthquakes are considered a county-wide hazard meaning that jurisdictions helped to establish a county-wide risk score for it that all communities used.

Table 4:7- Earthquake Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Page County	1	3	4	4	2.35	Low

Expansive Soils

Expansive soils are soils and soft rock that tend to swell or shrink excessively due to changes in moisture content. Very little information on expansive soils was readily available for Cass County. This combined with the fact that no recent incidents of expansive soils have been reported in the County led to the determination that the risk of expansive soils in Cass County is significantly low.

The following table shows how the county ranked expansive soils in their hazard score analysis.

Table 4:8- Expansive Soils Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Total	Risk
Blanchard	1	1	1	4	1.3	Low
Braddyville	1	1	1	1	1	Low
Clarinda	1	1	2	4	1.45	Low
Coin	1	1	1	4	1.3	Low
College Springs	1	1	1	4	1.3	Low
Essex	1	1	1	4	1.3	Low
Northboro	1	1	1	4	1.3	Low
Shambaugh	1	1	4	1	1.45	Low
Shenandoah	1	1	1	4	1.3	Low
Yorktown	1	1	4	1	1.45	Low
Page County (unincorporated)	2	1	1	4	1.75	Low

Extreme Heat

Conditions for extreme heat are defined by weather that is substantially hotter and/or more humid than average for a location at that time of year. While the high temperatures in themselves can cause extreme heat conditions, coupled with high humidity, conditions can impose even greater stress on humans and animals and be even more deadly. The heat index is a number in degrees Fahrenheit that tells how hot it really feels when relative humidity is factored into actual air temperature. Exposure to full sunshine can also increase the heat index by at least 15 degrees. The National Weather Service can issue a Heat Advisory or Excessive Heat Warning.

Heat Advisory - A heat index of 100°F or higher is expected for a period of 3 hours or more. A heat advisory shall be continued through the overnight hours, following a day with excessive heat, if the heat index is not expect to fall below "around 75°F". A heat advisory can be issued for a heat index less than 100°F when the cumulative effect of successive days of near advisory heat leads to potentially life threatening conditions.

Excessive Heat Warning - A heat index of 105°F or higher is expected for a period of 3 hours or more. An excessive heat warning shall be continued through the overnight hours, following a day with excessive heat, if the heat index is not expected to fall below "around 75°F". An excessive heat warning can be issued for a heat index less than 105°F when the cumulative effect of successive days of near warning heat leads to life threatening conditions.

Figure 4 - Heat Index

		Temperature (°F)															
Relative Humidity (%)		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
	55	81	84	86	89	93	97	101	106	112	117	124	130	137			
	60	82	84	88	91	95	100	105	110	116	123	129	137				
	65	82	85	89	93	98	103	108	114	121	128	136					
	70	83	86	90	95	100	105	112	119	126	134						
	75	84	88	92	97	103	109	116	124	132							
	80	84	89	94	100	106	113	121	129								
	85	85	90	96	102	110	117	126	135								
	90	86	91	98	105	113	122	131									

95	86	93	100	108	117	127											
100	87	95	103	112	121	132											

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity



Source: NOAA – National Weather Service

Extreme heat can impose stress on humans and animals. Health risks arise when a person is over exposed to heat. Heatstroke, sunstroke, cramps, exhaustion, and fatigue are possible with prolonged exposure and/or physical activity due to the body’s inability to dissipate the heat. Urban areas are particularly at risk because of air stagnation and large quantities of heat absorbing materials such as streets and buildings. Extreme heat can also result in distortion and failure of structures and surfaces such as roadways and railroad tracks. Extreme heat can also pose a threat to livestock and crops. High temperatures have been shown to reduce summer milk production, impair immunological and digestive function of animals, and increase mortality of livestock. Soils may become dry due to lack of moisture and affect crop growth. The dry weather can also increase the risk of fire due to the dryness of vegetation and flammable materials.

According to the National Oceanic and Atmospheric Administration, heat is one of the leading weather-related causes of deaths in the United States, resulting in hundreds of thousands of fatalities each year. In 1980, a heat wave caused more than 1,250 people to die and in 1995, more than 700 deaths in the Chicago area were attributed to heat. North American summers are hot with one or more parts of the United States seeing heat waves in the summer months. East of the Rocky Mountains, high temperatures tend to combine with high humidity causing extreme heat conditions. The months of July and August are when most extreme heat events occur. These months also have lower amount of precipitation, thus increasing the possibility for a drought event. Periods of high temperatures can make people vulnerable to heatstroke, heat cramps, heat exhaustion, and pose a threat to human life. The populations that are at most risk are young children, elderly, and those working and living in non-air-conditioned environments. Building stock, such as critical facilities, are not at risk; however periods of extreme heat place a significant demand on utilities, such as water and electricity, which can cause a failure in the system. Power loss could occur with the high demand on energy, making an extreme heat event even more dangerous.

The agricultural economy, especially livestock, is highly vulnerable and at great risk during periods of extreme heat. Heat stress in feedlot cattle can cause reduced performance, and in the most severe cases, death of the animals, resulting in millions of dollars in losses to the cattle industry.

Population groups with higher levels of vulnerability to extreme heat include the elderly (65 years and older), residents of nursing homes or care facilities, poor urban elderly, children, those isolated from social interactions, and low-income groups. Elderly people have a lower tolerance for extreme temperatures and can feel the effects more rapidly. Young children under the age of 5 are highly susceptible to the effects of extreme heat. They have a smaller body mass to surface ratio making them more vulnerable to heat-related morbidity and mortality. Children also become dehydrated more quickly than adults, making for greater concern. Low-income people and families may lack resources that mitigate the impacts of extreme heat such as air conditioning.

Extreme heat is considered a county-wide hazard meaning that jurisdictions helped to establish a county-wide risk score for it that all communities used.

Table 4:9 - Extreme Heat Hazard Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Page County	4	2	1	4	2.95	Moderate

Mitigation Strategies

There are many strategies that can be undertaken to protect both existing and future assets. Communities will always have some level of vulnerability related to extreme heat events. Any future development and future residents in the county will be vulnerable to the affects and losses sustained from extreme heat, especially the agricultural economy. The total losses that could occur in the future would increase as the population of the town increases. Education of the population is the best way to mitigate for extreme heat. There are few large scale “hard” projects that can be undertaken, but explaining policies and best practices can go a long way in dealing with this hazard. It is especially advisable to educate the most vulnerable populations such as the elderly and children.

Communities can incorporate some strategies to reduce the impacts of extreme heat including: cool roofing materials, planting trees and vegetation, incorporating green roofs into urban design, and using cool pavements. Cool roof products are made of highly reflective and emissive materials that can remain approximately 50 - 60°F cooler than traditional roofing materials during peak summer heat. Trees, shrubs, grass, and ground covers help cool urban environments by providing shade as well as increasing evapotranspiration resulting in cooler temperatures. A green roof is a vegetative layer grown on a rooftop that helps to remove heat from the air through evapotranspiration. Cool pavements are designed to reduce solar energy absorption as well as reduce thermal emittance.

The following bullet points identify some general mitigation strategies that can be used to reduce a community’s vulnerability to the threat of extreme heat. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document, Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards.

- Reduce Urban Heat Island Effect (i.e., using cool roofing products that reflect sunlight and heat away from buildings)
- Increase Awareness of Extreme Heat Risk and Safety (i.e., educating citizens regarding the dangers of extreme heat and the steps they can take to protect themselves)
- Assist Vulnerable Populations (i.e., creating a database to track those individuals at high risk such as the elderly)
- Identify Existing Community Shelters/Centers

Flash Flood

A flash flood is an event that occurs with little or no warning where water levels rise at an extremely fast rate. Flash flooding results from intense rainfall over a brief period, sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces. Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area. Due to the unique characteristics of flash flooding making it an extremely dangerous form of flooding, it has been separated from river flooding which often times can allow for more preparation before its devastating effects.

Flash flooding is an extremely dangerous form of flooding which can reach full peak in only a few minutes and allows little or no time to prepare for such events. Information on soil saturation and rainfall predictions that can help predict regular flooding events are often times not enough to predict flash flood events. Flash flood waters move at very fast speeds and can move boulders, tear out trees, quickly erode channels or even reroute them, destroy buildings, and wipe out bridges. Flash flooding often results in higher loss of life than slower developing river and stream flooding.

Floods are the most common and widespread of all-natural disasters except fire. In Iowa, as much as 21 inches of rain has fallen in a 24 hour period.

The effects of flash flooding can be a result of urban development and development of and around streams and rivers. Land that is converted from fields or woodlands to roads and parking lots loses its ability to absorb rainfall. Urbanization increases runoff by two (2) to six (6) times over what would normally occur on natural terrain. Portions of Iowa are developed with significant amounts of impervious surfaces. As more development occurs in the watersheds the amount of runoff produced also increases. Stream and river channelization can also compound the effects of river flooding by allowing water to run more quickly. This again prevents absorption into the ground can make rivers swell more rapidly downstream. Lastly the destruction of natural reservoirs through the development can result in harsher flooding. Natural reservoirs such as lakes, marshes and wetlands hold water in periods of large volumes of precipitation and allow that water to be absorbed rather than running into streams and rivers where it can cause higher levels of flooding.

To reduce runoff (or slow the movement of water), measures need to be taken to protect natural ecosystems and to develop urban systems that can handle and divert water safely so water does not become a problem further downstream. If measures are not taken to reduce the amount of runoff, flash floods will continue to occur and may become more frequent. In certain areas, aging storm sewer systems were not designed to carry the capacity currently needed to handle the increased storm runoff. This combined with rainfall trends that, according to the State Hazard Mitigation Plan, seem to be increasing, will contribute to the likelihood and unpredictable nature of flash flooding. Communities can help reduce flooding by implementing Low Impact Development techniques (LID). LID techniques focus on maintaining predevelopment hydrologic conditions by managing runoff at the source using uniformly distributed stormwater management facilities. Instead of conveying and treating stormwater in large facilities located at the bottom of drainage areas, LID addresses stormwater through small, cost-effective landscape features located at the lot level. Examples of LID techniques include limiting impervious surfaces and avoiding sensitive areas.

The following table shows how each community ranked flash flood in their hazard score analysis.

Table 4:10 - Flash Flood Hazard Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Total	Risk
Blanchard	1	2	4	3	1.95	Low
Braddyville	3	2	4	3	2.85	Moderate
Clarinda	3	2	4	3	2.85	Moderate
Coin	1	2	4	3	1.95	Low
College Springs	2	2	4	3	2.4	Moderate
Essex	1	1	2	4	1.45	Low
Northboro	1	1	4	3	1.65	Low
Shambaugh	1	1	4	3	1.65	Low
Shenandoah	2	2	4	3	2.4	Moderate
Yorktown	1	1	4	3	1.65	Low
Page County (unincorporated)	2	2	4	3	2.4	Moderate

Grass or Wild Land Fire

A grass or wild-land fire is an uncontrolled fire that threatens life and property in a rural or a wooded area. Grass and wild-land fires are more likely to occur during periods of high temperature, drought or when the vegetation is drier and can be intensified by high winds. Grass or wild land fires differ from other fires in that they are larger and extensive in size, can spread quickly from its original sources, can jump gaps such as roads and rivers and can change directions unexpectedly.

According to FEMA, periods of drought and dry conditions throughout the year greatly increase the potential for wildland fires and contribute to extreme wildfires. During a severe drought, large wildfires are common with windy days and steep slopes, which can cause wildfires to spread rapidly and become out of control in a very short time period. Wildfires are characterized by their physical properties in terms of topography, weather, and fuels. Wildfires are dependent on factors such as fuel type and moisture content in the fuel, humidity, wind speed, ambient temperature, topography, geographic location and the cause of ignition. Grass or wild-land fires can be man-made or naturally caused. Common causes of grass or wild land fires include, though not limited

to, lightning, arson, or unattended or uncontrollable burnings. Grass or wild land fires are more commonly caused by human related activities than natural sources.

Grass or wild land fires have the potential to damage or destroy buildings and crops, damage recreational areas, loss of wildlife habitat and air pollution. In addition, secondary effects of wildfires include higher risk of erosion, induction of invasive species and changes in water quality. They are also beneficial to many natural ecosystems and are vital to many prairies in Iowa. Vegetation that has been burned away allow for new diverse vegetation to grow in its place, provide nutrients to the soil and are vital to some species of plants for reproduction. Fire suppression can actually lead to an increased risk of wildfires due to the buildup of vegetation which increases the amount of fuel for a fire. Controlled burns are often used to reduce this risk.

Wildfires can cause extensive damage, both to property and human life. The damages caused by wildfires extend past the loss of building stock, recreation areas, timber, forage, wildlife habitat, and scenic views. In addition, the secondary effects of wildfires, including erosion, landslides, introduction of invasive species, and changes in water quality, all increase due to the exposure of bare ground and loss of vegetative cover following a wildfire, are often more disastrous than the fire itself.

Wildfire poses a threat to a range of demographic groups. Wildfire and urban wildfire could result in major evacuations of residents in impacted and threatened areas. Groups and individuals lacking reliable transportation could be trapped in dangerous locations. Lack of transportation is common among the elderly, low-income individuals, and families especially in urban areas. Homes and residents located in the Wildland/Urban Interface are also very vulnerable to wildfire and urban fires. The shift of homes and businesses into or near Wildland areas has resulted in an increase in structural fire losses related to wildfires.

The following table shows how each community ranked grass or wild land fire in their hazard score analysis.

Table 4:11 - Grass or Wild Land Fire Hazard Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Blanchard	1	2	4	3	1.95	Low
Braddyville	1	1	4	4	1.75	Low
Clarinda	2	2	4	3	2.4	Moderate
Coin	1	2	4	3	1.95	Low
College Springs	2	2	4	3	2.4	Moderate
Essex	2	1	4	3	2.1	Moderate
Northboro	1	2	4	3	1.95	Low
Shambaugh	1	1	4	3	1.65	Low

Shenandoah	3	2	4	1	2.65	Moderate
Yorktown	1	1	4	3	1.65	Low
Page County (unincorporated)	2	2	4	3	2.4	Moderate

Mitigation Strategy

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of wildfire. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

- Map and Assess Vulnerability to Wildfire
- Incorporate Wildfire Mitigation in Comprehensive Planning (i.e., identify areas of risk per assessment of vulnerability)
- Reduce Risk Through Land Use Planning (i.e., implement landscaping ordinances)
- Develop a Wildland-Urban interface Code
- Require or Encourage Fire-Resistant Construction (i.e., encourage the use of non-combustible materials)
- Retrofit At-Risk Structures with Ignition-Resistant Materials (i.e., installing wall components that conform to ignition-resistant construction standards)
- Create Defensible Space Around Structures and Infrastructure
- Conduct Maintenance to Reduce Risk (i.e., perform arson prevention cleanup activities)
- Implement a Fuels Management Program (i.e., Nebraska Forest Service – Forest Fuels Reduction Program)
- Participate in Firewise Program
- Increase Wildfire Risk Awareness (i.e., informing the public about proper evacuation procedures)
- Educate Property Owners about Wildfire Mitigation Techniques
- Wildland Fire Fighting Training for Fire Departments

Hazardous Materials Incident

Hazardous materials can come in various different forms and are found in almost every jurisdiction in the county. These are materials that could pose a threat to the environment or surrounding people if a leak occurred. Some materials are flammable and could cause an explosion if mistreated leading to possible injuries or death for those nearby.

Hazardous materials can also be found in pipelines running underground. There are multiple pipeline running through the county carrying different commodities including natural gas, butane and unleaded gasoline. Each of these could pose a threat to the health of all living creatures and the environment if a leak would occur.

The following table shows how the county ranked hazardous materials incident in their hazard score analysis.

Table 4:12- Hazardous Materials Incident Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Blanchard	1	3	4	3	2.25	Moderate
Braddyville	1	3	4	4	2.35	Moderate
Clarinda	4	2	4	3	3.3	High
Coin	1	3	4	3	2.25	Moderate
College Springs	3	3	4	3	3.15	High
Essex	3	2	4	3	2.85	Moderate
Northboro	1	2	4	3	1.95	Low
Shambaugh	1	1	4	3	1.65	Low
Shenandoah	4	2	4	2	3.2	High
Yorktown	1	1	4	3	1.65	Low
Page County (unincorporated)	3	3	4	3	3.15	High

Human Disease

Advances in science, sanitation and hygiene have greatly reduced the spread of diseases within the United States. Diseases that were once rampant have been nearly eliminated due to these advances leading to longer lifespans and healthier citizens. Although great progress has been made, the treat is not completely eradicated, and a disease outbreak could spread through an entire town if not treated properly.

The Iowa Department of Public Health Center for Acute Disease Epidemiology (CADE) keeps records of disease outbreaks within Iowa. This information is used to better inform the public and health care officials on disease prevention and education opportunities. Annually, the CADE prepares a report of notifiable and other diseases showing how many reports of specific diseases there were per county. The following table shows a summary of the number of reported diseases in Page County for a period of 10 years.

The Coronavirus Pandemic was first identified in December 2019 in Wuhan, China. The outbreak was officially declared a Public Health Emergency of International Concern by January 2020 and then a pandemic in March 2020. As of October 2023, nationally, more than 103 million cases were confirmed, and more than 1.1 million deaths were attributed to COVID-19. Specifically, in Iowa, there were 892,628 positive cases and 10,538 deaths.

Page County, though more rural, also faced Coronavirus surges throughout 2020 and 2021. As of July, 2023, the County had a rolling total of 3,796 positive cases and 54 deaths.

Human disease is considered a county-wide hazard meaning that jurisdictions helped to establish a county-wide risk score for it that all communities used.

Table 4:13 – Human Disease County Scores

	Probability	Magnitude/ Severity	Warning Time	Duration	Total	Risk
Page County	4	4	1	4	3.55	High

Infrastructure Failure

Infrastructure failure is classified as the complete or partial failure of any public or private infrastructure that could threaten life or property. Common types of infrastructure failure seen in the two Counties could include water main breaks, sewer system backups, bridge failure, power outages or road failures to name a few.

Due to the nature of these Counties, it is not uncommon for large portions of infrastructure, such as roads, bridges and water/sewer systems, to be decades old and already in need of repairs leading to expedited failure. Failure of infrastructure within the county could be caused by other hazards such as flooding, tornadoes, windstorms, transportation incidents, winter storms or extreme heat. Iowa has dramatic weather changes throughout the year which can add increased wear to infrastructure.

The following table shows how the county ranked Infrastructure failure in their hazard score analysis.

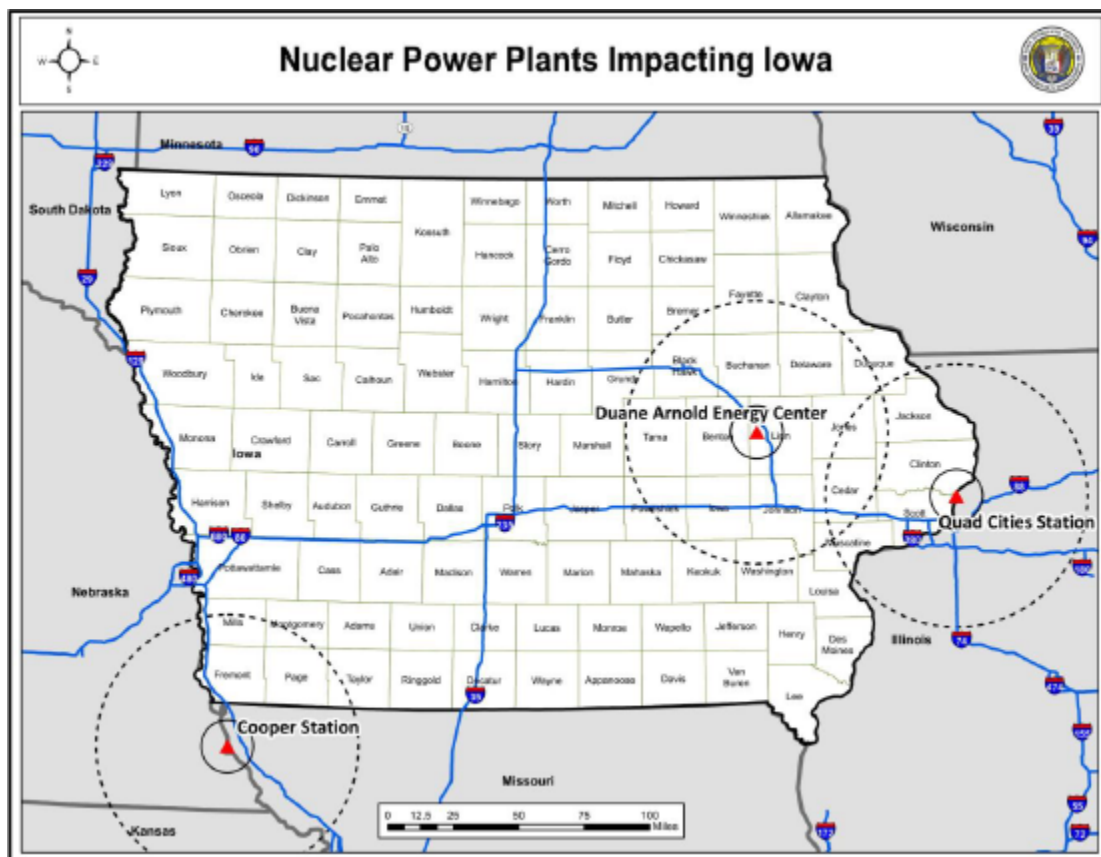
4:14- Infrastructure Failure Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Blanchard	1	2	2	3	1.65	Low
Braddyville	1	4	1	4	2.2	Moderate
Clarinda	2	3	4	3	2.7	Moderate
Coin	1	2	2	3	1.65	Low
College Springs	1	2	2	3	1.65	Low

Essex	1	2	4	4	2.05	Moderate
Northboro	1	3	4	3	2.25	Moderate
Shambaugh	1	1	4	4	1.75	Low
Shenandoah	2	3	4	4	2.8	Moderate
Yorktown	1	1	4	4	1.75	Low
Page County (unincorporated)	1	2	2	3	1.65	Low

Radiological

There are currently no active nuclear power plants located within Page County. Cooper Nuclear Station is located in Brownsville, NE and is within 50 miles to the majority of Page County. This is the largest single-unit electrical generator in the State of Nebraska and is scheduled to operate through January 2034. The Fort Calhoun Nuclear Generating Station is located near Blair Nebraska. This nuclear power plant was shut down in 2016 due to concerns with the structure of the building. Although this site has been closed, it takes years for it to be decommissioned and contaminated materials to be removed. This site is expected to be fully decommissioned in 2058.



Source: Iowa Homeland Security and Emergency Management

There are strict guidelines that must be followed when transporting radioactive materials through the State of Iowa. This includes a strict permitting/reporting system and designated routes. The routes are as follows:

- Interstate 880 from Nebraska to Interstate 80 [Use I-880 and I-80 in lieu of I-29 in the Council Bluffs area when heading north/south per 49 CFR 397.103(b). Use I-880 in lieu of I-80 in the Council Bluffs area when heading east/west per IA-NE coordination.]
- Interstate 29 from Missouri to Interstate 80 [I-80 and I-880 are used in lieu of I-29 in the Council Bluffs area when heading North/South per 49 CFR 397.103(b)]
- Interstate 80 from Interstate 29 to Illinois [Use I-280 or I-80 in the Quad cities. Use I-80 in lieu of I-235 in the Des Moines area. Use I-880 in lieu of I-80 in the Council Bluffs area per IA-NE coordination when heading east/west. Use I-80 and I-880 in the Council Bluffs area in lieu of I-29 when heading north/south]
- Interstate 880 from Interstate 80 to Interstate 29 [Used in lieu of I-29 in the Council Bluffs area per 49 CFR 397.103(b)]
- Interstate 280 from Interstate 80 to Illinois [Use I-280 or I-80 in Quad cities area.]
- Interstate 29 from Nebraska to Interstate 880 [I-80 and I-880 are used in lieu of I-29 in the Council Bluffs area when heading North/South per 49 CFR 397.103(b)]

The following table shows how the county ranked radiological in their hazard score analysis.

Table 4:15- Radiological Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Blanchard	1	4	4	4	2.65	Moderate
Braddyville	1	4	4	4	2.65	Moderate
Clarinda	1	1	4	3	1.65	Low
Coin	1	4	4	4	2.65	Moderate
College Springs	1	4	4	4	2.65	Moderate
Essex	1	1	4	4	1.75	Low
Northboro	1	4	4	4	2.65	Moderate
Shambaugh	1	1	4	2	1.55	Low
Shenandoah	1	1	2	4	1.45	Low
Yorktown	1	1	4	2	1.55	Low
Page County (unincorporated)	1	4	4	4	2.65	Moderate

River Flooding

River flooding is the rise of river waters that submerges land that is typically dry. Flood events can occur at a local level, affecting only a few people or businesses, or throughout a whole region. Flooding is most commonly caused by excessive rainfall or snowmelt but can also be caused by the obstruction of drainage routes. When drainage routes are obstructed, such as in the case of landslides, ice or debris, water is prevented from flowing downstream which can cause upstream flooding and if the water is released, flooding, or in the case of a sudden release, flash flooding can occur downstream. Floodwaters can be extremely dangerous as the force of moving water of six inches can knock people off their feet and two feet of water can move a car. Different from flash flood, river flooding generally develops over a period of days, though it can still rise quickly enough to cause damage or deaths. Also, unlike flash flooding, a river flood event may occur for a longer period of time, whereas flash floods are shorter in duration to time. Flooding is a naturally occurring event and is expected annually. It is usually restricted to specific streams, rivers or watershed areas and thus not a county-wide issue.

Similar to flash flooding and as mentioned before, the causes of river flooding can be caused or intensified by urban development, channelization of streams and the destruction of natural reservoirs. Urban flooding can also be caused or intensified by aging storm sewer systems not designed to carry the current runoff capacity. To reduce the negative effects of river flooding, natural river and stream ecosystems need to be preserved and development needs to protect against damage from flooding and prevent runoff from affecting other developed areas.

Flood events are the most damaging and costly hazards in the United States, and account for 90 percent of all presidential disaster declarations. Flooding can occur on a local level, sometimes affecting only a few streets, but can also extend throughout an entire district, affecting whole drainage basins and impacting property in multiple states. The principal type of flood most common to Nebraska, due to geographic location and topography, is riverine floods.

Analyzing Flood Risk

Part of Page County is covered by the West Nishnabotna Watershed and the East Nishnabotna Watershed touches a very small portion of the county. The Flood Risk Report: *West Nishnabotna Watershed, Iowa, USA* was published in January of 2015. The Department of Homeland Security (DHS), Federal Emergency Management Agency's (FEMA) Risk Mapping, Assessment, and Planning (Risk MAP) program provides states, tribes, and local communities with flood risk information and tools that they can use to increase their resilience to flooding and better protect their citizens. By pairing accurate floodplain maps with risk assessment tools and planning and outreach support, Risk MAP has transformed traditional flood mapping efforts into an integrated process of identifying, assessing, communicating, planning for, and mitigating flood-related risks.

Because flood risk often extends beyond community limits, the FRR provides flood risk data for the entire Flood Risk Project as well as for each individual community. This also emphasizes that flood risk reduction activities may impact areas beyond jurisdictional boundaries. Information from Page County was pulled from the report and summarized below. This information was used to inform the hazard ranking analysis along with reports of flooding.

The following table shows how each community ranked river flooding in their hazard score analysis.

Table 4:16 - River Flooding Hazard Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Blanchard	1	1	2	4	1.45	Low
Braddyville	1	2	2	3	1.65	Low
Clarinda	3	1	2	4	2.35	Moderate
Coin	1	1	2	4	1.45	Low
College Springs	4	1	1	4	3.55	High
Essex	1	2	2	4	1.75	Low
Northboro	1	1	2	4	1.45	Low
Shambaugh	1	1	4	1	1.45	Low
Shenandoah	3	2	1	4	2.5	Moderate
Yorktown	1	1	4	1	1.45	Low
Page County (unincorporated)	4	1	1	4	3.55	High

Mitigation Strategies

There are many strategies that can be undertaken to protect both existing and future assets. Land-use regulations should be used to limit development in floodplains and other flood prone areas as well as protecting natural flood mitigation features. Buyout programs can be used to eliminate properties located in floodplains, especially properties that have experienced repetitive losses. Communities may also consider incorporating “Green Infrastructure” to address flooding concerns, examples of this would include using permeable surfaces for parking areas, using rainwater retention swales, developing rain gardens, developing green roofs, and establishing greenways. Building codes can be enhanced to require tie-down straps for propane tanks while existing structures can be retrofitted to withstand potential flood events elevating structures and utilities.

Communities can also help mitigate flood damage by limiting development in the floodplain. The risk of flooding to future development in Page County should be minimized by the floodplain management programs in the region. Many Page County communities have chosen to participate in the National Flood Insurance Program (NFIP). Communities across the United States participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities. Flood risk can be further reduced by strengthening floodplain ordinances beyond minimum NFIP requirements. Other

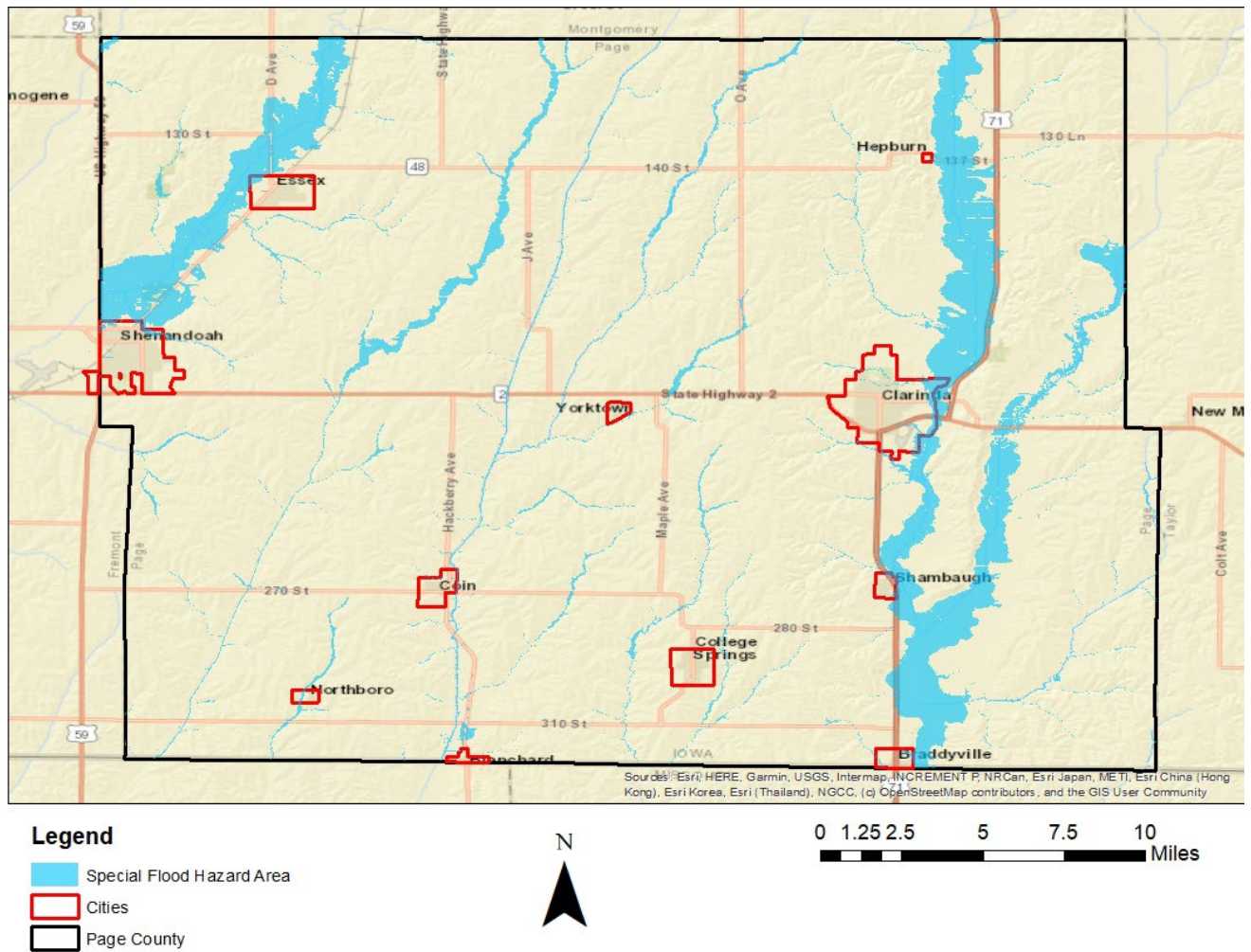
mitigation actions include elevation of structures in the hazard path, acquisition of structures in the hazard path, raising, grading, or resurfacing roads, reinforcing culverts to counteract washouts, and adding lift stations.

The National Flood Insurance Program (NFIP) Repetitive Loss Properties (REP) report identifies properties vulnerable to multiple flood losses. There are no REP listed in Page County.

The following map shows the areas of potential flooding using mapped FEMA flood zones:

- Zone A – Areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- Zone AE and A1-30 – Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. Base Flood Elevations (BFEs) are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- 0.2 PCT ANNUAL CHANCE – Areas subject to 0.2-percent-annual-chance flood event.
- X Area of Special Consideration – Areas subject to special circumstances in the event of a flood.

Map 4:4 - Page County Flood Zone Map



Source: Iowa Department of Natural Resources/FEMA

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of flooding. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

- Limit or restrict development in flood-prone areas
- Preserve natural open spaces in floodplains
- Incorporate permeable surfaces and other “green infrastructure” components into municipal designs; Establish a “green infrastructure” program
- Enhanced building codes (i.e. require tie-downs for propane tanks and other gas and chemical storage containers; require water detention swales and retention ponds for new construction)
- Revise and update floodplain maps
- Manage the Floodplain Beyond Minimum Requirements (i.e. adopting a “no-rise” in base elevation clause for the flood damage prevention ordinance)
- Participate in the National Flood Insurance Program (NFIP)

- Encourage property owners in areas protected by dams and levees to purchase flood insurance
- Participate in the NFIP's Community Rating System
- Remove existing structures from flood-prone areas
- Elevate or retrofit structures and utilities
- Incorporate ice jam prevention techniques into mitigation strategies and projects
- Develop incentives for structural floodproofing
- Consider erosion control and bank stabilization programs for critical facilities
- Retain natural vegetative beds in stormwater channels
- Incorporate flood mitigation programs into comprehensive plans
- Construct flood control measures
- Evaluate and update municipal storm water systems
- Develop flood response plans for the community (incorporating information about pet and agricultural animal considerations)
- Establish education programs to educate the public about the risks of flooding and ways to protect their families and property

Severe Winter Storm

Severe winter weather conditions occur during the coldest parts of the year and include blizzard conditions, heavy snow, blowing snow, freezing rain, heavy sleet, and extreme cold temperatures. Severe winter weather conditions can disrupt day to day activities and even cause damages and fatalities. Winter storms in Iowa are common during the months of October through April with the harshest months occurring between December and February.

Overall vulnerability to severe winter storms relative to other hazards is considered high, with significant potential impact to the general population and/or built environment and significant exposure of assets. Winter storms typically involve snow and ice, occasionally accompanied by high winds, which can cause downed trees and power lines, power outages, accidents, and road closures. Transportation networks, communications, and utilities infrastructure are the most vulnerable physical assets in the planning area and affect the jurisdiction equally. The most significant damage during winter storm events occurs when freezing rain and drizzle accumulate on utility poles and power lines causing widespread power outages.

During heavy snow and ice events, the threat to public safety is typically the greatest concern. Lower income and elderly populations are more at risk in cases of power outages during severe winter storms. These storms also impact the local economy by disrupting transportation, school and commercial activities. Travelers on roadways and highways in Page County, particularly along remote stretches of road, can become stranded, requiring search and rescue assistance and shelter provisions. Agriculture and livestock are also vulnerable to extreme cold temperatures and heavy snow.

The various types of severe winter weather can cause considerable damage. Winter storms can immobilize transportation systems, down trees and power lines, collapse buildings, and cause the loss of livestock and wildlife. Blizzard conditions are winter storms lasting at least three hours with sustained winds of 35 mph or more and create reduced visibility of 1/4 mile or less (white out conditions). Heavy snows of more than six

inches in a 12 hour period or freezing rain greater than 1/4 inch accumulation can cause hazardous travel conditions in the community which can disrupt or prevent the flow of vital supplies as well as emergency and medical services. In severe winter weather, loose snow begins to drift when wind reaches a speed of 9 to 10 mph under freezing conditions. The potential for drifting snow is substantially higher in the open country than in urban areas where buildings, trees, and other features obstruct the wind. Drifting snow can cover roads and make it difficult to travel as well as hide frozen ice on roadways that can often cause accidents on the road. Ice storms are characterized by freezing rain that can cause hazardous transportation conditions as well as result in fallen trees, broken tree limbs, downed power lines and utility poles, and fallen communications towers. Severe ice storms can prevent first responders from providing emergency services to people in need of assistance due to the hazardous conditions it creates.

According to the National Oceanic and Atmospheric Administration winter storms regularly move easterly and are commonly a result of the southward plunge of arctic cold air from Canada and the northward flow of moisture from the Gulf of Mexico. The combination of cold air and heavy moisture produce heavy snow and blizzard conditions. Most Iowa counties can expect two or three winter storms a season with an extreme storm, on average, every three to five years.

Hypothermia is a condition when the body loses heat faster than it can produce it, causing dangerously low body temperatures. Frostbite is the condition in which damage is caused to the skin and other tissues due to freezing temperatures. Cold temperatures combined with wind chills can further reduce the perceived air temperature and thus become increasingly dangerous. Hypothermia can affect anyone, though the young and elderly are particularly vulnerable. Water pipes, livestock, fish, wildlife, and pets are also affected by the dangers of extremely cold weather. The following chart illustrates the levels and wind speeds at which frostbite can occur.

Figure 5 - Wind Chill Chart

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

60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91
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Frostbite Times



30 min



10 min



5 min

Wind Chill (°F) = $35.74 + 0.615T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$

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

Source: NWS; NOAA

Winter storms are considered a county-wide hazard meaning that jurisdictions helped to establish a county-wide risk score for it that all communities used.

Table 4:17 - Severe Winter Storm Hazard Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Total	Risk
Page County	4	2	1	3	2.85	Moderate

Mitigation Strategy

There are many strategies that can be undertaken to protect both existing and future assets. Communities can incorporate “living snow fences” into community designs. “Living snow fences” are strategically placed trees and shrubs that act as a wind and snow block, reducing snow drifts and decreasing amounts of snow that would otherwise blow across flat areas. Communities can also bury power lines to reduce the chance of power outages resulting from severe winter storms and ice storms. New public buildings can be designed with redundant power supplies to ensure continuity of government services. Building codes can be enhanced to prohibit flat roofs and to increase facility strengths to withstand greater snow loads. Stakeholder groups in the area play a significant role in assisting and protecting vulnerable populations during and following severe winter storms.

The following bullet points identify some general mitigation strategies that can be used to reduce a community’s vulnerability to the threat of severe winter storms. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards.

- Improve buildings codes to eliminate flat roofs in areas that expect heavy snow loads
- Retrofit buildings and infrastructure to withstand snow loads
- Increase weather monitoring procedures
- Incorporate text messaging into severe weather messaging programs
- Incorporate cable TV interruption warning systems
- Establish road closure policies and procedures necessary to protect the public
- Develop continuity plans for critical community services (public and private)
- Establish a Tree Board to assist in the development of a tree management program
- Participate or continue participating in Tree City USA; establish a tree maintenance ordinance

- Establish redundancies for necessary municipal services (i.e. water, gas, electric, transportation)
- Develop a database of “vulnerable populations”
- Work with community groups serving “vulnerable populations” such as Meals on Wheels programs to help monitor vulnerable groups
- Establish public education programs to increase awareness of the dangers posed by severe winter storms and ways the public can mitigate the potential impact.

Sinkholes

Sinkholes are the depression or hole in the ground caused by the collapse of the surface layer. Sinkholes may vary in size and depth and may form gradually or suddenly. Common causes of sinkholes are from human activity such as mining of coal or other materials, groundwater or petroleum withdraw and drainage of organic soils, and natural occurrences from limestone erosion

The following table shows how the county ranked sinkholes in their hazard score analysis.

Table 4:18- Sinkholes Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Blanchard	1	1	4	4	1.75	Low
Braddyville	2	1	4	3	2.1	Moderate
Clarinda	2	1	4	4	2.2	Moderate
Coin	1	1	4	4	1.75	Low
College Springs	1	1	4	4	1.75	Low
Essex	1	1	4	4	1.75	Low
Northboro	1	1	4	4	1.75	Low
Shambaugh	1	1	4	1	1.45	Low
Shenandoah	2	2	4	2	2.3	Moderate
Yorktown	1	1	4	1	1.45	Low
Page County (unincorporated)	1	1	4	4	1.75	Low

Terrorism

Terrorism is a human caused threat that demonstrates unlawful force, violence or a threat to another person or property with the intent to cause harm. Various forms of terrorism exist including:

- Enemy attack
- Biological terrorism
- Agro-terrorism
- Chemical terrorism
- Conventional terrorism
- Cyber terrorism
- Radiological terrorism
- Public disorder

As discussed by jurisdictions, the most common types of terrorism that would be seen in Cass County are agro-terrorism, cyber terrorism and public disorder. Public knowledge was used for determining the probability of this hazard.

The following table shows how the county ranked terrorism in their hazard score analysis.

Table 4:19- Terrorism Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
Blanchard	1	1	4	2	1.55	Low
Braddyville	1	2	4	2	1.85	Low
Clarinda	1	3	4	4	2.35	Moderate
Coin	1	1	4	2	1.55	Low
College Springs	1	1	4	2	1.55	Low
Essex	1	1	4	4	1.75	Low
Northboro	1	1	4	2	1.55	Low
Shambaugh	1	1	4	1	1.45	Low
Shenandoah	1	1	4	4	1.75	Low
Yorktown	1	1	4	1	1.45	Low
Page County (unincorporated)	1	1	4	2	1.55	Low

Thunderstorms, Lightning and Hail

Thunderstorms are common in Iowa and can occur singly, in clusters, or in lines. Thunderstorms can result in heavy rains, high winds (reaching or exceeding 58 mph), tornadoes, or hail. Thunderstorms are created from a combination of moisture, rapidly rising warm air, and the lifting mechanism such as that caused when warm and cold air masses collide. Most severe storms cause little damage, but some can be life threatening and cause extensive damage to buildings, trees, utilities, and crops. Tornadoes are relatively common in Iowa, including Page County, particularly in spring and summer. The potential for tornadoes to occur is county-wide and Iowa is known to have a long history of having a higher rate of tornadoes per square mile than any other state. Lightning can cause damage to electronic equipment located inside buildings. Communications equipment and warning transmitters and receivers could be knocked out by lightning strikes. Hail can cause significant damage to buildings, utilities, and crops. While thunderstorms can produce a number of weather related hazards; many of these were separated into individual hazard categories due to their severity and unique characteristics in the region.

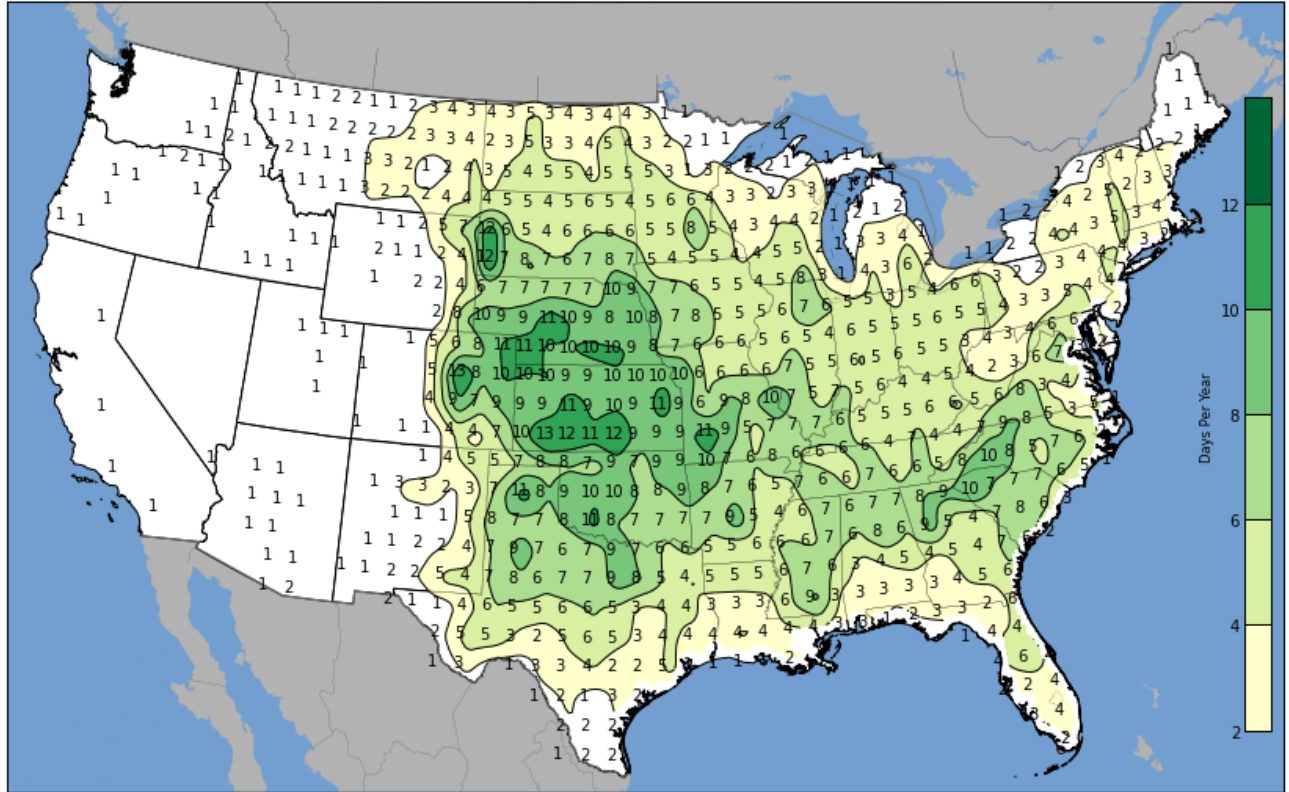
The development of a thunderstorm is classified in three stages: the developing stage, the mature stage and the dissipating stage. The developing stage is marked by a cumulus cloud that is being pushed upward by a rising column of air (updraft). There is little to no rain during this stage but occasional lightning can occur. The thunderstorm enters the mature stage when the updraft continues to feed the storm, but precipitation begins to fall out of the storm creating a column of air pushed downward (downdraft). This stage can produce hail, heavy rain, frequent lightning, strong winds and tornadoes. Eventually a large amount of precipitation (downdraft) is produced overcoming the updraft beginning the dissipating stage. During this stage, rainfall decreases in intensity, but lightning becomes a danger.

- Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a “bolt” or flash of light that occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches temperatures approaching 50,000 degrees Fahrenheit in a split second. This rapid heating, expansion, and cooling of air near the lightning bolt creates thunder. Due to the geography and the humid continental climate of the area, there is a possibility that summer storms can turn into severe thunderstorms and cause damage. The proper conditions that often create severe thunderstorms include moisture to form clouds and rain, relatively warm and unstable air that can rise rapidly, and weather fronts and convective systems that lift air masses.
- Hailstorms are a product of a severe thunderstorm in which pellets or lumps of ice (of most concern when greater than 1 inch in diameter) fall with rain. Hail is produced in many strong thunderstorms by strong rising currents of air carrying water droplets to a height where freezing occurs, the ice particles grow in size until they are too heavy to be supported by the updraft and fall back to earth. Hail can be smaller than a pea or as large as a softball and can be very destructive to plants and crops. Pets and livestock are particularly vulnerable to hail. Due to historical events there is a possibility of a hailstorm occurrence in any given year.

Overall, the risk and vulnerability assessment shows that thunderstorms are a high probability hazard, but do not cause as much property damage as tornados. While NCDC does collect damages from thunderstorms it is likely

that some damages may be missed or minor damages go unreported. This is a hazard of significant concern and can adversely impact various segments of the population.

Map 4:5 - Severe Hail Days per Year with at Least 1 Report of Inch+ Hail within 25 Miles (2003 – 2012)



Source: NOAA Storm Prediction Center

Thunderstorms, lightening and hail are considered a county-wide hazard meaning that jurisdictions helped to establish a county-wise risk score for it that all communities used.

Table 4:20 - Thunderstorms, Lightning and Hail Hazard Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Total	Risk
Page County	4	2	1	2	2.75	Moderate

Mitigation Strategies

There are many strategies that can be undertaken to protect both existing and future assets. Building codes can be enhanced so that they require or recommend the use of hail resistant material, tie-downs and ground anchors for mobile homes, and architectural designs that reduce or limit potential for wind-born debris. Existing structures can also incorporate hail resistant products such as concrete roof tiles and siding. Critical facilities should install and utilize surge protectors to ensure the continuity of vital services. Power lines can be buried to decrease the chance of prolonged power outages and safe rooms can be constructed near vulnerable populations (schools, daycares, mobile home parks, etc.) to increase safety for residents in those areas. Communities can also establish Tree Boards and tree ordinances to ensure urban canopies are safe and healthy, reducing the potential impacts of severe thunderstorms.

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of severe thunderstorms. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

- Install and maintain surge protection for critical facilities
- Incentive programs to encourage the use of hail resistant roofing materials for new and existing structures
- Bury overhead power lines
- Establish a Tree Board to assist in the development of a tree management program
- Continue to participate, or become a participant, in Tree City USA; establish a tree maintenance ordinance
- Establish redundancies for necessary municipal services (i.e. water, gas, electric, transportation)
- Establish data recovery program and backup program for municipal employees
- Establish community severe weather warning protocols
- Incorporate text messaging into severe weather messaging programs
- Incorporate cable TV interruption warning systems
- Purchase and issue weather radios to critical facilities and vulnerable populations
- Establish mutual aid agreements with neighboring communities and privately owned businesses
- Develop business continuity plans for critical community services (public and private)
- Establish public education programs to increase awareness of the dangers posed by severe thunderstorms and ways the public can mitigate the potential impacts

Tornado and Windstorms

Tornadoes and windstorms are extreme weather events where wind speeds can cause damage and destruction. The speed of the wind can tear apart structures, break branches and even lift and carry objects. It is often difficult to separate windstorms and tornado damage when winds get above 64 knots. For this reason the plan combines tornado and windstorm hazards.

A tornado is a violent whirling wind characteristically accompanied by a funnel shaped cloud extending down from a cumulonimbus cloud that moves along the ground in a narrow, erratic path. The funnel is made visible by the dust sucked up and condensation of water droplets in the center of the funnel. Rotating wind speeds can exceed 300 mph and travel across the ground at average speeds of 25-30 mph. An average tornado is a few

hundred yards wide where it touches the ground, though tornadoes can range from a few yards to around a mile wide. A tornado can move over land for many miles and stay on the ground usually no more than 20 minutes.

Tornadoes have occurred all over the world, but are prevalent in the American Midwest and South. Over a 1000 tornadoes are recorded each year in the US. Tornado season typically occurs within the months of March and April. Most tornadoes occur sometime between noon and midnight. Tornadoes can often strike with little to no warning, though advances in weather technology and prediction has given people more time to seek shelter in the event of a tornado.

Tornadoes are most deadly when they hit communities and urban areas where populations are highly concentrated. The high wind speeds can cause devastation and destruction wherever it descends and has been known to wipe out whole communities. Due to the comparative size between rural and urban places, tornadoes more commonly occur in the rural areas where they can create crop and livestock damage, destroy agricultural buildings and equipment, rural residential homes and pose a threat to the vehicles traveling on highway and interstate roads.

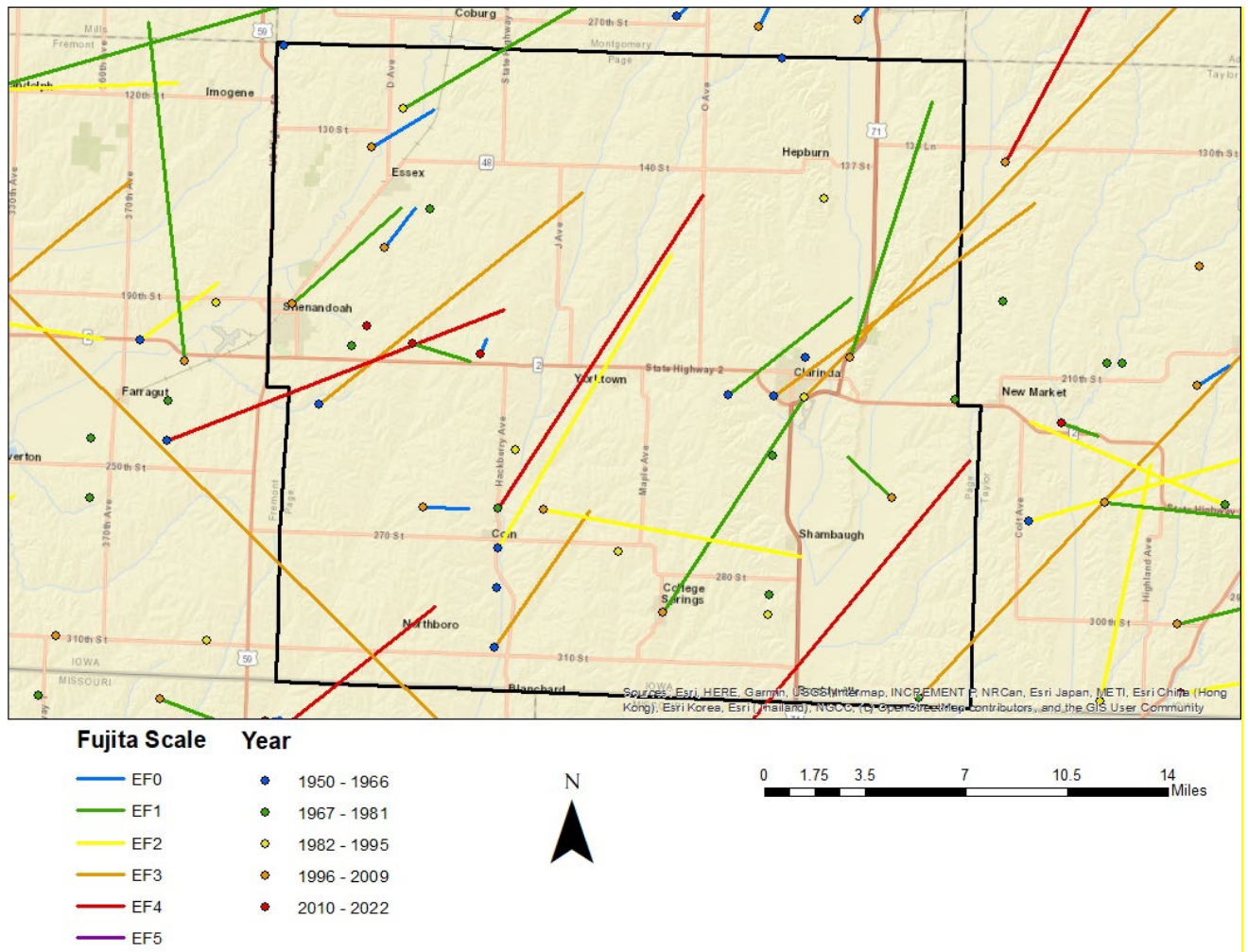
Below is a table showing the enhanced Fujita scale showing the wind speeds and damage descriptions associated with the corresponding level.

Figure 6 - Enhanced Fujita Scale and Damage Descriptions

EF Rating	Wind Speeds	Expected Damage
EF-0	65-85 mph	Minor damage: shingles blown off or parts of a roof torn off, damage to gutters/siding, branches broken off trees, shallow rooted trees uprooted
EF-1	86-110 mph	Moderate Damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged
EF-2	111-135 mph	Considerable damage: roofs torn off well-constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed
EF-3	136-165 mph	Severe Damage: entire stories of well-constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark
EF-4	166-200 mph	Extreme Damage: Well-constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse
EF-5	Over 200 mph	Massive/incredible Damage: Well-constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked and stripped of branches

Source: NOAA Storm Prediction Center

Map 4:6 - Recorded Tornado Sightings and Tracks (1950-2022)



Source: NOAA Storm Prediction Center

Average Annual Number of Tornadoes per State 1993 - 2022

State	Average Annual Number of Tornadoes
AK	0
AL	53
AR	38
AZ	5
CA	9
CO	45
CT	2
DE	1
FL	57
GA	35
HI	0
IA	52
ID	4
IL	55
IN	24
KS	83
KY	25
LA	40
MA	2
MD	9
ME	2
MN	45
MI	13
MS	54
MT	7
NC	30
ND	30
NE	48
NH	1
NJ	3
NM	9
NV	2
NY	9
OH	21
OK	65
OR	3
PA	17
RI	0
SC	26
SD	30
TN	29
TX	136
UT	2
VA	19
VT	1
WA	3
WI	24
WV	2
WY	10

U.S. Annual Average (1993-2022): 1225

Legend: >120, 101-120, 81-100, 61-80, 41-60, 21-40, 6-20, <6

NOAA
NATIONAL WEATHER SERVICE AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

National Weather Service
Storm Prediction Center

Windstorms, on the other hand, are extreme winds associated with severe winter storms, severe thunderstorms, downbursts, and very steep pressure gradients. Windstorms occur in all regions of the United States and have a wider area of impact than that of tornadoes. Unlike tornadoes, windstorms may have a destructive path that is miles wide and duration of the event could range from hours to days. Although Iowa does not experience direct impacts from hurricanes, windstorms cause damage similar to how hurricanes can cause damage to buildings and structures. These events can produce straight line winds in excess of 64 knots (73 mph) causing power outages, property damage, impaired visibility, and crop damage.

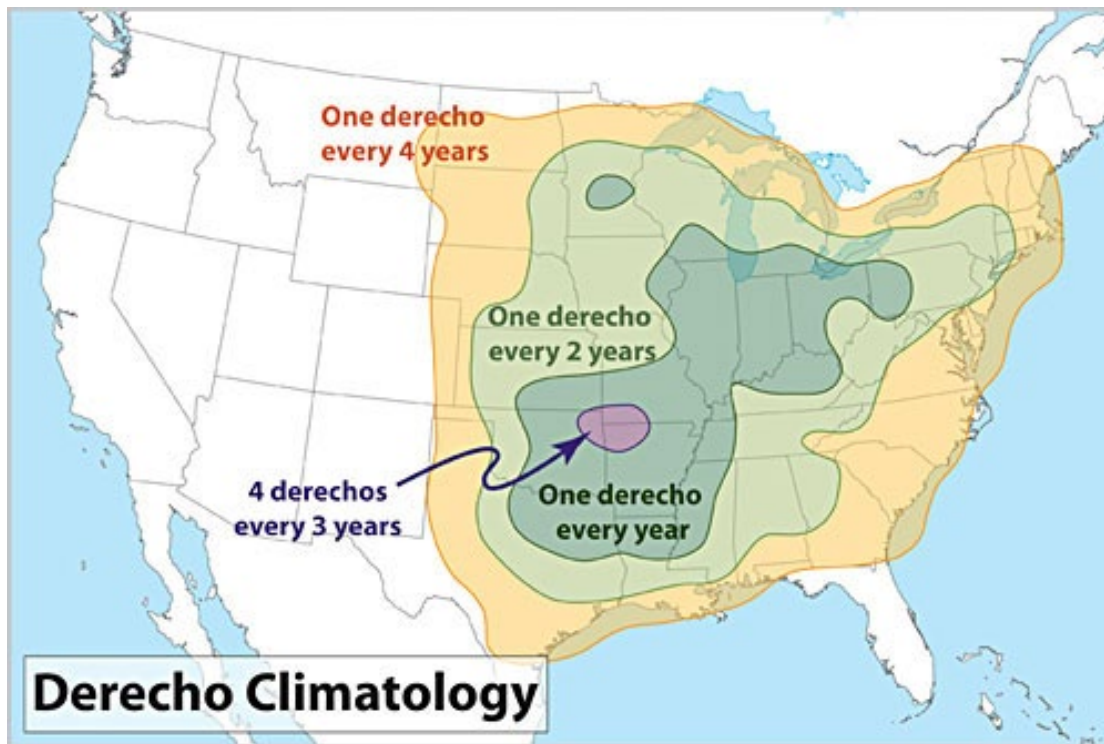
Figure 4:7 - Beaufort Wind Scale

Description – Visible Condition	
0	Calm smoke rises vertically
1-4	Light air direction of wind shown by smoke but not by wind vanes
4-7	Light breeze wind felt on face; leaves rustle; ordinary wind vane moved by wind
8-12	Gentle breeze leaves and small twigs in constant motion; wind extends light flag
13-18	Moderate breeze raises dust and loose paper; small branches are moved
19-24	Fresh breeze small trees in leaf begin to sway; crested wavelets form on inland water
25-31	Strong breeze large branches in motion; telephone wires whistle; umbrellas used with difficulty
32-38	Moderate gale whole trees in motion; inconvenience in walking against wind
39-46	Fresh gale breaks twigs off trees; generally impedes progress
47-54	Strong gale slight structural damage occurs; chimney pots and slates removed
55-63	Whole gale trees uprooted; considerable structural damage occurs
64-72	Storm very rarely experienced; accompanied by widespread damage
73+	Hurricane devastation occurs

Source: NOAA Storm Prediction Center

A derecho is a type of windstorm that is a widespread, long-lived wind storm and are associated with bands of rapidly moving showers or thunderstorms. Severe wind gusts must reach speeds greater than 57 mph along most points of a derecho path. A strong derecho can have wind speeds that exceed 100 mph. Speeds may vary within a derecho. Within the general path of a derecho, stronger winds, produced by what are called downbursts, often occur in irregularly-arranged clusters. A downburst is a concentrated area of strong wind produced by a convective downdraft, have horizontal dimensions of about 4 to 6 miles, and may last for several minutes. Downbursts occur when air is chilled high in the atmosphere causing the air to be heavier than the warm air below it. Derechos occur when meteorological conditions support the repeated production of downbursts within the same general area.

Map 4:8 - Derecho Climatology



Source: NOAA Storm Prediction Center

Tornados and windstorms are considered a county-wide hazard meaning that jurisdictions helped to establish a county-wise risk score for it that all communities used.

Table 4:21 - Tornado and Windstorm Hazard Score by Jurisdiction

	Probability	Magnitude/ Severity	Warning Time	Duration	Total	Risk
Page County	4	4	4	4	4	High

Mitigation Strategies

There are many strategies that can be undertaken to protect both existing and future assets. Considerations for future developments should include developing tornado safe rooms in/near mobile home parks. The 2003 Tornado Shelters Act authorizes communities to use Community Development Block Grant (CDBG) funds for construction of tornado-safe shelters in manufactured home parks with 20 or more housing units consisting predominately of low- and moderate-income residents.

There are some changes that communities can make to partially mitigate against tornados and strong winds. Building codes for new structures can be strengthened, requiring increased rebar in foundations, enhanced nailing patterns for wall sheathing, and the use of Simpson Strong Ties and Straps. Building codes can also be strengthened to require the use of anchors and tie-downs on mobile homes. Additionally, individuals can choose to build to an optional Code Plus Standard, such as Fortified for Safer Living. Safe rooms can be installed in new structures as well as made to adapt to existing structures. In-ground safe rooms can be installed in existing structures for as little as \$4,000. The installation of public safe rooms in areas around vulnerable populations, such as mobile home parks, can increase safety of residents in those areas.

The following bullet points identify some general mitigation strategies that can be used to reduce a community's vulnerability to the threat of tornado and strong winds. Some of these strategies, such as the use of warning systems, are already in place in the planning area. Many of these strategies are identified and discussed in greater detail in the FEMA document *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*.

- Enhance building codes to incorporate wind –resistant building techniques
- Bury overhead power lines
- Establish redundancies for necessary municipal services (i.e. water, gas, electric, transportation)
- Establish data recovery program and backup program for municipal employees
- Establish a Tree Board to assist in the development of a tree management program
- Participate, or continue participating, in Tree City USA; establish a tree maintenance ordinance
- Pursue funding for construction of safe rooms
- Require tornado safe rooms in newly constructed municipal buildings
- Work with trailer and mobile home parks to develop tornado safe rooms
- Ensure schools are equipped with sufficient safe space for their maximum student capacity
- Develop maps of “vulnerable populations” and safe rooms located near those groups
- Ensure outdoor warning sirens are functional and located adequately to warn the public of potential tornadic events
- Incorporate text messaging into severe weather messaging programs
- Incorporate cable TV interruption warning systems
- Establish mutual aid agreements with neighboring communities and privately owned businesses
- Develop business continuity plans for critical community services (public and private)
- Establish public education programs to increase awareness of the dangers posed by severe tornados and strong winds and ways the public can mitigation the potential impacts

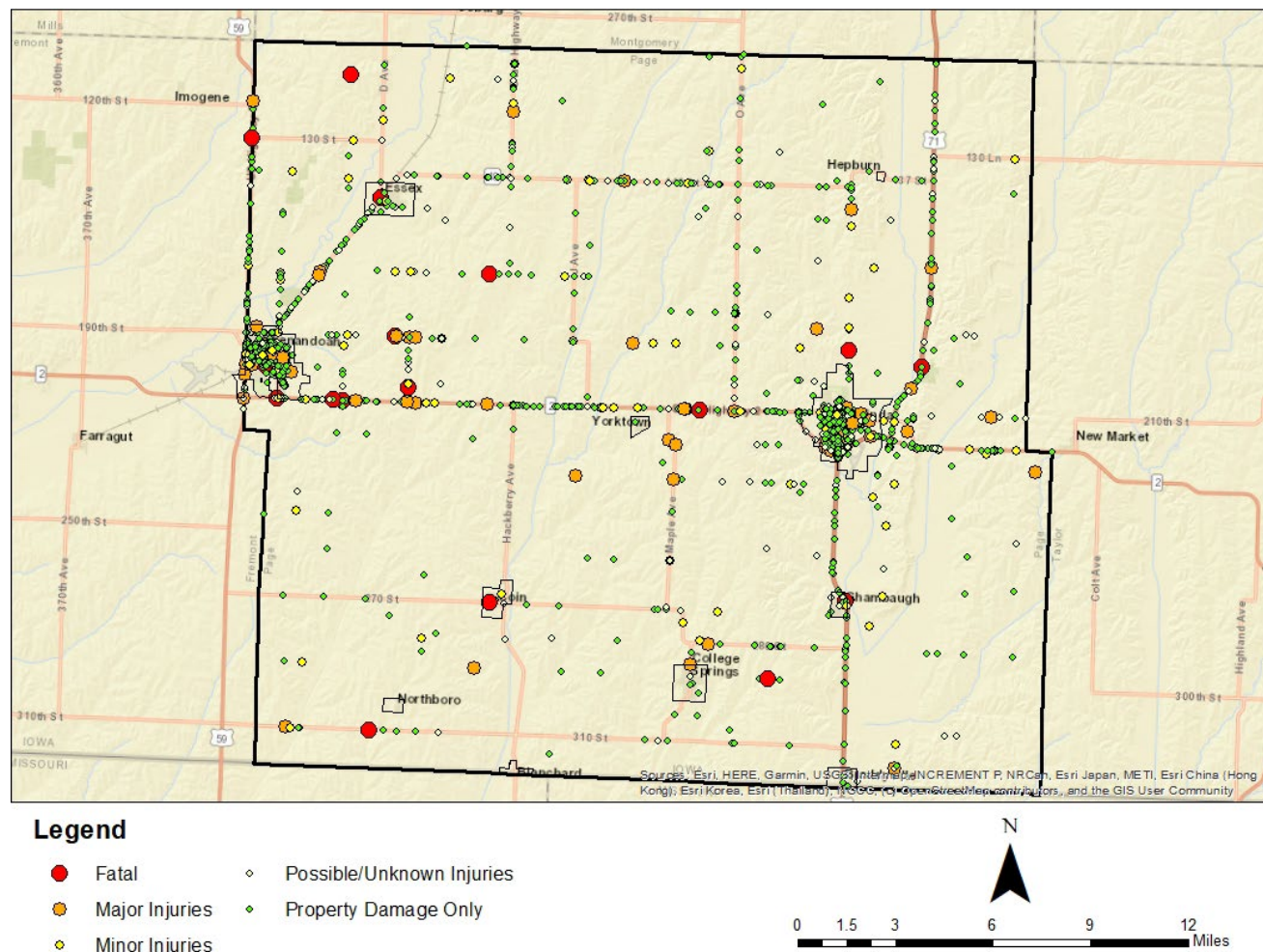
Transportation Incident

Transportation incidents can happen at any time with varying degrees of damage making them highly unpredictable. These incidents could cause damage to facilities, infrastructure, disrupt services or even result in serious injury or death. Transportation incidents could be directly related to other hazards common in the area such as winter storms or heavy rain.

Data regarding transportation incidents was gathered from the Iowa Department of Transportation and the National Transportation Safety Board. Within Page County in the last ten years, there have been 1570 transportation incidents. Of these accidents, 18 were fatal and 238 resulted in a major or minor injury. The vast

majority of accidents, 1,039, resulted in only property damage and the remaining were unknown or possible injury.

Map 4:9—Crashes from 2013-2023



Source: Iowa Department of Transportation

The following table shows how the county ranked transportation incident in their hazard score analysis.

Table 4:22 – Transportation Incident County Scores

	Probability	Magnitude/ Severity	Warning Time	Duration	Weighted Total	Risk
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Blanchard	1	1	4	2	1.55	Low
Braddyville	4	2	4	2	3.2	High
Clarinda	4	1	4	1	2.8	Moderate
Coin	2	1	4	2	2	Moderate
College Springs	4	1	4	2	2.9	Moderate
Essex	4	1	4	4	3.1	High
Northboro	1	1	4	2	1.55	Low
Shambaugh	4	1	4	1	2.8	Moderate
Shenandoah	4	2	4	2	3.2	High
Yorktown	4	1	4	1	2.8	Moderate
Page County (unincorporated)	4	1	4	2	2.9	Moderate

Assessing Vulnerability

After identifying the potential hazards within the jurisdiction and creating a profile of each hazard, this portion of the hazard analysis and risk assessment seeks to analyze and identify the total vulnerability of each jurisdiction in the event of a hazard event. First, early in the planning process, critical facilities were identified to determine populations most at risk to any type of hazard or facilities that were crucial to the functions of the community. This process is important to the mitigation strategy as it can greatly influence how the goals, objectives and actions, outlined in the following section, will target the community. Then a Community Assessed Value was calculated to determine a total vulnerability and inventory of a community's assets based on a dollar value for each jurisdiction. In the event of a disaster the value of a community can be used to estimate the potential loss to the community. Knowing the assessed value or estimated loss can help in determining resources needed to prevent or mitigate loss created by a particular hazard or incident.

Critical Facilities

Early in the planning process critical facilities were identified to determine populations most at risk to any type of hazard or facilities that were crucial to the functions of the community. This process is important to the mitigation strategy as it can greatly influence how the goals, objectives and actions will target the community. To further concentrate hazard mitigation efforts, a number of facilities were prioritized by each jurisdiction according to their significance based upon the five evaluation criteria listed below.

Evaluation Criteria

Critical Facilities were chosen and reviewed at public meetings and through contact with local officials. The criteria for the chosen facilities were based on five different ideas listed below.

- Critical Facilities – City and county facilities that would be important to have functioning during and after a hazard.
- Vulnerable Populations – Elderly or very young people who might need special assistance or medical care after the occurrence of a hazard.
- Economic Elements – Large employers or financial assets that could affect the local economy if disrupted during a hazard.
- Social Considerations – Areas of high density development that could result in large death tolls or injuries.
- Historical or Other Considerations – Areas protected under state or federal law or facilities that would help ensure a full recovery of the county following a hazard event.

Many of those who reside in Page County rely on services within and outside their jurisdiction or in different counties altogether. These structures are therefore possibly important to those outside of the designated jurisdiction. Among the facilities designated as critical to Page County by the planning team are fire departments, city halls, police departments, water and wastewater systems, electrical utility facilities and structures, transportation systems, schools, medical centers, retirement centers, and other structures.

One or more of the designations for a critical facility was assigned to each facility in order to display its critical importance following a hazard. For example, a city hall in one community may be designated both a ‘Critical Facility’ and a ‘Social Consideration’ while another community may designate their city hall as only a ‘Critical Facility’. Adding each designation for a critical facility will not represent the total number of critical facilities in the county.

Blanchard Critical Facilities

The City of Blanchard elected to designate three different facilities for the multi-jurisdictional plan. All of those facilities were designated as critical to the function of the community.

Table 4:23 – Blanchard Critical Facilities

	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
City Hall	X									
Old Fire Station	X									
City Park	X									

Braddyville Critical Facilities

The City of Braddyville elected to designate nine facilities for the multi-jurisdictional plan. The City designated four facilities critical to the community, three of which were also economic assets. The five remaining facilities were designated as a social consideration.

Table 4:24 – Braddyville Critical Facilities

	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
City Hall	X		X			1,856 s/f	\$75,000	\$200,000		208 E Main
Fire Station	X		X			2,500 s/f	\$75,000	\$400,000		208 E Main
Storage Shed	X		X			2,500 s/f	\$30,000	\$200,000		101 E Main
Baseball Field				X				\$150,000		206 E Main
City Park				X				\$5,000		208 E Main
Braddy Hall				X		2,400 s/f	\$200,000	\$5,000		307 E Main
Braddy Park				X				\$5,000		401 E Main
Lagoons	X									
Cemetery				X	X					

Clarinda Critical Facilities

The City of Clarinda elected to designate eight different facilities for the multi-jurisdictional plan. All eight facilities were designated as critical to the community with two of those also having a social consideration.

Table 4:25 – Clarinda Critical Facilities

	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
Water Plant	X					26,306	\$12,040,478	\$206,600	260	701 North 1 st Street
Sewer Plant	X					5,498	\$12,386,988	\$137,400	55	1422 East LaPerla Drive
Police Station	X					14,175	\$4,146,462	\$344,764	140	200 South 15 th Street
Fire Station	X					9,670	\$1,192,575	\$928,984	96	322 East Washington Street
Library	X			X		13,546	\$3,110,862	\$822,300	135	100 East Garfield Street
Lied Recreation Center	X			X		35,991	\$6,697,855	\$638,600	360	1140 East Main Street
Red Water Tower	X					400,000 gal	\$1,697,438	\$64,764		801 West Main Street
Blue Water Tower	X					490,000 gal	\$652,332	\$40,612		1200 West State Street

Coin Critical Facilities

The City of Coin elected to designate eight different facilities for the multi-jurisdictional plan. The City designated seven facilities critical to the community.

Table 4:26 – Coin Critical Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
Community Center	X	X		X						
Fire Department	X	X								
IAMO Buildings	X		X	X						
Potable Water System	X	X								
Pumping Stations	X	X								
Lagoons	X	X								
Wastewater System	X	X								
Library		X		X						

College Springs Critical Facilities

The City of College Springs elected to designate three facilities for the multi-jurisdictional plan. The City designated one facility critical to the community and two facilities with vulnerable populations.

Table 4:27 – College Springs Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
South Page High School		X		X		10,148	\$923,468	\$923,468	200	
First Presbyterian Church		X		X		3,053	\$344,989	\$344,989	25	
City Hall	X			X		6,396	\$562,848	\$562,848	40	

Essex Critical Facilities

The City of Essex elected to designate seven different facilities for the multi-jurisdictional plan. The City designated four facilities critical to the community, three facilities with vulnerable populations, and one with social consideration.

Table 4:28 – Essex Critical Facilities

	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
Water Tower	X									
Water Plant	X									
Sewer Plant	X									
City Hall	X									
Southview Village		X								
Town and Country		X								
Essex CSD		X		X						

Northboro Critical Facilities

The City of Northboro elected to designate one facilities for the multi-jurisdictional plan. The City designated the city hall/community center critical to the community.

Table 4:29 – Northboro Critical Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
City Hall/Community Center	X					3,900				

Shambaugh Critical Facilities

Shambaugh elected four different facilities for the multi-jurisdictional plan. The County designated all facilities critical to the city with two also having social consideration and one being an economic asset.

Table 4:30 – Shambaugh Critical Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
City Hall/Community Center	X			X		2848	\$355,089	\$355,089	110	
Maintenance Building	X					2394	\$62,244	31,122	60	
Pumping Station	X			X			\$35,000	\$35,000		
Wastewater Treatment Plant	X		X				\$25,000	\$25,000		

Shenandoah Critical Facilities

Shenandoah identified twenty-three different facilities for the multi-jurisdictional plan. The City designated twenty facilities critical to the city, fifteen facilities with vulnerable populations, eight facilities that were economic assets to the county, thirteen facilities that had special considerations and fourteen facilities with historic or other considerations.

Table 4:31 – Shenandoah Critical Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
Autumn Park Apartments	+	+		+		10,100	\$989,800	\$494,900	110	
Elm Heights Care Center	+	+		+		27,544	\$2,451,416	\$1,225,708	275	
Forest Park Apartments	+	+		+		18,195	\$1,783,110	\$891,555	125	
Garden View Care Center	+	+		+		31,692	\$2,820,588	\$1,410,294	317	
Green Plains		+	+	+	+	30,277	\$2,089,113	\$3,133,670	37	
Holmes Apartments	+	+		+		6,662	\$652,876	\$326,438	40	
Lloyd Inc		+	+	+	+	37,014	\$2,553,966	\$3,830,949	82	
Nishna Productions (301 W Lowell)	+	+		+		5,200	\$509,600	\$254,800	25	

Nishna Productions (304 W Valley)	+	+		+		4,000	\$392,000	\$196,000	25	
Pella Corporation		+	+	+	+	201,026	\$13,870,794	\$20,806,191	200	
Power facilities - Shenandoah	+				+	N/A	\$834,900	\$834,900	N/A	
Shenandoah Bricker Senior Center	+	+				3,000	\$267,000	\$133,500	71	
Shenandoah City Hall	+				+	9,592	\$872,872	\$872,872	35	
Shenandoah Elementary/Middle School	+	+	+	+	+	63,772	\$5,803,252	\$5,803,252	1,518	
Shenandoah Fire Department/Police Department	+				+	9,600	\$1,248,000	\$1,872,000	30	
Shenandoah High School	+	+	+	+	+	63,513	\$5,779,683	\$5,779,683	1,512	
Shenandoah Medical Center	+	+			+	41,219	\$5,976,755	\$8,965,133	150	
Shenandoah Municipal Airport	+		+		+	11,448	\$745,000	\$70,000	14 aircraft	
State Highway 59	+		+		+	2.24 miles through town	\$2,912,000	N/A	N/A	
US Highway 2	+		+		+	2 miles through town	\$2,600,000	N/A	N/A	

Valley View Apartments	+	+		+		14,556	\$1,426,488	\$713,244	100	
Wastewater facilities - Shenandoah	+				+	N/A	\$25,000,000	\$1,500,000	N/A	
Water facilities - Shenandoah	+				+	N/A	\$15,000,000	\$3,150,000	N/A	

Yorktown Critical Facilities

Yorktown elected two different facilities for the multi-jurisdictional plan. The city designated both facilities critical to the community.

Table 4:32 – Yorktown Critical Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
City Hall	X			X		2,613	229,944	229,944	65	
Post Office	X			X		1440	126,720	126,720	50	

Page County (unincorporated) Critical Facilities

Page County elected twelve different facilities for the multi-jurisdictional plan. The County designated ten facilities critical to the county, three facilities with vulnerable populations, two facilities that were economic assets to the county, six facilities that had social considerations and three facilities with historic or other considerations.

Table 4:33 – Page County (unincorporated) Critical Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
Page County Courthouse	X		X		X	26,840	\$3,032,920	\$3,032,920	450	
Page County Sheriff	X	X	X	X						
Page County Jail	X	X	X	X		12,708				
Page County 911 Center (may be included in Clarinda)	X		X							
SW Rural Water Tower – Clarinda	X		X							
Page County Radio and SW Rural Water Tower - Shenandoah	X		X							
Page County Radio Tower – Haug/Braddyville	X									
Page County Radio Tower - Clarinda	X									
Hepburn – unincorporated		X								
Page County Landfill	X									
Page County Roads Shed						3906	\$101,556	\$50,778	120	

Page County Rural Water Treatment Plant	X									
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Clarinda CSD Critical Facilities

The Clarinda School District has an office building, middle school, and high school. All of these buildings hold vulnerable populations.

Table 4:34 – Clarinda CSD Critical Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
McKinley	X	X	X				\$3.3 Million	\$400,000	10	423 E Nodaway
PK-6 Elementary	X	X	X				\$21.1 Million	\$2.9 Million	600	910 s 15 th St
7-12 Building	X	X	X				\$22.6 Million	\$2.7 Million	600	100 N Cardinal Dr

Essex CSD Critical Facilities

Essex Community School district identified two different facilities for the multi-jurisdictional hazard mitigation plan. The school district designated four facilities as having vulnerable populations due to the amount of people under 18 years old present throughout the year.

Table 4:35 – Essex CSD Critical Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
Essex CSD (K-12)	X	X	X	X		30,000	12.3 Million	\$1.7 Million	230	
East Gym						10,000	\$5.1 Million	\$100,000		

Shenandoah CSD Critical Facilities

Essex Community School district identified three different facilities for the multi-jurisdictional hazard mitigation plan. All three are critical facilities with vulnerable populations and social considerations.

Table 4:36 – Shenandoah CSD Critical Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
K8	X	X		X		115,754				
Logan	X	X		X		16,300				
High School	X	X		X		94467				

South Page CSD Critical Facilities

South Page Community School district identified four different facilities for the multi-jurisdictional hazard mitigation plan. The school district designated two facilities as having vulnerable populations due to the amount of people under 18 years old present throughout the year.

Table 4:37 – South Page CSD Critical Facilities

Name or Description of Asset	Critical Facilities	Vulnerable Populations	Economic Assets	Social Considerations	Historic/Other Considerations	Size of Building (Sq. Ft.)	Replacement Value(\$)	Contents Value (\$)	Occupancy (#)	Notes
	X	X	X	X	X					
PK-12 Building	X	X		X	X	615,358	\$19,092,690	\$1,255,656	625	
Ag Building	X	X		X	X	8,316	\$2,336,920	\$456,136	165	
Concession Stand	X					546	\$67,373	\$339,966	20	
Weight Room/Maintenance Shop	X					1,968	\$299,600	\$91,063	25	

Community Value Assessment

An inventory was completed for each of the cities and the unincorporated area of Page County to assess the vulnerable assets in each particular area. Structure count, value of structures and number of people were included in the assessment, as outlined in the Iowa Local Hazard Mitigation Plan data collection sheets provided by the Iowa Homeland Security and Emergency Management. The structure inventory portion of the assessment includes the structure count and the value of all the structures located in each city and the unincorporated areas.

The number of people in each jurisdiction that could potentially be affected by hazard incidents was also assessed. Additionally, due to the importance of the agricultural industry in the county, estimates on crop assets were also calculated as one potential economic indication that could be affected by a hazard incident. Information on the number of structures and the value of structures were categorized based on their land use to provide greater detail about the characteristics of the assets in the community. The classifications are as follows:

- Residential
- Multi-Residential
- Commercial
- Industrial
- Agricultural

Hazards vary in the area of vulnerability depending on the characteristics of the hazard. Certain hazard events affect large regions while others can be localized. When performing the analysis for the community value assessment, a total county-wide and city-wide assessment was performed to find the total vulnerability in each city and for the county. Hazards that were categorized under this assessment included those where events typically occur throughout the region and are not localized, hazards that have localized incidents but the risk is equal throughout the region and for incidents where specific data was not available to perform a complete analysis of the vulnerable areas. Hazards that typically affect large regions and are not localized incidents include droughts, extreme heat events, severe winter storms, and thunderstorms that include lightning and hail. Hazards events that may be more localized, but could potentially occur almost anywhere in the county include flash flooding grass or wild land fires, tornadoes and windstorms. Dam and levee failure was included in the county-wide assessment as there are a number of dams and levees located throughout the county. River flooding inventory was assessed separately using floodplain data to define what areas were at risk to river flooding and determine the assets located in the at risk areas. Below is how the resources and data were utilized to complete an assessment for each asset.

- Number of Structures – To determine the number of structures in Page County, Iowa Department of Natural Resource structure location data was utilized. This data includes the location of each structure within Page County and categorized each structure by its use. Important structures, such as government buildings, school buildings, medical or health buildings or critical facilities, were reclassified using community input, assessor data, or resources available online. The boundaries of incorporated cities were used to determine the number of structures in each city while the remaining structures were designated as within the unincorporated areas of the county. Lastly, FEMA preliminary floodplain data was used to determine the number of structures located within the floodplain.

- **Estimated Value of Structures** – The dollar value of structures located in each city and the unincorporated areas of the county was estimated using county assessor data and the Iowa Department of Natural Resource structure location data. The county assessor data contained the building values of all the structures in each parcel. This data was combined with the previous assessment determine the count and value of structures for each land use. Because the land use in the assessor data was only categorized by residential, commercial and industrial, IDNR structure location data was used to supplement or replace the assessor land use categorizations to provide more detail in the structure value analysis. Additional structures, such as government buildings, school buildings, medical or health buildings or critical facilities, were reclassified using community input, assessor data, or resources available online. FEMA preliminary floodplain data was used to determine the value of structures located within the floodplain.
- **Number of People** – In assessing the vulnerability of the population in Page County, Census data at the city and county level was the lowest geographic denominator used. Census data obtained from the community profile section of this plan illustrates the number of people that could be affected by each hazard in each incorporated city and in the unincorporated areas of the county. The resources and information were not available to determine the specific populations within communities that would be affected or are most at risk in the event of a hazard event. Gathering such information would have been costly and time consuming for this assessment.
- **Estimated Value of Crops** – The estimated value of crops was assessed using USDA land use data and Iowa State University Extension and Outreach per-acre crop production values. USDA land use data was used to determine the number of acres of cropland in each jurisdiction. Then Iowa State University Extension and Outreach per-acre crop production values were used to calculate an estimated crop value for each jurisdiction. Because the Iowa State University data provided per-acre crop production values for only corn, soybeans, and alfalfa, and because these crops had the highest percentage of agricultural land use in the county, these were the only crops that were assessed. FEMA floodplain data was then used to estimate the amount of crop land and the estimated value of crops in the floodplain.

The following tables shows the total assessed value of Page County with community summaries following. Individual assessed value for each jurisdiction is located in appendix D.

In tables below the following hazard areas designate

A: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure

B: River Flooding

C: Grass/Wild Fire

Table 4:38 - Page County Structure Inventory

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure		
Type of Structures	Number of Parcels	Value of Structures

	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	1,038	1,038	100%	\$145,844,460	\$145,844,460	100%
Multi-Residential	1	1	100%	\$30,580	\$30,580	100%
Commercial	215	215	100%	\$6,503,015	\$6,503,015	100%
Industrial	5	5	100%	\$889,760	\$889,760	100%
Agricultural	10,325	10,325	100%	\$22,601,280	\$22,601,280	100%
Total	11,584	11,584	100%	\$175,869,095	\$175,869,095	100%

Hazard: River Flooding

Type of Structures	Number of Structures			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	1,038	67	6.5%	\$145,844,460	\$8,054,660	5.5%
Multi-Residential	1	0	0%	\$30,580	\$0	0%
Commercial	215	70	32.6%	\$6,503,015	\$849,060	13.1%
Industrial	5	1	20%	\$889,760	\$89,690	10.1%
Agricultural	10,325	3182	30.8%	\$22,601,280	\$3,369,110	14.9%
Total	11,584	3,320	28.7%	\$175,869,095	\$12,362,520	7%

Hazard: Grass/Wild Fire

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	1,038	1,038	100%	\$145,844,460	\$145,844,460	100%
Multi-Residential	1	1	100%	\$30,580	\$30,580	100%
Commercial	215	215	100%	\$6,503,015	\$6,503,015	100%
Industrial	5	5	100%	\$889,760	\$889,760	100%
Agricultural	10,325	10,325	100%	\$22,601,280	\$22,601,280	100%
Total	11,584	11,584	100%	\$175,869,095	\$175,869,095	100%

Hazard: Hazardous Materials

Type of Structures	Number of Parcels	Value of Structures
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	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	1,038	843	81.2%	\$145,844,460	\$123,151,470	84.4%
Multi-Residential	1	1	100%	\$30,580	\$30,580	100%
Commercial	215	184	85.6%	\$6,503,015	\$6,213,785	95.6%
Industrial	5	5	100%	\$889,760	\$889,760	100%
Agricultural	10,325	8,591	83.2%	\$22,601,280	\$19,248,120	85.2%
Total	11,584	9,624	83.1%	\$175,869,095	\$149,533,715	85.0%

Source: Page County Assessor (2014), FEMA, Iowa DNR

Table 4:39 – Population of Jurisdiction

Town	2020 (Census)
Blanchard	29
Braddyville	147
Clarinda	5,369
Coin	176
College Springs	172
Essex	722
Northboro	52
Shambaugh	159
Shenandoah	4,925
Yorktown	60
Page County Unincorporated	3,400
Page County Total	15,211

Source: U.S. Census

Table 4:40 - Page County Crop and Animal Values

Crops and Animals	Estimated Yearly Value
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Corn	\$73,163,000
Soybeans	\$60,386,000
Other Crops	\$1,125,000
Cattle and Calves	\$25,497,000
Hogs	\$6,441,000
Other Animals (including animal products)	\$1,454,000

Source: US Census of Agriculture (2017)

Section V: Mitigation Strategy

The purpose of the mitigation strategy is to outline the implementation strategy and potential actions that can be pursued to reduce the losses identified in the risk assessment. The following sections then outlines the community goals, objectives and actions, assess the capabilities of each jurisdiction and provide possible funding sources that are currently available. The goals, objectives and actions are steps that each jurisdiction may follow in order to better protect its citizens. The local capability assessment shows what resources are available to each jurisdiction needed to implement hazard mitigation policies or actions. Lastly, possible or potential funding sources are identified that would help communities accomplish their action and objectives.

Implementation Strategy

By reviewing each action, each jurisdiction had to consider a number of factors that would make the action feasible and beneficial. These included understanding the costs in time and personnel required as well as a general idea of the funding required and available to implement each action. Each jurisdiction, knowing the resources available to them and the characteristics of the community, were in the best position to determine which actions would be most beneficial in mitigating hazard risk while still within their capacity to implement the action. The categories of the cost/benefit analysis for each action item is as follows:

- Related Hazard – Which hazards the action could/would address.
- Funding Sources – The level at which funds could be obtained to implement the action.
- Estimated Cost – Possible costs that could be associated with implementation to the project.
- Benefit – Possible benefits if the action is implemented.
- Obstacles to Implementation – Possible limitations or obstacles that could prevent the action from being implemented.
- Responsibility – Agency, organization or entity that might be responsible for implementing the action.
- Time Frame – General completion time.
 - Long-term: 10-20 years
 - Short-term: 1-10 years
 - Continuous: an ongoing item that has no specific end date

Goals, Objectives and Actions

The goals, objectives and actions are a series of strategies and steps that the local jurisdictions will follow in order to reduce risk of potential hazards. The purpose of these general guidelines are to eliminate or reduce long-term risks to life and property, reduce disaster response and recovery costs and minimize disruption to the communities. Goals are statements that are written in general terms and do not lay out any specific strategies and are broad in order to cover all potential areas of hazard risks. The hazard mitigation goals created for this plan instead lay a path to achieve results that better the community by reducing the risks of hazards. Objectives are the means in which the goals that were previously set will be met. These are smaller in scope and are targeted to break down and identify specific, measurable areas of the goals that are to be addressed by specific actions. The actions are specific steps that can be accomplished to eventually achieve the objectives and goals.

The goals, objectives and actions were developed in conjunction with SWIPCO staff through meetings and discussions held with the jurisdictions. Participants representing each jurisdiction developed the best set of goals, objectives and actions that related to their jurisdiction. Because the goals and objectives from each jurisdiction were broad and similar, they were developed as shared goals and objectives. It was decided by the participants of these meetings that the goals developed by the State of Iowa in their Hazard Mitigation Plan already represented their goals, so they were directly taken from the state plan. The objective and action items were then discussed amongst the planning members and developed during the meetings held by SWIPCO. The goals, objectives and actions were then reviewed by each jurisdiction in subsequent meetings for adjustments and approval. The planning committee decided to use the same 3 goals as the State's plan. The goals were condensed and adapted from the 2011 Page County Plan, which were: 1. Preserve land, infrastructure and property from flooding. 2. Reduce potential of property damage resulting from hazards (other than flooding) 3. Reduce effects of adverse weather. 4. Ensure public safety during hazardous events. The following goals for this plan update addresses the County's objectives and actions items in a clearer, concise way.

- Goal #1 – Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.
- Goal #2 – Ensure government operations, response, and recovery are not significantly disrupted by disasters.
- Goal #3 – Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.

During our objectives and actions public meeting, SWIPCO staff gave each participant a list of general mitigation actions as a reference along with a list of mitigation actions from the prior plan. Participants reviewed mitigation actions from their prior plans to determine if they had been completed, needed revisions to reflect changes in development, progress in mitigation efforts, or changes in priorities. Participants were not only asked to create their own actions, but consider actions from the prior plan that remained relevant to their jurisdictions. Participants were then asked to create a set of their own actions. Each participant could suggest items on the list to include in their plan, repeat actions listed in the prior plan, or add new actions to be created for their respective jurisdiction. After a number of action items were created using feedback from the community meeting, planning

teams from each jurisdiction decided on which actions they would each implement by ranking the priority of each action. The ranked action items represent each jurisdiction’s implementation strategy to reduce hazard risk.

Each action is listed with the priority of implementation for each action represented as high, medium or low for each jurisdiction. The priority of each action is as follows:

- (H) High – Will pursue and implement
- (M) Medium – Would like to implement, but not a high priority
- (L) Low – Action the jurisdiction may implement should funding be available

Actions labeled high priority will be examined by the County Emergency Manager for possible county-wide implementation or assistance efforts. For example, “Conduct ALiCE hazard event drills in schools and public facilities to promote hazard response and teach proper safety techniques” is a high priority for nearly every jurisdiction. The county will determine if this action item is something that can be addressed at a county level or county driven to ensure all jurisdictions are able to benefit. The projects with the most county-wide benefit will be pursued if possible.

Where possible jurisdictions will partner to further each other’s goals. If the action is city-specific, the individual jurisdiction will be responsible for implementation and reporting to the emergency management department.

During the community meetings each jurisdiction was provided additional space for certain action items so that additional details could be included with each action item. These additional details were to enable each jurisdiction to personalize the actions. The following tables in this section detail the actions for each jurisdiction.

Individual Jurisdiction Objectives and Actions

Page County (Unincorporated)

GOAL #1 - Protect the health, safety and quality of life for Fremont County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.								
Objective: Protect health, safety and quality of life of Fremont County residents by ensuring effective response to all hazards.								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
The County will ensure all mechanisms for early warning of hazards are properly functioning. EMA/Dispatch will check sirens monthly and mass notification system quarterly	Dam/Levee Failure, Drought, Extreme Heat, Flash Flood, Grass or Wild Land Fire, River Flooding, Severe Winter Storm, Thunderstorms/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	No cost	Increases warning time to protect people from severe weather	Time, personnel, funding	Fire Chief, Emergency Management Director	Long Term	High
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures.								

Adopt and enforce building codes that improve disaster resistance and are manageable to enforce	Flash Flooding, River Flooding	Local	Within current budget	Promotes development practices that can withstand or mitigate hazard damages and risk	Time, personnel, funding, enforcement	Board of Supervisors, Building inspector	Short Term	High
The County (Engineer Department) will prohibit or limit floodplain development through regulatory based measures (Zoning).	Flash Flooding, River Flooding	Local	Within current budget	Promotes development practices that can withstand or mitigate hazard damages and risk	Time, personnel, funding, enforcement	Board of Supervisors, Zoning Administrator	Short Term	High
The County (Engineer) will maintain drainage systems to meet proper capacity requirements and provide adequate drainage systems.	Flash Flooding, River Flooding	Local, State, Federal, Private sector	Cost vary depending on project	Reduces the risk or damages caused by flooding	Time, personnel, funding,	County Engineer, Emergency Management Director	Continuous	High
Objective: Prevent economic loss by improving disaster resistance to resources supporting economic activity.								
The County will plan for and maintain adequate road and debris clearing capabilities.	Severe Winter Storm	Local, State	No cost	Ensures hazards will have minimal impact on roadway transportation	Time, personnel, funding,	Public Works Director, Board of Supervisors, County Engineer	Continuous	High

The County will encourage businesses to identify resources that would be available in the event of a disaster.	Dam/Levee Failure, Drought, Extreme Heat, Flash Flood, Grass or Wild Land Fire, River Flooding, Severe Winter Storm, Thunderstorms/Lightning/Hail, Tornado/Windstorm	Local	\$0 to \$500	Ensures quick and adequate response from emergency personnel to protect people from hazard events	Time, personnel	Fire Chief, Police Chief, County Sheriff, Emergency Management Director	Short Term/ Continuous	Medium
The County will establish standards and methods that protect power lines and infrastructure from potential risks, including tree pruning and burying power lines.	Thunderstorms/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	Tree pruning equipment or services \$40 to \$1000	Decreases the risk of damage to electrical lines and property	Time, personnel, funding,	Board of Supervisors, County Engineer	Short Term	Medium
Objective: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event.								
The County Engineer Department will clear flood ditches from blockages that would enhance flood risk and/or damage.	Flash Flooding, River Flooding	Local, State, Federal, Private sector	Cost vary depending on project	Reduces the risk or damages caused by flooding	Time, personnel, funding,	County Engineer, Emergency Management Director	Continuous	High
Keep streams, creeks and flood ditches clear of debris and blockages to ensure they flow properly	Flash Flooding, River Flooding	Local, State, Federal, Private sector	Cost vary depending on project	Reduces the risk or damages caused by flooding	Time, personnel, funding,	Public Works Director, County Engineer, Emergency	Continuous	High

						Management Director		
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GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.

Objective: Communities will ensure public facilities are available and operational during a disaster or hazard event.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
The County will ensure public buildings critical to disaster response have back-up generators.	Dam/Levee Failure, Drought, Extreme Heat, Flash Flood, Grass or Wild Land Fire, River Flooding, Severe Winter Storm, Thunderstorms/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$4000 to \$10000 per generator	Ensures emergency responders and community service providers are able to operate during a power outage	Time, personnel, funding,	Board of Supervisors	Long Term	High

Objective: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery

Ensure emergency response teams are adequately staffed	Dam/Levee Failure, Drought, Extreme Heat, Flash Flood, Grass or Wild Land Fire, River Flooding, Severe Winter Storm, Thunderstorms/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	No cost	Ensures emergency response personnel are adequately equipped to save and protect lives	Time, personnel, funding	Fire Chief, Police Chief, County Sheriff, Emergency Management Director	Long Term / Continuous	Medium
Objective: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster.								
The County will maintain 28-E agreements with surrounding communities.	Dam/Levee Failure, Drought, Extreme Heat, Flash Flood, Grass or Wild Land Fire, River Flooding, Severe Winter Storm, Thunderstorms/Lightning/Hail, Tornado/Windstorm	Local	Within current budget	Ensures communities/jurisdictions with limited resources have access to emergency response and services	Time, personnel, funding,	Emergency Management Director, City Council, Board of Supervisors	Continuous	High
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority

The City will produce and distribute family and traveler emergency preparedness information.	Drought, Extreme Heat, Flash Flood, Grass or Wild Land Fire, River Flooding, Severe Winter Storm, Thunderstorms/Lightning/Hail, Tornado/Windstorm	Local	\$0 to \$2500	Promotes hazard awareness and teaches proper safety techniques in the event of a hazard incident	Time, personnel, funding	Emergency Management Director, Fire Chief, Police Chief, County Sheriff,	Continuous	Low
Objective: Communities will maintain communication and cooperation with neighboring communities.								
Ensure communications equipment is available and working between all government operations	Dam/Levee Failure, Drought, Extreme Heat, Flash Flood, Grass or Wild Land Fire, River Flooding, Severe Winter Storm, Thunderstorms/Lightning/Hail, Tornado/Windstorm	Local, State	Within current budget	Ensures communication between local emergency response departments properly functions to help coordinate emergency response	Time, personnel, funding,	Emergency Management Director, Fire Chief, Police Chief, County Sheriff, School Superintendent	Continuous	High

Blanchard

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
Continue to press towards mitigation of factors that would present a maximum response and assistance when confronted with conditions of emergency in nature.	Thunderstorm/Lightning/Hail/ Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Provides a baseline for community to judge how much improvement is required to be effective in disaster response and recovery	Time, personnel, funding,	Board of Supervisors	Short Term	High
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.								
Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.								
	Related Hazard	Funding	Potential Costs	Benefit	Obstacles	Responsibility	Time Frame	Priority

Action Measures								
Keep streets open and passable for emergency vehicles.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Mitigates flood and fire risk	Time	Board of Supervisors	Short Term	High
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
We will continue to maintain our community building as a response center for our community.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Allows residents to find a central location for disaster recovery and response	Time, personnel, funding,	Board of Supervisors	Short Term	High

Braddyville

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	15x15 in a new building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors, City Council	Long Term	Medium
Obtain and upgrade necessary equipment for emergency responders to respond to situations in the most prepared manner	All	Local, State, Federal		Ensures first responders can adequately respond to all hazards to ensure minimal loss	Funds	Braddyville Fire and Rescue	Mid	Medium

Continue to press towards mitigation of factors that would present a maximum response and assistance when confronted with conditions of emergency in nature.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Provides a baseline for community to judge how much improvement is required to be effective in disaster response and recovery	Time, personnel, funding,	City Council, Emergency Response	Short Term	High
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GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.

Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Keep streets open and passable for emergency vehicles.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Mitigates flood and fire risk	Time	City Council, Page County Sheriff, Iowa DOT	Short Term	High

GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.

Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
28-E Agreement	Thunderstorm/Lightning/Hail/Tornado/Windstorm	Local	Included in budget	Regional response and recovery effort	Time, personnel, funding	City Council	Long Term	High

Clarinda

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.								
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures.								

Adopt and enforce building codes that implement disaster resistance	Thunderstorm/Lightning/Hail, Tornado/Windstorm/Fire	Local, State, Federal	Included in budget	Increases the likelihood structures are able to mitigate and withstand hazards; increases occupant safety	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
Retrofit or construct new drainage systems	Winter Storms/Flooding /Flash Flood	Local, State, Federal	\$250,000+	Reduces or eliminates the severity of a flood event	Time, personnel, funding,	Board of Supervisors	Short Term	High
Objective #3: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event.								
Clear flood ditches and keep streams/creeks free of debris	Winter Storms/Flooding /Flash Flood	Local	Included in budget	Ensures proper water flow	Time, personnel, funding,	-	Long Term	High
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.								
Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Review community policies to ensure community buildings are open and available	Thunderstorm/Lightning/Hail, Tornado/Windstorm/Fire	Local	Included in budget	City residents will be able to seek protection from a hazard event	Time, personnel	Board of Supervisors	Short Term	High

to residents during extreme weather								
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery								
Provide training to emergency response personnel; maintain a list or directory of volunteers to respond to disasters	Thunderstorm/Lightning/Hail, Tornado/Windstorm/Fire	Local, State, Federal	Included in budget	Fosters disaster resiliency	Time, personnel, funding	Board of Supervisors	Long Term	High
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Tornado drills in schools and public buildings	Thunderstorm/Lightning/Hail/Tornado	Local, State, Federal	Included in budget	Enhances community disaster preparedness	Time, personnel, funding	School	Long Term	High
Ensure communication equipment is in working order	Thunderstorm/Lightning/Hail/Tornado/Winter Storms/Flooding	Local	Included in budget	Allows time for repairs or new equipment to be ordered before a disaster event	Time, personnel, funding	Board of Supervisors	Short Term	High

Objective #2: Communities will create and implement public education programs in schools to encourage safe hazard response practices to ensure youth safety								
Tornado drills in schools and public buildings	Thunderstorm/Lightning/Hail/Tornado	Local, State, Federal	Included in budget	Enhances community disaster preparedness	Time, personnel, funding	School	Long Term	High
Objective #3: Communities will maintain communication and cooperation with neighboring communities.								
28-E Agreement with neighboring communities	Thunderstorm/Lightning/Hail/Tornado/Winter Storms/Flooding	Local, State, Federal	Included in budget	Promotes a regional response and recovery to disaster events	Time, personnel, funding	Board of Supervisors	Short Term	Medium

Coin

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.								
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium

Encourage residents and businesses to identify resources available after a disaster	Thunderstorm/ Lightning/Hail, Tornado/Winds torm/Fire	Local	Free	Enhances community disaster preparedness	Time, personnel	Board of Supervisors	Short Term	High
Police and Fire department are properly equipped and in working order	Thunderstorm/ Lightning/Hail, Tornado/Winds torm/Fire	Local	Included in budget	Enhances community disaster preparedness	Time, personnel, funding	Board of Supervisors	Long Term	High
Ensure communication equipment is working and in good order.	Thunderstorm/ Lightning/Hail, Tornado/Winds torm/Fire	Local	Included in budget	Improves first responder response times	Time, funding	Board of Supervisors	Short Term	Medium
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures.								
Ensure manufactured housing is properly secured. Remove fuel that increase risk of fire. Continue to maintain public infrastructure and services in good condition.	Fire/Flooding/ Winter Storms	Local	Included in budget	Lowers the probability of a significant fire outbreak	Time, personnel, funding	Board of Supervisors	Short Term	High
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity.								
Plan and maintain adequate roads; clear debris	Thunderstorm/ Lightning/Hail/ Tornado/Winds torm/Fire	Local	Included in budget	Lowers the probability and/or severity of flooding or other hazard events; ensures emergency personnel are able to respond quickly	Time, personnel, funding	Board of Supervisors	Long Term	High

GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.

Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Purchase supplemental cots and blankets that may be used in an emergency.	Thunderstorm/ Lightning/Hail/ Tornado/Winds torm/Fire	Local, State	\$1,000	Provides warmth	Time, personnel, funding	Board of Supervisors	Short Term	Low
Purchase and install backup generator for City Hall.	Thunderstorm/ Lightning/Hail/ Tornado/Winds torm/Fire	Local, State, Federal	\$6,000-\$10,000	Provides electricity when the grid is down	Time, personnel, funding	Board of Supervisors	Short Term	High
Maintain infrastructure that protects critical facilities. Review policies and procedures to ensure facilities are open and available.	Thunderstorm/ Lightning/Hail/ Tornado/Winds torm/Fire	Local	Included in budget	Allows time for repairs or new equipment to be ordered before a disaster event; ensures residents have protection during and after a hazard event	Time, personnel, funding	Board of Supervisors	Short Term	High

Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery

Provide NIMS training. Purchase necessary equipment and tools needed. Encourage enlistment of volunteers to train for response to hazards.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Fire	Local	Free	Enhances community disaster preparedness	Time, personnel, funding	Board of Supervisors	Short Term	High
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Educate citizens about grass fires and droughts. Ensure fire hydrants are properly marked by pressure rating.	Fire/Drought	Local	\$500-\$2,000	Teaches residents on how to respond to a fire event	Time, personnel, funding	Board of Supervisors	Short Term	High
Create and maintain evacuation routes for safety. Ensure all early warning mechanisms are properly functioning. Organize outreach to vulnerable populations. Make sure citizens know	Thunderstorm/Lightning/Hail/Tornado/Windstorm	Local	\$500-\$5,000	Enhances community disaster preparedness	Time, personnel, funding	Board of Supervisors	Short Term	High

where to get Weather Alert Radios.								
Educate residents of hazard risks through newsletters, training classes, etc. Conduct fire/tornado drills in public buildings done in conjunction EMS	Thunderstorm/ Lightning/Hail/ Tornado/Winds torm	Local	Included in budget	Enhances community disaster preparedness	Time, personnel, funding	Board of Supervisors	Short Term	Medium
Educate public of alternative safe locations	Thunderstorm/ Lightning/Hail/ Tornado/Winds torm	Local	Included in budget	Enhances community disaster preparedness	Time, personnel, funding	Board of Supervisors	Short Term	Medium
Create committee to coordinate hazard mitigation operations.	Thunderstorm/ Lightning/Hail/ Tornado/Winds torm	Local	Included in budget	Enhances community disaster preparedness	Time, personnel, funding	Board of Supervisors	Short Term	High
Objective #2: Communities will maintain communication and cooperation with neighboring communities.								
28-E Agreement	Thunderstorm/ Lightning/Hail/ Tornado/Winds torm	Local	Included in budget	Regional response and recovery effort	Time, personnel, funding	Board of Supervisors	Long Term	High

College Springs

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/L ightning/Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors, City Council	Long Term	Medium
Continue to press towards mitigation of factors that would present a maximum response and assistance when confronted with conditions of emergency in nature.	Thunderstorm/L ightning/Hail/Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Provides a baseline for community to judge how much improvement is required to be effective in disaster response and recovery	Time, personnel, funding,	Board of Supervisors, City Council	Short Term	High

GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.

Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Keep streets open and passable for emergency vehicles.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Mitigates flood and fire risk	Time	City Council	Short Term	High
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
28-E Agreement	Thunderstorm/Lightning/Hail/Tornado/Windstorm	Local	Included in budget	Regional response and recovery effort	Time, personnel, funding	City Council	Long Term	High

Essex

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Maintain and enforce Code of Ordinances and enforce building codes	Flooding, Thunderstorm/L ightning/Hail, Tornado/Windstorm	Local	\$0 to \$500 barring litigation	Promotes development practices that can withstand or mitigate hazard damages and risk	Time, personnel, funding, enforcement	City Council, Board of Supervisors, Building Inspector	Short Term / Continuous	Medium

Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures.

Buyout of at risk properties	Flooding, Thunderstorm/L ightning/Hail, Tornado/Windstorm	Local	Depends on property	Removes dilapidated properties and reduces risk of property damage or fire hazard	Time, personnel, funding, enforcement	City Council, Board of Supervisors, Building Inspector	Short Term / Continuous	High
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Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity.

Back-up generators would ensure that the water and wastewater systems continue to function during a long-term power outage. In case of a fire during a power outage, the continued functioning of the water system is required for proper fire suppression and continued water usage by residents	Flooding, Thunderstorm/L ightning/Hail, Tornado/Windstorm	Local, State, Federal	\$4000 to \$10000 per generator	Ensures emergency responders and community service providers are able to operate during a power outage	Time, personnel, funding,	City Council, Board of Supervisors	Long Term	High
Ensure streets will be cleared and/or repaired following adverse weather	Flooding, Thunderstorm/L ightning/Hail, Tornado/Windstorm/ Severe winter storm	Local, State	No cost	Ensures hazards will have minimal impact on roadway transportation	Time, personnel, funding,	City Council, Public Works Director, Board of Supervisors, County Engineer	Continuous	Medium
Purchase backup, quick switch generators for waste water plant, water pumps, school, and east gym	Flooding, Thunderstorm/L ightning/Hail, Tornado/Windstorm/ Severe winter storm	Local, State, Federal	\$4000 to \$10000 per generator	Ensures emergency responders and community service providers are able to operate during a power outage	Time, personnel, funding,	City Council, Board of Supervisors	Long Term	High

GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.

Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Construct a Red Cross certified and FEMA approved safe room/s in a public facility	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
Update emergency siren	Tornado/Windstorm	Local, State, Federal	Varying based on needed maintenance	Increases early warning notification to people which can mitigate risk to loss of life in the event of a hazard incident	Time, personnel, funding	Fire Chief, Police Chief, County Sheriff, Emergency Management Director	Continuous	Medium

Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery

Ensure Fire Department is properly staffed	Thunderstorm/Lightning/Hail/Tornado/Winter Storms/Flooding	Local	No cost	Ensure emergency response departments are adequately staffed to handle emergency situations	Time, personnel, funding, commitment	City Council, Board of Supervisors, Emergency Management Director	Continuous	High
Maintain fire department HAZMAT training	Thunderstorm/Lightning/Hail/Tornado/Winter Storms/Flooding	Local	Within current budget	Increases knowledge of hazards and safety techniques to prevent hazard risk	Time, personnel, funding, commitment	Emergency Management Director	Continuous	Medium
Objective#3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster.								
Maintain Mutual Aid Agreements with surrounding city and county emergency departments and law enforcement	Thunderstorm/Lightning/Hail/Tornado/Winter Storms/Flooding	Local	Within current budget	Ensures communities/jurisdictions with limited resources have access to emergency response and services	Time, personnel, funding,	Emergency Management Director, City Council, Board of Supervisors	Continuous	High
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority

Identify and promote public organizations that can hold training events or create classes that relate to hazard awareness	Thunderstorm/Lightning/Hail/Tornado/Winter Storms/Flooding	Local, State, Private Sector	\$2500 to \$5000	Promotes awareness of hazards and educates the public on how to handle and prepare for hazard events using existing resources	Time, personnel, funding, organization opportunities	School Superintendent, Emergency Management Director	Continuous	Medium

Northboro

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
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Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/ Lightning/Hail, Tornado/Winds torm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
Maintain and enforce building codes regulating building construction to avoid structural failure	Thunderstorm/ Lightning/Hail, Tornado/Winds torm/Fire	Local	Included in budget	Increases the likelihood infrastructure are able to mitigate and withstand hazards; increases occupant/user safety	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
Maintain infrastructure in good condition	Thunderstorm/ Lightning/Hail, Tornado/Winds torm/Fire	Local, State, Federal	Included in budget	Reduces the cost of repairs or replacement after a disaster event	Time, personnel, funding	Board of Supervisors	Short Term	High
Maintain all local Emergency Response Plans	Thunderstorm/ Lightning/Hail, Tornado/Winds torm/Fire	Local	Included in budget	Enhances community disaster preparedness	Time, personnel	Board of Supervisors	Short Term	High
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures.								
Renovate or demolish existing dilapidated structures that could pose harm to the community in a storm	Thunderstorm/ Lightning/Hail, Tornado/Winds torm/Fire	Local, State, Federal	\$25,000-\$50,000	Removes vulnerable structures that become bigger hazards during a hazard event	Time, personnel, funding	Board of Supervisors	Long Term	Medium

Ensure that streets and infrastructure will be clear of debris following a natural disaster	Thunderstorm/Lightning/Hail, Tornado/Windstorm/Fire	Local	Included in budget	Reduces damage from floods, fires, and other weather related events	Time, personnel, funding	Board of Supervisors	Short Term	High
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.								
Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Repair Main Street Bridge in order to maintain community evacuation routes	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$100,000 - \$1,000,000	Ensures a safer evacuation route	Time, personnel, funding	Board of Supervisors	Long Term	High
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery								
Ensure fire hydrants are properly marked by pressure rating	Fire	Local	Included in budget	Ensures that equipment is ready to fight fires	Time, personnel, funding	Board of Supervisors	Short Term	High
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
	Related Hazard	Funding	Potential Costs	Benefit	Obstacles	Responsibility	Time	Priority

Action Measures								
Educate citizens of the potential driving hazards posed by winter storms	Winter Storms	Local	Included in Budget	Prepares residents to deal with snow and ice on the roads	Time, personnel, funding	Board of Supervisors	Long Term	Low
Encourage citizens to develop and have an emergency plan and survival kit	Thunderstorm/Lightning/Hail, Tornado/Winds torm/Fire	Local	Free	Enhances community disaster preparedness	Time, personnel, funding	Board of Supervisors	Short Term	Medium
Objective #2: Communities will maintain communication and cooperation with neighboring communities.								
28-E Agreement; surrounding departments	Thunderstorm/Lightning/Hail, Tornado/Winds torm/Fire	Local	Included in budget	Regional response and recovery to disasters	Time, personnel, funding	Board of Supervisors	Short Term	High

Shambaugh

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
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Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/Lightning /Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
Purchase signage and post at relevant locations	Thunderstorm/Lightning /Hail, Tornado/Windstorm	Local, State	\$1,000-5,000	Directs residents to safe locations during or after a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.								
Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles	Responsibility	Time Frame	Priority

Action Measures								
Provide an alert system to notify residents when there is a problem in the city with water, sewer, etc.; Purchase software to send out alert calls	Thunderstorm/Lightning /Hail/Tornado/Windstorm/Winter Storms	Local, State, Federal	\$10,000	Improves communication regarding disaster events	Time, personnel, funding,	City Council	Long Term	Medium
Obtain permission from businesses providing shelter	Thunderstorm/Lightning /Hail, Tornado/Windstorm	Local	Included in budget	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Business owners	Short Term	High
Churches have offered basements as shelters	Thunderstorm/Lightning /Hail, Tornado/Windstorm	Local	Included in budget	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Churches	Short Term	High

Shenandoah

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.

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Action Measures								
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/ Lightning/Hail /Tornado/Wind storm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
Upgrade City Wastewater Treatment Facility over the next 3 years to comply with new DNR regulations to better serve the Community's wastewater needs.	Flooding/Winter Storms	Local, State, Federal	\$750,000+	-	Time, personnel, funding,	Board of Supervisors	Short Term	High
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures.								
Maintain standards and methods that protect power lines and infrastructure from potential risks.	Thunderstorm/ Lightning/Hail/ Tornado/Windstorm/ Winter Storms	Local, State	Included in budget	Increases the likelihood infrastructure are able to mitigate and withstand hazards; increases occupant/user safety	Time, personnel, funding,	City Council	Long Term	High

Adopt, maintain, and enforce building codes and remove dilapidated properties.	Thunderstorm/Lightning/Hail/Tornado/Winter Storms	Local, State, Federal	-	Increases the likelihood structures are able to mitigate and withstand hazards; increases occupant safety	Time, personnel, funding,	City Council	Long Term	High
Clear flood and drainage ditches from blockages that would enhance flood risk and/or damage.	Flooding/Winter Storms	Local	Included in budget	Reduces or eliminates the severity of a flood event	Time, personnel, funding,	City Council	Short Term	Medium
Remove combustible items that increases the risk of fire hazard, including but not limited to, abandoned homes, dead trees, yard waste and debris, etc.	Fire	Local	Included in budget	Reduces or eliminates the severity of a fire event	Time, personnel, funding,	City Council	Short Term	Medium
Complete and continue to maintain erosion control project at East Nishnabotna River bend adjacent to City Airport.	Flooding/Winter Storms	Local, State	Included in budget	Protects environment and infrastructure	Time, personnel, funding,	City Council	Long Term	Medium
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.								
Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.								
	Related Hazard	Funding	Potential Costs	Benefit	Obstacles	Responsibility	Time Frame	Priority

Action Measures								
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery								
Work with Page County Communications to ensure all emergency response vehicles and personnel have clear communication capabilities across the entire County.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms	Local, State, Federal	Included in budget	Improves emergency communication and response for first responders	Time, personnel, funding	City Council	Short Term	High
Continue participation in the statewide Alert Iowa System mass notification system.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms	Local, State, Federal	Included in budget	Improves emergency communication, response for first responders, and community recovery	Time, personnel, funding	City Council	Short Term	High
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority

Make weather alert radios available to citizens	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms	Local, State, Federal	\$20-35 per unit	Alerts residents of approaching hazards and recovery efforts	Time, personnel, funding	City Council	Short Term	Medium
Objective #2: Communities will create and implement public education programs in schools to encourage safe hazard response practices to ensure youth safety								
Identify and invite outside organizations that can teach hazard safety to youth.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms	Local, State, Federal	Included	Increases community preparedness	Time, personnel, funding	City Council	Short Term	High

Yorktown

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.								
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority

Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
Continue to press towards mitigation of factors that would present a maximum response and assistance when confronted with conditions of emergency in nature.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Provides a baseline for community to judge how much improvement is required to be effective in disaster response and recovery	Time, personnel, funding,	Board of Supervisors	Short Term	High

GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.

Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Keep streets open and passable for emergency vehicles.	Thunderstorm/Lightning/Hail/Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Mitigates flood and fire risk	Time	Board of Supervisors	Short Term	High

GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.

Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Maintain 28-E Agreement	Thunderstorm/Lightning/Hail/Tornado/Windstorm	Local	Included in budget	Regional response and recovery effort	Time, personnel, funding	Board of Supervisors	Long Term	High

Clarinda Community School District

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Clarinda School District	Long Term	Medium

Review and update post-disaster recovery plan to minimize the impacts of a disaster.	Thunderstorm/Lightning/Hail, Tornado/Winter Storm	Local	Included in budget	Community preparedness	Time, personnel, funding,	Clarinda School District	Short Term	High
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.								
Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Provide training to emergency response personnel (ex. NIMS training)	Thunderstorm/Lightning/Hail, Tornado/Winter Storms/Flooding	-	Free	Improves communication; disaster responses and recovery	Time	Clarinda School District	Short Term	Medium
Encourage the enlistment of volunteers to respond to disasters and maintain a directory or list of volunteers	Thunderstorm/Lightning/Hail, Tornado/Winter Storms/Flooding	Local, State, Federal	Included in budget	Enhances community resiliency, disaster response, and recovery	Time, personnel, funding	Clarinda School District	Short Term	High
Ensure communications equipment is available and working between all	Thunderstorm/Lightning/Hail, Tornado/Winter Storms/Flooding	Local, State, Federal	Included in budget	Improves communication; disaster responses and recovery	Time, personnel, funding	Clarinda School District	Short Term	High

government operations								
Objective #2: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster.								
Create or maintain policies that provide guidelines that designate secondary locations and/or personnel to handle disaster response and recovery	Thunderstorm/Lightning/Hail, Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Enhances community resiliency, disaster response, and recovery	Time, personnel, funding	Clarinda School District	Short Term	High
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority

Support severe weather awareness week and create or continue campaigns that support awareness of hazards and proper safety techniques	Thunderstorm/Lightning/Hail, Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Enhances community resiliency, disaster response, and recovery	Time, personnel, funding	Clarinda School District	Long Term	Medium
Conduct tornado drills in schools and public buildings	Thunderstorm/Lightning/Hail, Tornado/Windstorm/Winter Storms/Flooding	Local	Included in budget	Prepares residents and youth for disaster events	Time, personnel, funding	Clarinda School District	Short Term	High
Objective #2: Communities will create and implement public education programs in schools to encourage safe hazard response practices to ensure youth safety								
Conduct fire safety education in schools	Fire	Local	Included in budget	Prepares youth to respond to fire events	Time, personnel, funding	Clarinda School District	Short Term	High

Essex Community School District

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
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Construct safe room/s constructed to FEMA 361 Guidance in a public facility	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.								
Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Review crisis response manual; ensure that the safe room is open during school hours	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local	No cost	Ensures communities/jurisdictions have a designated facility that can provide services or emergency response from outside of affected hazard zones	Time, personnel, funding,	Superintendent, Principals, Staff	Short Term	High
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery								
Have first aid kits ready	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	No cost	Helps protect vulnerable populations from hazard events	Time, personnel, funding, commitment	Emergency Management Director	Continuous	Medium

GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.

Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Conduct fire safety education in schools.	Fire	In budget	minimal	Promotes hazard awareness and teaches proper safety techniques in the event of a hazard incident	Time, personnel, funding	Emergency Management Director, Fire Chief, School Superintendent	Continuous	High

Shenandoah Community School District

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Construct safe room/s constructed to FEMA 361 Guidance in a public facility	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	Board of Supervisors	Long Term	Medium

GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.

Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Review crisis response manual; ensure that the safe room is open during school hours	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local	No cost	Ensures communities/jurisdictions have a designated facility that can provide services or emergency response	Time, personnel, funding,	Superintendent, Principals, Staff	Short Term	High

				from outside of affected hazard zones				
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery								
Have first aid kits ready	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	No cost	Helps protect vulnerable populations from hazard events	Time, personnel, funding, commitment	Emergency Management Director	Continuous	Medium
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Conduct fire safety education in schools.	Fire	In budget	minimal	Promotes hazard awareness and teaches proper safety techniques in the event of a hazard incident	Time, personnel, funding	Emergency Management Director, Fire Chief, School Superintendent	Continuous	High
Objective: Communities will maintain communication and cooperation with the community and neighboring communities.								

Fire alarm systems in schools; communication systems between fire and police departments	Fire	Local	\$0-\$250	Ensures emergency response equipment properly functions so that emergency response personnel are adequately equipped to save and protect lives	Time, personnel, funding	Emergency Management Director, Fire Chief, School Superintendent	Continuous	Medium
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South Page Community School District

GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.

Objective #1: Protect health, safety and quality of life of Page County students by ensuring effective response to all hazards.

Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.	Thunderstorm/Lightning/Hail, Tornado/Windstorm	Local, State, Federal	\$6000 to \$8700 for 8x8sqft room in new building 20% more for existing building	Provides a safe area in which populations can seek protection during a hazard event	Time, personnel, funding,	School Board	Long Term	Medium

GOAL #2 - Ensure government/school operations, response, and recovery are not significantly disrupted by disasters.

Objective #1: Communities will ensure public facilities are available and operational during a disaster or hazard event.								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Purchase backup generators for critical buildings for disaster response	Thunderstorm/ Lightning/Hail, Tornado/Winds torm/ Severe winter storm	Local, State, Federal	\$6,000- \$10,000	Provides an alternate energy source. Limits the time that building operations are down.	Funding		Long Term	Medium
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.								
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures								
Action Measures	Related Hazard	Funding Source	Potential Costs	Benefit	Obstacles to Implementation	Responsibility	Time Frame	Priority
Conduct fire safety education in schools.	Fire	In budget	minimal	Promotes hazard awareness and teaches proper safety techniques in the event of a hazard incident	Time, personnel, funding	Emerge ncy Manage ment Director, Fire Chief, School	Continu ous	High

						Superintendent		
Conduct severe weather and winter weather awareness educational campaigns	Thunderstorm/Lightning/Hail, Tornado/Windstorm/ Severe winter storm	In budget	\$0-\$500	Promotes awareness of hazards and educates the public on how to handle and prepare for hazard events	Time, personnel, funding	Emergency Management Director, Fire Chief, School Superintendent	Continuous	High

Changes in Priorities and Completed Projects

The following goals and objectives were adopted in the 2011 plan. For the plan update most jurisdictions chose new action items to guide decisions to mitigate hazards based off the updated analysis. Most action items have been completed or are continued and maintained regularly through local budgeting. The Hazard Mitigation Plan guides local jurisdictions when they are incorporating the action items via annual budgets and allocating local funding for these projects. Others were not completed due to lack of funding. The below chart outlines updates to each item:

Blanchard Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.				X			
Continue to press towards mitigation of factors that would present a maximum response and assistance when confronted with conditions of emergency in nature.			X				
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							

Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Keep streets open and passable for emergency vehicles.			X				
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
We will continue to maintain our community building as a response center for our community.			X				
Objective #2: Communities will maintain communication and cooperation with neighboring communities							

Braddyville Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.						X	
Continue to press towards mitigation of factors that would present a maximum response and assistance			X				

when confronted with conditions of emergency in nature.							
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Keep streets open and passable for emergency vehicles.			X				
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Objective #2: Communities will maintain communication and cooperation with neighboring communities							
28-E Agreement			X				

Clarinda Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							

Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.						X	
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Adopt and enforce building codes that implement disaster resistance						X	
Retrofit or construct new drainage systems						X	
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
Clear flood ditches and keep streams/creeks free of debris .			X				
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Backup generators for critical buildings for disaster response	X						
Review community policies to ensure community buildings are open and available to residents during extreme weather			X				
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Provide training to emergency response personnel; maintain a			X				

list or directory of volunteers to respond to disasters							
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Tornado drills in schools and public buildings			X				
Ensure communication equipment is in working order			X				
Objective #2: Communities will maintain communication and cooperation with neighboring communities							
28-E Agreement with neighboring communities			X				

Coin Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.					X		
Encourage residents and businesses to identify resources available after a disaster			X				

Police and Fire department are properly equipped and in working order			X				
Ensure communication equipment is working and in good order.			X				
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Ensure manufactured housing is properly secured. Remove fuel that increase risk of fire. Continue to maintain public infrastructure and services in good condition.			X				
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Plan and maintain adequate roads; clear debris			X				
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Purchase supplemental cots and blankets that may be used in an emergency.				X			
Purchase and install backup generator for City Hall.				X			
Maintain infrastructure that protects critical facilities. Review policies and procedures			X				

to ensure facilities are open and available.							
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Purchase and install new tornado siren.	X						
Provide NIMS training. Purchase necessary equipment and tools needed. Encourage enlistment of volunteers to train for response to hazards.			X				
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Educate citizens about grass fires and droughts. Ensure fire hydrants are properly marked by pressure rating.			X				
Create and maintain evacuation routes for safety. Ensure all early warning mechanisms are properly functioning. Organize outreach to vulnerable populations. Make sure citizens know where to get Weather Alert Radios.		X					
Educate residents of hazard risks through newsletters, training classes, etc. Conduct fire/tornado drills in				X			

public buildings done in conjunction EMS							
Educate public of alternative safe locations				X			
Create committee to coordinate hazard mitigation operations.				X			
Objective #2: Communities will maintain communication and cooperation with neighboring communities							
28-E Agreement	X						

College Springs Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.				X			
Continue to press towards mitigation of factors that would present a maximum response and assistance when confronted with conditions of emergency in nature.			X				
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							

Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Keep streets open and passable for emergency vehicles.			X				
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Objective #2: Communities will maintain communication and cooperation with neighboring communities							
28-E Agreement			X				

Essex Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Maintain and enforce Code of Ordinances and enforce building codes			X				
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							

Buyout of at risk properties			X				
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Back-up generators would ensure that the water and wastewater systems continue to function during a long-term power outage. In case of a fire during a power outage, the continued functioning of the water system is required for proper fire suppression and continued water usage by residents	X						
Ensure streets will be cleared and/or repaired following adverse weather			X				
Purchase backup, quick switch generators for waste water plant, water pumps, school, and east gym		X					
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Construct a Red Cross certified and FEMA approved safe room/s in a public facility					X		
Update emergency siren					X		
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							

Ensure Fire Department is properly staffed			X				
Maintain fire department HAZMAT training			X				
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
Maintain Mutual Aid Agreements with surrounding city and county emergency departments and law enforcement			X				
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Identify and promote public organizations that can hold training events or create classes that relate to hazard awareness					X		
Objective #2: Communities will maintain communication and cooperation with neighboring communities							

Northboro Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.				X			

Maintain and enforce building codes regulating building construction to avoid structural failure			X				
Maintain infrastructure in good condition			X				
Maintain all local Emergency Response Plans			X				
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Renovate or demolish existing dilapidated structures that could pose harm to the community in a storm			X				
Ensure that streets and infrastructure will be clear of debris following a natural disaster			X				
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Repair Main Street Bridge in order to maintain community evacuation routes				X			
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Ensure fire hydrants are properly marked by pressure rating			X				

Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Educate citizens of the potential driving hazards posed by winter storms			X				
Encourage citizens to develop and have an emergency plan and survival kit			X				
Objective #2: Communities will maintain communication and cooperation with neighboring communities							
28-E Agreement; surrounding departments			X				

Shambaugh Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.					X		
Purchase signage and post at relevant locations				X			

Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Relocate all city records to clerk's office	X						
Secure city maintained building	X						
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Provide an alert system to notify residents when there is a problem in the city with water, sewer, etc.; Purchase software to send out alert calls		X					
Obtain permission from businesses providing shelter					X		
Churches have offered basements as shelters	X						
Objective #2: Communities will maintain communication and cooperation with neighboring communities							

Shenandoah Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.							X
Upgrade City Wastewater Treatment Facility over the next 3 years to comply with new DNR regulations to better serve the Community's wastewater needs.						X	
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Maintain standards and methods that protect power lines and infrastructure from potential risks.							X
Adopt, maintain, and enforce building codes and remove dilapidated properties.			X				
Clear flood and drainage ditches from blockages that would enhance flood risk and/or damage.			X				
Remove combustible items that increases the risk of fire hazard, including but not			X				

limited to, abandoned homes, dead trees, yard waste and debris, etc.							
Complete and continue to maintain erosion control project at East Nishnabotna River bend adjacent to City Airport.			X				
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Upgrade police vehicle communications equipment to include tablet computers and new mobile radios within the next 5 years.	X						
Work with Page County Communications to ensure all emergency response vehicles and personnel have clear communication capabilities across the entire County.			X				
Continue participation in the statewide Alert Iowa System mass notification system.							X
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							

Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Make weather alert radios available to citizens					X		
Objective #2: Communities will maintain communication and cooperation with neighboring communities							
Identify and invite outside organizations that can teach hazard safety to youth.				X			

Yorktown Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.					X	X	
Continue to press towards mitigation of factors that would present a maximum response and assistance when confronted with conditions of emergency in nature.							
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							

GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Keep streets open and passable for emergency vehicles.			X			X	
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Objective #2: Communities will maintain communication and cooperation with neighboring communities							
Maintain 28-E Agreement			X			X	

Page County (unincorporated) Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Page County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
The County will ensure all mechanisms for early warning of hazards are properly functioning. EMA/Dispatch will check sirens monthly and mass notification system quarterly.		X updating sirens for Coin and College Springs (they may include this)	X			X	

Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Adopt and enforce building codes that improve disaster resistance and are manageable to enforce			X				
The County (Engineer Department) will prohibit or limit floodplain development through regulatory based measures (Zoning).			X				
The County (Engineer) will maintain drainage systems to meet proper capacity requirements and provide adequate drainage systems.			X				
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
The County will plan for and maintain adequate road and debris clearing capabilities.			X				
The County will encourage businesses to identify resources that would be available in the event of a disaster.			X				
The County will establish standards and methods that protect power lines and infrastructure from potential risks, including tree pruning and burying power lines.			X				

Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
The County Engineer Department will clear flood ditches from blockages that would enhance flood risk and/or damage.			X				
Keep streams, creeks and flood ditches clear of debris and blockages to ensure they flow properly			X				
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
The County will ensure public buildings critical to disaster response have back-up generators.			X			X	
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Ensure emergency response teams are adequately staffed			X				
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
The County will maintain 28-E agreements with surrounding communities			X				
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
The County will produce and distribute			X				

family and traveler emergency preparedness information.							
Objective #2: Communities will maintain communication and cooperation with neighboring communities							
Ensure communications equipment is available and working between all government operations			X				

Clarinda CSD Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.				X			
Review and update post-disaster recovery plan to minimize the impacts of a disaster.			X				
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							

Provide training to emergency response personnel (ex. NIMS training)			X				
Encourage the enlistment of volunteers to responds to disasters and maintain a directory or list of volunteers			X				
Ensure communications equipment is available and working between all government operations			X				
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
Create or maintain policies that provide guidelines that designate secondary locations and/or personnel to handle disaster response and recovery			X				
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Support severe weather awareness week and create or continue campaigns that support awareness of hazards and proper safety techniques			X				
Conduct tornado drills in schools and public buildings			X				

Objective #2: Communities will maintain communication and cooperation with neighboring communities							
Conduct fire safety education in schools			X				

Essex CSD Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility					X		
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Review crisis response manual; ensure that the safe room is open during school hours			X				
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Have first aid kits ready			X				
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							

GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Conduct fire safety education in schools.			X				
Objective #2: Communities will maintain communication and cooperation with neighboring communities							
Fire alarm systems in schools; communication systems between fire and police departments			X				

Shenandoah CSD Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility				X			
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							
Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Review crisis response manual; ensure that the			X				

safe room is open during school hours							
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Have first aid kits ready			X				
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Conduct fire safety education in schools.			X				
Objective #2: Communities will maintain communication and cooperation with neighboring communities							
Fire alarm systems in schools; communication systems between fire and police departments			X				

South Page CSD Action Update

	Status						
	Complete	Underway	Ongoing	Future	Not Implemented	Carry Over	Delete
GOAL #1 - Protect the health, safety and quality of life for Cass County citizens while reducing or eliminating property losses, economic costs, and damage to the natural environment caused by a disaster.							
Objective #1: Protect health, safety and quality of life of Page County residents by ensuring effective response to all hazards.							
Construct safe room/s constructed to FEMA 361 Guidance in a public facility.				X			
Objective #2: Prevent and reduce property and infrastructure damage by maintaining and improving property protection measures							

Objective #3: Prevent economic loss by improving disaster resistance to resources supporting economic activity							
Objective #4: Promote and initiate measures that protect the natural environment and help mitigate or prevent damages caused by a disaster or hazard event							
GOAL #2 - Ensure government operations, response, and recovery are not significantly disrupted by disasters.							
Objective #1: Ensure public facilities are available and operational during a disaster or hazard event.							
Purchase backup generators for critical buildings for disaster response				X			
Objective #2: Communities will ensure Emergency Response personnel are properly equipped and trained to handle disaster response and recovery							
Objective #3: Communities will ensure identify or designate alternative operations in the event that response and recovery are impacted by a disaster							
GOAL #3 - Expand public awareness and encourage intergovernmental cooperation, coordination and communication to build a more resilient community against all hazards.							
Objective #1: Communities will Enhance public education through programs that expand public awareness about hazard risks and mitigation and safety measures							
Conduct fire safety education in schools.			X				
Conduct severe weather and winter weather awareness educational campaigns			X				
Objective #2: Communities will maintain communication and cooperation with neighboring communities							

Local Capability Assessment

The local capability assessment determines the resource capabilities accessible to each jurisdiction. This assessment evaluated the planning capabilities, studies and reports completed, the staff and departments, non-governmental organizations (NGOs) and other capabilities available in each jurisdiction. By assessing the capabilities prior to a hazard event, limitations in local capabilities can be addressed to strengthen hazard preparedness. During a hazard event, knowledge of the resources available and the limitations present will allow for a quicker response to disaster recovery. A detailed breakdown of each community's capabilities is located in the appendix. Some of the capabilities of the smaller communities are handled through agreements either with neighboring jurisdictions or with the county to provide services, while other capabilities are handled through informal measures.

Where possible, jurisdictions will integrate mitigation planning into its planning mechanisms. This includes comprehensive planning, capital improvement planning/projects, zoning ordinances and Code of Ordinance updates. The emergency management department will encourage emergency resiliency testing in all planning efforts. As part of its outreach, the emergency management department will provide consulting for planning efforts to incorporate mitigation planning.

Planning Capabilities

The planning capabilities of a jurisdiction include written and adopted plans or documents that outline the tools and resources as well as the actions and steps that can be taken to direct future development of services and infrastructure. These documents typically provide medium to long range goals to guide community activities. The planning capabilities of each jurisdiction vary by size of the community. The larger communities and jurisdictions typically have more resources available to develop and write large comprehensive strategies while smaller communities tend to use informal processes to guide development or join other jurisdictions to develop large comprehensive plans.

Communities within Page County primarily rely on the resources of the county to maintain a number of planning capabilities. The County is responsible for and coordinates planning related to emergencies, recovery and mitigation. A county-wide economic development corporation helps aid and attract businesses and tourism to the county. Of the local planning capabilities that have been adopted locally, comprehensive plans and land-use plans are the most common.

Budget Capabilities

The Page County budget includes many items for hazard mitigation. First, the county includes snow removal based on the miles of road maintained including 28E agreements with individual jurisdictions. County Conservation has a budget item for land burning as part of the annual maintenance of parks for regulated brush removal.

Each city has a line item in its budget for snow removal. The amount varies based on the miles of road within the city limits and if any portions are maintained by the county. The amount programmed is typically minimal. Each city participating in the NFIP has the required adopted ordinance to participate.

Policies and Ordinances

Policies and ordinances are capabilities that guide and regulate current development within a community. Typically communities in Page County adopt a Code of Ordinances that include a number of the ordinances outlined in the table below. The most common ordinances that have been adopted by the cities within Page County include zoning ordinances, building ordinances, subdivision ordinances, tree trimming ordinances and nuisance ordinances. Enforcement of adopted ordinances varies from community and the type of ordinance. Zoning and building code ordinances may be more stringently enforced than tree trimming or nuisance ordinances.

Programs

Programs are special or supplemental activities that communities can either join or create to enhance community awareness on a number of issues. These activities and resources can come from a variety of governmental or non-governmental organizations. Many communities also have mutual aid agreements with other local communities or counties to provide a number of services in the form of county-wide emergency response associations. These include the Page County Emergency Management Agency, the Page County Fire Rescue Association, as well as agreements with the Page County Sheriff's Office. All of the community participates in the National Flood Insurance Program and have zoning and land use restrictions. Economic Development is handled county-wide by the Page County Economic Development Corporation.

Studies, Reports and Maps

Studies, reports and maps are documents created while researching specific characteristics of populations, infrastructure or environments that lead to better knowledge and understanding of the targeted area. A number of the studies, reports and maps have been completed for each jurisdiction through the 2017 Multi-jurisdictional Hazard Mitigation Plan and will be updated in this plan. All jurisdictions have flood insurance maps and all but three have land use maps

Staff and Departments

The staff and department capability assessment identifies dedicated personnel responsible for handling certain affairs for the community. These include coordinators, specialists, inspectors, other officials or response teams. Because many smaller communities cannot afford to hire dedicated staff for many positions, they are either left vacant, work part-time or have the position contracted out to another organization or government. A number of services are operated at a county level to combine resources so that services are more robust for the county as a whole. An emergency management coordinator, bomb and/or arson squad and hazardous materials expert are all coordinated at the county level. A GIS specialist is employed with the county to handle mapping services. Development in Page County is handled by the Page County Economic Development Corporation and the

regional planning agency is Southwest Iowa Planning Council. Each community has a designated public works official, although their hours of work vary by community.

Non-Governmental Organizations (NGOs)

Non-Governmental Organizations (NGOs) are bodies that may be helpful to communities by being able to provide resources and expertise in a number of areas. The American Red Cross, The Salvation Army Western Division is operated out of Council Bluffs and Omaha and has two offices located in Page County. A number of veterans groups are located or have a presence in the county. The most common veteran's organizations were the American Legion, VFW and the Veterans Affairs. The most common community organizations located in Page County were the 4-H Club, Optimus, Boy and Girl Scouts, the Lions Club and the Kiwanis Club as well as a number of other local organizations.

School District Capabilities

All four of the school districts providing education in the county can levy taxes and bond for capital improvement projects, purchase property and complete construction projects with the adoption of the respective school board. All three districts have a dedicated maintenance manager and an emergency response plan that outlines duties of staff in case of a disaster. Transit is provided by each district individually.

Changes in Development

Overall, there have been few changes in development since the previous plan. Clarinda completed a downtown revitalization project and is currently completing the construction of a new mental health facility. Shenandoah has been improving the city's housing stock the past few years and has started inspecting rental properties. The city has also constructed a Water Treatment Plant in 2017. A Safe Routes to School route was completed in 2017. Essex has complete an update to their comprehensive plan and zoning ordinance. There have been multiple new houses constructed within Essex through the school and a non-profit organization. The cities of Yorktown and Braddyville are working on updates to their code of ordinances. Coin recently completed an update to their code of ordinances. The city of Hepburn disincorporated in 2016 and will no longer be considered a jurisdiction in this plan.

Programs and Funding Sources

National Flood Insurance Program (NFIP)

In 1968, Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves in the event of flooding. Since standard homeowners insurance doesn't cover flooding, many property owners require the additional coverage provided through this program. Insurance coverage policy type can be purchased as building coverage only, contents coverage only or both building and contents coverage. NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities are required to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. The requirement to adopt and enforce ordinances guides future development away from flood prone areas, thus limiting the risks of flooding.

As of 2013, the NFIP has approximately 5.6 million policies in force, representing \$1.3 billion in total coverage. The NFIP is administered by FEMA, which works with nearly 90 private insurance companies to provide coverage for participants. Over 50.6 billion in total payments have been made on claims throughout the nation. Iowa currently has just under 16,000 policies in force with a total of about \$2.9 billion in total coverage.

Table 5:1 - Page County NFIP Policies as of August 2023

Jurisdiction	Policies In-Force	Insurance In-Force Whole (\$)	Written Premium In-Force
Clarinda	1	210,000	408
Shenandoah	2	568,000	1,700

Source: FEMA/NFIP Statistical Agent Bureau

Table 5:2 - Page County Loss Statistics as of October 2023

Jurisdiction	Total Losses	Total Payments
Clarinda	1	\$5,682.30
Shenandoah	20	\$1,150.82

Source: FEMA/NFIP Statistical Agent Bureau

This plan recommends that each participant continue their involvement with the NFIP and remain in good standing. Compliance will ensure communities have access to resources that are available to help with flood mitigation. In addition, communities are encouraged to participate in the Community Rating System as described below.

Table 5:3 - Page County NFIP Participants

Jurisdiction	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Blanchard		04/19/17	04/19/17
Braddyville		04/19/17	04/19/17
Clarinda	06/28/74	07/02/81	04/19/17
Coin		04/19/17	04/19/17
Essex		04/19/17	04/19/17 (M)
Northboro	07/09/76	04/19/17	04/19/17
Shambaugh		04/19/17	04/19/17
Shenandoah	06/28/74	09/01/86	04/19/17 (M)
Yorktown	10/08/76	05/01/11	04/19/17 (M)
Page County		04/19/17	04/19/17
(M) No Elevation Determined – All Zone A, C and X			
(L) Original FIRM by Letter – All Zone A, C and X			
(NSFHA) No Special Flood Hazard Area – All Zone C			

Source: FEMA/NFIP Statistical Agent Bureau

Community Rating System

The NFIP Community Rating System is a voluntary incentive program that recognizes and encourages community floodplain management activities that go beyond the minimum NFIP requirements. Communities meeting the three goals: 1) reduce flood damage to insurable property, 2) strengthen and support the insurance aspects of the NFIP, and 3) encourage a comprehensive approach to floodplain management have shown their commitment in going beyond NFIP requirements. Flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions. To become eligible, communities must be in full compliance with the NFIP and be in the Regular phase of the program.

The Community Rating System (CRS) is divided into 10 classes with the lowest class (10) rating receiving no discount and the highest class (1) rating receiving the largest premium discount. All communities start at class 10 whether they participate in the program or not. After an application is made and credits achieved are assessed, a classification can be given resulting in the discounted premiums. Credits are awarded for each of the 19 activities recognized as measures for eliminating exposure to floods. Activities are organized under four categories: 1) public information, 2) mapping and regulations, 3) flood damage reduction and 4) warning and response.

Table 5:4 - Community Rating System Classes

Rating Class	SFHA*	Non-SFHA**	Credit Points Required
1	45%	10%	4,500 +
2	40%	10%	4,000 – 4,499
3	35%	10%	3,500 – 3,999
4	30%	10%	3,000 – 3,499
5	25%	10%	2,500 – 2,999
6	20%	10%	2,000 – 2,499
7	15%	5%	1,500 – 1,999
8	10%	5%	1,000 – 1,499
9	5%	5%	500 – 999
10	0%	0%	0 – 499
<p>*Special Flood Hazard Area</p> <p>**Preferred Risk Policies are available only in B, C, and X Zones for properties that are shown to have a minimal risk of flood damage. The Preferred Risk Policy does not receive premium rate credits under the CRS because it already has a lower premium than other policies. The CRS credit for AR and A99 Zones are based on non-Special Flood Hazard Areas (non-SFHAs) (B, C, and X Zones). Credits are: classes 1-6, 10% and classes 7-9, 5%. Premium reductions are subject to change.</p>			

Source: FEMA/NFIP Community Rating System

Compliance with NFIP

To remain in good standing with the NFIP program, communities must adopt and enforce floodplain management regulations that meet or exceed the minimum NFIP standards and requirements. These standards are intended to prevent loss of life and property, as well as economic and social hardships that result from flooding. The requirements of a particular community to remain on the program depend on the flood hazard and the level of detail of the data provided by FEMA in the Flood Insurance Rate Maps (FIRMs) and risk assessments.

In order to remain compliant with the NFIP program, participating communities have adopted a number of measures to meet the standards and requirements of the program. These include adopting and implementing as well as enforcing floodplain ordinances, zoning ordinances and building codes to limit building in the flood way or ensuring new development would not be affected by flooding.

Cities will continue participation in the NFIP program. The new FIRM floodplain maps outline changes in affected areas, which means a greater accuracy in mapping. Once FEMA officially adopts the new FIRM maps for Page County, each city will update its Code of Ordinances to reflect any changes.

Severe Repetitive Loss Program

The Severe Repetitive Loss (SRL) grant program was authorized to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss structures insured under the National Flood Insurance Program. An SRL property is defined as one covered under the NFIP program and has at least four NFIP claim payments (including building and contents) over \$5,000, and the cumulative amount of claims payments exceeds \$20,000 or at least two separate claims payments (building payments only) have been made with the cumulative amount exceeding the market value of the building. Either one of the claims also must have been made in a ten year period and must be greater than ten days apart. There are no such properties located in Page County.

Unified Hazard Mitigation Assistance Grant Program

In 2009, the Unified Hazard Mitigation Assistance Grant Program was put together by FEMA as an informative tool in detailing information on five different grant programs offered through FEMA. These programs offer assistance with the goal of reducing the risk of loss of life and property due to natural hazards. The programs are as follows:

- **Hazard Mitigation Grant Program (HMGP)**
HMGP is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (the Stafford Act), Title 42, United States Code (U.S.C.) 5170c. The key purpose of HMGP is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster. HMGP is available, when authorized under a Presidential major disaster declaration, in the areas of the State requested by the Governor. The amount of HMGP funding available to the Applicant is based upon the total Federal assistance to be provided by FEMA for disaster recovery under the Presidential major disaster declaration.
- **Pre-Disaster Mitigation (PDM)**
The PDM program is authorized by Section 203 of the Stafford Act, 42 U.S.C. 5133. The PDM program is designed to assist States, Territories, Indian Tribal governments, and local communities in implementing a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding from future disasters.
- **The Flood Mitigation Assistance**
The FMA program is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended (NFIA), 42 U.S.C. 4104c, with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).
- **Severe Repetitive Loss (SRL)**
The SRL program is authorized by Section 1361A of the NFIA, 42 U.S.C. 4102a, with the goal of reducing flood damages to residential properties that have experienced severe repetitive losses under

flood insurance coverage and that will result in the greatest amount of savings to the NFIF in the shortest period of time.

Table 5:5 - Unified Hazard Mitigation Assistance Grant Program Eligible Activities

Eligible Activities	HMGP	PDM	FMA	RFC	SRL
1.Mitigation Projects	✓	✓	✓	✓	✓
Property Acquisition and Structure Demolition or Relocation	✓	✓	✓	✓	✓
Structure Elevation	✓	✓	✓	✓	✓
Mitigation Reconstruction					✓
Dry Flood proofing of Historic Residential Structures	✓	✓	✓	✓	✓
Dry Flood proofing of Non-residential Structures	✓	✓	✓	✓	
Minor Localized Flood Reduction Projects	✓	✓	✓	✓	✓
Structural Retrofitting of Existing Buildings	✓	✓			
Non-structural Retrofitting of Existing Buildings and Facilities	✓	✓			
Safe Room Construction	✓	✓			
Infrastructure Retrofit	✓	✓			
Soil Stabilization	✓	✓			
Wildfire Mitigation	✓	✓			
Post-disaster Code Enforcement	✓				
5% Initiative Projects	✓				
2.Hazard Mitigation Planning	✓	✓	✓		
3.Management Costs	✓	✓	✓	✓	✓

Source: FEMA

Cost Sharing

In general, HMA funds may be used to pay up to 75 percent of the eligible activity costs. The remaining 2 percent of eligible costs are derived from non-Federal sources. The table below outlines the Federal and State cost share requirements.

Table 5:6 - Hazard Mitigation Assistance Cost Sharing by Program

Programs	Mitigation Activity Grant (Percent of Federal/Non-Federal Share)
HMGP	75/25
PDM	75/25
PDM (sub-grantee is a small impoverished community)	90/10
PDM (Tribal grantee is a small impoverished community)	90/10
FMA	75/25
FMA (severe repetitive loss property with Repetitive Loss Strategy)	90/10
RFC	100/0
SRL	75/25
SRL (with Repetitive Loss Strategy)	90/10

Source: FEMA

Eligible Applicants and Sub-applicants

States, Territories, and Indian Tribal governments are eligible HMA Applicants. Each State, Territory, and Indian Tribal government shall designate one agency to serve as the Applicant for each HMA program. All interested sub-applicants must apply to the Applicant. The table below identifies, in general, eligible sub-applicants.

Table 5:7 - Eligible Sub-applicants by HMA Program

Sub-applicants	HMGP	PDM	FMA	RFC	SRL
State agencies	✓	✓	✓	✓	✓
Indian Tribal governments	✓	✓	✓	✓	✓
Local governments/communities	✓	✓	✓	✓	✓
Private non-profit organizations (PNPs)	✓				

Source: FEMA

Individuals and businesses are not eligible to apply for HMA funds, however, an eligible sub-applicant may apply for funding to mitigate private structures. RFC funds are only available to sub-applicants who cannot meet the cost share requirements of the FMA program.

Local Funding Sources

There are a limited number of local funding sources available to each community in Page County that were identified by the jurisdictions through the local capability assessment. These sources of local funding are available through both local taxes and nonprofit or non-governmental organizations. While these sources of funding might possibly be available for or could incorporate hazard mitigation projects, many of them have their own limitations.

Taxes are a local funding source used by cities to provide services to its residents. Taxes are often levied on a number of items that include sales of goods and services, property or income. These taxes can bring in revenue to provide city services to a community. The amount of revenue a city is able to bring in from taxes is limited by its tax base or the size of the city. Because Page County is primarily a rural county, Braddyville is the only city that has a population over 1,500 with the majority of them having a population under 500. This means that these communities have a small tax base to acquire revenues for city services. Services are often limited to essential items such as utilities, roads, education, emergency response and protection and are even more limited in administrative staff. With small and often constrained budgets, many rural communities often don't have enough funding or resources for additional or large scale projects.

Local organizations are often created to raise funds for certain projects or to promote certain aspects of a community. During the local capability assessment, communities identified local organizations that are sources of available funding. These organizations might provide grant dollars or financial assistance for a number of projects or services. There were very few organizations identified, however, there are many organizations that could contribute volunteer hours and possible fundraising organization.

Table 5:8 – Local Funding Opportunities

Community	Funding Opportunity
Blanchard	
Braddyville	
Clarinda	Clarinda Foundation, Clarinda Economic Development Corporation
Coin	
College Springs	
Essex	Essex Community Club, Lied Foundation

Northboro	
Page County (unincorporated)	Page County Community Foundation Iowa West Foundation Iowa Economic Development USDA Rural Development
Shenandoah	Shenandoah Community Foundation

Section VI: Plan Maintenance

Monitoring, Evaluating, and Updating the Plan

The purpose of this section is to provide information regarding how this document is to be maintained after its adoption. The process of monitoring, evaluation and updating the plan is to keep this document relevant to the activities in the jurisdiction and to address any new developments that may relate to the jurisdiction. By updating the plan, information in this document will be current and hazard mitigation planning will not cease once it has been adopted. Each jurisdiction may prioritize hazard mitigation projects based on individual need with suggestions and input from the public, property owners, and business owners.

Page County jurisdictions will be responsible for monitoring, evaluating, and updating the Page County Multi-Jurisdictional Plan. Updates to this plan will be completed annually. If additions to the plan are to be made, amendments may be proposed and considered separate from the annual review or any other proposed plan amendments. Amendments will be written and provide a report providing applicable information with a recommended action. Proposed amendments to this plan will be submitted to the Page County Emergency Management Coordinator's office. The amendments will be reviewed annually, and the coordinator shall recommend action on the proposed amendments. Review and update of this Plan will occur, at a minimum, every five years as required by FEMA. In order to conduct a thorough review when updating the plan, the following questions should be addressed:

- Are the goals and objectives still relevant?
- Do the goals and objectives reflect expected conditions?
- If any projects have been completed, did they have the anticipated impact on the goal under which they were identified? If not, why?
- Have any of the risks changed due to nature, magnitude and/or type?
- Have there been any plan implementation difficulties? If so, what and how should they be addressed?
- Are current resources available to implement the plan?
- Did the plan accomplish the expected outcomes?
- Are there other agencies that should be involved in the revision process? If so, what agencies?

To ensure continued plan support and input from stakeholders and local residents, notices for public meetings involving discussion of or action on plan updates should be published and posted within the jurisdiction with reasonable advance notice. Notices for public meetings concerning discussion or action on hazard mitigation plan updates will be published and posted for the public two weeks in advance. Public notices may be published or posted using the following:

- Local newspapers
- Radio or television
- Websites
- Public spaces or buildings within the community.

Monitoring Progress and Assessment of Mitigation Activities

A hazard mitigation plan is a requirement for eligibility for project grants under the following hazard mitigation assistance programs: the Hazard Mitigation Grant Program (HMGP), Pre Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA). FEMA reviews plans to ensure that they meet the requirements of the Stafford Act and Title 44 Code of Federal Regulations (CFR) §201.6 and approves plans that comply with those requirements; it administers the mitigation grant programs. Once a jurisdiction is part of a FEMA-approved plan, it may become eligible for up to 75 percent cost-share for a wide variety of projects that have been identified in the plan. Corresponding jurisdictions shall be responsible for the monitoring and reporting of mitigation activities.

Homeland Security and Emergency Management has implemented record keeping and financial reporting for each grant awarded. Grantees are required to submit quarterly reports providing information necessary for effective monitoring activities.

A summary of each project completed will be written and attached to this plan to assist in monitoring the plan. Information in the summary will include a detailed timeline, agencies involved, total funding and sources of funding, etc. Other information to be reported shall include which implementation processes worked best, any difficulties, success of coordination efforts, and which strategies need revision.

Incorporation into Existing Planning Mechanisms

Each jurisdiction will be responsible for making certain that the goals and objectives of this plan are incorporated into appropriate planning mechanisms such as comprehensive plans, zoning, and code of ordinances. This plan should act as a tool and resource for any future planning activities and be reviewed by those involved in the planning process.

Cities, Counties, and local Council of Governments should incorporate this plan into any existing and future plans where appropriate. These could include the following:

- City and County code of ordinances
- City and County comprehensive plans
- Strategic planning
- Watershed planning
- Trails and parks and recreation plans

Because incorporation of hazard mitigation principles into local planning mechanisms is so vital, inclusion of planning agencies and organizations in future hazard mitigation plan updates is recommended.

Hazard Mitigation #2

2/27/23

NAME	ORGANIZATION	EMAIL
Roger Williams	Clarinda Fire	clarindaofd@hotmail.com
Keith Brochert	Clarinda Police	Kbrochert@clarindapolice.com
CRAIG HILL	CLARINDA	CHill78@gmail.com
Jeff Brownfield	Brownfield	jeffreyj.brownfield@gmail.com
Gary McLarnon	City of Clarinda	gmclarnon@cityofclarinda.com
Kim Gotschall	City of B'ville	bvillecityhall@iamtelephone.com
Nancy McKinnon	COSD	nmckinnon@clarinda.csd.org
Tim Hood - South ^{Page}		
City of Council		
Rhonda Sheldon - South ^{Page}		
Robert Brecht - Essex		

Hazard Mitigation Meeting #3

Jill Harvey Page County EMA

Jeff Brownfield Blanchard

Roger Wilhite Clarinda Fire

Mary McIlanna City of Clarinda

Craig Hies City of Clarinda

Kim Lotschall Biville

Jeff Rine Clarinda Schools

Nancy McKinnon Clarinda Schools

Rhonda Sheldon South Page

Appendix B: Section II Appendices

Blanchard Resolution

Braddyville Resolution

Clarinda Resolution

Coin Resolution

College Springs Resolution

Essex Resolution

Northboro Resolution

Shambaugh Resolution

Shenandoah Resolution

Yorktown Resolution

Page County (unincorporated) Resolution

Clarinda CSD Resolution

Essex CSD Resolution

Shenandoah CSD Resolution

South Page CSD Resolution

Appendix C: Section III Appendices

Correspondence email sent to Neighboring Communities

Appendix D: Section IV Appendices

Hazard History

Drought

EVENT_ID	CZ_NAME_STR	BEGIN_DATE	BEGIN_TIME	EVENT_TYPE	DEATHS_DIRECT	INJURIES_DIRECT	DAMAGE_PROPERTY_NUM	DAMAGE_CROPS_NUM	STATE_ABBR	CZ_TIME_ZONE	EPISODE_ID
388744	PAGE (ZONE)	##### #	0	Drought	0	0	0	0	IA	CST-6	64914
399153	PAGE (ZONE)	8/1/2012	0	Drought	0	0	0	0	IA	CST-6	65097
406818	PAGE (ZONE)	9/1/2012	0	Drought	0	0	0	0	IA	CST-6	66563
411810	PAGE (ZONE)	##### #	0	Drought	0	0	0	0	IA	CST-6	68424

Extreme Heat

EVENT_ID	CZ_NAME_STR	BEGIN_DATE	BEGIN_TIME	EVENT_TYPE	DEATHS_DIRECT	INJURIES_DIRECT	DAMAGE_PROPERTY_NUM	DAMAGE_CROPS_NUM	STATE_ABBR	CZ_TIME_ZONE	EPISODE_ID
5711050	PAGE (ZONE)	##### ##	1	Heat	0	0	0	0	IA	CST	2411988
5258952	PAGE (ZONE)	##### ##	1800	Heat	0	0	0	0	IA	CST	1119665
5263122	PAGE (ZONE)	8/1/2001	0	Heat	0	0	0	0	IA	CST	1121482

5467 830	PAGE (ZONE)	##### ##	1100	Heat	0	0	0	0	IA	CST	11952 81
1678 47	PAGE (ZONE)	##### ##	1300	Excessiv e Heat	0	0	0	0	IA	CST-6	28517
2378 33	PAGE (ZONE)	##### ##	1400	Heat	0	0	0	0	IA	CST-6	40830
2368 20	PAGE (ZONE)	##### ##	1100	Heat	0	0	0	0	IA	CST-6	40705
2367 77	PAGE (ZONE)	##### ##	1200	Heat	0	0	0	0	IA	CST-6	40698
2375 06	PAGE (ZONE)	##### ##	1300	Heat	0	0	0	0	IA	CST-6	40792
2435 62	PAGE (ZONE)	8/2/20 10	1300	Heat	0	0	0	0	IA	CST-6	41791
2413 44	PAGE (ZONE)	8/8/20 10	1200	Excessiv e Heat	0	0	0	0	IA	CST-6	41412
3059 99	PAGE (ZONE)	##### ##	1400	Heat	0	0	0	0	IA	CST-6	51477
3102 58	PAGE (ZONE)	##### ##	1300	Heat	0	0	0	0	IA	CST-6	52069
3102 59	PAGE (ZONE)	##### ##	1300	Heat	0	0	0	0	IA	CST-6	52069
3119 99	PAGE (ZONE)	##### ##	1200	Excessiv e Heat	0	0	0	0	IA	CST-6	52267

3177 93	PAGE (ZONE)	##### ##	1300	Heat	0	0	0	0	IA	CST-6	52891
3192 18	PAGE (ZONE)	8/1/20 11	0	Excessiv e Heat	0	0	0	0	IA	CST-6	53365
3807 69	PAGE (ZONE)	##### ##	1300	Heat	0	0	0	0	IA	CST-6	63592
3813 48	PAGE (ZONE)	7/3/20 12	1300	Excessiv e Heat	0	0	0	0	IA	CST-6	63725
3857 18	PAGE (ZONE)	##### ##	1400	Heat	0	0	0	0	IA	CST-6	64248

Hazardous Materials Incident

Location City	Location County	Material Mode	Material Name	Material Type	Material Amount And Qty	Reported Date
	Page	Handling And Storage	Hydrochloric acid	Acids/Bases	300 gal	7/14/2006
	Page	Handling And Storage	Kerosene	Petroleum	200 gal	2/18/2009
	Page	Handling And Storage	nickel bath solution	Inorganic Chemical	50 gal	3/8/2005
	Page	Handling And Storage	Oil	Petroleum	15 gal	10/30/2009
	Page	Handling And Storage	Reverse Osmosis Water	Chlorine	200 gal	6/26/2020
Braddyville	Page	Handling And Storage	Transmission fluid	Petroleum	5 gal	2/22/2019

Clarinda	Page	Handling And Storage	Antifreeze	Organic Chemical	6 gal	1/20/2020
Clarinda	Page	Handling And Storage	Cyanides (soluble salts and complexes)	Organic Chemical	20 lbs	8/15/2011
Clarinda	Page	Handling And Storage	Dye	Paints/Dyes/Organic Solv	1 Unknown	6/23/2016
Clarinda	Page	Handling And Storage	FGS - 614	Organic Chemical	10 gal	10/4/2019
Clarinda	Page	Handling And Storage	Hydraulic Oil	Petroleum	1 gal	7/13/2002
Clarinda	Page	Handling And Storage	Lexar Herbicide	Fertilizer/Pesticide	1 Unknown	8/14/2009
Clarinda	Page	Handling And Storage	Oil	Petroleum	10 oz	10/7/2022
Clarinda	Page	Handling And Storage	Oil	Petroleum	20 gal	10/31/2022
Clarinda	Page	Handling And Storage	Oil - Cutting	Petroleum	4 gal	4/10/2023
Clarinda	Page	Handling And Storage	Yuman SF-30A	Organic Chemical	200 gal	6/15/2022
Clarinda	Page	Handling And Storage	Yumate FGS 614	Organic Chemical	3 gal	4/28/2022
Clarinda	Page	Manure	Manure	Manure	7000 gal	10/25/2017
Clarinda	Page	Theft	Anhydrous ammonia		1000 lbs	7/2/2007
Clarinda	Page	Transformer	Transformer mineral oil	Transformer oil/PCB	1 gal	6/26/2000
Clarinda	Page	Transformer	Transformer Oil (Non PCB)	Transformer oil/PCB	10 gal	5/3/2010

Clarinda	Page	Transportation	Ammonia		850 gal	4/23/2008
Clarinda	Page	Transportation	Ammonium nitrate	Inorganic Chemical	1 ton	4/18/2005
Clarinda	Page	Transportation	Ammonium stearate	Acids/Bases	55 gal	6/6/2000
Clarinda	Page	Transportation	Diesel Fuel	Petroleum	35 gal	9/27/2000
Clarinda	Page	Transportation	Hydraulic Oil	Petroleum	3 gal	3/4/2019
Coin	Page	Handling And Storage	Touchdown Herbicide		1 Unknown	6/26/2014
College Springs	Page	Transformer	Transformer Oil	Transformer oil/PCB	2 gal	6/4/2002
Essex	Page	Handling And Storage	10-34-0, 28-0-0, ammonium lignosulphonate, pot ash		1 unk	6/16/2003
Essex	Page	Transformer	Non PCB transformer oil	Transformer oil/PCB	50 gal	2/23/2012
Essex	Page	Transportation	Engine additive	Petroleum	1 Unknown	3/16/2017
Essex	Page	Transportation	Phosphorus	Fertilizer/Pesticide	1 Unknown	3/16/2017
Essex	Page	Transportation	Potash	Fertilizer/Pesticide	20 ton	3/16/2017
Essex	Page	Transportation	potash herbicide mix	Acids/Bases	1000 gal	5/4/2004
Essex	Page	Transportation	Roundup Herbicide	Fertilizer/Pesticide	250 gal	6/23/2008
Northboro	Page	Pipeline	Diesel Fuel	Petroleum	200 gal	5/6/2009
Shambaugh	Page	Transformer	Transformer oil PCB	Acids/Bases	1 qt	11/11/2001
Shenandoah	Page	Handling And Storage	28% nitrogen fertilizer		6000 gal	10/5/2001
Shenandoah	Page	Handling And Storage	Ammonia (anhydrous) - Agricultural	Fertilizer/Pesticide	80 lbs	6/20/2007

Shenandoah	Page	Handling And Storage	Anhydrous ammonia		0 Unknown	3/1/2009
Shenandoah	Page	Handling And Storage	Diesel Fuel	Petroleum	100 gal	5/10/2016
Shenandoah	Page	Handling And Storage	Diesel Fuel	Petroleum	30 gal	3/11/2001
Shenandoah	Page	Handling And Storage	Gasoline	Petroleum	5 gal	10/24/2011
Shenandoah	Page	Handling And Storage	Mineral spirits	Paints/Dyes/Organic Solv	1 qt	8/15/2011
Shenandoah	Page	Handling And Storage	Nitrogen dioxide	Inorganic Chemical	500 lbs	4/10/2000
Shenandoah	Page	Handling And Storage	Nitrogen oxide (NO)	Inorganic Chemical	9510 lbs	4/10/2000
Shenandoah	Page	Theft	Ammonia		40 lbs	9/26/2002
Shenandoah	Page	Theft	Ammonia (anhydrous) - Agricultural	Fertilizer/Pesticide	1 lbs	10/20/2012
Shenandoah	Page	Theft	Anhydrous ammonia		1000 lbs	1/26/2009
Shenandoah	Page	Transformer	Transformer Oil	Transformer oil/PCB	0 gal	5/14/2003
Shenandoah	Page	Transformer	Transformer Oil (Unknown PCB)	Transformer oil/PCB	10 gal	11/22/2022
Shenandoah	Page	Transformer	Transformer Oil (Unknown PCB)	Transformer oil/PCB	5 gal	11/9/2013

Shenandoah	Page	Transformer	Transformer oil PCB	Acids/Bases	18 gal	7/17/2003
Shenandoah	Page	Transportation	Diesel Fuel	Petroleum	125 gal	11/24/2010
Shenandoah	Page	Transportation	Herbicide Mix	Fertilizer/Pesticide	700 gal	4/11/2023
Stanton	Page	Transportation	Potash	Fertilizer/Pesticide	40000 lbs	4/20/2019

River Flood

EVEN T_ID	CZ_NA ME_STR	BEGIN_L OCATION	BEGIN _DATE	BEGIN _TIME	EVENT _TYPE	DEATHS_ DIRECT	INJURIES _DIRECT	DAMAGE_PRO PERTY_NUM	DAMAGE_CR OPS_NUM	STATE _ABBR	CZ_TIM EZONE	EPISO DE_ID
5590 767	PAGE (ZONE)		##### ###	1800	Flood	0	0	0	0	IA	CST	20584 28
5651 605	PAGE (ZONE)		##### ###	1000	Flood	0	0	0	2000000	IA	CST	20800 18
5697 273	PAGE (ZONE)		##### ###	500	Flood	0	0	0	0	IA	CST	24079 37
2225 3	PAGE CO.	SHENAN DOAH	5/6/20 07	500	Flood	0	0	932000	0	IA	CST-6	3932
2195 2	PAGE CO.	CLARIND A	5/6/20 07	1400	Flood	0	0	932000	0	IA	CST-6	3932
2336 0	PAGE CO.	ELLIOTT	##### ###	700	Flood	0	0	0	0	IA	CST-6	4130
5519 7	PAGE CO.	HEPBURN	##### ###	30	Flood	0	0	0	0	IA	CST-6	9909

1135 34	PAGE CO.	ESSEX	6/5/20 08	15	Flood	0	0	800000	0	IA	CST-6	16651
9713 3	PAGE CO.	CLARIND A	6/5/20 08	145	Flood	0	0	550000	0	IA	CST-6	16651
9724 7	PAGE CO.	HEPBURN	6/8/20 08	1645	Flood	0	0	0	0	IA	CST-6	16875
1015 60	PAGE CO.	HEPBURN	##### ###	230	Flood	0	0	0	0	IA	CST-6	16886
3039 76	PAGE CO.	SHAMBA UGH	##### ###	2300	Flood	0	0	6000	0	IA	CST-6	51244
3793 34	PAGE CO.	CLARIND A	##### ###	400	Flood	0	0	0	0	IA	CST-6	61139
5223 53	PAGE CO.	HEPBURN	6/3/20 14	2254	Flood	0	0	5000	0	IA	CST-6	84602
5445 37	PAGE CO.	CLARIND A	##### ###	2223	Flood	0	0	5000	10000	IA	CST-6	90805
5444 96	PAGE CO.	CLARIND A	##### ###	345	Flood	0	0	5000	10000	IA	CST-6	90765
6080 06	PAGE CO.	HEPBURN	##### ###	500	Flood	0	0	0	0	IA	CST-6	10107 1
6439 26	PAGE CO.	HEPBURN	##### ###	851	Flood	0	0	0	0	IA	CST-6	10649 3

Thunderstorm/Lightning/Hail

EVEN T_ID	CZ_NAM E_STR	BEGIN_LOCATIO N	BEGIN_ DATE	BEGIN_ TIME	EVENT_TYP E	MAGNI TUDE	DEATHS_ DIRECT	INJURIES_ DIRECT	DAMAGE_PROP ERTY_NUM	DAMAGE_CR OPS_NUM	MAGNITUD E_TYPE	EPISO DE_ID
1001 8177	PAGE CO.		6/4/19 60	1700	Hail	2.75	0	0	0	0		
1001 8179	PAGE CO.		6/4/19 60	1720	Hail	0.75	0	0	0	0		
1001 8180	PAGE CO.		6/4/19 60	2000	Hail	1.5	0	0	0	0		
1001 8181	PAGE CO.		6/4/19 60	2000	Thunderstor m Wind	0	0	0	0	0		
1001 2105	PAGE CO.		8/9/19 61	2300	Thunderstor m Wind	0	0	0	0	0		
1001 4402	PAGE CO.		##### ##	1530	Hail	1.5	0	0	0	0		
1001 3145	PAGE CO.		6/9/19 67	1900	Thunderstor m Wind	0	0	0	0	0		
1001 2362	PAGE CO.		##### ##	300	Thunderstor m Wind	0	0	0	0	0		
1001 3512	PAGE CO.		##### ##	1730	Thunderstor m Wind	0	0	0	0	0		
1001 1323	PAGE CO.		8/2/19 70	2210	Thunderstor m Wind	65	0	0	0	0		
1001 2382	PAGE CO.		##### ##	1800	Hail	0.87	0	0	0	0		
1001 4495	PAGE CO.		5/7/19 74	2015	Hail	2	0	0	0	0		
1001 2598	PAGE CO.		##### ##	1800	Thunderstor m Wind	0	0	0	0	0		

1001 3782	PAGE CO.		##### ##	40	Thunderstor m Wind	0	0	0	0	0		
1001 4907	PAGE CO.		##### ##	1725	Thunderstor m Wind	52	0	0	0	0		
1001 4908	PAGE CO.		##### ##	1740	Hail	0.75	0	0	0	0		
1001 1547	PAGE CO.		##### ##	130	Thunderstor m Wind	0	0	0	0	0		
1001 1568	PAGE CO.		8/8/19 77	830	Thunderstor m Wind	65	0	0	0	0		
1001 2668	PAGE CO.		4/5/19 78	2230	Thunderstor m Wind	52	0	0	0	0		
1001 4211	PAGE CO.		##### ##	24	Thunderstor m Wind	70	0	0	0	0		
1001 4212	PAGE CO.		##### ##	30	Thunderstor m Wind	70	0	0	0	0		
1001 1395	PAGE CO.		##### ##	1730	Thunderstor m Wind	0	0	0	0	0		
1001 3710	PAGE CO.		##### ##	2055	Thunderstor m Wind	60	0	0	0	0		
1001 1524	PAGE CO.		##### ##	2325	Hail	1.75	0	0	0	0		
1001 2933	PAGE CO.		##### ##	1600	Hail	1.75	0	0	0	0		
1001 4037	PAGE CO.		6/8/19 82	1330	Thunderstor m Wind	0	0	0	0	0		
1001 4038	PAGE CO.		6/8/19 82	1340	Hail	0.75	0	0	0	0		
1001 4039	PAGE CO.		6/8/19 82	1340	Thunderstor m Wind	0	0	0	0	0		

1001 4041	PAGE CO.		6/8/19 82	1345	Thunderstor m Wind	0	0	0	0	0		
1001 4049	PAGE CO.		##### ##	2225	Thunderstor m Wind	0	0	0	0	0		
1001 5170	PAGE CO.		##### ##	15	Thunderstor m Wind	0	0	0	0	0		
1001 5219	PAGE CO.		5/1/19 83	1330	Thunderstor m Wind	0	0	0	0	0		
1001 5011	PAGE CO.		5/1/19 83	1425	Thunderstor m Wind	0	0	0	0	0		
1001 5234	PAGE CO.		5/6/19 83	1745	Thunderstor m Wind	0	0	0	0	0		
1001 1870	PAGE CO.		##### ##	1830	Thunderstor m Wind	0	0	0	0	0		
1001 3001	PAGE CO.		##### ##	1200	Thunderstor m Wind	0	0	0	0	0		
1001 4142	PAGE CO.		##### ##	31	Thunderstor m Wind	0	0	0	0	0		
1001 1882	PAGE CO.		6/7/19 84	1620	Thunderstor m Wind	52	0	0	0	0		
1001 1891	PAGE CO.		6/7/19 84	1700	Thunderstor m Wind	0	0	0	0	0		
1001 1688	PAGE CO.		##### ##	1810	Thunderstor m Wind	0	0	0	0	0		
1001 2050	PAGE CO.		##### ##	1748	Hail	0.75	0	0	0	0		
1001 2081	PAGE CO.		##### ##	1947	Thunderstor m Wind	58	0	0	0	0		
1001 2082	PAGE CO.		##### ##	1947	Thunderstor m Wind	0	0	0	0	0		

1002 8357	PAGE CO.		##### ##	1310	Thunderstor m Wind	52	0	0	0	0		
1002 7264	PAGE CO.		##### ##	2035	Thunderstor m Wind	50	0	0	0	0		
1002 7265	PAGE CO.		##### ##	2040	Thunderstor m Wind	67	0	0	0	0		
1002 6202	PAGE CO.		##### ##	2300	Thunderstor m Wind	50	0	0	0	0		
1002 6210	PAGE CO.		##### ##	1400	Thunderstor m Wind	50	0	0	0	0		
1002 6231	PAGE CO.		9/8/19 89	230	Thunderstor m Wind	50	0	0	0	0		
1002 7362	PAGE CO.		5/9/19 90	320	Thunderstor m Wind	60	0	0	0	0		
1002 6310	PAGE CO.		##### ##	1835	Thunderstor m Wind	50	0	0	0	0		
1002 8664	PAGE CO.		##### ##	1935	Thunderstor m Wind	50	0	0	0	0		
1015 7518	PAGE CO.		##### ##	119	Hail	0.75	0	0	0	0		
1015 7570	PAGE CO.		7/4/19 92	1945	Hail	1.75	0	0	0	0		
1015 7575	PAGE CO.		7/4/19 92	2000	Hail	1.75	0	0	0	0		
1032 4242	PAGE CO.	Bethesda	##### ##	45	Hail	0.75	0	0	5000	50000		
1032 4243	PAGE CO.	Northboro	##### ##	1835	Thunderstor m Wind	52	0	0	5000	0		
1032 4244	PAGE CO.	Bethesda	##### ##	1815	Hail	0.75	0	0	5000	50000		

1032 4245	PAGE CO.	Clarinda	4/8/19 95	2348	Hail	1.75	0	0	0	0		
5554 350	PAGE CO.	BRADDYVILLE	5/8/19 96	2240	Thunderstor m Wind	52	0	0	0	0		20354 19
5554 701	PAGE CO.	CLARINDA	##### ##	2200	Lightning		0	0	35000	0		20354 80
5554 703	PAGE CO.	SHENANDOAH	##### ##	2230	Hail	1.75	0	0	0	0		20354 82
5554 704	PAGE CO.	BLANCHARD	##### ##	2310	Hail	1.75	0	0	0	0		20354 83
5562 048	PAGE CO.	BRADDYVILLE	##### ##	1400	Hail	1.75	0	0	0	0		20392 64
5562 049	PAGE CO.	SHAMBAUGH	##### ##	1417	Hail	1.75	0	0	0	0		20392 65
5562 053	PAGE CO.	ESSEX	##### ##	1526	Thunderstor m Wind	56	0	0	0	0		20392 69
5562 055	PAGE CO.	ESSEX	##### ##	1600	Thunderstor m Wind	52	0	0	0	0		20392 71
5557 019	PAGE CO.	SHAMBAUGH	##### ##	1320	Thunderstor m Wind	56	0	0	0	0		20431 82
5563 916	PAGE CO.	CLARINDA	##### ##	930	Hail	1	0	0	0	0		20471 51
5606 460	PAGE CO.	COLLEGE SPGS	##### ##	1805	Hail	1	0	0	0	0		20662 12
5606 461	PAGE CO.	BLANCHARD	##### ##	1810	Hail	1	0	0	0	0		20662 13
5612 561	PAGE CO.	SHENANDOAH	##### ##	50	Thunderstor m Wind	65	0	0	0	0		20664 14
5612 553	PAGE CO.	SHENANDOAH	##### ##	208	Thunderstor m Wind	65	0	0	0	0		20664 06

5639 170	PAGE CO.	BLANCHARD	##### ##	2050	Thunderstor m Wind	60	0	0	10000	0		20746 70
5639 146	PAGE CO.	ESSEX	##### ##	2058	Hail	0.75	0	0	0	0		20746 49
5639 151	PAGE CO.	SHAMBAUGH	##### ##	2105	Hail	1.75	0	0	0	0		20746 54
5639 171	PAGE CO.	COLLEGE SPGS	##### ##	2105	Thunderstor m Wind	60	0	0	20000	0		20746 71
5639 152	PAGE CO.	COLLEGE SPGS	##### ##	2105	Hail	1.75	0	0	0	0		20746 55
5639 172	PAGE CO.	BRADDYVILLE	##### ##	2115	Thunderstor m Wind	60	0	0	400000	0		20746 72
5643 961	PAGE CO.	SHENANDOAH	##### ##	803	Thunderstor m Wind	66	0	0	0	0		20779 36
5643 962	PAGE CO.	SHENANDOAH MUNI ARPT	##### ##	803	Thunderstor m Wind	68	0	0	0	0		20779 37
5645 154	PAGE CO.	SHENANDOAH	##### ##	805	Thunderstor m Wind	66	0	0	0	0		20778 02
5645 374	PAGE CO.	NORTHBORO	##### ##	845	Hail	0.75	0	0	0	0		10612 85
5651 207	PAGE CO.	CLARINDA	##### ##	2235	Hail	1.75	0	0	0	0		20798 98
5651 206	PAGE CO.	CLARINDA	##### ##	2330	Hail	1.75	0	0	0	0		10635 90
5651 293	PAGE CO.	CLARINDA	##### ##	34	Thunderstor m Wind	57	0	0	0	0		20799 19
5651 502	PAGE CO.	SHENANDOAH	##### ##	2140	Thunderstor m Wind	70	0	0	0	0		20799 86
5696 052	PAGE CO.	COLLEGE SPGS	4/5/19 99	1400	Thunderstor m Wind	60	0	0	2000	0		24054 17

5695 845	PAGE CO.	ESSEX	4/8/19 99	520	Hail	0.75	0	0	0	0		24054 08
5709 019	PAGE CO.	CLARINDA	6/9/19 99	1611	Thunderstor m Wind	57	0	0	0	0		24093 58
5710 756	PAGE CO.	ESSEX	##### ##	2210	Thunderstor m Wind	52	0	0	0	0		24112 87
5717 675	PAGE CO.	HEPBURN	9/7/19 99	1902	Hail	1	0	0	0	0		24135 79
5151 271	PAGE CO.	BRADDYVILLE	##### ##	1715	Thunderstor m Wind		0	0	15000	0		10974 36
5151 623	PAGE CO.	BLANCHARD	##### ##	1105	Hail	0.88	0	0	0	0		10974 47
5151 624	PAGE CO.	COLLEGE SPGS	##### ##	1105	Hail	0.75	0	0	0	0		10974 48
5152 730	PAGE CO.	CLARINDA	##### ##	1600	Thunderstor m Wind	50	0	0	0	0	E	10975 07
5164 797	PAGE CO.	CLARINDA	7/5/20 00	1415	Thunderstor m Wind	50	0	0	0	0	E	10991 19
5164 770	PAGE CO.	SHENANDOAH	##### ##	1825	Thunderstor m Wind	50	0	0	0	0	E	10991 41
5240 742	PAGE CO.	SHENANDOAH	##### ##	250	Thunderstor m Wind	60	0	0	30000	0	E	11128 84
5245 592	PAGE CO.	HEPBURN	##### ##	803	Hail	1	0	0	0	0		11148 59
5245 593	PAGE CO.	CLARINDA	##### ##	30	Hail	1.25	0	0	0	0		11148 60
5254 265	PAGE CO.	SHENANDOAH	##### ##	2310	Thunderstor m Wind	50	0	0	0	0	E	11177 70
5258 826	PAGE CO.	CLARINDA	##### ##	19	Thunderstor m Wind	55	0	0	0	0	E	11196 61

5268 465	PAGE CO.	COIN	9/7/20 01	1825	Hail	1	0	0	0	0		11231 37
5292 034	PAGE CO.	SHENANDOAH	##### ##	1610	Hail	0.75	0	0	0	0		11342 25
5303 924	PAGE CO.	COIN	##### ##	1803	Hail	0.75	0	0	0	0		11383 82
5303 925	PAGE CO.	COIN	##### ##	1803	Thunderstor m Wind	50	0	0	0	0	E	11383 83
5303 926	PAGE CO.	SHAMBAUGH	##### ##	1813	Hail	0.75	0	0	0	0		11383 84
5303 927	PAGE CO.	SHAMBAUGH	##### ##	1813	Thunderstor m Wind	50	0	0	0	0	E	11383 85
5309 365	PAGE CO.	COIN	##### ##	605	Hail	0.75	0	0	0	0		11392 70
5307 896	PAGE CO.	SHENANDOAH	##### ##	1914	Hail	1.75	0	0	0	0		11392 84
5307 898	PAGE CO.	CLARINDA	##### ##	1933	Thunderstor m Wind	55	0	0	0	0	E	11392 86
5307 899	PAGE CO.	CLARINDA	##### ##	1941	Hail	1.75	0	0	0	0		11392 87
5307 900	PAGE CO.	CLARINDA	##### ##	1946	Hail	1	0	0	0	0		11392 88
5320 216	PAGE CO.	CLARINDA	##### ##	1650	Hail	1	0	0	0	0		11436 69
5320 217	PAGE CO.	CLARINDA	##### ##	1701	Hail	1.75	0	0	0	0		11436 70
5320 215	PAGE CO.	SHAMBAUGH	##### ##	1727	Hail	1.75	0	0	0	0		11436 68
5349 913	PAGE CO.	BLANCHARD	##### ##	1648	Thunderstor m Wind	50	0	0	0	0	EG	11501 14

5357 005	PAGE CO.	YORKTOWN	5/4/20 03	330	Hail	0.75	0	0	0	0		11516 24
5357 006	PAGE CO.	CLARINDA	5/4/20 03	340	Hail	1.25	0	0	0	0		11516 25
5357 192	PAGE CO.	CLARINDA	##### ##	1901	Hail	0.75	0	0	0	0		11517 05
5395 221	PAGE CO.	SHENANDOAH	##### ##	1720	Hail	1	0	0	0	0		11690 74
5395 234	PAGE CO.	COIN	##### ##	1730	Hail	0.88	0	0	0	0		11690 87
5395 860	PAGE CO.	CLARINDA	##### ##	2143	Thunderstor m Wind	55	0	0	0	0	EG	11691 89
5395 647	PAGE CO.	ESSEX	##### ##	1700	Thunderstor m Wind	60	0	0	0	0	EG	11691 41
5395 649	PAGE CO.	YORKTOWN	##### ##	1728	Hail	1	0	0	0	0		11691 43
5395 650	PAGE CO.	CLARINDA	##### ##	1729	Hail	1	0	0	0	0		11691 44
5396 099	PAGE CO.	SHENANDOAH	##### ##	1120	Thunderstor m Wind	60	0	0	0	0	EG	11692 42
5396 166	PAGE CO.	SHAMBAUGH	##### ##	1150	Hail	1	0	0	0	0		11692 44
5404 889	PAGE CO.	CLARINDA	##### ##	1700	Hail	1	0	0	0	0		11732 61
5422 127	PAGE CO.	CLARINDA	8/3/20 04	2107	Thunderstor m Wind	60	0	0	0	0	EG	11796 53
5422 279	PAGE CO.	COLLEGE SPGS	##### ##	1045	Thunderstor m Wind	50	0	0	0	0	EG	11796 79
5442 610	PAGE CO.	SHENANDOAH	##### ##	1824	Hail	1	0	0	0	0		11873 71

5500 919	PAGE CO.	YORKTOWN	##### ##	1853	Thunderstor m Wind	50	0	0	0	0	EG	12070 70
5500 920	PAGE CO.	CLARINDA	##### ##	1855	Thunderstor m Wind	50	0	0	0	0	MG	12070 71
5500 921	PAGE CO.	CLARINDA	##### ##	1857	Hail	0.88	0	0	0	0		12070 72
5515 504	PAGE CO.	ESSEX	##### ##	1640	Hail	0.75	0	0	0	0		12127 92
5515 506	PAGE CO.	ESSEX	##### ##	1700	Hail	0.88	0	0	0	0		12127 94
5515 509	PAGE CO.	ESSEX	##### ##	1722	Hail	0.88	0	0	0	0		12127 97
5523 955	PAGE CO.	CLARINDA	##### ##	1605	Thunderstor m Wind	55	0	0	0	0	EG	12165 93
5524 364	PAGE CO.	CLARINDA	##### ##	835	Thunderstor m Wind	53	0	0	0	0	MG	12166 34
5524 363	PAGE CO.	CLARINDA	##### ##	835	Hail	0.88	0	0	0	0		12166 33
668	PAGE CO.	CLARINDA	##### ##	2031	Hail	0.88	0	0	0	0		181
669	PAGE CO.	CLARINDA	##### ##	2104	Hail	0.75	0	0	0	0		181
1702 0	PAGE CO.	SHENANDOAH	##### ##	815	Hail	0.75	0	0	0	0		3131
2027 7	PAGE CO.	SHAMBAUGH	5/6/20 07	58	Hail	1	0	0	0	0		3651
2312 1	PAGE CO.	SHENANDOAH	##### ##	1420	Hail	1.5	0	0	0	0		4128
4367 1	PAGE CO.	CLARINDA	8/7/20 07	2115	Thunderstor m Wind	52	0	0	0	0	EG	6723

3978 4	PAGE CO.	CLARINDA	8/7/20 07	2220	Heavy Rain		0	0	0	0		6723
4005 6	PAGE CO.	ESSEX	##### ##	1738	Thunderstor m Wind	50	0	0	0	0	EG	6893
4004 8	PAGE CO.	CLARINDA	##### ##	1810	Heavy Rain		0	0	0	0		6893
4005 7	PAGE CO.	CLARINDA	##### ##	1824	Thunderstor m Wind	50	0	0	0	0	EG	6893
4005 8	PAGE CO.	COLLEGE SPGS	##### ##	1829	Thunderstor m Wind	50	0	0	0	0	EG	6893
4182 2	PAGE CO.	HEPBURN	##### ##	2020	Thunderstor m Wind	52	0	0	0	0	EG	7271
5010 4	PAGE CO.	CLARINDA	9/6/20 07	2228	Thunderstor m Wind	52	0	0	0	0	EG	8252
8489 4	PAGE CO.	NORTHBORO	##### ##	55	Hail	0.75	0	0	0	0		14944
9310 8	PAGE CO.	SHENANDOAH	##### ##	1910	Thunderstor m Wind	54	0	0	0	0	MG	15726
9310 5	PAGE CO.	ESSEX	##### ##	1930	Thunderstor m Wind	55	0	0	0	0	EG	15726
9310 9	PAGE CO.	YORKTOWN	##### ##	1930	Thunderstor m Wind	52	0	0	0	0	EG	15726
9414 7	PAGE CO.	SHENANDOAH	##### ##	2345	Thunderstor m Wind	55	0	0	0	0	EG	16314
9420 5	PAGE CO.	CLARINDA	6/3/20 08	1710	Hail	0.88	0	0	0	0		16322
9720 6	PAGE CO.	CLARINDA	6/5/20 08	20	Hail	0.88	0	0	0	0		16651
9724 1	PAGE CO.	BETHESDA	6/8/20 08	1315	Hail	0.75	0	0	0	0		16875

9724 2	PAGE CO.	CLARINDA	6/8/20 08	1350	Hail	0.88	0	0	0	0		16875
1001 99	PAGE CO.	BLANCHARD	##### ##	1955	Hail	0.88	0	0	0	0		17316
1127 23	PAGE CO.	ESSEX	##### ##	1320	Hail	1	0	0	0	0		19124
1542 84	PAGE CO.	BETHESDA	##### ##	1830	Hail	1.5	0	0	0	0		26110
1542 95	PAGE CO.	BETHESDA	##### ##	1855	Thunderstor m Wind	55	0	0	0	0	EG	26110
1787 70	PAGE CO.	BRADDYVILLE	8/4/20 09	110	Hail	1	0	0	0	0		30501
1824 53	PAGE CO.	NORTHBORO	##### ##	1620	Hail	1.75	0	0	0	0		31115
1824 54	PAGE CO.	CLARINDA	##### ##	1652	Hail	1	0	0	0	0		31115
2231 82	PAGE CO.	BRADDYVILLE	6/1/20 10	1922	Hail	1	0	0	0	0		38439
2237 41	PAGE CO.	ESSEX	6/4/20 10	2330	Hail	1.75	0	0	0	0		38552
2330 23	PAGE CO.	SHENANDOAH	##### ##	1948	Thunderstor m Wind	50	0	0	0	0	EG	40055
2474 99	PAGE CO.	COIN	##### ##	1730	Hail	1	0	0	0	0		42395
2533 85	PAGE CO.	YORKTOWN	##### ##	2005	Hail	1.75	0	0	0	0		43517
2533 87	PAGE CO.	CLARINDA MUNI ARPT	##### ##	2012	Hail	1	0	0	0	0		43517
2533 89	PAGE CO.	PAGE CENTRE	##### ##	2023	Hail	1.75	0	0	0	0		43517

2533 90	PAGE CO.	CLARINDA	##### ##	2035	Hail	1.75	0	0	0	0		43517
2533 96	PAGE CO.	CLARINDA	##### ##	2050	Hail	3	0	0	0	0		43517
2788 55	PAGE CO.	SHENANDOAH	##### ##	230	Hail	1	0	0	0	0		47832
2788 56	PAGE CO.	ESSEX	##### ##	241	Hail	1	0	0	0	0		47832
2834 75	PAGE CO.	SHAMBAUGH	4/3/20 11	1940	Hail	1	0	0	0	0		48527
2997 32	PAGE CO.	BRADDYVILLE	6/9/20 11	2131	Hail	1	0	0	0	0		50779
2997 62	PAGE CO.	BINGHAM	##### ##	2238	Hail	1	0	0	0	0		50784
3016 81	PAGE CO.	SHAMBAUGH	##### ##	2100	Hail	1	0	0	0	0		50992
3016 82	PAGE CO.	CLARINDA	##### ##	2103	Hail	0.88	0	0	0	0		50992
3016 84	PAGE CO.	SHENANDOAH	##### ##	2223	Hail	0.88	0	0	0	0		50992
3056 39	PAGE CO.	BLANCHARD	##### ##	2000	Heavy Rain		0	0	0	0		51244
3056 35	PAGE CO.	ESSEX	##### ##	2052	Thunderstor m Wind	52	0	0	0	0	EG	51244
3260 55	PAGE CO.	COIN	##### ##	1800	Thunderstor m Wind	60	0	0	0	0	EG	54307
3427 68	PAGE CO.	COIN	##### ##	1800	Hail	1	0	0	0	0		54307
3260 57	PAGE CO.	CLARINDA MUNI ARPT	##### ##	1809	Hail	1	0	0	0	0		54307

3346 29	PAGE CO.	SHENANDOAH	##### ##	1950	Thunderstor m Wind	52	0	0	0	0	MG	54307
3260 68	PAGE CO.	CLARINDA	##### ##	1955	Thunderstor m Wind	50	0	0	0	0	MG	54307
3635 71	PAGE CO.	BRADDYVILLE	##### ##	1942	Hail	1	0	0	0	0		60840
3663 97	PAGE CO.	PAGE CENTRE	##### ##	1725	Thunderstor m Wind	52	0	0	0	0	EG	61139
3688 60	PAGE CO.	SHENANDOAH	5/3/20 12	145	Hail	0.88	0	0	0	0		61642
3857 22	PAGE CO.	BLANCHARD	##### ##	1950	Thunderstor m Wind	50	0	0	0	0	EG	64412
3862 87	PAGE CO.	BETHESDA	##### ##	1641	Hail	1	0	0	0	0		64569
3896 62	PAGE CO.	SHENANDOAH	8/8/20 12	1802	Thunderstor m Wind	50	0	0	0	0	EG	65038
3896 64	PAGE CO.	BLANCHARD	8/8/20 12	1826	Thunderstor m Wind	57	0	0	0	0	EG	65038
4355 58	PAGE CO.	CLARINDA	##### ##	525	Hail	0.88	0	0	0	0		72213
4408 41	PAGE CO.	BINGHAM	##### ##	1620	Thunderstor m Wind	55	0	0	0	0	EG	72994
4408 39	PAGE CO.	SHENANDOAH	##### ##	1624	Hail	1	0	0	0	0		72994
4408 40	PAGE CO.	SHENANDOAH	##### ##	1627	Hail	0.75	0	0	0	0		72994
4483 34	PAGE CO.	CLARINDA	##### ##	618	Hail	0.75	0	0	0	0		74068
5009 86	PAGE CO.	CLARINDA	##### ##	2045	Hail	0.75	0	0	0	0		83012

5283 87	PAGE CO.	NORTHBORO	6/3/20 14	1430	Hail	2.5	0	0	0	0		84602
5284 37	PAGE CO.	ESSEX ARPT	6/3/20 14	1943	Thunderstor m Wind	52	0	0	0	0	EG	84602
5284 38	PAGE CO.	SHENANDOAH	6/3/20 14	1950	Thunderstor m Wind	57	0	0	0	0	MG	84602
5284 46	PAGE CO.	CLARINDA	6/3/20 14	2016	Hail	1.25	0	0	0	0		84602
5284 48	PAGE CO.	CLARINDA MUNI ARPT	6/3/20 14	2024	Thunderstor m Wind	58	0	0	0	0	MG	84602
5810 62	PAGE CO.	SHENANDOAH	##### ##	105	Thunderstor m Wind	54	0	0	0	0	MG	96626
5879 27	PAGE CO.	BLANCHARD	##### ##	130	Thunderstor m Wind	52	0	0	0	0	EG	97763
5879 25	PAGE CO.	BLANCHARD	##### ##	130	Hail	1	0	0	0	0		97763
6191 46	PAGE CO.	SHENANDOAH	##### ##	1618	Hail	1	0	0	0	0		10341 5
6191 48	PAGE CO.	NORTHBORO	##### ##	1637	Hail	0.88	0	0	0	0		10341 5
6191 50	PAGE CO.	PAGE CENTRE	##### ##	1719	Thunderstor m Wind	52	0	0	0	0	EG	10341 5
6222 96	PAGE CO.	ESSEX	##### ##	1450	Hail	1	0	0	0	0		10403 9
6243 45	PAGE CO.	ESSEX	5/9/20 16	1929	Hail	0.88	0	0	0	0		10427 6
6278 87	PAGE CO.	CLARINDA	##### ##	1655	Hail	0.88	0	0	0	0		10483 1
6278 88	PAGE CO.	CLARINDA	##### ##	1726	Thunderstor m Wind	50	0	0	0	0	EG	10483 1

6439 30	PAGE CO.	CLARINDA	##### ##	34	Thunderstor m Wind	52	0	0	0	0	EG	10649 3
6764 00	PAGE CO.	CLARINDA	3/6/20 17	1749	Hail	1.75	0	0	0	0		11309 4
6764 06	PAGE CO.	SHAMBAUGH	3/6/20 17	1754	Thunderstor m Wind	52	0	0	0	0	EG	11309 4
7112 14	PAGE CO.	SHENANDOAH	##### ##	1810	Hail	1.75	0	0	0	0		11835 4
7112 17	PAGE CO.	SHENANDOAH	##### ##	1810	Hail	1	0	0	0	0		11835 4
7112 20	PAGE CO.	SHENANDOAH	##### ##	1814	Hail	2	0	0	0	0		11835 4
7112 70	PAGE CO.	SHENANDOAH	##### ##	1816	Hail	2.75	0	0	0	0		11835 4
7112 71	PAGE CO.	SHENANDOAH	##### ##	1820	Hail	1.75	0	0	0	0		11835 4
7112 77	PAGE CO.	CLARINDA	##### ##	1946	Hail	1.25	0	0	0	0		11835 4
7106 24	PAGE CO.	NORWICH	##### ##	1525	Hail	2.5	0	0	0	0		11825 2
7106 83	PAGE CO.	NORWICH	##### ##	1530	Thunderstor m Wind	55	0	0	0	0	EG	11825 2
7106 28	PAGE CO.	ESSEX	##### ##	1534	Hail	2.5	0	0	0	0		11825 2
7106 87	PAGE CO.	YORKTOWN	##### ##	1535	Thunderstor m Wind	55	0	0	0	0	EG	11825 2
7106 36	PAGE CO.	SHENANDOAH	##### ##	1535	Hail	3	0	0	0	0		11825 2
7106 37	PAGE CO.	NYMAN	##### ##	1550	Hail	1	0	0	0	0		11825 2

7102 74	PAGE CO.	ESSEX	##### ##	2250	Hail	1	0	0	0	0		11818 9
7251 68	PAGE CO.	CLARINDA	##### ##	600	Heavy Rain		0	0	0	0		12112 9
7251 69	PAGE CO.	SHENANDOAH	##### ##	700	Heavy Rain		0	0	0	0		12112 9
7517 73	PAGE CO.	ESSEX	##### ##	1740	Hail	1.75	0	0	0	0		12535 9
7620 78	PAGE CO.	SHAMBAUGH	5/2/20 18	1651	Hail	1	0	0	0	0		12715 1
7712 58	PAGE CO.	SHENANDOAH	##### ##	1835	Thunderstor m Wind	61	0	0	0	0	MG	12791 6
7712 61	PAGE CO.	CLARINDA	##### ##	1901	Thunderstor m Wind	54	0	0	0	0	MG	12791 6
7712 62	PAGE CO.	CLARINDA	##### ##	1903	Thunderstor m Wind	59	0	0	0	0	MG	12791 6
7712 63	PAGE CO.	CLARINDA MUNI ARPT	##### ##	1915	Thunderstor m Wind	55	0	0	0	0	MG	12791 6
7724 69	PAGE CO.	SHENANDOAH	##### ##	1431	Thunderstor m Wind	47	0	0	1000	0	MG	12879 1
7804 07	PAGE CO.	COLLEGE SPGS	8/6/20 18	1810	Thunderstor m Wind	52	0	0	0	0	EG	13035 6
8142 88	PAGE CO.	CLARINDA	##### ##	2310	Thunderstor m Wind	50	0	0	0	0	EG	13572 2
8166 82	PAGE CO.	PAGE CENTRE	##### ##	520	Thunderstor m Wind	52	0	0	0	0	EG	13609 9
8355 30	PAGE CO.	CLARINDA	##### ##	719	Thunderstor m Wind	53	0	0	0	0	MG	13892 5
8576 44	PAGE CO.	BETHESDA	9/9/20 19	1538	Thunderstor m Wind	61	0	0	0	0	EG	14293 7

8576 45	PAGE CO.	CLARINDA	9/9/20 19	1543	Thunderstor m Wind	51	0	0	0	0	EG	14293 7
8776 84	PAGE CO.	ESSEX	##### ##	1614	Hail	1.5	0	0	0	0		14529 2
8830 30	PAGE CO.	HEPBURN	##### ##	1710	Hail	1	0	0	0	0		14529 2
9000 11	PAGE CO.	ESSEX	6/9/20 20	2002	Thunderstor m Wind	50	0	0	0	0	EG	14931 5
9039 34	PAGE CO.	NORTHBORO	##### ##	330	Thunderstor m Wind	56	0	0	0	0	EG	14993 9
9236 02	PAGE CO.	ESSEX ARPT	##### ##	2311	Thunderstor m Wind	50	0	0	0	0	EG	15339 7
9236 06	PAGE CO.	BETHESDA	##### ##	2339	Thunderstor m Wind	50	0	0	0	0	MG	15339 7
9945 68	PAGE CO.	CLARINDA MUNI ARPT	##### ##	1715	Thunderstor m Wind	53	0	0	0	0	MG	16471 7
1003 857	PAGE CO.	NYMAN	3/5/20 22	1515	Hail	1	0	0	0	0		16604 3
1017 913	PAGE CO.	ESSEX	##### ##	913	Thunderstor m Wind	52	0	0	0	0	EG	16815 8
1035 290	PAGE CO.	BETHESDA	6/7/20 22	2046	Thunderstor m Wind	52	0	0	0	0	EG	17064 9
1035 291	PAGE CO.	NYMAN	6/7/20 22	2047	Thunderstor m Wind	52	0	0	0	0	EG	17064 9

Tornado/Windstorm

EVENT_ID	CZ_NAME_STR	BEGIN_LOCATION	BEGIN_DATE	BEGIN_TIME	EVENT_TYPE	TOR_F_SCALE	DEATHS_DIRECT	INJURIES_DIRECT	DAMAGE_PROPERTY_NUM	DAMAGE_CROPS_NUM	EPISODE_ID
10017057	PAGE CO.		4/5/1954	1720	Tornado	F4	0	2	25000	0	
10017058	PAGE CO.		4/5/1954	1730	Tornado	F3	0	0	0	0	
10015659	PAGE CO.		4/3/1955	1900	Tornado	F1	0	0	2500	0	
10015665	PAGE CO.		##### ##	1310	Tornado	F2	0	0	25000	0	
10015905	PAGE CO.		##### ##	2315	Tornado	F1	0	0	25000	0	
10014406	PAGE CO.		##### ##	1645	Tornado	F4	1	28	2500000	0	
10012198	PAGE CO.		##### ##	1910	Tornado	F3	0	2	2500000	0	
10012200	PAGE CO.		##### ##	2021	Tornado	F3	0	1	250000	0	
10013615	PAGE CO.		##### ##	1510	Tornado	F2	0	0	250000	0	
10013134	PAGE CO.		6/7/1967	1900	Tornado	F1	0	0	250000	0	
10012160	PAGE CO.		##### ##	1428	Tornado	F0	0	0	250	0	
10012163	PAGE CO.		##### ##	1640	Tornado	F1	0	0	25000	0	

10012 602	PAGE CO.		##### ##	600	Tornado	F2	0	0	25000	0	
10014 729	PAGE CO.		##### ##	1800	Tornado	F4	0	16	2500000	0	
10013 918	PAGE CO.		##### ##	1828	Tornado	F3	0	0	2500	0	
10013 930	PAGE CO.		9/5/197 9	2345	Tornado	F1	0	0	25000	0	
10011 748	PAGE CO.		##### ##	1432	Tornado	F0	0	0	0	0	
10015 216	PAGE CO.		5/1/198 3	1330	Tornado	F0	0	0	2500	0	
10015 217	PAGE CO.		5/1/198 3	1330	Tornado	F1	0	0	250000	0	
10015 009	PAGE CO.		5/1/198 3	1410	Tornado	F0	0	0	250	0	
10015 235	PAGE CO.		5/6/198 3	1750	Tornado	F1	0	0	250000	0	
10011 881	PAGE CO.		6/7/198 4	1620	Tornado	F3	0	3	2500000	0	
10014 364	PAGE CO.		##### ##	1515	Tornado	F1	0	0	250000	0	
10015 476	PAGE CO.		7/8/198 7	2320	Tornado	F1	0	0	25000	0	
56959 40	PAGE CO.	SHENANDO AH	4/8/199 9	1322	Tornado	F1	0	0	10000	0	150220 0

56959 41	PAGE CO.	COLLEGE SPGS	4/8/199 9	1336	Tornado	F1	0	1	100000	0	150220 1
56959 43	PAGE CO.	CLARINDA	4/8/199 9	1348	Tornado	F1	0	0	20000	0	150088 8
51512 59	PAGE CO.	ESSEX	##### ##	1520	Tornado	F0	0	0	0	0	109742 4
53079 01	PAGE CO.	CLARINDA	##### ##	1948	Tornado	F1	0	0	0	0	113928 9
54222 86	PAGE CO.	COIN	##### ##	1725	Tornado	F0	0	0	0	0	117968 6
54222 88	PAGE CO.	COIN	##### ##	1730	Tornado	F2	0	0	0	0	117968 8
11391 2	PAGE CO.	ESSEX	6/5/200 8	1824	Tornado	EF0	0	0	0	0	16869
60206 8	PAGE CO.	NORWICH	##### ##	1248	Tornado	EF0	0	0	0	0	100551
71067 8	PAGE CO.	BINGHAM	##### ##	1521	Tornado	EF1	0	0	0	0	118252
86155 6	PAGE CO.	SHENANDO AH	##### ##	1435	Tornado	EFU	0	0	0	0	143580

Severe Winter Storm

EVENT _ID	CZ_NAME _STR	BEGIN_LOC ATION	BEGIN_D ATE	BEGIN_T IME	EVENT_TYP E	DEATHS_DI RECT	INJURIES_DI RECT	DAMAGE_PROPERT Y_NUM	DAMAGE_CROP S_NUM	EPISODE _ID
55429 79	PAGE (ZONE)		##### #	1700	Blizzard	0	0	0	0	202938 1

55732 27	PAGE (ZONE)		##### #	1400	Winter Storm	0	0	0	0	204996 6
55905 69	PAGE (ZONE)		##### #	1500	Winter Storm	0	0	0	0	205842 6
55947 57	PAGE (ZONE)		##### #	600	Winter Storm	0	0	0	0	205967 9
56197 46	PAGE (ZONE)		##### #	600	Heavy Snow	0	0	0	0	207094 6
56343 06	PAGE (ZONE)		3/7/199 8	1600	Winter Storm	0	0	0	0	207345 0
56888 64	PAGE (ZONE)		##### #	500	Winter Storm	0	0	0	0	150301 3
56928 73	PAGE (ZONE)		3/8/199 9	0	Winter Storm	0	0	0	0	150253 5
51678 28	PAGE (ZONE)		##### #	1900	Winter Storm	0	0	0	0	110529 1
51677 24	PAGE (ZONE)		##### #	200	Winter Storm	0	0	0	0	110528 9
52277 78	PAGE (ZONE)		##### #	200	Winter Storm	0	0	0	0	111027 3
52319 44	PAGE (ZONE)		2/8/200 1	1400	Winter Storm	0	0	0	0	111104 6
52320 77	PAGE (ZONE)		##### #	1300	Winter Storm	0	0	0	0	111104 8
53385 88	PAGE (ZONE)		##### #	1600	Winter Storm	0	0	0	0	114660 1

53436 55	PAGE (ZONE)		##### #	1730	Winter Storm	0	0	0	0	114759 9
53812 48	PAGE (ZONE)		1/3/200 4	2300	Winter Storm	0	0	0	0	116545 8
53813 58	PAGE (ZONE)		##### #	500	Winter Storm	0	0	0	0	116546 0
54330 10	PAGE (ZONE)		1/2/200 5	2100	Ice Storm	0	0	0	0	118320 0
54330 40	PAGE (ZONE)		1/4/200 5	1400	Winter Storm	0	0	0	0	118320 2
5316	PAGE (ZONE)		##### #	1700	Heavy Snow	0	0	0	0	1212
10821	PAGE (ZONE)		3/1/200 7	700	Blizzard	0	0	0	0	2232
10855	PAGE (ZONE)		3/2/200 7	900	Winter Weather	0	0	0	0	2232
61883	PAGE (ZONE)		##### #	400	Ice Storm	0	0	0	0	11250
62391	PAGE (ZONE)		##### #	2100	Ice Storm	0	0	0	0	11356
13899 7	PAGE (ZONE)		##### #	1800	Ice Storm	0	0	0	0	23819
20062 1	PAGE (ZONE)		##### #	2100	Winter Storm	0	0	0	0	34588
20062 6	PAGE (ZONE)		##### #	0	Blizzard	0	0	0	0	34588

20262 8	PAGE (ZONE)		##### #	1200	Winter Storm	0	0	0	0	34834
20266 7	PAGE (ZONE)		##### #	2200	Blizzard	0	0	0	0	34834
20273 8	PAGE (ZONE)		1/6/201 0	730	Winter Storm	0	0	0	0	35092
20274 6	PAGE (ZONE)		1/6/201 0	2230	Winter Weather	0	0	0	0	35092
26515 1	PAGE (ZONE)		##### #	1100	Winter Weather	0	0	0	0	45605
26724 5	PAGE (ZONE)		1/9/201 1	800	Winter Weather	0	0	0	0	46079
27053 0	PAGE (ZONE)		##### #	800	Winter Storm	0	0	0	0	46634
27058 2	PAGE (ZONE)		2/1/201 1	0	Winter Storm	0	0	0	0	46636
41984 3	PAGE (ZONE)		##### #	1900	Winter Storm	0	0	0	0	69530
42617 5	PAGE (ZONE)		##### #	1000	Heavy Snow	0	0	0	0	70908
48115 7	PAGE (ZONE)		##### #	2300	Winter Weather	0	0	0	0	80331
48683 0	PAGE (ZONE)		2/4/201 4	1000	Winter Storm	0	0	0	0	81180
55082 8	PAGE (ZONE)		##### #	1400	Winter Storm	0	0	0	0	91914

55212 8	PAGE (ZONE)		2/1/201 5	0	Winter Storm	0	0	0	0	91916
55217 4	PAGE (ZONE)		2/4/201 5	600	Winter Weather	0	0	0	0	92168
78675 3	PAGE (ZONE)		##### #	535	Blizzard	0	0	0	0	131445
80148 0	PAGE (ZONE)		##### #	725	Winter Storm	0	0	0	0	133901
80148 5	PAGE (ZONE)		##### #	0	Winter Storm	0	0	0	0	133907
80521 7	PAGE (ZONE)		##### #	1800	Winter Weather	0	0	0	0	133311
80868 3	PAGE (ZONE)		##### #	1200	Winter Weather	0	0	0	0	134374
87756 1	PAGE (ZONE)		##### #	1300	Winter Storm	0	0	0	0	146051
92836 5	PAGE (ZONE)		##### #	330	Winter Storm	0	0	0	0	154100
93459 9	PAGE (ZONE)		##### #	700	Winter Storm	0	0	0	0	154990
10677 16	PAGE (ZONE)		##### #	900	Winter Weather	0	0	0	0	175867

Transportation Incidents

Community Value Assessments

Blanchard

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	93	93	100%	\$700,180	\$700,180	100%
Multi-Residential	0	0	-	-	-	-
Commercial	18	18	100%	\$99,235	\$99,235	100%
Industrial	0	0	-	-	-	-
Agricultural	8	8	100%	\$0	\$0	100%
Total	119	119	100%	\$799,415	\$799,415	100%

Hazard: River Flooding

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	93	0	0%	\$700,180	\$0	0%
Multi-Residential	0	0	-	-	-	-
Commercial	18	1	5.6%	\$99,235	\$0	0%
Industrial	0	0	-	-	-	-
Agricultural	8	4	50%	\$0	\$0	-
Total	119	5	4.2%	\$799,415	\$0	0%

Hazard: Grass/Wild Fire

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	93	17	18.3%	\$700,180	\$3,770	0.5%
Multi-Residential	0	0	-	-	-	-
Commercial	18	5	27.8%	\$99,235	\$17,220	17.4%
Industrial	0	0	-	-	-	-
Agricultural	8	8	100%	\$0	\$0	100%

Total	119	30	25.2%	\$799,415	\$20,990	2.6%
Hazard: Hazardous Materials						
Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	93	93	100%	\$700,180	\$700,180	100%
Multi-Residential	0	0	-	-	-	-
Commercial	18	18	100%	\$99,235	\$99,235	100%
Industrial	0	0	-	-	-	-
Agricultural	8	8	100%	\$0	\$0	100%
Total	119	119	100%	\$799,415	\$799,415	100%

Braddyville

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	124	124	100%	\$5,862,660	\$5,862,660	100%
Multi-Residential	2	2	100%	\$218,410	\$218,410	100%
Commercial	32	32	100%	\$624,015	\$624,015	100%
Industrial	2	2	100%	\$870,490	\$870,490	100%
Agricultural	18	18	100%	\$19,830	\$19,830	100%
Total	178	178	100%	\$7,595,405	\$7,595,405	100%

Hazard: River Flooding						
Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	124	1	0.1%	\$5,862,660	\$10,930	0.01%
Multi-Residential	2	0	0%	\$218,410	\$0	0%
Commercial	32	3	0.1%	\$624,015	\$0	0%
Industrial	2	0	0%	\$870,490	\$0	0%
Agricultural	18	8	44.4%	\$19,830	\$16,040	80.9%

Total	178	12	6%	\$7,595,405	\$26,970	0.3%
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Hazard: Grass/Wild Fire

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	124	42	33.9%	\$5,862,660	\$2,485,070	42.4%
Multi-Residential	2	1	50%	\$218,410	\$66,550	30.5%
Commercial	32	15	46.9%	\$624,015	\$77,550	12.4%
Industrial	2	1	50%	\$870,490	\$822,170	94.4%
Agricultural	18	18	100%	\$19,830	\$19,830	100%
Total	178	77	43.3%	\$7,595,405	\$3,471,170	45.7%

Hazard: Hazardous Materials

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	124	124	100%	\$5,862,660	\$5,862,660	100%
Multi-Residential	2	2	100%	\$218,410	\$218,410	100%
Commercial	32	32	100%	\$624,015	\$624,015	100%
Industrial	2	2	100%	\$870,490	\$870,490	100%
Agricultural	18	18	100%	\$19,830	\$19,830	100%
Total	178	178	100%	\$7,595,405	\$7,595,405	100%

Clarinda

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	1,850	1,850	100%	\$169,299,978	\$169,299,178	100%
Multi-Residential	59	59	100%	\$17,323,790	\$17,323,790	100%
Commercial	382	382	100%	\$52,489,038	\$52,489,038	100%
Industrial	28	28	100%	\$13,707,190	\$13,707,190	100%
Agricultural	85	85	100%	\$125,350	\$125,350	100%
Total	2,404	2,404	100%	\$252,945,346	\$252,945,346	100%

Hazard: River Flooding

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	1,850	32	1.7%	\$169,299,978	\$4,780,750	2.8%
Multi-Residential	59	1	1.7%	\$17,323,790	\$1,240,230	7.2%
Commercial	382	42	11%	\$52,489,038	\$2,139,920	4.1%
Industrial	28	4	14.3%	\$13,707,190	\$9,347,660	68.2%
Agricultural	85	41	48.2%	\$125,350	\$580	0.4%
Total	2,404	120	5.0%	\$252,945,346	\$17,509,140	6.9%

Hazard: Grass/Wild Fire

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	1,850	168	9.1%	\$169,299,978	\$24,247,468	14.3%
Multi-Residential	59	3	5.1%	\$17,323,790	\$5,210,830	30.1%
Commercial	382	102	26.7%	\$52,489,038	\$16,557,735	31.5%
Industrial	28	10	35.7%	\$13,707,190	\$12,298,590	89.7%
Agricultural	85	85	100%	\$125,350	\$125,350	100%
Total	2,404	368	15.3%	\$252,945,346	\$58,439,973	23.1%

Hazard: Hazardous Materials						
Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	1,850	1,850	100%	\$169,299,978	\$169,299,178	100%
Multi-Residential	59	59	100%	\$17,323,790	\$17,323,790	100%
Commercial	382	382	100%	\$52,489,038	\$52,489,038	100%
Industrial	28	28	100%	\$13,707,190	\$13,707,190	100%
Agricultural	85	85	100%	\$125,350	\$125,350	100%
Total	2,404	2,404	100%	\$252,945,346	\$252,945,346	100%

Coin

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure						
Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	146	146	100%	\$3,590,420	\$3,590,420	100%
Multi-Residential	1	1	100%	\$57,480	\$57,480	100%
Commercial	48	48	100%	\$1,324,695	\$1,324,695	100%
Industrial	0	-	-	\$0	-	-
Agricultural	26	26	100%	\$52,860	\$52,860	100%
Total	221	221	100%	\$5,025,455	\$5,025,455	100%

Hazard: River Flooding						
Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	146	10	6.8%	\$3,590,420	\$360,350	10.0%
Multi-Residential	1	0	0%	\$57,480	\$0	0%
Commercial	48	1	2.1%	\$1,324,695	\$0	0%

Industrial	0	-	-	\$0	-	-
Agricultural	26	7	26.9%	\$52,860	\$3,350	6.3%
Total	221	18	8.1%	\$5,025,455	\$363,700	7.2%

Hazard: Grass/Wild Fire

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	146	50	34.2%	\$3,590,420	\$1,444,610	40.2%
Multi-Residential	1	0	0%	\$57,480	\$0	0%
Commercial	48	23	47.9%	\$1,324,695	\$972,750	73%
Industrial	0	0	0%	\$0	\$0	0%
Agricultural	26	26	100%	\$52,860	\$52,860	100%
Total	221	99	44.8%	\$5,025,455	\$2,440,220	48.6%

Hazard: Hazardous Materials

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	146	146	100%	\$3,590,420	\$3,590,420	100%
Multi-Residential	1	1	100%	\$57,480	\$57,480	100%
Commercial	48	48	100%	\$1,324,695	\$1,324,695	100%
Industrial	0	-	-	\$0	-	-
Agricultural	26	26	100%	\$52,860	\$52,860	100%
Total	221	221	100%	\$5,025,455	\$5,025,455	100%

College Springs

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	128	128	100%	\$5,092,830	\$5,092,830	100%
Multi-Residential	0	-	-	0	-	-
Commercial	28	28	100%	\$706,280	\$706,280	100%

Industrial	0	-	-	0	-	-
Agricultural	42	42	100%	\$59,880	\$59,880	100%
Total	198	198	100%	\$5,858,990	\$5,858,990	100%

Hazard: River Flooding

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	128	0	0%	\$5,092,830	\$0	0%
Multi-Residential	0	0	0%	0	\$0	0%
Commercial	28	0	0%	\$706,280	\$0	0%
Industrial	0	0	0%	0	\$0	0%
Agricultural	42	0	0%	\$59,880	\$0	0%
Total	198	0	0%	\$5,858,990	\$0	0%

Hazard: Grass/Wild Fire

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	128	94	73.4%	\$5,092,830	\$3,884,690	76.3%
Multi-Residential	0	-	-	0	-	-
Commercial	28	12	42.9%	\$706,280	\$500,260	70.8%
Industrial	0	-	-	0	-	-
Agricultural	42	42	100%	\$59,880	\$59,880	100%
Total	198	148	74.7%	\$5,858,990	\$4,444,830	75.9%

Hazard: Hazardous Materials

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	128	128	100%	\$5,092,830	\$5,092,830	100%
Multi-Residential	0	-	-	0	-	-
Commercial	28	28	100%	\$706,280	\$706,280	100%
Industrial	0	-	-	0	-	-
Agricultural	42	42	100%	\$59,880	\$59,880	100%

Total	198	198	100%	\$5,858,990	\$5,858,990	100%
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Essex

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	389	389	100%	\$26,116,970	\$26,116,970	100%
Multi-Residential	8	8	100%	\$919,830	\$919,830	100%
Commercial	87	87	100%	\$7,071,225	\$4,071,225	100%
Industrial	0	-	-	\$0	-	-
Agricultural	25	25	100%	\$61,660	\$61,660	100%
Total	509	509	100%	\$34,169,685	\$34,169,685	100%

Hazard: River Flooding

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	389	0	0%	\$26,116,970	\$0	0%
Multi-Residential	8	0	0%	\$919,830	\$0	0%
Commercial	87	0	0%	\$7,071,225	\$0	0%
Industrial	0	-	-	\$0	-	-
Agricultural	25	5	20%	\$61,660	\$0	0%
Total	509	5	1.0%	\$34,169,685	\$0	0%

Hazard: Grass/Wild Fire

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	389	126	32.4%	\$26,116,970	\$10,989,600	42.1%
Multi-Residential	8	5	62.5%	\$919,830	\$570,760	62.1%
Commercial	87	24	27.6%	\$7,071,225	\$1,107,390	15.7%

Industrial	0	-	-	\$0	-	-
Agricultural	25	25	100%	\$61,660	\$61,660	100%
Total	509	180	35.4%	\$34,169,685	\$12,729,410	37.3%

Hazard: Hazardous Materials

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	389	389	100%	\$26,116,970	\$26,116,970	100%
Multi-Residential	8	8	100%	\$919,830	\$919,830	100%
Commercial	87	87	100%	\$7,071,225	\$4,071,225	100%
Industrial	0	-	-	\$0	-	-
Agricultural	25	25	100%	\$61,660	\$61,660	100%
Total	509	509	100%	\$34,169,685	\$34,169,685	100%

Northboro

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	60	60	100%	\$1,504,200	\$1,504,200	100%
Multi-Residential	0	-	-	\$0	-	-
Commercial	15	15	100%	\$25,030	\$25,030	100%
Industrial	0	-	-	\$0	-	-
Agricultural	7	7	100%	\$0	-	-
Total	82	82	100%	\$1,529,230	\$1,529,230	100%

Hazard: River Flooding

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	60	2	3.3%	\$1,504,200	\$120,160	8.0%

Multi-Residential	0	-	-	\$0	-	-
Commercial	15	0	0%	\$25,030	\$0	0%
Industrial	0	-	-	\$0	-	-
Agricultural	7	4	57.1%	\$0	\$0	-
Total	82	6	7.3%	\$1,529,230	\$120,160	7.9%

Hazard: Grass/Wild Fire

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	60	33	55%	\$1,504,200	\$660,160	43.9%
Multi-Residential	0	-	-	\$0	-	-
Commercial	15	8	53.3%	\$25,030	\$3,460	13.8%
Industrial	0	-	-	\$0	-	-
Agricultural	7	7	100%	\$0	-	-
Total	82	48	58.5%	\$1,529,230	\$663,620	43.4%

Hazard: Hazardous Materials

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	60	60	100%	\$1,504,200	\$1,504,200	100%
Multi-Residential	0	-	-	\$0	-	-
Commercial	15	15	100%	\$25,030	\$25,030	100%
Industrial	0	-	-	\$0	-	-
Agricultural	7	7	100%	\$0	-	-
Total	82	82	100%	\$1,529,230	\$1,529,230	100%

Shambaugh

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure

Type of Structures	Number of Parcels	Value of Structures
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	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	139	139	100%	\$5,957,020	\$5,957,020	100%
Multi-Residential	0	-	-	\$0	-	-
Commercial	22	22	100%	\$119,980	\$119,980	100%
Industrial	3	3	100%	\$99,240	\$99,240	100%
Agricultural	5	5	100%	\$0	-	-
Total	169	169	100%	\$6,176,240	\$6,176,240	100%

Hazard: River Flooding

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	139	6	4.3%	\$5,957,020	\$318,150	5.3%
Multi-Residential	0	-	-	\$0	-	-
Commercial	22	7	31.8%	\$119,980	\$0	0%
Industrial	3	0	0%	\$99,240	\$0	0%
Agricultural	5	4	80%	\$0	-	-
Total	169	17	10.1%	\$6,176,240	\$318,150	5.2%

Hazard: Grass/Wild Fire

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	139	22	15.8%	\$5,957,020	\$1,011,090	17.0%
Multi-Residential	0	-	-	\$0	-	-
Commercial	22	7	31.8%	\$119,980	-	-
Industrial	3	1	33.3%	\$99,240	\$0	0%
Agricultural	5	5	100%	\$0	-	-
Total	169	35	20.7%	\$6,176,240	\$1,011,090	16.4%

Hazard: Hazardous Materials

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area

Residential	139	139	100%	\$5,957,020	\$5,957,020	100%
Multi-Residential	0	-	-	\$0	-	-
Commercial	22	22	100%	\$119,980	\$119,980	100%
Industrial	3	3	100%	\$99,240	\$99,240	100%
Agricultural	5	5	100%	\$0	-	-
Total	169	169	100%	\$6,176,240	\$6,176,240	100%

Shenandoah

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	2,228	2,228	100%	\$176,614,170	\$176,614,170	100%
Multi-Residential	59	59	100%	\$23,988,380	\$23,988,380	100%
Commercial	424	424	100%	\$70,887,310	\$70,887,310	100%
Industrial	8	8	100%	\$2,471,090	\$2,471,090	100%
Agricultural	27	27	100%	\$105,820	\$105,820	100%
Total	2,746	2,746	100%	\$271,194,840	\$271,194,840	100%

Hazard: River Flooding

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	2,228	37	1.7%	\$176,614,170	\$1,756,610	1.0%
Multi-Residential	59	1	1.7%	\$23,988,380	\$88,090	0.4%
Commercial	424	47	6.4%	\$70,887,310	\$3,994,660	5.6%
Industrial	8	0	0%	\$2,471,090	\$0	0%
Agricultural	27	8	29.6%	\$105,820	\$100,990	95.4%
Total	2,746	93	3.4%	\$271,194,840	\$5,940,350	2.2%

Hazard: Grass/Wild Fire

Type of Structures	Number of Parcels			Value of Structures		
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	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	2,228	221	10.0%	\$176,614,170	\$25,085,300	14.2%
Multi-Residential	59	8	13.6%	\$23,988,380	\$9,289,320	38.7%
Commercial	424	60	14.2%	\$70,887,310	\$4,234,060	6.0%
Industrial	8	0	0%	\$2,471,090	\$0	0%
Agricultural	27	27	100%	\$105,820	\$105,820	100%
Total	2,746	316	11.5%	\$271,194,840	\$38,714,500	14.3%

Hazard: Hazardous Materials

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	2,228	2,228	100%	\$176,614,170	\$176,614,170	100%
Multi-Residential	59	59	100%	\$23,988,380	\$23,988,380	100%
Commercial	424	424	100%	\$70,887,310	\$70,887,310	100%
Industrial	8	8	100%	\$2,471,090	\$2,471,090	100%
Agricultural	27	27	100%	\$105,820	\$105,820	100%
Total	2,746	2,746	100%	\$271,194,840	\$274,194,840	100%

Yorktown

Hazard: Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail, Drought, Extreme Heat, Flash Flooding, Terrorism, Transportation Incidents, Radiological, Human Disease, Infrastructure Failure

Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	75	75	100%	\$2,034,070	\$2,034,070	100%
Multi-Residential	0	-	-	\$0	-	-
Commercial	5	5	100%	\$57,770	\$57,770	100%
Industrial	0	-	-	\$0	-	-
Agricultural	12	12	100%	\$19,100	\$19,100	100%
Total	92	92	100%	\$2,110,940	\$2,110,940	100%

Hazard: River Flooding						
Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	75	0	0%	\$2,034,070	\$0	0%
Multi-Residential	0	0	0%	\$0	\$0	0%
Commercial	5	0	0%	\$57,770	\$0	0%
Industrial	0	0	0%	\$0	\$0	0%
Agricultural	12	0	0%	\$19,100	\$0	0%
Total	92	0	0%	\$2,110,940	\$0	0%

Hazard: Grass/Wild Fire						
Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	75	34	59.6%	\$2,034,070	\$1,219,990	60.0%
Multi-Residential	0	-	-	\$0	-	-
Commercial	5	2	40%	\$57,770	\$38,900	67.3%
Industrial	0	-	-	\$0	-	-
Agricultural	12	12	100%	\$19,100	\$19,100	100%
Total	92	48	52.2%	\$2,110,940	\$1,277,990	60.5%

Hazard: Hazardous Materials						
Type of Structures	Number of Parcels			Value of Structures		
	# in Community	# in Hazard Area	% in Hazard Area	\$ Value in Community	\$ Value in Hazard Area	% in Hazard Area
Residential	75	75	100%	\$2,034,070	\$2,034,070	100%
Multi-Residential	0	-	-	\$0	-	-
Commercial	5	5	100%	\$57,770	\$57,770	100%
Industrial	0	-	-	\$0	-	-
Agricultural	12	12	100%	\$19,100	\$19,100	100%
Total	92	92	100%	\$2,110,940	\$2,110,940	100%

Appendix E: Section V Appendices

Community Capabilities

Blanchard

	Date/Time	Location
Council Meetings	1 st Wednesday @ 6pm	City Hall

Utilities and Services

Service	Provider
Electricity	MidAmerican Energy
Gas	N/A
Water	Rural Water
Phone Services	IAMO
Law Enforcement	Page County Sheriff
Fire Protection	Coin Fire
Cable/Internet	IAMO
Warning System	Page Communications 542-1419
HAZMAT Assistance	Council Bluffs
Gas/Fuel	N/A
Grocery/Convenience Store	N/A
Solid Waste Removal	Shenandoah Sanitation
Landfill	Page County Landfill
Library	N/A
Recycling	N/A
Public Transit	N/A
Emergency Medical Services	Coin Fire
Medical Clinic/Hospital	Shenandoah Medical Center or Clarinda Regional Health
Tornado Shelter	N/A

Plans/Ordinances

	Yes/No	Year Approved	Comments
Comprehensive/land use Plan	Yes		
Capital Improvement Plan	Yes		
Local Emergency Plan	Yes		
Economic Development Plan	Yes		
Transportation Plan	No		
Flood Mitigation Assistance Plan	Yes		
Zoning Ordinance	Yes		
Restricted Residential District Ordinance	Yes		
Subdivisions Ordinance	No		
Floodplain Ordinance	Yes		
Building Permit Ordinance			
Tree Trimming Ordinance			
Nuisance Ordinance			
Storm Water Ordinance			
Drainage Ordinance			
Historic Preservation Ordinance			
Landscape Ordinance			
Mutual Aid Agreements			

	Yes/No	If yes, with who?
Mutual Aid Agreements	Yes	Coin Fire

Boards/Staff/Departments

	Yes/No	Title	Comments
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Building Code Official			
Building Inspector			
Public Works Official			
NFIP Floodplain Administrator			
Zoning Commission			
Board of Adjustments			
Nuisance Abatement Official	Yes		

Braddyville

	Date/Time	Location
Council Meetings	2 nd Tuesday, 6pm CT, 7pm CDT	City Hall, 208 E Main

Utilities and Services

Service	Provider
Electricity	MidAmerican
Gas	NA
Water	Southwest Regional Water
Phone Services	IAMO, Windstream
Law Enforcement	Page County Sheriff
Fire Protection	Braddyville Fire and Rescue
Cable/Internet	IAMO, Windstream
Warning System	Page County Communications
HAZMAT Assistance	Council Bluffs
Gas/Fuel	Trex Mart
Grocery/Convenience Store	Trex Mart
Solid Waste Removal	Southwest Sanitation (Clarinda)
Landfill	Page County Landfill
Library	Clarinda Lied Library
Recycling	Page County Landfill
Public Transit	NA
Emergency Medical Services	Braddyville Fire and Rescue/CRHC EMS
Medical Clinic/Hospital	NA
Tornado Shelter	NA

Plans/Ordinances

	Yes/No	Year Approved	Comments
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Comprehensive/land use Plan	No		
Capital Improvement Plan	No		
Local Emergency Plan	Yes	2019	
Economic Development Plan	No		
Transportation Plan	No		
Flood Mitigation Assistance Plan	No		
Zoning Ordinance	No		
Restricted Residential District Ordinance	Yes	2014	
Subdivisions Ordinance	Yes		
Floodplain Ordinance	No		
Building Permit Ordinance	Yes	2014	
Tree Trimming Ordinance	No		
Nuisance Ordinance	Yes	2014	
Storm Water Ordinance	No		
Drainage Ordinance	No		
Historic Preservation Ordinance	No		
Landscape Ordinance	No		
Mutual Aid Agreements			

	Yes/No	If yes, with who?
Mutual Aid Agreements	Yes	Area fire departments, Clarinda EMS

Boards/Staff/Departments

	Yes/No	Title	Comments
Building Code Official	No		
Building Inspector	No		

Public Works Official	No		
NFIP Floodplain Administrator	No		
Zoning Commission	No		
Board of Adjustments	No		
Nuisance Abatement Official	No		

Clarinda

	Date/Time	Location
Council Meetings	2 nd & 4 th Wed @ 5:00 p.m.	101 North 15 th Street

Utilities and Services

Service	Provider
Electricity	MidAmerican Energy
Gas	Alliant Energy
Water	City of Clarinda
Phone Services	Windstream/Mediacom/FMTC/Farmers/IAMO
Law Enforcement	Clarinda Police Department
Fire Protection	Clarinda Volunteer Fire Department
Cable/Internet	FMTC/Windstream/Mediacom
Warning System	City of Clarinda
HAZMAT Assistance	Council Bluffs
Gas/Fuel	Agriland FS
Grocery/Convenience Store	Caseys, Fareway, HyVee
Solid Waste Removal	Southwest Sanitation
Landfill	Page County Landfill
Library	City of Clarinda
Recycling	Page County Landfill
Public Transit	SWITA
Emergency Medical Services	Clarinda Regional Health Center
Medical Clinic/Hospital	Clarinda Regional Health Center
Tornado Shelter	None

Plans/Ordinances

	Yes/No	Year Approved	Comments
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Comprehensive/land use Plan	Yes	2004	
Capital Improvement Plan	Yes	2022	
Local Emergency Plan	Yes	?	
Economic Development Plan	Yes	2004	
Transportation Plan	No		SWIPCO?
Flood Mitigation Assistance Plan	No		
Zoning Ordinance	Yes	1998	
Restricted Residential District Ordinance	No		
Subdivisions Ordinance	Yes	2020	
Floodplain Ordinance	Yes	2017	
Building Permit Ordinance	Yes	2018	
Tree Trimming Ordinance	Yes	1998	
Nuisance Ordinance	Yes	2009	
Storm Water Ordinance	Yes	2005	
Drainage Ordinance	Yes	2005	
Historic Preservation Ordinance	No		
Landscape Ordinance	No		
Mutual Aid Agreements	Yes	Various	

	Yes/No	If yes, with who?
Mutual Aid Agreements	Yes	See attached list

Boards/Staff/Departments

	Yes/No	Title	Comments
Building Code Official	Yes	City Manager	
Building Inspector	Yes	Fire Chief	

Public Works Official	Yes	Public Works Director	
NFIP Floodplain Administrator	Yes	City Manager	
Zoning Commission	Yes	Planning & Zoning Board	
Board of Adjustments	Yes	Board of Adjustment	
Nuisance Abatement Official	No		

Coin

	Date/Time	Location
Council Meetings	2 nd Tuesday @ 7pm	Community Center

Utilities and Services

Service	Provider
Electricity	MidAmerican
Gas	Holt, Agriland
Water	SWRWD
Phone Services	IAMO Communications
Law Enforcement	Page Co Sheriff
Fire Protection	Coin Volunteer Fire and Rescue
Cable/Internet	IAMO Communications
Warning System	Siren
HAZMAT Assistance	Council Bluffs
Gas/Fuel	
Grocery/Convenience Store	
Solid Waste Removal	Shenandoah Sanitation
Landfill	Page Co. Landfill
Library	Coin Public Library
Recycling	Page Co. Landfill
Public Transit	
Emergency Medical Services	Coin Fire and Rescue, Shenandoah EMS
Medical Clinic/Hospital	
Tornado Shelter	

Plans/Ordinances

	Yes/No	Year Approved	Comments
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Comprehensive/land use Plan	No		
Capital Improvement Plan	No		
Local Emergency Plan	Yes	2013	
Economic Development Plan	No		
Transportation Plan	No		
Flood Mitigation Assistance Plan	Yes	2013	
Zoning Ordinance	Yes	2020	
Restricted Residential District Ordinance	Yes	2020	
Subdivisions Ordinance	Yes	2020	
Floodplain Ordinance	No		
Building Permit Ordinance	Yes	2020	
Tree Trimming Ordinance	Yes	2020	
Nuisance Ordinance	Yes	2020	
Storm Water Ordinance	No		
Drainage Ordinance	Yes	2020	
Historic Preservation Ordinance	No		
Landscape Ordinance	Yes	2020	
Mutual Aid Agreements	No		

	Yes/No	If yes, with who?
Mutual Aid Agreements	Yes	Page Co. Sheriff

Boards/Staff/Departments

	Yes/No	Title	Comments
Building Code Official	No		
Building Inspector	No		

Public Works Official	Yes	City Maintenance	
NFIP Floodplain Administrator	No		
Zoning Commission	No		
Board of Adjustments	No		
Nuisance Abatement Official	No		

College Springs

	Date/Time	Location
Council Meetings	2 nd Tuesday at 7:00pm	

Utilities and Services

Service	Provider
Electricity	MidAmerican
Gas	
Water	City of College Springs
Phone Services	Windstream
Law Enforcement	Page County Sheriff
Fire Protection	Coin or Braddyville Fire Departments
Cable/Internet	Windstream
Warning System	
HAZMAT Assistance	Council Bluff's Fire
Gas/Fuel	NA
Grocery/Convenience Store	NA
Solid Waste Removal	
Landfill	Page County Landfill
Library	
Recycling	Page County Landfill
Public Transit	
Emergency Medical Services	
Medical Clinic/Hospital	Clarinda or Shenandoah Hospitals
Tornado Shelter	

Plans/Ordinances

	Yes/No	Year Approved	Comments
Comprehensive/land use Plan	No		
Capital Improvement Plan	No		
Local Emergency Plan	No		
Economic Development Plan	No		
Transportation Plan	No		
Flood Mitigation Assistance Plan	No		
Zoning Ordinance	No		
Restricted Residential District Ordinance	No		
Subdivisions Ordinance	No		
Floodplain Ordinance	No		
Building Permit Ordinance	No		

Tree Trimming Ordinance	No		
Nuisance Ordinance	Yes		
Storm Water Ordinance	No		
Drainage Ordinance	No		
Historic Preservation Ordinance	No		
Landscape Ordinance	No		
Mutual Aid Agreements	Yes		

	Yes/No	If yes, with who?
Mutual Aid Agreements	Yes	

Boards/Staff/Departments

	Yes/No	Title	Comments
Building Code Official			
Building Inspector			
Public Works Official	Yes		
NFIP Floodplain Administrator			
Zoning Commission			
Board of Adjustments			
Nuisance Abatement Official			

Essex

	Date/Time	Location
Council Meetings	2 nd Weds @ 7pm	City Hall

Utilities and Services

Service	Provider
Electricity	MidAmerican
Gas	MidAmerican
Water	City of Essex
Phone Services	Farmers Telephone
Law Enforcement	City of Shenandoah/Page Co Sheriff
Fire Protection	City of Essex
Cable/Internet	Farmers Telephone
Warning System	Outdoor
HAZMAT Assistance	Council Bluffs
Gas/Fuel	Casey's
Grocery/Convenience Store	Casey's
Solid Waste Removal	City of Essex
Landfill	Page County
Library	City of Essex
Recycling	Page County
Public Transit	N/A
Emergency Medical Services	City of Essex
Medical Clinic/Hospital	Shenandoah, Red Oak, Clarinda
Tornado Shelter	None

Plans/Ordinances

	Yes/No	Year Approved	Comments
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Comprehensive/land use Plan	Yes	2021	
Capital Improvement Plan	No		
Local Emergency Plan	No		
Economic Development Plan	No		
Transportation Plan	No		
Flood Mitigation Assistance Plan	No		
Zoning Ordinance	Yes	2023	
Restricted Residential District Ordinance	No		
Subdivisions Ordinance	No		
Floodplain Ordinance	No		
Building Permit Ordinance	Yes		
Tree Trimming Ordinance	Yes		
Nuisance Ordinance	Yes		
Storm Water Ordinance	No		
Drainage Ordinance	No		
Historic Preservation Ordinance	No		
Landscape Ordinance	No		
Mutual Aid Agreements	Yes		

	Yes/No	If yes, with who?
Mutual Aid Agreements	Yes	Red Oak, Clarinda, Shenandoah

Boards/Staff/Departments

	Yes/No	Title	Comments
Building Code Official	Yes		
Building Inspector	Yes		

Public Works Official	Yes		
NFIP Floodplain Administrator	No		
Zoning Commission	Yes		
Board of Adjustments	No		
Nuisance Abatement Official	Yes	Council	

Northboro

	Date/Time	Location
Council Meetings	2 nd Monday at 6:30 p.m.	

Utilities and Services

Service	Provider
Electricity	Mid-American
Gas	Sapp Bros. Shenandoah
Water	Southwest Regional Water
Phone Services	IAMO
Law Enforcement	Page County Sheriff-28E
Fire Protection	Coin FD
Cable/Internet	IAMO
Warning System	City siren
HAZMAT Assistance	Council Bluffs
Gas/Fuel	Shenandoah
Grocery/Convenience Store	Shenandoah
Solid Waste Removal	
Landfill	Page County Landfill
Library	Shenandoah
Recycling	Page County Landfill
Public Transit	SWITA
Emergency Medical Services	Coin Rescue
Medical Clinic/Hospital	Shenandoah Medical Center
Tornado Shelter	

Plans/Ordinances

	Yes/No	Year Approved	Comments
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Comprehensive/land use Plan	No		
Capital Improvement Plan	No		
Local Emergency Plan	No		
Economic Development Plan	No		
Transportation Plan	No		
Flood Mitigation Assistance Plan	No		
Zoning Ordinance	No		
Restricted Residential District Ordinance	No		
Subdivisions Ordinance	No		
Floodplain Ordinance	No		
Building Permit Ordinance	No		
Tree Trimming Ordinance	No		
Nuisance Ordinance	Yes		
Storm Water Ordinance	No		
Drainage Ordinance	No		
Historic Preservation Ordinance	No		
Landscape Ordinance	No		
Mutual Aid Agreements			

	Yes/No	If yes, with who?
Mutual Aid Agreements	Yes	Page County Sheriff

Boards/Staff/Departments

	Yes/No	Title	Comments
Building Code Official	No		
Building Inspector	No		

Public Works Official	No		
NFIP Floodplain Administrator	No		
Zoning Commission	No		
Board of Adjustments	No		
Nuisance Abatement Official	Yes		Mayor/Council

Shambaugh

	Date/Time	Location
Council Meetings	First Monday of each month at 6:00 p.m.	Shambaugh City Hall

Utilities and Services

Service	Provider
Electricity	Mid-American
Gas	
Water	Shambaugh Municipal Water Supply – IA Rural Water
Phone Services	Windstream
Law Enforcement	28 E Agreement / Page County Sheriff Department
Fire Protection	28 E Agreement /Harlan Fire Department/Clarinda
Cable/Internet	Windstream/
Warning System	EMA
HAZMAT Assistance	Page County Sheriff Department/Clarinda Fire/Harlan Fire Department
Gas/Fuel	Clarinda/Shenandoah/Braddyville
Grocery/Convenience Store	Clarinda/Shenandoah/Braddyville
Solid Waste Removal	Southwest Sanitation
Landfill	Page County Landfill
Library	Lied Public Library - Clarinda
Recycling	Page County Landfill
Public Transit	SWIPCO
Emergency Medical Services	Clarinda Fire Department
Medical Clinic/Hospital	Clarinda Regional Hospital/Clinic
Tornado Shelter	

Plans/Ordinances

	Yes/No	Year Approved	Comments
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Comprehensive/land use Plan	Yes	2013	
Capital Improvement Plan	Yes	2013	
Local Emergency Plan	Yes	2013	
Economic Development Plan	Yes	2013	
Transportation Plan	Yes	2013	
Flood Mitigation Assistance Plan	Yes	2013	
Zoning Ordinance	Yes	2013	
Restricted Residential District Ordinance	Yes	2013	
Subdivisions Ordinance	Yes	2013	
Floodplain Ordinance	Yes	2013	
Building Permit Ordinance	Yes	2013	
Tree Trimming Ordinance	Yes	2013	
Nuisance Ordinance	Yes	2013	
Storm Water Ordinance	Yes	2013	
Drainage Ordinance	Yes	2013	
Historic Preservation Ordinance	Yes	2013	
Landscape Ordinance	Yes	2013	
Mutual Aid Agreements	Yes	2013	

	Yes/No	If yes, with who?
Mutual Aid Agreements	Yes	Page County Sheriff Department and Harlan Fire Department/Clarinda

Boards/Staff/Departments

	Yes/No	Title	Comments
Building Code Official	NO		
Building Inspector	NO		

Public Works Official	NO		
NFIP Floodplain Administrator	NO		
Zoning Commission	NO		
Board of Adjustments	NO		
Nuisance Abatement Official	NO		

Shenandoah

	Date/Time	Location
Council Meetings	6:00 pm 2 nd and 4 th Tues of each month	500 W. Clarinda Ave Shenandoah, IA 51601

Utilities and Services

Service	Provider
Electricity	Mid-American
Gas	Mid-American
Water	City
Phone Services	SWIFT, Mediacom, Century Link
Law Enforcement	City
Fire Protection	City
Cable/Internet	SWIFT, Mediacom, Century Link
Warning System	PageComm, FD, PD
HAZMAT Assistance	CBFD
Gas/Fuel	Caseys x2, Roc Stop, Cardtrol, Sapp Bros
Grocery/Convenience Store	Hy-Vee, Fareway, Walmart
Solid Waste Removal	Shenandoah Sanitation
Landfill	Page Co
Library	City
Recycling	Page Co
Public Transit	SWITA
Emergency Medical Services	Shenandoah Medical Center/City 28E
Medical Clinic/Hospital	Shenandoah Medical Center
Tornado Shelter	

Plans/Ordinances

	Yes/No	Year Approved	Comments
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Comprehensive/land use Plan	Y		Old
Capital Improvement Plan			
Local Emergency Plan	Y	2012	Old
Economic Development Plan			
Transportation Plan			
Flood Mitigation Assistance Plan			
Zoning Ordinance	Y	1982	old
Restricted Residential District Ordinance			
Subdivisions Ordinance			
Floodplain Ordinance			
Building Permit Ordinance	Y	2017	
Tree Trimming Ordinance	Y		
Nuisance Ordinance	Y		
Storm Water Ordinance			
Drainage Ordinance			
Historic Preservation Ordinance			
Landscape Ordinance	Y		
Mutual Aid Agreements	Y		Just for Fire

	Yes/No	If yes, with who?
Mutual Aid Agreements	Y	Red Oak FD, Clarinda FD

Boards/Staff/Departments

	Yes/No	Title	Comments
Building Code Official	Y	Inspector	3 rd party contractor
Building Inspector	Y	Inspector	3 rd party contractor

Public Works Official			
NFIP Floodplain Administrator			
Zoning Commission	Y	Same	
Board of Adjustments	Y	Same	
Nuisance Abatement Official	Y	Fire Chief	

Yorktown

	Date/Time	Location
Council Meetings	First Wednesday of each month at 7:00 p.m.	Yorktown City Hall 208 Main Street Yorktown, Iowa 51656

Utilities and Services

Service	Provider
Electricity	MidAmerican
Gas	
Water	Southwest Regional Water District
Phone Services	Windstream
Law Enforcement	28 E Agreement -Page County Sheriff Department
Fire Protection	28 E Agreement -Nodaway Harlan Fire District
Cable/Internet	Windstream, FMCT,
Warning System	
HAZMAT Assistance	
Gas/Fuel	Clarinda/Shenandoah area
Grocery/Convenience Store	Clarinda/Shenandoah HyVee and Fareway
Solid Waste Removal	
Landfill	Page County Landfill
Library	Clarinda Lied Library
Recycling	Page County Landfill
Public Transit	SWIPCO
Emergency Medical Services	Clarinda Regional Health Center
Medical Clinic/Hospital	Clarinda Regional Health Center
Tornado Shelter	

Plans/Ordinances

	Yes/No	Year Approved	Comments
Comprehensive/land use Plan			Working on Update are ordinance at this present time.
Capital Improvement Plan			
Local Emergency Plan			
Economic Development Plan			
Transportation Plan			
Flood Mitigation Assistance Plan	Yes	2018	
Zoning Ordinance			
Restricted Residential District Ordinance			
Subdivisions Ordinance			
Floodplain Ordinance			
Building Permit Ordinance	Yes		
Tree Trimming Ordinance	Yes		
Nuisance Ordinance	Yes		
Storm Water Ordinance			
Drainage Ordinance			
Historic Preservation Ordinance			
Landscape Ordinance			
Mutual Aid Agreements	Yes		

	Yes/No	If yes, with who?
Mutual Aid Agreements	Yes	28 E Agreements with Page County Sheriff Department and Nodaway Harlan Fire District

Boards/Staff/Departments

	Yes/No	Title	Comments
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Building Code Official	No		
Building Inspector	No		
Public Works Official	No		
NFIP Floodplain Administrator	No		
Zoning Commission	No		
Board of Adjustments	No		
Nuisance Abatement Official	No		

Page County (unincorporated)

	Date/Time	Location
Page County Supervisors Meeting	1 st Thur. 9:00 am other Thur. 6:00 pm	Page County Courthouse

Utilities and Services

Service	Provider
Electricity	Alliant Energy, Mid American Energy, REC, Atchison Holt
Gas	Alliant Energy
Water	Southwest Regional Water District
Phone Services	IAMO Communications, FMTC
Law Enforcement	Page County Sheriff
Fire Protection	Clarinda, Braddyville, College Springs, Coin, Shenandoah, Essex
Cable/Internet	IAMO, FMTC,
Warning System	
HAZMAT Assistance	Council Bluffs HazMat Team
Gas/Fuel	Casey's, Fast Stop
Grocery/Convenience Store	Hyvee, Fareway
Solid Waste Removal	
Landfill	Page County Landfill
Library	
Recycling	
Public Transit	SWITA
Emergency Medical Services	Clarinda Regional, Shenandoah Medical, Essex, Coin, College Springs
Medical Clinic/Hospital	Clarinda and Shenandoah
Tornado Shelter	

Plans/Ordinances

	Yes/No	Year Approved	Comments
Comprehensive/land use Plan	Yes	1996??	Looked at previous plan
Capital Improvement Plan			Informal Process
Local Emergency Plan	Yes	2019	Ongoing updates
Economic Development Plan			
Transportation Plan			
Flood Mitigation Assistance Plan			
Zoning Ordinance	Yes	2008	
Restricted Residential District Ordinance			Within zoning ordinance?
Subdivisions Ordinance	Yes	1999	
Floodplain Ordinance	Yes	2019	Admin 2019-1
Building Permit Ordinance			Within zoning ordinance?
Tree Trimming Ordinance			
Nuisance Ordinance	Yes	2015	(for abandoned properties)
Storm Water Ordinance			
Drainage Ordinance			
Historic Preservation Ordinance			
Landscape Ordinance			
Mutual Aid Agreements	Yes		

	Yes/No	If yes, with who?
Mutual Aid Agreements		Fire/EMS, Law enforcement, Council Bluffs HazMat

Boards/Staff/Departments

	Yes/No	Title	Comments
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Building Code Official			
Building Inspector			
Public Works Official	Yes		
NFIP Floodplain Administrator	Yes	Engineer/EM Coord.	
Zoning Commission	Yes		
Board of Adjustments	Yes		
Nuisance Abatement Official			

Clarinda CSD

	Date/Time	Location
School Board Meeting	2 nd /4 th Wednesdays @ 5pm	423 E Nodaway

Utilities and Services

Service	Provider
Electricity	MidAmerican
Gas	Alliant and Wood River
Water	City of Clarinda
Phone Services	
Law Enforcement	City of Clarinda
Fire Protection	City of Clarinda
Cable/Internet	Mediacom
Warning System	
HAZMAT Assistance	Council Bluffs
Gas/Fuel	Agriland
Solid Waste Removal	SW Sanitation
Landfill	Page County
Library	City of Clarinda
Recycling	Page County
School Nurse	Yes, one at each building
Tornado Shelter	Yes, hallways and bathrooms
Fire Escape Route	Yes, sidewalks and playground close by
Routine Fire/Tornado Drills	Yes, twice a year
Active Shooter Plan	Yes
Security Cameras	Yes
Single Entrance	Yes, need buzzed in to each building
Intercom System	Yes

Plans/Ordinances

	Yes/No	Year Approved	Comments
Comprehensive/land use Plan			
Capital Improvement Plan			
Local Emergency Plan			
Economic Development Plan			
Transportation Plan			
Flood Mitigation Assistance Plan			
Zoning Ordinance			
Restricted Residential District Ordinance			
Subdivisions Ordinance			

Boards/Staff/Departments

	Yes/No	Title	Comments
School Nurse	Yes		1 at each building
Building Inspector			
Public Works Official			
NFIP Floodplain Administrator			
Zoning Commission			
Board of Adjustments			
Nuisance Abatement Official			

Essex CSD

	Date/Time	Location
School Board Meeting	Third Wednesday/6:00 p.m.	Essex Community School District Library

Utilities and Services

Service	Provider
Electricity	Mid American
Gas	Mid American
Water	City of Essex
Phone Services	Farmers Telephone
Law Enforcement	Shenandoah Police
Fire Protection	Essex Volunteer Fire Department
Cable/Internet	Media Com
Warning System	Alarms
HAZMAT Assistance	Essex Volunteer Fire Department/Shenandoah
Gas/Fuel	School Tanks
Solid Waste Removal	City of Essex
Landfill	Page County
Library	Essex Library
Recycling	Essex Schools
School Nurse	Elizabeth Shirley
Tornado Shelter	School Shelter
Fire Escape Route	Yes-Football Field
Routine Fire/Tornado Drills	Once a quarter for each one
Active Shooter Plan	Yes (ALICE)
Security Cameras	Yes
Single Entrance	Yes
Intercom System	Yes

Plans/Ordinances

	Yes/No	Year Approved	Comments
Comprehensive/land use Plan	No		
Capital Improvement Plan	Yes	2021	
Local Emergency Plan			
Economic Development Plan	No		
Transportation Plan	Yes	2021	
Flood Mitigation Assistance Plan	No		
Zoning Ordinance	No		
Restricted Residential District Ordinance	No		
Subdivisions Ordinance	No		

Boards/Staff/Departments

	Yes/No	Title	Comments
School Nurse	Yes	Elizabeth Shirley, Nurse	712-350-0205
Building Inspector	Yes	Ryan Fann	573-429-9202
Public Works Official	No		
NFIP Floodplain Administrator	No		
Zoning Commission	No		
Board of Adjustments	No		
Nuisance Abatement Official	No		

Shenandoah CSD

	Date/Time	Location
School Board Meeting	Second Monday of the month	Logan Admin building

Utilities and Services

Service	Provider
Electricity	MidAmerican Energy
Gas	MidAmerican Energy
Water	City of Shenandoah
Phone Services	Century Link
Law Enforcement	Shenandoah PD, Page County Sherriff, and Fremont County Sheriff
Fire Protection	Shenandoah Fire department
Cable/Internet	Swift
Warning System	City of Shenandoah
HAZMAT Assistance	
Gas/Fuel	Roc Stop and Casey,s
Solid Waste Removal	Shenandoah Sanitation
Landfill	Page County Landfill
Library	Shenandoah Public Library
Recycling	Page county Landfill
School Nurse	Linda Andersen and Kristi O'Rourke
Tornado Shelter	Safe room at the Shenandoah High School
Fire Escape Route	All buildings
Routine Fire/Tornado Drills	All buildings
Active Shooter Plan	All Buildings
Security Cameras	All Buildings
Single Entrance	All Buildings
Intercom System	All Buildings

Plans/Ordinances

	Yes/No	Year Approved	Comments
Comprehensive/land use Plan			
Capital Improvement Plan			
Local Emergency Plan	Yes		
Economic Development Plan			
Transportation Plan	Yes		
Flood Mitigation Assistance Plan			
Zoning Ordinance			
Restricted Residential District Ordinance			
Subdivisions Ordinance			

Boards/Staff/Departments

	Yes/No	Title	Comments
School Nurse	Yes		
Building Inspector			
Public Works Official			
NFIP Floodplain Administrator			
Zoning Commission			
Board of Adjustments			
Nuisance Abatement Official			

South Page CSD

	Date/Time	Location
School Board Meeting	2nd Monday of the Month @ 6:00 pm	South Page Ag Building

Utilities and Services

Service	Provider
Electricity	Mid American
Gas	Sapp Bros Petroleum
Water	City of College Springs
Phone Services	IAMO
Law Enforcement	Page County
Fire Protection	College Springs VFD
Cable/Internet	IAMO
Warning System	Tornado Siren in town
HAZMAT Assistance	Council Bluffs Unit
Gas/Fuel	Youngers - Elmo, Missouri
Solid Waste Removal	City of College Springs (septic tanks)
Landfill	Page County
Library	Coin Library/Clarinda Lied Library
Recycling	Page County
School Nurse	Tamra Ruff
Tornado Shelter	Basement - Sports Locker Rooms
Fire Escape Route	Yes
Routine Fire/Tornado Drills	Yes
Active Shooter Plan	Yes
Security Cameras	Yes
Single Entrance	Not Yet, Working on it
Intercom System	Yes - working to improve

Plans/Ordinances

	Yes/No	Year Approved	Comments
Comprehensive/land use Plan	No		
Capital Improvement Plan	No		
Local Emergency Plan	Yes	2022	
Economic Development Plan	No		
Transportation Plan	No		

Flood Mitigation Assistance Plan	No		
Zoning Ordinance	No		
Restricted Residential District Ordinance	No		
Subdivisions Ordinance	NO		

Boards/Staff/Departments

	Yes/No	Title	Comments
School Nurse	Yes	South Page CSD Nurse	Shared with East Mills
Building Inspector	NO		
Public Works Official	NO		
NFIP Floodplain Administrator	NO		
Zoning Commission	NO		
Board of Adjustments	NO		
Nuisance Abatement Official	NO		

