2022-2027 Final Approved

Wayne County Multi-Jurisdictional Hazard Mitigation Plan

Unincorporated Wayne County

Allerton

Clio

Corydon

Humeston

Lineville

Millerton

Promise City

Seymour

Wayne County Hospital

Wayne Community School

Seymour Community School

Mormon Trail Elementary Community School

FEMA Approved

July 18, 2022

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Executive Summary

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. Wayne County and participating jurisdictions developed this multi-jurisdictional local hazard mitigation plan update to reduce future losses to the region due to hazard events. The plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 and to achieve eligibility for the Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance Grant Programs.

The Wayne County Multi-Jurisdictional Hazard Mitigation Plan covers the following jurisdictions that participated in the planning process:

Unincorporated Wayne County
Allerton
Clio
Corydon
Humeston
Lineville
Millerton
Promise City
Seymour
Wayne County Hospital
Wayne Community School
Seymour Community School
Mormon Trail Elementary Community School

Stakeholders were also invited to include private businesses, community groups, private non- profit entities, adjacent communities, state and federal agencies, academia, and local regional agencies that have a stake in mitigation planning in county.

The plan update process followed a methodology prescribed by FEMA, which began with the assembly of the Hazard Mitigation Planning Committee (HMPC) comprised of representatives from Wayne County and participating jurisdictions and stakeholders. The HMPC updated the risk assessment that identified and profiled hazards that pose a risk to the regional planning area, assessed the vulnerability to these hazards, and examined the capabilities in place to mitigate them. The planning area is vulnerable to several hazards that are identified, profiled, and analyzed in this plan. Based upon the risk assessment, the HMPC reviewed the previously developed goals for reducing risk from hazards.

The committee recognized that many previous county goals were still pertinent. The members constructed goals that were derived from the previous goals and considered the State of Iowa's 2018 Hazard Mitigation Plan. The following goals were agreed upon:

Goal 1: Protect critical facilities, infrastructure, and other community assets from the impacts of hazards.

Goal 2: Protect the health, safety & quality of life for Wayne County residents by minimizing the vulnerability of people and property in Wayne County.

Goal 3: Reduce losses due to natural and man-made hazards.

Goal 4: Educate residents and visitors about local hazards and the resources available in the community.

Goal 5: Apply public funds to hazard mitigation projects in an efficient and fair manner to minimize dependence on Federal resources.

The recommended mitigation action details to meet the identified goals are in Section F. The HMPC developed an implementation plan for each action, which identifies priority level, background information, responsible agency, timeline, cost estimate, potential funding sources, and more.

Prerequisites

44 CFR requirement 201.6(c)(5): The local hazard mitigation plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan. For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

When this plan has been reviewed and approved pending adoption by FEMA Region VII the adoption resolutions will be signed by the participating jurisdictions and added to the Appendix. A model resolution is provided below

Plan Approval and Adoption

The Wayne County Multi-Jurisdictional Hazard Mitigation Plan was approved adopted at the federal level on July 18, 2022, and the new plan update was adopted by the following jurisdictions on the dates listed. See the Appendix for *Resolutions Adopting Wayne County Disaster Mitigation Plan*. Adoption is important for the communities to receive the benefits of the plan; if the plan is not adopted by a particular jurisdiction, that jurisdiction is not eligible for certain disaster recovery and disaster prevention programs and funds.

Adoption of plan by respective jurisdictions is pending FEMA and State conditional approval.

Jurisdiction	Adoption date
Unincorporated Wayne County	12/13/2021
Allerton	12/06/2021
Clio	12/09/2021
Corydon	12/22/2021
Humeston	12/13/2021
Lineville	12/13/2021
Millerton	02/13/2022
Promise City	12/07/2021
Seymour	12/14/2021
Wayne Community School	12/20/2021
Wayne County Hospital	12/20/2021
Mormon Trail Elementary School	06/13/2022
Seymour Community School	06/13/2022

Resolution # 22-16

Adopting the Wayne County Multi-Jurisdictional Local Hazard Mitigation Plan (Wayne County, Iowa)

Whereas, Wayne County recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, Wayne County fully participated in the hazard mitigation planning process to prepare this Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, the Iowa Homeland Security and Emergency Management Department and the Federal Emergency Management Agency Region VII officials have reviewed the "Wayne County Multi-Jurisdictional Local Hazard Mitigation Plan," and approved it contingent upon this official adoption of the participating governing body; and

Whereas, Wayne County desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Wayne County Multi-Jurisdictional Local Hazard Mitigation Plan; and

Whereas, adoption by the governing body for Wayne County demonstrates the jurisdictions' commitment to fulfilling the mitigation goals outlined in this Multi- Jurisdictional Local Hazard Mitigation Plan;

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

Now, therefore, be it resolved, that Wayne County adopts the "Wayne County Multi-Jurisdictional Local Hazard Mitigation Plan" as an official plan; and

Be it further resolved, Wayne County will submit this Adoption Resolution to the Iowa Homeland Security and Emergency Management Department and Federal Emergency Management Agency Region VII officials to enable the plan's final approval.

Approval Date: December 13, 2021

David Dotts, Wayne County Board of Supervisor Chairman
Certifying Official:

Signature of Certifying Official:

Attest: Michelle Dooley
Wayne County Auditor

Introduction & Planning

Local Hazard Mitigation Planning Overview

The primary purpose of hazard mitigation planning is to identify how a community can minimize the negative impacts such as death, injury, property damage and community disruption of natural, technological, and human-caused hazards. For the State of Iowa and Wayne Counties there are recurring natural disasters such as windstorms, flooding, and severe winter storms have made local hazard mitigation planning an essential activity. Communities that engage in hazard mitigation planning to maintain a local governments eligibility to apply for FEMA's Hazard Mitigation Assistance funding, which includes the grant programs of: Hazard Mitigation Grant Program, Pre-Disaster Mitigation, and Flood Mitigation Assistance.

Local hazard mitigation plans are required to:

1. Document the planning process.
2. Identify hazards and risks.
3. Document jurisdictions; mitigation strategies and priorities
4. If applicable provide an update tot eh previously approved plan(s)
5. The participating jurisdictions are required to formally adopt the plan for the plan to be approved by FEMA.

This plan demonstrates the jurisdictions' commitments to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This plan was also developed to make the Wayne County and the participating jurisdictions eligible for certain federal grant programs, specifically the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance (HMA) grants including the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program.

Plan Background

The purpose of the Hazard Mitigation Plan is to identify steps to prevent or reduce the impact of disasters on the residents and property in Wayne County. This is accomplished through compliance with the Federal Emergency Management Agency's (FEMA) Mitigation Planning Regulations under Code of Federal Regulations (CFR), Title 44, Part 201 (Standard 44 CFR 201.4, 44CFR 201.5) Administrative Code 29C 605-7.3(4)(d)(1)(2).

Each year in the United States, disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters because additional expenses to insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated.

Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." The results of a three-year, congressionally mandated independent study to assess future savings from mitigation activities provides evidence that mitigation activities are highly cost-effective. On average, each dollar spent on mitigation saves society $6 in avoided future losses, in

addition to saving lives and preventing injuries (National Institute of Building Science Multi-Hazard Mitigation Council 2017).

Hazard mitigation planning is the process through which hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies to lessen impacts are determined, prioritized, and implemented.

This plan is a multi-jurisdictional hazard mitigation plan for Wayne County in southern Iowa. Wayne County Emergency Management contacted Chariton Valley Planning & Development (CVPD) Council of Governments to create this document.

This planning effort creates a FEMA approved document for Wayne County. Their previous strategies were reviewed to determine if they were still valid or had been accomplished. New strategies and those carried forward were merged into a collaborative document.

This plan fulfills the requirements of the Stafford Act, DMA 2000, and Title 44 of the Code of Federal Regulations 201.6. Throughout the development of this plan, the consultant balanced applicable federal legislation and local priorities to provide the region with an approved and valuable plan.

Plan development began in summer of 2021 and occurred over a six-month period that involve collaboration among local officials, staff, county representatives, EMA and CVPD. The planning consultant facilitated research, public meetings, and a public comment period. The plan was submitted to Iowa Homeland Security and Emergency Management Department (HSEMD) and FEMA for review February 2022. Upon approval and adoption by participating jurisdictions, this plan is effective for five years and maintains eligibility for HMA funding.

This chapter addresses the background and purpose of this plan, who was involved, and how it was developed. Combined, these elements are expected to provide an overview of the decision-making process on disaster mitigation issues. This document is officially a Multi-Jurisdictional Hazard Mitigation Plan, but for simplicity, it will be referred to as the Wayne County Disaster Mitigation Plan in this document.

Plan Participants

44 CFR Requirement §201.6(a)(3): multi-Jurisdictional plans may be accepted, as appropriate, if each jurisdiction has participated in the process and has officially adopted the plan.

Wayne County officials invited the incorporated cities, public school districts and various other stakeholders to participate in mitigation planning. The jurisdictions that elected to participate in this plan are listed below. The county requires that each jurisdiction that participates in the planning process must officially adopt the multi-jurisdictional hazard mitigation plan.

The planning area for this multi-jurisdictional hazard mitigation plan includes one county, eight communities and unincorporated area that lie within the boundaries. The planning area also includes three school districts.

The following chart contains the Wayne Hazard Mitigation Planning Committee members. The committee was not established until after the orientation meeting.

Exhibit 1: Wayne County Hazard Mitigation Planning Committee	
NAME	***ORGANIZATION/JURISDICTION***
Bill Byrns	Wayne County Emergency Management
David Dotts	Wayne County Board of Supervisors
Nikki Sayler	City of Allerton
Bob Mortimore/Eric Purvis	Mayor of Clio/councilman
Stacy Gibbs	Corydon City Clerk
Rick Hopkins	Wayne Community Schools
Brenda DeVore	Promise City Mayor
Caleb Housh	Seymour Mayor
Jack Shields	Lineville Mayor
Josh Hysell	Wayne County Hospital
	City of Millerton
Courtney Peasley	City of Humeston
Brad Breon	Seymour Community Schools Board Member
Becky Stripe	Mormon Trails Elementary Principal

Rosters and summaries of each meeting can be found in the Appendix. If jurisdictions were met with on an individual basis, name of the person and the date(s) that meetings were held are supplied in the community profile.

It was determined that the most active representation of community members occurs at the Wayne County Hazard Mitigation Plan Committee. The participants provided information to develop this Disaster Mitigation Plan in conjunction with professional services from Chariton Valley Planning and Development Council of Governments. It was acknowledged that participation from rural jurisdictions could occur in the LEPC meetings or at other locations. The meetings are held during the day and not all community representatives can attend the meeting times. It was accepted that CVPD could meet with community members when it was convenient for them and could include virtual meetings. Information regarding the purpose of the Hazard Mitigation Plan would be shared and specific community information would be gathered at that time to be included in the plan.

Plan Development

44 CFR Requirement 201.6(c)(1): [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

The hazard mitigation plan is a product of a multi-year planning process that involves collaboration between officials, staff and residents participating jurisdictions. In Iowa, the process typically is completed by a coordinator, usually a planner, HSEMD and FEMA region VII. The primary goals of the coordinator are to ensure the planning process and final document focus on the mitigation priorities of participating jurisdictions and fulfill regulatory requirements.

Planning Consultant

Wayne County Emergency Management has collaborated with Chariton Valley Planning & Development on previous mitigation plans and has been confident the agency's capability to develop a multi-Jurisdiction plan. Planning staff at CVPD possess knowledge and experience in hazard mitigation planning and having the previously approved hazard mitigation plans for Wayne County. For more information visit the agency website www.cvpdcog.com.

Chariton Valley Planning and Development's role was to:

- Assist in establishing the Hazard Mitigation Planning Committee (HMPC) as defined by the Disaster Mitigation Act (DMA),
- Ensure the updated plan meets the DMA requirements as established by federal regulations and following FEMA's planning guidance,
- Facilitate the entire planning process,
- Identify the data requirements that HMPC participants could provide and conduct the research and documentation necessary to augment that data,
- Assist in facilitating the public input process,
- Produce the draft and final plan update documents, and
- Coordinate the Iowa Homeland Security and Emergency Management Department and FEMA plan reviews.

Review and Research

Throughout the plan development process, existing documents and data for each jurisdiction were reviewed for relevance and potential inclusion in this plan. Other documents incorporated into the content of this plan include local regulatory documents, planning, and procedure documents and mapping. Jurisdictions included in this plan are diverse in purpose and size so the types of documents available vary for each one. In each jurisdiction's Operations & Resources table, the jurisdiction-specific documents incorporated into the content of this plan are described. A valuable source of information referenced in this plan is the Iowa Hazard Mitigation Plan 2018 prepared by HSEMD.

In addition to existing documents, extensive research was completed to include current information for each jurisdiction in the plan. The bulk of this research consists of database searches for hazard event information relevant to the region. The databases are cited throughout the document.

To ensure this plan meets regulatory requirements, the October 2011 version of the Local Mitigation Plan Review Guide, provided by FEMA, was referenced frequently in the development process. The planning process was designed to meet or exceed the basic requirements presented in the guide for a multi-jurisdictional plan.

Planning Meetings & Public Involvement

44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

This document was development during the COVID-19 pandemic when social distancing was encouraged and holding large public meetings was discouraged.

Exhibit 2: Plan Development Process

Community Rating System (CRS) Planning Steps (Activity 510)	Local Mitigation Planning Handbook Tasks (44 CFR Part 201)
Step 1. Organize	Task 1: Determine the Planning Area and Resources
	Task 2: Build the Planning Team 44 CFR 201.6(c)(1)
Step 2. Involve the public	Task 3: Create an Outreach Strategy 44 CFR 201.6(b)(1)
Step 3. Coordinate	Task 4: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)
Step 4. Assess the hazard	Task 5: Conduct a Risk Assessment 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)
Step 5. Assess the problem	
Step 6. Set goals	Task 6: Develop a Mitigation Strategy 44 CFR 201.6(c)(3)(i); 44 CFR 201.6(c)(3)(ii); and 44 CFR 201.6(c)(3)(iii)
Step 7. Review possible activities	
Step 8. Draft an action plan	
Step 9. Adopt the plan	Task 8: Review and Adopt the Plan
Step 10. Implement, evaluate, revise	Task 7: Keep the Plan Current
	Task 9: Create a Safe and Resilient Community 44 CFR 201.6(c)(4)

At the kick-off meeting, the committee discussed options for soliciting public input on the mitigation plan. To provide an opportunity for the public to comment during the drafting stage, the committee determined that the most effective method would be dissemination of a survey.

The public survey was developed specific to the Wayne County Hazard Mitigation Plan and provided a brief plan summary as well as a questionnaire to capture public and stakeholder input. The survey was made available online and in post offices throughout the County. .

In addition to notification through media outlets described above, committee members distributed the survey link to members of the public and key stakeholders in their own jurisdiction via email and Facebook.

CVPD manages a public government Facebook page that disseminates information, education, and solicit information from readers. Information regarding hazard mitigation was posted multiple times throughout the planning process.

The Wayne County Hazard Mitigation Plan Committee developed this Disaster Mitigation Plan in conjunction with professional services from Chariton Valley Planning and Development Council of Governments.

The committee met twice from August 2021 and December 2021. All meetings complied with the Iowa Open Meetings Law; this simply means all sessions are open to the public and appropriate notifications were present. The initial orientation disaster planning meeting took place September 1, 2021, in Corydon. The attendees discussed what a Hazard Mitigation Plan contains, some reasons for having one, the basic process for updating the plan, and some initial brainstorming of information for the plan and people that should be involved. A brief survey was utilized to help spark conversation about the various types of hazards that might impact Wayne County. The committee reviewed the existing mission statement and goals. Committee members proposed and approved similar goals and objectives from the previous Hazard Mitigation Plan with slight modifications of words (which are noted in the minutes). Members discussed the changes in the hazards in this update and voted to evaluate and assigned a score to all 23 hazards. During the scoring process, members held discussion as to some hazards that have no effect on communities (I.E., river flooding if there were no rivers in the city limits). CVPD guided discussion to determine which could be eliminated for every jurisdiction (See the Appendix for meeting minute details).

Committee discussion then focused on the critical facilities in each community. The committee reviewed the facilities identified in the 2017 plan to make additions/changes. The members made the decision that only public facilities should be identified and not to list privately owned businesses. Bill Byrns, Emergency Management Coordinator, recommended including the locations that house “vulnerable populations” especially the elderly, children, schools, Amish, etc. CVPD also indicated that it’s important to identify any historical properties. It was suggested and approved by the committee to have the hospitals; medical clinics, & disaster shelter/recovery locations included also. CVPD then presented the Mitigation Strategies that were approved in the 2017 Hazard Mitigation Plan. The committee reviewed each strategy to provide an update of any progress made on it. Highlights of the discussion included the progress of communities demolishing dilapidated buildings, updated information on GIS with a recent Pictometry flight, active shooter training at county courthouse/school/hospital, and new generators.

On October 27, 2021, the planning committee was to meet and reviewed the hazard scoring and rankings by each jurisdiction. Due to a recent surge in COVID-19 cases, Emergency Management Coordinator Bill Byrns conducted private jurisdiction meetings to go over the introductory documents and hazard scoring that was determined at the first meeting.

Mr. Bryns proceeded with reviewing the next step of the process to discuss Mitigation Strategies. Jurisdiction representatives were supplied with the community list of “existing mitigation strategies” that were in place that the development of the 2017 plan. There were few changes. It was noted that Driver’s Education is no longer offered, Emergency Alert notices are not issued by local cable company by rather by the local Law Center after issued by the National Weather Service. Clarification was also made that each community does

have a designated storm shelter/recovery location identified but none are certified as "Red Cross" locations. Each participant agreed that all strategies should remain in the plan even if one jurisdiction accomplished it or made progress, many other communities may not have.

Chariton Valley Planning & Development presented the draft HMP document to Wayne County Emergency Management in early December for review. Jurisdiction resolution samples were sent to participating jurisdictions for formal approval and many were passed in December also.

The Wayne County Multi-Jurisdictional Hazard Mitigation Plan will be sent to FEMA and the State for conditional approval prior to being subjected to the adoption process by each incorporated community and the Wayne County Board of Supervisors.

To ensure the opportunity for participation public flyers were posted at Chariton Valley Planning & Development in Centerville, Wayne County courthouse, and Wayne County Hospital. Invitations to the orientation meeting were also sent to numerous individuals ranging from elected officials, local businesses, non-profit organizations, neighboring communities (Corydon, Allerton, & Seymour) and jurisdictions and educational institution of Wayne Community School.

Public Comment

The 30-day public comment period for this plan was completed. A draft of the plan was available on CVPD's website and a news release with information about the public comment period was sent to each participating jurisdiction, local media, and emergency management coordinators in the surrounding counties. Specifically inviting surrounding counties to participate in the public comment period allows for potential regional cooperation beyond the planning area because the mitigation strategies and action plans are not yet finalized.

Before the full draft plan of the document was released for public comment, the planning consultant gave local planning committees the option to review and verify that the plan information reflects the discussion at planning meetings.

Coordination with other Departments & Agencies

44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process. (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

There are numerous organizations whose goals and interests' interface with hazard mitigation in Wayne County. Coordination with these organizations and other community planning efforts is vital to the success of this plan. Many stakeholder agencies were contacted throughout the planning process to obtain data in preparation of the Risk Assessment. This included contact with specific representatives of stakeholder agencies, as well as accessing stakeholder data that has been made available to the public via the internet. These sources have been identified where data is presented. In addition, neighboring counties were invited, as well as other local, state, and federal departments and agencies and institutions of higher learning to review and comment on the final draft of the Wayne County Multi-Jurisdictional Hazard Mitigation Plan prior to final submittal to FEMA.

Exhibit 3: Stakeholder Involvement

Stakeholder	Type	Provided Data for Risk Assessment	Invited to Comment on Final Draft
Iowa State University, Iowa Flood Center	Academia	X	X
Appanoose County	Adjacent County		X
Lucas County	Adjacent County		X
Decatur County	Adjacent County		X
Monroe County	Adjacent County		X
Clarke County	Adjacent County		X
Putnam County, Missouri	Adjacent County		X
Environmental Protection Agency	Federal Agency	X	X
Federal Emergency Management Agency	Federal Agency	X	X
National Weather Service	Federal Agency	X	X
U.S. Army Corps of Engineers	Federal Agency	X	X
U.S. Geological Survey	Federal Agency	X	X
Southern Iowa Council of Governments	Regional Planning		X
Iowa Department of Agriculture and Land Stewardship	State Agency	X	X
Iowa Department of Natural Resources	State Agency	X	X
Iowa Homeland Security and Emergency Management	State Agency	X	X

In addition, input was solicited from many other agencies and organizations that provided information. As part of the coordination with other agencies, the HMPC collected and reviewed existing technical data, reports, and plans. These included:

- 2018 Iowa Hazard Mitigation Plan.
- Appanoose, Lucas & Monroe County draft Multi-Jurisdictional Hazard Mitigation Plans 2021
- National Flood Insurance Program Policy and Loss Statistics.
- Flood Insurance Administration, Repetitive/Severe Repetitive Loss Property Data.
- Flood Insurance Rate Map.
- Iowa Department of Natural Resources, Dam Safety Program Inventory.
- National Inventory of Dams.
- National Levee Database.
- Various local plans such as Comprehensive Plans, Economic Development Plans, Capital Improvement Plans, etc.
- US Department of Agriculture's (USDA) Risk Management Agency Crop Insurance Statistics

This information was used in the development of the hazard identification, vulnerability assessment, and capability assessment and in the formation of goals, objectives, and mitigation actions. These sources, as well as additional sources of information, are documented throughout the plan and in the Appendix.

Plan Goals

44 CFR Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

This section presents the mitigation strategy updated by the Hazard Mitigation Planning Committee (HMPC) based on the updated risk assessment. The mitigation strategy was developed through a collaborative group process and consists of updated general goal statements to guide the jurisdictions in efforts to lessen disaster impacts, as well as specific mitigation actions that can be put in place to directly reduce vulnerability to hazards and losses. The following definitions are based upon those found in the March *2013 Local Mitigation Planning Handbook*: Goals are general guidelines that explain what the community wants to achieve with the plan. They are usually broad policy-type statements that are long-term, and they represent visions for reducing or avoiding losses from the identified hazards. Objectives are specific actions that help achieve the goal. Throughout the development process of this plan, goals were used as a guide for planning committee decisions and final decision making. Jurisdiction representatives reviewed the goals in the 2017-2022 hazard mitigation plan and made the following adjustments and additions:

Goal 1: Protect critical facilities, infrastructure, and other community assets from the impacts of hazards.

Goal 2: Protect the health, safety & quality of life for Wayne County residents by minimizing the vulnerability of people and property in Wayne County.

Goal 3: Reduce losses due to natural and man-made hazards.

Goal 4: Educate residents and visitors about local hazards and the resources available in the community.

Goal 5: Apply public funds to hazard mitigation projects in an efficient and fair manner to minimize dependence on Federal resources.

Jurisdiction Profiles

Each community in Wayne County and the County itself will be addressed separately in this section to ensure that the needs of each are covered. The following profiles are divided into official jurisdictions; incorporated communities are lumped into Wayne County as the county is the most direct level of government for them. Some of the Census numbers may not be the same between tables due to statistical and sampling methods used and the originating table from the American Factfinder website.

Unincorporated Wayne County

General Information

Exhibit 4: Rural County Profile	
Total County Population: 6429 Unincorp: 2726	Floodplain: yes
Median Age: 43.2yrs	NFIP Participant: no
65 years & Older: 1395 21.7%	Historic District: no
5 years & Under: 461 7.2%	Comprehensive Plan: No
School buildings: 0 (not including Amish schools)	Zoning Ordinance: No
Places of Worship: 3	Subdivision Ordinance: No
Land Area: sq. miles: 527	Building Permits required: No
Most Recent Codification:	

Geography

Wayne County is in the south-central sector of Iowa at coordinates Rathbun Lake is located primarily in Appanoose County but extends into the far Northeast corner of Wayne County covering a total area of 12,040 acres across four counties. Rathbun Lake is the second largest water body in Iowa. Eight rivers and creeks cross through Wayne County, the most significant of which is the Chariton River which created Rathbun Lake once dammed in the 1970's. Wayne County's terrain is predominantly undulating topography that characterizes the rolling hills of the Southern Iowa Drift Plain. Wayne County is in 3 different watersheds, all within the Mississippi Basin. The Lake Red Rock watershed encompasses slightly more of the county than the other two.

Population Data

As of the 2019 ACS, the total population of Wayne County was 6,429 which was up from 6,385 in 2010. There was also an increase of 141 households during this time to have approximately 2689 households. Wayne County has faced six decades of decline starting in 1920 through 1970. More recently, a decrease occurred as captured in the 2010 Census. But the most recent decade has shown a population rebound with an increase in residents and households. The population of the unincorporated county is over one third of total county population.

Woods & Poole Economics, Inc. provided population projections for each of the counties in Iowa through 2040. Wayne County is projected to lose population into 2025 and continued decreasing through 2040. Cumulative projected change for Wayne County is a loss of 5% suggesting that by 2040 the county's population could be down to 5,586. See Exhibit 5 for the Woods & Poole population projection for Wayne County.

Exhibit 5: Woods & Poole Population Projection for Wayne County
Source: Iowa State Data Center, http://www.iowadatacenter.org

AREA	2025	2030	2035	2040
WAYNE	**5,878**	5,780	5,682	5,586
PERCENT CHANGE	-1.03%	-1.01%	-1.01%	-1.01%

Wayne County at risk groups are identified as young children, the elderly, those with disabilities, and those whose primary language is not English. As of the 2019 ACS, the census estimated that 10% people have a primary language that is other than English and would be considered linguistically isolated in Wayne County. This includes 9% of the Amish population that speak Indo-European. There are approximately 461 (7.2% of total population) children under the age of five years. The population over the age of 65 years account for 21.7% (1395 people) in Wayne County.

The remaining "at risk" category would be individuals that have a disability. It is estimated that 922 residents of Wayne County have a confirmed disability. That accounts for approximately 14.6% of the population.

In the 2019 ACS, median household income for Wayne County was $44,768 which is up from $42,083 in 2010. Approximately 42% of households in unincorporated Wayne County had incomes under $50,000 annually. In 2019, Wayne County had 1,086 people under the Federal Poverty Guidelines comprising about 17.2% of the unincorporated population.

Major Employers

Ten major employers are identified in Wayne County by the Location One Information System (LOIS) website.

Hy-Vee	Allerton Lumber Co
Wayne County Community Schools	Log Chain Apiary
Wayne County Hospital	NXMP, North America Inc
Country Clipper	East Penn
Shivver's	Taylor Fencing & Hardware

Structures

Some of the housing stock (42%) in Wayne County was constructed before 1950 suggesting that the structural integrity of the buildings likely does not meet newer building codes designed to ensure the safety of residents. These structures are likely the most vulnerable to various hazards due to their age and the difference in construction techniques which have improved in many ways since they were built. A larger proportion of the older housing stock is found in incorporated communities in Wayne County. Median year built of the homes in Wayne County is 1947, meaning that half of the homes were built before and half after this year.

Another potential concern is the prevalence of bottled fuels such as LP gas, kerosene, and oil or heating with wood. Approximately 26% of homes use LP gas as heating fuel. While LP tanks can be safe forms of fuel containment and transport, liquefied petroleum gas is flammable and can explode. LP gas is heavier than air and so it will sink to the lowest level possible; if inhaled it can cause asphyxiation through oxygen deprivation but is otherwise nontoxic. A further concern is that 10% homes in 2019 reported using wood as the primary heating fuel. This becomes a concern due to its potential fire hazard but also to carbon monoxide poisoning in the home if a chimney is blocked.

About 42% of the owner-occupied homes in Wayne County was valued at less than $50,000 as of the 2019 ACS and approximately 75% of homes are valued below $150,000.

Below are valuations for the unincorporated county from the Wayne County Assessor's office. The number of structures for exempt properties is not readily available and thus is omitted from the chart.

Exhibit 6: Rural County Structure Evaluations

Type of Structure (Occupancy Class)	Number of Structures	Total Valuation	Average Valuation
Residential	2,983	$222,559,270	$74,609
Commercial	480	$22,621,972	$47,129
Industrial	66	$8,822,530	$133,675
Agricultural	--	$4,577,530	$4,577,530

Source: Wayne County Assessor

Community Assets

Community assets are not always easily identified and can often include cultural resources which are similar but may be more focused on historical or scientific significance. Community assets are those buildings, public or private facilities, and other infrastructure that make a settlement more than a cluster of homes and perhaps a few businesses. Often if such assets leave a community or are severely damaged, there may be a sense of loss in the community, and it may signal impending decline of population.

In these terms, community assets are more difficult to define for an unincorporated area or county since communities are generally thought of as a town or a city. None-the-less, the same assets that can be identified for an incorporated community in Wayne County, can be identified as an asset to the unincorporated county where they are present. This section also includes critical facilities which are assets that play a role in disaster recovery or are particularly vulnerable to disasters due to their vital role in the community. Grocery stores are included in this category as if they are lost or closed for extended periods of time then additional problems arise in the respective community including an incentive for residents to relocate.

For a geographic area like a county, community assets may also include water resources, wildlife preserves, and parkland. See the Appendix for Community Assets for buildings located in the unincorporated county, Critical Facilities, and Community Assets and Critical Facilities for listing of which assets and facilities are present in Wayne County.

Exhibit 7: National Register of Historic Places
Source: http://www.nps.gov/history/nr/

PROPERTY	ADDRESS	CITY	DATE LISTED
NELSON ROUND BARN		ALLERTON, IA	1986
PLEASANT HILL SCHOOL	3 MILES NORTH OF LINEVIL	LINEVILLE, IA	1975
W.H. THEDFORD HOUSE	312 S WEST ST	CORYDON, IA	1979
CORYDON PUBLIC LIBRARY	N DEKALB ST	CORYDON, IA	1983

There are approximately 176 known historic sites in Wayne County; these sites include Historic Sites and Prehistoric Sites Exact location, and details of the historic sites is not publicly available to protect the sites from looting or intentional damage the exception to this may be sites that are on the National Historic Registry. The State Archeologist's office may be contacted for more information as needed.

1. Bobwhite State Park is a 15-acre park that is located two miles west of Allerton or six miles southwest of Corydon in the rural region of Wayne County. It is a county operated park that offers fishing, camping, swimming, and hiking.
2. Cinder Path Trail is 13.5 miles of rails-to-trails abandon rail line in Lucas and Wayne County. The route extends from Chariton to Humeston.
3. The historic Mormon Trail extended across southern Iowa, including Wayne County. The specific trek occurred throughout the rural county and near the cities of Seymour, Corydon, and Allerton.

Exhibit 8: Rural County Critical Facilities		
Facility	**Location**	**Assessed Value**
1.Water Towers (5)	Scattered	
2.Natural Gas Booster Station	South of Allerton & near Lineville	
3.Nelson Round Barn (historical)	South of Allerton	
4.Pleasant Hill School (historical)	3 miles north of Lineville	

Transportation

There is only one distinct US Highway crossing through Wayne County, Highway 65 running north to south. Two distinct county highways are in the county, Highway 2 running east to west at the mid-section and the spur of highway 14 that extends north to Chariton. Two railroads cross through the county, one (UP) running north-south connecting Lineville, Clio, Allerton, Corydon, and Millerton. The second rail (DME) crosses the southeast corner of Wayne County and enters the cities of Sewal (unincorporated community) and Seymour.

Hazard Scoring & Ranking

Community representatives were responsible for scoring each hazard based on probability, severity, warning time, and duration of the event. The identified hazards of the plan were included for each jurisdiction to rate. The scoring guidelines were provided by Iowa Homeland Security and was utilized by the committee members. The comprehensive ranking is given on the next page. David Dotts, Wayne County Board of Supervisors, completed the comprehensive scoring chart for the county. The numbers were then added to achieve a weighted score that prioritized the hazards. Wayne County's unincorporated region is most concerned about flash flooding, river flooding, and infrastructure failure in their region.

Jurisdictional hazard rankings beyond region wide events (Tornado & Windstorm; Human Disease; Thunderstorm, Lightning & Hail; Severe Winter Storm; Terrorism; Extreme Heat; Animal, Plant, & Crop Disease; Earthquake; Drought; and Expansive Soils

Unincorporated Wayne County

1. Flash Flood
2. River Flood
3. Infrastructure Failure
4. Grass & Wildland Fire
5. Dam Failure
6. Radiological Incident
7. Sinkholes
8. Transportation Incident
9. Hazardous Materials Incident
10. Landslide

Overall, Wayne County Rankings

1. Hazardous Materials Incident
2. Infrastructure Failure
3. Transportation Incident
4. Grass & Wildland fire
5. Radiological Incident
6. Human Disease
7. Sinkholes
8. Landslide
9. River Flood
10. Dam Failure

Mitigation Strategies - Existing Strategies

- Law Center provides service to entire county
- Mobile communication trailer(s) located at Law Center; about 5-6 hours are needed to mobilize
- 28E agreements in place with surrounding jurisdictions for fire protection and hazardous materials containment.
- County-wide Emergency Operations Plan (EOP) is in place and maintained by Wayne County Emergency Management; a copy of the plan is present in the Wayne County Supervisors' office.
- Tree trimming or management is currently handled by utility services provided throughout the county.
- Neighboring community of Centerville can provide emergency personnel that are certified in waterway rescue.
- Enhanced 9-1-1 emergency calling system through Next Generation radio systems
- NOAA Weather radios were provided to communities through a grant 10 years ago. Some are working but beginning to fail.
- Emergency Alert notices are posted through the National Weather Service on weather radio, radios, televisions & cell phones.
- Emergency Shelters are established and currently have backup generators
- Have a Debris Management Plan for the County.
- County has a Mass Casualty Preparation Plan at the Wayne County Hospital.
- County has 100-amp mobile generator that can provide backup power to critical facilities if necessary.
- Currently in process of installing an emergency alert siren near a large Amish community.
- Alert Iowa provides local or statewide access to emergency messaging to all residents in Wayne County.

Priority Strategies

See the Appendix for mitigation strategies identified in the previous hazard mitigation plan. This chart will identify the progress made on those strategies. In this updated plan, the county has prioritized the following strategies:

Exhibit 9: Rural County Mitigation Strategies				
Mitigation Strategy Priorities	**Mitigation Ranking**	**Expense**	**Responsible Party**	**Timeline to Occur**
Maintain up-to-date Search & Rescue trainings, certification, equipment for First Responders	1	Moderate	Fire Departments, First Responders, Local hospitals, city councils	Ongoing
Encourage citizens to create family preparedness kits to be used in case of emergency	2	Voluntary-Minimal	Residents, Emergency Management, Fire Departments, etc	Ongoing
Maintain a current plan for Mass Casualty Preparation &	3	Minimal	Emergency management, city councils,	Ongoing

Allerton

General Information

Exhibit 10: Allerton Community Profile	
Population: 513	Floodplain: No
Median Age: 44.6yrs	NFIP Participant: No
65 years & Older: 71 14.3%	Historic District: No
5 years & Under: 57 11.5%	Comprehensive Plan: No
School buildings: 0	Zoning Ordinance: No
Places of Worship: 4	Subdivision Ordinance: No
Land Area: 1.14 sq. miles	Building Permits required: No
Most Recent Codification: 2001	

Geography

Allerton is near the center of Wayne County at coordinates 40° 42' 25" N, 93° 21' 57" W. The city encompasses an area of 1.0 square mile with a population density of 439.5 people per square mile according to the 2010 Census.

Population Data

As of the 2010 Census, the total population of Allerton was 501 with a total of 219 households. The population has continually declined from 1990 to 2010. From 2000 to 2010, the population declined by 58 people and 14 households. Between 1990 and 2000, Allerton lost 40 people and lost 10 households.

The Wayne County committee determined at risk groups as young children, the elderly, and those that speak a language other than English are generally identified as a "at risk groups." Some of the county at risk population was in Allerton amounting approximately 33.8% under 18 and about 14.3% over 65. As of the 2019 ACS, eleven of the county's residents who speak a language besides English reside in Allerton.

In the 2019 ACS, median household income for Allerton was down to $39,464 from $42,813 in the 2010 Census. More than 42% of the households in Allerton had incomes less than $35,000 in 2019. Nearly 32% of the population of Allerton have incomes below the 2019 Federal Poverty Guidelines.

Major Employers

Ten major employers are identified in Wayne County by the Location One Information System (LOIS) website.

Hy-Vee	Allerton Lumber Co
Wayne County Community Schools	Log Chain Apiary
Wayne County Hospital	NXMP, North America Inc
Country Clipper	East Penn
Shivver's	Taylor Fencing & Hardware

Structures

More half (55.3%) of homes in Allerton were built prior to 1940 though there was a spike in new homes built in the 1970's with nearly 13% of the housing stock built during this decade. Approximately 28% of homes in Allerton are heated with electricity and 69% of homes were heated by utility gas in 2019. Approximately 95% of the owner-occupied homes in Allerton were valued at less than $100,000; about 56% homes were valued below $50,000.

Community Assets

Dairi Concepts is a provider of dairy and cheese products to the commercial, food service and retail markets. It specializes in cheese and dairy powders and concentrates, functional dairy replacement systems and hard Italian-block and grated cheese. The company offers straight and high flavor cheese, cheese powder blends and flavoring items. It operates a quality department that provides quality and food safety systems, sanitation procedures, environmental monitoring, and allergen control and foreign material control programs. The company has a staff of food scientists, process engineers and technicians who conduct product development research in the dairy and cheese fields. It is a joint venture between Fonterra Co-operative Group and Dairy Farmers of America and serves customers throughout the United States and Canada. Dairi Concepts maintains a location in Allerton, Iowa. This location employs 50-100 individuals. The company has $10-$20 million annual revenue.

Exhibit 11: Allerton Critical Facilities

Facility	Location	Assessed Value
1.Lift station		
2.City Hall/community center (shelter site)	Central Ave	$54,030
3. Legion	Pine	$23,380
4. Post Office	108 N Central	
5. Water Dept		$83,110
6. City Shop	101 N Central	$27,440
7.Public Housing		$204,950
8. Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Transportation

Allerton is accessible by three county highways. Highway S26 provides the main service north and south from State Highway 2. Two small county blacktops spur from the southwest corner of the community to transport people west on J46 or south on S22. Union Pacific Railroad has a double set of tracks that intersect the northern section of the community.

Hazard Scoring & Ranking

The Allerton City Clerk, Nikki Sayler, participated throughout the mitigation process and identified priority hazards shown in *Hazards by Jurisdiction* in the Appendix. The members have identified the hazards of flash flood, infrastructure failure, grass & wildland fire as major concerns for that community.

Jurisdictional hazard rankings beyond region wide events (Tornado & Windstorm; Human Disease; Thunderstorm, Lightning & Hail; Severe Winter Storm; Terrorism; Extreme Heat; Animal, Plant, & Crop Disease; Earthquake; Drought; and Expansive Soils)

City of Allerton

1. Flash Flood
2. Infrastructure Failure
3. Grass & Wildland Fire
4. Transportation Incident
5. Hazardous Materials Incident
6. Landslide
7. Sinkholes
8. Radiological Incident

Mitigation Strategies - Existing Strategies

- Fire Station has a storm warning system
- Mobile communication trailer(s) located at Law Center; about 5-6 hours are needed to mobilize
- Sand or blade trucks are / can be used to clear paths for first responders in the event of road blockage (debris or heavy snow)
- Designated shelters at the Civic Center.
- 28E agreements in place with surrounding jurisdictions for fire protection and hazardous materials containment.
- County-wide Emergency Operations Plan (EOP) is in place and maintained by Wayne County Emergency Management; a copy of the plan is present in the Wayne County Supervisors' office.
- Enhanced 9-1-1 emergency calling system through Next Generation radio systems
- NOAA Weather radios were provided to communities through a grant 10 years ago. Some are working but beginning to fail.
- Emergency Shelters are established
- Have a Debris Management Plan for the county.
- County has a Mass Casualty Preparation Plan at the local hospital.
- County has 100-amp mobile generator that can provide backup power to critical facilities if necessary.
- Emergency Alert notices are posted through the National Weather Service on weather radio, radios, televisions & cell phones.
- Emergency Alert Sirens can be activated locally or at Wayne County Law Center.
- Alert Iowa provides local or statewide access to emergency messaging to all residents in Wayne County.

Priority Strategies

The city was interested in pursuing many of the mitigation strategies but felt priority is to develop a safe room in schools and critical facilities, generator hook ups for critical facilities, encourage weather radios for citizens and obtain search & rescue training/equipment for first responders.

Exhibit 12: Allerton Mitigation Strategies				
Mitigation Strategy Priorities	**Mitigation Ranking**	**Expense**	**Responsible Party**	**Timeline to Occur**
Develop safe rooms in schools & critical facilities	1	High	City Councils/BOS, critical facility property owners, schools, hospitals	Long term
Generator hook ups for critical facilities	2	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Short Term
Encourage weather radios for citizens	3	Minimal	Voluntary	Ongoing

Clio

General Information

Exhibit 13: Community Profile	
Population: 66	Floodplain: No
Median Age: 58.7 yrs.	NFIP Participant: No
65 years & Older: 19 29%	Historic District: No
5 years & Under: 0	Comprehensive Plan:
School buildings: 0	Zoning Ordinance: No
Places of Worship: 1	Subdivision Ordinance: No
Land Area: .75 sq. miles	Building Permits required: No
Most Recent Codification: Uncertain	

Geography

Clio is in the south-west quadrant of Wayne County at coordinates 40° 38' 9" N, 93° 26' 29" W. The city encompasses an area of 1.0 square mile with a population density of 106.7 people per square mile according to the 2010 Census.

Population Data

As of the 2019 ACS, the total population of Clio was 66 with a total of 28 households. Between 1990 and 2000, Clio lost 12 people and gained 5 households and the same trend follows for 2000 to 2010; there were 11 less people and 2 more household and 2019 saw a decrease of 14 less people and 11 less households.

The Wayne County section of at-risk groups, young children, the elderly, and those that speak another language besides English are generally identified as a "at risk groups." Some of the county at risk population was in Clio amounting to 18.5% under 18 and about 29% over 65. As of the 2010 Census, none of the county's linguistically isolated population was in Clio.

In the 2019 ACS, median per capita household income for Clio was up significantly to$83,333 from $38,750 2010 Census. More than 29% of the households in Clio had incomes less than $35,000 in 2019.

Major Employers

Ten major employers are identified in Wayne County by the Location One Information System (LOIS) website.

Hy-Vee	Allerton Lumber Co
Wayne County Community Schools	Log Chain Apiary
Wayne County Hospital	NXMP, North America Inc
Country Clipper	East Penn
Shivver's	Taylor Fencing & Hardware

Structures

More than 79% of homes in Clio were built prior to 1940. Nearly 68% of homes in Clio are heated with bottled fuels and 11% were heated by firewood in 2019.All of the owner-occupied homes in Clio were valued at less than $100,000; about 46% homes were valued below $50,000.

Exhibit 14: Clio Critical Facilities		
Facility	**Location**	**Assessed Value**
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main St	$20,000
Library		$10,110

Transportation

County highway J54 provides access to Clio from the east and west. Union Pacific Railroad has a double set of tracks that intersect the northern section of the community.

Hazard Scoring & Ranking

The City Mayor (Bob Mortimore) and councilman Eric Purvis, participated throughout the mitigation process and identified priority hazards shown *in Hazards by Jurisdiction* in the Appendix. The members have identified the hazards of Animal/plant/Crop Disease, extreme heat, drought, and Thunderstorm & Lightning major concerns for that community.

Jurisdictional hazard rankings beyond region wide events (Tornado & Windstorm; Human Disease; Thunderstorm, Lightning & Hail; Severe Winter Storm; Terrorism; Extreme Heat; Animal, Plant, & Crop Disease; Earthquake; Drought; and Expansive Soils)

Clio

1. Thunderstorm, Lightning & Hail
2. Drought
3. Extreme Heat
4. Animal/Plant/Crop Disease
5. Flash Flood
6. Severe Winter Storm
7. Tornado/Windstorm
8. Infrastructure Failure
9. Human Disease
10. Transportation Incident
11. Hazardous Materials Incident
12. Grass & Wildland Fire
13. Sinkholes
14. Expansive Soils
15. Radiological Incident
16. Earthquake
17. Terrorism

Mitigation Strategies - Existing Strategies

- 28E agreements in place with surrounding jurisdictions for fire protection and hazardous materials containment.
- County-wide Emergency Operations Plan (EOP) is in place and maintained by Wayne County Emergency Management; a copy of the plan is present in the Wayne County Supervisors' office.
- Tree trimming or management is currently handled to an extent by utility services.
- Some residents have private weather radios.
- Enhanced 9-1-1 emergency calling system through Next Generation radio systems
- NOAA Weather radios were provided to communities through a grant 10 years ago. Some are working but beginning to fail.
- Emergency Shelters are established
- Have a Debris Management Plan for the county
- County has a Mass Casualty Preparation Plan at the local hospital.
- County has 100-amp mobile generator that can provide backup power to critical facilities if necessary.
- Emergency Alert notices are posted through the National Weather Service on weather radio, radios, televisions & cell phones.
- Alert Iowa provides local or statewide access to emergency messaging to all residents in Wayne County.

Priority Strategies

The city was interested in pursuing many of the mitigation strategies but felt priority would be placed on Install/Purchase mobile generators and make them available to ensure that designated shelter sites and other critical infrastructure sites can be provided with supplemental power, Generator hook ups for critical facilities, and Develop/Implement Storm water Management ordinance preventing illicit connections. Representatives also note that the city needs an early new storm warning system.

Exhibit 15: Clio Mitigation Strategies				
Mitigation Strategy Priorities	**Mitigation Score**	**Expense**	**Responsible Party**	**Timeline to Occur**
Develop/Implement Storm water Management ordinance preventing illicit connections	11	Low	City Councils, BOS, Zoning Commissions	Ongoing
Install/Purchase mobile generators and make them available to ensure that designated shelter sites and other critical infrastructure sites can be provided with supplemental power	16	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Ongoing
Generator hook ups for critical facilities	12	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Short Term

Corydon

General Information

Exhibit 16: Corydon Community Profile	
Population: 1,628	Floodplain: No
Median Age: 38.2yrs	NFIP Participant: No
65 years & Older: 373 23%	Historic District: No
5 years & Under: 151 9.3%	Comprehensive Plan: No
School buildings: 2	Zoning Ordinance: Yes
Places of Worship: 9	Subdivision Ordinance: No
Land Area: 1.39 sq. miles	Building Permits required: Yes
Most Recent Codification: May 2015	

Geography

Corydon is located approximately in the center of the county at coordinates 40° 45' 16" N, 93° 18' 37" W. Corydon encompasses an area of 1.0 square miles with a population density of 1,140.3 people per square mile according to the 2010 Census.

Population Data

As of the 2019 ACS, the total population of Corydon was 1,628 with a total of 657 households.

There has been a steady decline over the past 20 years in Corydon. Between 1990 and 2000, Corydon lost 75 people and 29 households, from 2000 to 2010 the city lost 6 people and 38 households, but the population has rebounded to gain 43 residents in 23 less households.

Wayne County section on at risk groups, young children, the elderly, and those that primarily speak another language besides English are identified as a "at risk groups." Approximately half of the Corydon residents combined to be considered at risk populations in Wayne County (49%). As of the 2019 ACS, there were ten people that speak another language besides English.

In the 2019 ACS, median household income for Corydon was up to $48,229 from $39,833 in the 2010 Census. Nearly 50% of the households in Corydon had incomes less than $50,000 in 2019. Approximately 16.4% of the population of Corydon have incomes below the 2019 Federal Poverty Guidelines.

Major Employers

Ten major employers are identified in Wayne County by the Location One Information System (LOIS) website.

Hy-Vee	Allerton Lumber Co
Wayne County Community Schools	Log Chain Apiary
Wayne County Hospital	NXMP, North America Inc
Country Clipper	East Penn
Shivver's	Taylor Fencing & Hardware

Structures

Nearly half (45%) of homes in Corydon were built prior to 1940 though there was a spike in new homes built in the 1970's with nearly 22% of the housing stock built during this decade. Approximately 59% homes in Corydon are heated with utility gas and 3.7% are heated by electricity in 2019. Approximately 69% of the owner-occupied homes in Corydon were valued at less than $100,000. About 20% of homes were valued over $100,000.

Community Assets -Wayne County Hospital

A two-time (2010 & 2009) Press Ganey Summit Award recipient for outstanding patient satisfaction, the Wayne County Hospital team of health care professionals is dedicated to improving the health and well-being of patients. Wayne County Hospital is a general medical/surgical hospital with modern medical imaging and laboratory services, inpatient & outpatient rehabilitation therapy, new labor-delivery-recovery obstetrical suites and an exceptional dialysis unit. The emergency department, designated as a Level IV Trauma Center, provides 24-hour emergency care, and offers stabilization and transfer services to patients requiring more specialized care. Ambulance and medical helicopter transfer services are available with highly trained emergency personnel. The medical staff consists of family practice physicians, a general surgeon and orthopedic specialist, complemented by physician assistants and nurse practitioners. In addition, obstetric care service in a 5-county area.

The Amy Robertson Specialty Clinic offers patients local care with visiting specialists in areas such as audiology, cardiology, orthopedics, podiatry, and urology. The Wayne County Hospital rehabilitation services team provides physical, occupational and speech language therapy. The hospital clinic system operates four clinics conveniently located in Corydon, Humeston, Lineville and Seymour to provide better health care access to patients within Wayne County.

Wayne County Hospital is one of the largest employers in the county serving a population of 6,403 people in Wayne County plus surrounding areas. (2010 Census) Wayne County Hospital operates as a tax-exempt; 25-bed licensed Critical Access Hospital (CAH).

WCH Facts & Figures

- Founded 1954
- Total CAH licensed beds 25
- Gross revenues $25 million (as of July 2011)

Affiliate of Mercy Medical Center, Des Moines

Since 1986, the Wayne County Hospital has been a part of the Mercy Medical Center of Des Moines, Iowa, statewide collaborative Network of Healthcare Services. This affiliation is through a management contract with that facility

Wayne County Hospital is one of the major employers in Wayne County. There are approximately 236 employees.

Wayne County Hospital employee, Mr. Josh Hysell, was involved in the entire HMG planning sessions and participated in all the meetings held. The hospital is concerned about the safety of patients, clients, and visitors that could be at in the building during the event of a disaster. The hospital has established and approved emergency procedures in place for the potential number of patients in the facilities. However, greater concern happens when there are many people attending the numerous events held at the hospital or when it is utilized as an emergency recovery site such as for a terrorism event, human disease pandemic or incident, extensive severe natural weather events (tornado, ice, etc).

1. Transportation Incident
2. Flash Flood
3. Sinkholes
4. Hazardous Materials
5. Infrastructure Failure
6. Expansive Soils
7. Radiological Incident

Wayne Community School

Wayne Community Schools was created in the mid-60s, as some of the individual school districts in the area reorganized. Students are housed in two buildings that are located within the city limits of Corydon. The sites are Wayne Community Junior/Senior High School, and Wayne Community Elementary School.

Wayne Community Schools, like every public school district in Iowa, is governed by a board of directors. The board is responsible for determining policies, setting the budget, and maintaining standards of excellence in education on behalf of the community. Board members are elected by Wayne County voters for four-year terms. Because the district school board members are committed to their own lifelong learning, they are regular participants in training and board development opportunities through the Iowa Association of School Boards

Staff District Detail for Wayne Comm School District (ed.gov)

This includes full-time and parttime Staff: 50
The Wayne Community School is predominantly (99%) white ethnicity.

There were approximately 568 students enrolled during the 2020-21 school year. The current number of students who are enrolled for the Free and Reduced Lunch program is

used to determine the number of at-risk students who reside in poverty conditions. There are approximately 56% of students in this school district that qualify for this program. Wayne Community Schools offers transportation to enrolled students throughout the district. Six (6) buses travel throughout the district to transport children to and from school.

Rick Hopkins, employee of the Wayne County Community School provided information regarding the school for the purposes of the Hazard Mitigation Plan and attending mitigation planning meetings. The school system is concerned about the safety of students, parents, and visitors that could be at a school function during the event of a disaster and particularly concerned about the event of a Tornado and thunderstorm occurrence during a school event. The school has established and approved emergency procedures in place for the number of students enrolled in the facilities. However, greater concern happens when there are many people attending the numerous events held at the school. Wayne Community Schools may apply for any grant funded opportunities to assist them in constructing a Safe Room for their district. The school district does not have any structures in the flood plain and does not have concerns of river flooding.

Wayne Community Schools

1. Transportation Incident
2. Flash Flood
3. Infrastructure Failure
4. Grass & Wildland Fire
5. Hazardous Materials Incident
6. Sinkholes
7. Radiological incident

East Penn

November 1, 2006, East Penn manufacturing purchased Voltmaster Company, Inc. of Corydon Iowa. Since 1946, East Penn has been producing lead-acid batteries and battery accessories for the automotive, industrial, commercial, marine, stationary, and specialty markets. East Penn manufactures products to the exacting specifications of both private-label and original equipment customers. In addition, other first-class products are marketed worldwide under the Deka brand name.

East Penn is constantly pursuing an aggressive expansion plan. In fact, our modern facilities and computer monitoring, and control systems make it the industry's most technologically advanced battery manufacturer.

Shivvers

Launched in 1984, Shivvers created the Country Clipper Zero Turn Mower and was a leader ahead of its time. Country Clipper produced zero turn mowers for other leading brands in the industry. Today, Country Clipper designs and builds its own brand and has a loyal, dedicated dealer network throughout North America and other countries.

For 30 years, Country Clipper has designed, built, and marketed zero turn mowers and accessories for both lawn care professionals and residential homeowners. We are one of the first eight zero turn mower manufacturers in the industry.

Shivvers Manufacturing, Inc. is in Corydon, Iowa; 80 miles southeast of Des Moines. Shivvers currently houses 120,000 square feet of manufacturing, office, and warehouse space on a 20-acre campus and employs approximately 150 associates from

around the region. Shivvers remains privately owned with annual sales exceeding 40 million dollars in agricultural and outdoor power equipment.

Exhibit 17: Corydon Critical Facilities		
Facility	**Location**	**Assessed Value**
Lift station		
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community Bldg.	501 S East St	$179,730
Sewer Lagoon	South St	
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Bath House (historical)	100 McKinley St	
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Water Dept		$20,340
Murphy Place Senior Housing	511 E Jackson	$875,890
Emergency Shelter locations		
Golf Course		$454,340
Sports Complex		
Fairgrounds		$273,330
Extension Office	220 E Jefferson	$132,670
Corydon Nursing & Rehab (Shelter Site)		
Walden Park Club House (Shelter Site)		
Corydon Head start	605 S West St	
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510
Private In-home Daycare	2018 170 St	
Private In-Home Daycare	507 W Monroe St	
Private In-Home Daycare	418 W Madison St	
Private In-Home Daycare	1615 80th St	

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Transportation

Two state roads intersect the city of Corydon. Highway 2, traveling east-west through the center of town, and Highway 14, running north-south extends from the center of Corydon north to Chariton.

Hazard Scoring & Ranking

The Corydon City Clerk, Stacy Gibbs, participated throughout the mitigation process and identified priority hazards shown in *Hazards by Jurisdiction* in the Appendix. The members have identified the hazards of Hazardous Materials Incident, flash flood, and Transportation Incident

Jurisdictional hazard rankings beyond region wide events (Tornado & Windstorm; Human Disease; Thunderstorm, Lightning & Hail; Severe Winter Storm; Terrorism; Extreme Heat; Animal, Plant, & Crop Disease; Earthquake; Drought; and Expansive Soils)

City of Corydon

1. Hazardous Materials Incident
2. Flash Flood
3. Transportation Incident
4. Radiological Incident
5. Grass & Wildland Fire
6. Infrastructure Failure
7. Sinkholes

Mitigation Strategies - Existing Strategies

- Fire Station has a storm warning system
- Law Center houses City & county police in the city limits
- Sand or blade trucks are/can be used to clear paths for first responders anywhere in the county during an event of road blockage (debris or heavy snow)
- 28E agreements in place with surrounding jurisdictions for fire protection and hazardous materials containment.
- County-wide Emergency Operations Plan (EOP) is in place and maintained by Emergency Management: a copy of the plan is present in the Wayne County Supervisors' office.
- Tree trimming or management is currently handled by utility services
- Fire fighters & emergency personnel have handheld radio.
- Enhanced 9-1-1 emergency calling system through Next Generation radio systems
- NOAA Weather radios were provided to communities through a grant 10 years ago. Some are working but beginning to fail.
- Emergency Shelters are established and currently have backup generators
- Have a Debris Management Plan for the county.
- County has a Mass Casualty Preparation Plan at the local hospital.
- County has 100-amp mobile generator that can provide backup power to critical facilities if necessary.
- Emergency Alert notices are posted through the National Weather Service on weather radio, radios, televisions & cell phones.
- Emergency Alert Sirens can be activated locally or at Wayne County Law Center.
- ALICE training completed at County Courthouse, Wayne County Hospital, & Wayne Community School.
- Alert Iowa provides local or statewide access to emergency messaging to all residents in Wayne County.

Priority Strategies

The city was interested in pursuing many of the mitigation strategies but felt priority would be placed on the following:

Jurisdiction: City of Corydon

Exhibit 18: Corydon Mitigation Strategies				
Mitigation Strategy Priorities	**Mitigation Ranking**	**Expense**	**Responsible Party**	**Timeline to Occur**
Develop local process for Hazard Occurrence Data Collection & reporting	4	Minimal	Emergency management	Ongoing
Maintain up-to-date Search & Rescue trainings, certification, and equipment for First Responders	1	Moderate	Fire Departments, First Responders, Local hospitals, city councils	Ongoing
Designate shelter sites (including heating/cooling shelters) and provide with adequate supplies and overnight accommodations.	10	Minimal	Emergency Management, City Councils,	Short term

Jurisdiction: Wayne County Hospital

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
NEW: Generator hookups for critical facilities	5	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Short
Develop & maintain a current plan for Mass Casualty Preparation & Up-to-date training	3	Minimal	Emergency management, city councils, first responders	Short
Up-to-date Search & Rescue Training and equipment for First Responders	1	Moderate	Fire Departments, First Responders, Local hospitals, city councils	Medium

Jurisdiction: Wayne Community School

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Public Education of warnings & self-protection	6	Minimal Expense	Emergency Management	Ongoing/Long term
Create a list of vulnerable people in communities that would need immediate help in a disaster	22	Minimal Expense	Local First Responders	Short Term
Develop Emergency response team post-disaster	7	Minimal Expense	Emergency Management & First Responders	Short term
Safe Rooms in schools, mobile home parks, campgrounds, etc	34	Moderate to high – grant dependent	School administration	Long term

Humeston

General Information

Exhibit 19: Humeston Community Profile	
Population: 484	Floodplain: No
Median Age: 42.4yrs	NFIP Participant: No
65 years & Older: 132 27.3%	Historic District: No
5 years & Under: 11 2.3%	Comprehensive Plan: No
School buildings: 1	Zoning Ordinance: No
Places of Worship: 3	Subdivision Ordinance: No
Land Area: .62 sq. miles	Building Permits required: No
Most Recent Codification: uncertain	

Geography

Humeston is in the northeast corner in Wayne County at coordinates 40° 51' 11" N, 93° 29' 56" W. The city encompasses an area of 1.0 square miles with a population density of 809.8 people per square mile according to the 2019 ACS.

Population Data

As of the 2019 ACS, the total population of Humeston was 484 with a total of 234 households. The city was on a continuous decline from 1990 and 2000 when Humeston lost 10 people and from 2000 to 2010 there were 49 less people. However, since 2010 the city has continued to grow, and the population has increased by 54 people in 2019.

Wayne County section on at risk groups, young children, the elderly, and those that primarily speak another language besides English are generally identified as a "at risk groups." Less than 25% of Humeston' s population are young people and about 27% are elderly are in Humeston. As of the 2019 ACS, there were about 63 people that speak a language other than English.

In the 2019 ACS, median household income for Humeston was up slightly to $37,386 from $36,406 in the 2010 Census. About 67% of the households in Humeston had incomes less than $50,000 in 2019 and 29% had incomes below $25,000. Approximately 8% people of the population of Humeston have incomes below the 2019 Federal Poverty Guidelines.

Major Employers

Ten major employers are identified in Wayne County by the Location One Information System (LOIS) website.

Hy-Vee	Allerton Lumber Co
Wayne County Community Schools	Log Chain Apiary
Wayne County Hospital	NXMP, North America Inc
Country Clipper	East Penn
Shivver's	Taylor Fencing & Hardware

Structures

Less than half (29%) of homes in Humeston were built prior to 1940 though there was a spike in new homes built in the 1970's with about 32.5% of the housing stock built during this decade. Nearly 57% of homes in Humeston are heated with bottled fuels and about 32% homes were heated by electricity in 2019. Over 29% of the owner-occupied homes in Humeston were valued at less than $50,000 and12.5% of homes were valued above $100,000.

Community Assets - Mormon Trail Elementary School

Mormon Trail Elementary School is a coeducational public school who has a total student enrollment of 130 students. The school provides Pre-Kindergarten to sixth grade. The student/teacher ratio is 10:1. Approximately 63% of students qualify for free or reduced-price lunch based upon their household income.
Please see Appendix for specific information.

Exhibit 20: Humeston Critical Facilities

Facility	Location	Assessed Value
Lift station	6th & Blevens	$22,410
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Water Tower		
Library		$375,480
Medical Clinic		
Elementary School		$60,000
Public Housing		
Humeston Senior Center (Shelter Site)		
Storage & Shop		$130,940

Transportation

US highway 65 intersects the heart of Humeston. County Highway J22 transports east and west to the cities of Millerton or Van Wert.

Hazard Scoring & Ranking

The City of Humeston, City Clerk, Courtney Peasley, participated throughout the mitigation process and identified priority hazards shown in the Appendix Hazards by Jurisdiction. The members have identified the hazards of flash flood, infrastructure failure and hazardous materials as major concerns for that community.

Jurisdictional hazard rankings beyond region wide events (Tornado & Windstorm; Human Disease; Thunderstorm, Lightning & Hail; Severe Winter Storm; Terrorism; Extreme Heat; Animal, Plant, & Crop Disease; Earthquake; Drought; and Expansive Soils)

City of Humeston

1. Flash Flood
2. Infrastructure Failure
3. Hazardous Materials

Mitigation Strategies - Existing Strategies

- Fire Station has a storm warning system active by members
- Law Center has contact information for firefighters
- Mobile communication trailer(s) located at the Law Center; about 5-6 hours are needed to mobilize for neighboring counties
- Sand or blade trucks are / can be used to clear paths for first responders in the event of road blockage (debris or heavy snow)
- In event of disaster, community meeting site is at community center and if it damaged to meet at the school.
- County-wide Emergency Operations Plan (EOP) is in place and maintained by Wayne County Emergency Management; a copy of the plan is present in the Wayne County Supervisors' office.
- EMT personnel & Fire Department have some water rescue equipment
- Fire Dept has trained storm spotters and equipment to assist with that
- Fire department members have handheld radios
- 28E agreements in place with surrounding jurisdictions for fire protection and hazardous materials containment.
- Enhanced 9-1-1 emergency calling system through Next Generation radio systems
- NOAA Weather radios were provided to communities through a grant 10 years ago. Some are working but beginning to fail.
- Emergency Shelters are established and currently have backup generators
- Have a Debris Management Plan for the county.
- County has a Mass Casualty Preparation Plan at the local hospital.
- County has 100-amp mobile generator that can provide backup power to critical facilities if necessary.
- Emergency Alert notices are posted through the National Weather Service on weather radio, radios, televisions & cell phones.
- Emergency Alert Sirens can be activated locally or at Wayne County Law Center.
- Alert Iowa provides local or statewide access to emergency messaging to all residents in Wayne County.

Priority Strategies

The city was interested in pursuing many of the mitigation strategies but felt priority would be placed on the following.

Exhibit 21: Humeston Mitigation Strategies				
Mitigation Strategy Priorities	**Mitigation Score**	**Expense**	**Responsible Party**	**Timeline to Occur**
NEW: Designate shelter sites and provide with adequate supplies and overnight accommodations	10	Minimal	Emergency Management, City Councils,	Ongoing
NEW: Install/Purchase mobile generators and make them available to ensure that designated shelter sites and other critical infrastructure sites can be provided with supplemental power	12	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Ongoing
Maintain up-to-date Search & Rescue trainings, certification, and equipment for First Responders	1	Ongoing	Fire Departments, First Responders, Local hospitals, city councils	Ongoing

Jurisdiction: Mormon Trail Elementary School

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Public Education of warnings & self-protection	6	Minimal Expense	Emergency Management	Ongoing/Long term
Create a list of vulnerable people in communities that would need immediate help in a disaster	22	Minimal Expense	Local First Responders	Short Term
Develop Emergency response team post-disaster	7	Minimal Expense	Emergency Management & First Responders	Short term
Safe Rooms in schools, mobile home parks, campgrounds, etc	34	Moderate to high – grant dependent	School administration	Long term

Lineville

General Information

Exhibit 22: Lineville Community Profile	
Population: 259	Floodplain: No
Median Age: 46.3yrs	NFIP Participant: No
65 years & Older: 41 15.8%	Historic District: No
5 years & Under: 13 5%	Comprehensive Plan: No
School buildings: 0	Zoning Ordinance: No
Places of Worship: 2	Subdivision Ordinance: No
Land Area: .90 sq. miles	Building Permits required: no
Most Recent Codification: uncertain	

Geography

Lineville is in the south-west quadrant of Wayne County at coordinates 40° 34' 53" N, 93° 31' 16" W. The city encompasses an area of 1.0 square mile with a population density of 241 people per square mile according to the 2010 Census.

Population Data

As of the 2010 Census, the total population of Lineville was 217 and continued to decline between 1990 and 2000 by losing 16 people and had 56 less people from 2000 to 2010. However, since 2010 Lineville has experienced population growth with 42 more residents.

Wayne County section on at risk groups, young children, the elderly, and those that primarily speak another language besides English generally identified as a "at risk groups." Some of the county at risk population was in Lineville amounting to approximately 16.6% under 18 and about 15.8% over 65. As of the 2019 ACS, two residents speak a language besides English.

In the 2019 ACS, median household income for Lineville was up significantly to $51,042 from $30,313 in 2010 Census. More than 46% of the households in Lineville had incomes less than $50,000 in 2019. Approximately 18% people in the population of Lineville have incomes below the 2019 Federal Poverty Guidelines.

Major Employers

Ten major employers are identified in Wayne County by the Location One Information System (LOIS) website.

Hy-Vee	Allerton Lumber Co
Wayne County Community Schools	Log Chain Apiary
Wayne County Hospital	NXMP, North America Inc
Country Clipper	East Penn
Shivver's	Taylor Fencing & Hardware

Structures

Nearly 29% of homes in Lineville were built prior to 1940 though there was a spike in new homes built in the 1970's with nearly 17% of the housing stock built during this decade. Approximately 17% of homes were built after 1990. The majority (98%) of the owner-occupied homes in Lineville were valued at less than $100,000; about 68% homes were valued below $50,000.

Community Assets

Community assets in are identified in the Appendix. Primary businesses include MFA, Ag Storage, Brian Farm Supply, Pleasant Hill School and Lineville-Clio School.

Exhibit 23: Lineville Critical Facilities		
Facility	**Location**	**Assessed Value**
Lift station	West 3rd St	
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Sewer Lagoon	East Line St	
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Medical Clinic		$149,440
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170
Private In-Home Daycare	805 Main St	

Transportation

Lineville is located on U.S. Route 65. The city is served by the Union Pacific Railroad which was originally the CRI&P (Rock Island). Rail traffic has increased considerably on this line since it was purchased by the Union Pacific. Lineville used to have rail passenger service which was discontinued in the 1960s.

Hazard Scoring & Ranking

The City of Lineville Mayor, Jack Shields, participated the mitigation process and identified priority hazards shown in Hazards by Jurisdiction in the Appendix. The members have identified the hazards of transportation incident, infrastructure failure and radiological incident as major concerns for that community.

Jurisdictional hazard rankings beyond region wide events (Tornado & Windstorm; Human Disease; Thunderstorm, Lightning & Hail; Severe Winter Storm; Terrorism; Extreme Heat; Animal, Plant, & Crop Disease; Earthquake; Drought; and Expansive Soils)

City of Lineville

1. Transportation Incident
2. Infrastructure Failure
3. Radiological Incident
4. Hazardous Materials Incident
5. Grass & Wildland Fire
6. Flash Flood

Mitigation Strategies - Existing Strategies

- Wayne County Law Enforcement Center has contact information for local fire fighters
- Sand or blade trucks are / can be used to clear paths for first responders in the event of road blockage (debris or heavy snow)
- Designated shelters at the Civic Center (No generator).
- 28E agreements in place with surrounding jurisdictions for fire protection and hazardous materials containment.
- County-wide Emergency Operations Plan (EOP) is in place and maintained by Wayne County Emergency Management; a copy of the plan is present in the Wayne County Supervisors' office.
- Some citizens have weather radios and/or handheld radios.
- Enhanced 9-1-1 emergency calling system through Next Generation radio systems
- NOAA Weather radios were provided to communities through a grant 10 years ago. Some are working but beginning to fail.
- Emergency Shelters are established
- Maintain a Debris Management Plan for the county.
- County has a Mass Casualty Preparation Plan at the local hospital.
- City is in process of purchasing a generator that can provide backup power to critical facilities if necessary.
- Emergency Alert notices are posted through the National Weather Service on weather radio, radios, televisions & cell phones.
- Emergency Alert Sirens can be activated locally or at Wayne County Law Center.
- Alert Iowa provides local or statewide access to emergency messaging to all residents in Wayne County.

Priority Strategies

The city was interested in pursuing many of the mitigation strategies but felt priority would be placed on the following:

Exhibit 24: Lineville Mitigation Strategies				
Mitigation Strategy Priorities	**Mitigation Ranking**	**Expense**	**Responsible Party**	**Timeline to Occur**
Maintain up-to-date Search & Rescue trainings, certification, and equipment for First Responders	1	High	Fire Departments, First Responders, Local hospitals, city councils	Ongoing
Maintain a current plan for Mass Casualty Preparation & Up-to-date training	3	Minimal	Emergency management, city councils, first responders	Short term
Encourage citizens to create family preparedness kits & have all hazards radio	2	Minimal	Residents, Emergency Management, Fire Departments, etc	Ongoing

Millerton

General Information

Exhibit 25: Millerton Community Profile	
Population: 108	Floodplain: No
Median Age: 22.6yrs	NFIP Participant: No
65 years & Older: 5 5%	Historic District: No
5 years & Under: 0	Comprehensive Plan: No
School buildings: 0	Zoning Ordinance: No
Places of Worship: 1	Subdivision Ordinance: No
Land Area: .21 sq. miles	Building Permits required:
Most Recent Codification: Uncertain	

Geography

Millerton is in the north-central portion of Wayne County at coordinates 40° 50' 56" N, 93° 18' 19" W. The city encompasses an area of 1.0 square mile with a population density of 214 people per square mile according to the 2010 Census.

Population Data

As of the 2019 ACS, the total population of Millerton was 108 which was 17 more residents than the 2010 Census. Between 1990 and 2000, Millerton gained 4 people and lost 1 household, however, the community lost 3 people and 4 households from 2000 to 2010. Wayne County section on at risk groups, young children, the elderly, and those who primarily speak another language besides English are generally identified as a "at risk groups." Little of the county at risk population was in Millerton amounting to just under 31% under 18 and less than 5% over 65. As of the 2019 ACS, none of the county's linguistically isolated population reside in Millerton.

Major Employers

Ten major employers are identified in Wayne County by the Location One Information System (LOIS) website.

Hy-Vee	Allerton Lumber Co
Wayne County Community Schools	Log Chain Apiary
Wayne County Hospital	NXMP, North America Inc
Country Clipper	East Penn
Shivver's	Taylor Fencing & Hardware

Structures

Approximately 5% of homes in Millerton were built prior to 1940. Nearly 67% of homes in Millerton are heated by wood and 30% homes were heated by electricity in 2019. All of the owner-occupied homes in Millerton were valued at less than $200,000.

Community Assets

Community assets are identified in Appendix.

Exhibit 26: Millerton Critical Facilities		
Facility	**Location**	**Assessed Value**
Lift station		
Post Office	313 N Main	
Sewer Lagoon		
City shop	101 Thatcher	$4,210

Transportation

Millerton is in the county on Highway J22 that provides east/west transport on across the northern section of Wayne County. The community is also a short distance from state Highway 14 that connects the county seats of Corydon and Chariton.

Hazard Scoring & Ranking

The City of Millerton representative participated throughout the mitigation process and identified priority hazards shown in the Appendix Hazards by Jurisdiction. The members have identified the hazards of grass & wildland fire, hazardous materials incident, and transportation incident as major concerns for that community.

Jurisdictional hazard rankings beyond region wide events (Tornado & Windstorm; Human Disease; Thunderstorm, Lightning & Hail; Severe Winter Storm; Terrorism; Extreme Heat; Animal, Plant, & Crop Disease; Earthquake; Drought; and Expansive Soils)

City of Millerton

1. Grass & Wildland Fire
2. Hazardous Materials Incident
3. Transportation Incident
4. Flash Flood
5. Radiological Incident
6. Infrastructure Failure
7. Sinkholes
8. Landslide

Mitigation Strategies - Existing Strategies

- 28E agreements in place with surrounding jurisdictions for fire protection and hazardous materials containment.
- Enhanced 9-1-1 emergency calling system through Next Generation radio systems
- NOAA Weather radios were provided to communities through a grant 10 years ago. Some are working but beginning to fail.
- Emergency Shelters are established
- Maintain a Debris Management Plan for the county.
- County has a Mass Casualty Preparation Plan at the local hospital.
- County has 100-amp mobile generator that can provide backup power to critical facilities if necessary.
- Emergency Alert notices are posted through the National Weather Service on weather radio, radios, televisions & cell phones.
- Alert Iowa provides local or statewide access to emergency messaging to all residents in Wayne County.

Priority Strategies

The city was interested in pursuing many of the mitigation strategies but felt priority would be placed on public education & outreach of warnings & self-protection, create a list of vulnerable people that would need immediate assistance in a disaster, and maintain a continuity of operations plan.

Exhibit 28: Millerton Mitigation Strategies					
Mitigation Strategy Priorities	**Jurisdiction Actions**	**Mitigation Ranking**	**Expense**	**Responsible Party**	**Timeline to Occur**
Public Education of warnings & self-protection	National Weather Service offers many promotional pieces & PSAs to educate residents. EM can use for local education	18	Minimal Expense	Emergency Management	Ongoing/Long term
Create a list of vulnerable people in communities that would need immediate help in a disaster	List of fragile residents that may need oxygen or specialized care in disaster or emergency situations	17	Minimal Expense	Local First Responders	Short Term
Continuity of Operations plan for post-disaster	EM will work with local energy providers, first responders & critical facilities to ensure continuity of operations after an emergency situation	16	Minimal Expense	Emergency Management & First Responders	Short term

Promise City

General Information

Exhibit 29: Promise City Community Profile	
Population: 78	Floodplain: No
Median Age: 55.5yrs	NFIP Participant: No
65 years & Older: 18 23%	Historic District: No
5 years & Under: 0	Comprehensive Plan: No
School buildings: 0	Zoning Ordinance: No
Places of Worship: 1	Subdivision Ordinance: No
Land Area: .19 sq. miles	Building Permits required: No
Most Recent Codification: uncertain - prior to 2010	

Geography

Promise City is in the eastern third of Wayne County at coordinates 40° 44' 50" N, 93° 8' 38" W. The city encompasses an area of 1.0 square mile with a population density of 584 people per square mile according to the 2010 Census.

Population Data

As of the 2019 Census, the total population of Promise City was 78 with a total of 47 households, which was a significant drop from the 141 residents in the 2010 Census. Between 1990 and 2000, Promise City lost 29 people and lost 3 households in contrast with the County's gain in both population and households. From 200 to 2010 the community saw a slight population increase of 6 people and a loss of one household.

Wayne County section on at risk groups, young children, the elderly, and those that primarily speak another language besides English are generally identified as a "at risk groups." Promise City's share of at-risk groups was predominantly older residents (23%) and approximately 17% of residents are under 18 years. As of the 2019 ACS, there were no people that are considered linguistically isolated.

In the 2019 ACS, median household income for Promise City was down to $20,938 from $30,625 in the 2010 Census. More than 23% of the households in Promise City had incomes less than $10,000 in 2019 and about 55% make below $25,000 annually. The places approximately 19% of residents below the 2019 Federal Poverty Guidelines.

Major Employers

Ten major employers are identified in Wayne County by the Location One Information System (LOIS) website.

Hy-Vee	Allerton Lumber Co
Wayne County Community Schools	Log Chain Apiary
Wayne County Hospital	NXMP, North America Inc
Country Clipper	East Penn
Shivver's	Taylor Fencing & Hardware

Structures

More than half (47%) of homes in Promise City were built prior to 1940. Nearly 55% of homes in Promise City are heated with bottled fuels and 34% homes were heated by electricity in 2010.

More than 56% of the owner-occupied homes in Promise City were valued at less than $50,000; and no homes were valued above $150,000 in the 2019 ACS.

Community Assets

Community Assets are identified in the Appendix. The largest community asset is Lockridge.

Exhibit 30: Promise City Critical Facilities		
Facility	**Location**	**Assessed Value**
Lift station	North edge of town	
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310
Sewer Lagoon	South of town	

Transportation

Promise City is location directly on State Highway 2, which transports east to west from the county seats of Corydon to Centerville. County highway S56 spurs at the eastern edge of Promise City and extends north into Lucas County.

Hazard Scoring & Ranking

The City of Promise City Mayor, Brenda DeVore, participated throughout the mitigation process and identified priority hazards shown in the Appendix. The members have identified the hazards of flash flooding, transportation incident and grass & wildland fire as major concerns for that community.

Jurisdictional hazard rankings beyond region wide events (Tornado & Windstorm; Human Disease; Thunderstorm, Lightning & Hail; Severe Winter Storm; Terrorism; Extreme Heat; Animal, Plant, & Crop Disease; Earthquake; Drought; and Expansive Soils)

City of Promise City

1. Flash Flood
2. Transportation Incident
3. Grass & Wildland Fire
4. Hazardous Materials Incident
5. Infrastructural Failure
6. Sinkholes

Mitigation Strategies - Existing Strategies

- Mobile communication trailer(s) located at Law Center; about 5-6 hours are needed to mobilize
- 28E agreements in place with surrounding jurisdictions for fire protection and hazardous materials containment.
- County-wide Emergency Operations Plan (EOP) is in place and maintained by Wayne County Emergency Management; a copy of the plan is present in the Wayne County Supervisors' office.
- Tree trimming or management is currently handled to an extent by utility services
- Enhanced 9-1-1 emergency calling system through Next Generation radio systems
- NOAA Weather radios were provided to communities through a grant 10 years ago. Some are working but beginning to fail.
- Emergency Shelters are established and currently have backup generators
- Maintain a Debris Management Plan for the county.
- County has a Mass Casualty Preparation Plan at the local hospital.
- County has 100-amp mobile generator that can provide backup power to critical facilities if necessary.
- Emergency Alert notices are posted through the National Weather Service on weather radio, radios, televisions & cell phones.
- Alert Iowa provides local or statewide access to emergency messaging to all residents in Wayne County.

Priority Strategies

The city was interested in pursuing many of the mitigation strategies, but the following were prioritized higher.

Exhibit 31: Promise City Mitigation Strategies				
Mitigation Strategy Priorities	**Mitigation Ranking**	**Expense**	**Responsible Party**	**Timeline to Occur**
Designate shelter sites and provide with adequate supplies and overnight accommodations	10	Minimal	City councils, BOS, emergency management	Short-term
Maintain, improve, and protect public buildings, facilities, and utilities against all hazards	11	Moderate-High	Private property owners, City Councils, BOS,	Ongoing
Install proper generator hookups at designated shelter sites to ensure shelters can support generator power	5	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Medium

Seymour

General Information

Exhibit 32: Seymour Community Profile	
Population: 567	Floodplain: Yes
Median Age: 53.7yrs	NFIP Participant: Yes #190655
65 years & Older: 165 29%	Historic District: No
5 years & Under: 19 3.4%	Comprehensive Plan: No
School buildings: 1	Zoning Ordinance: No
Places of Worship: 4	Subdivision Ordinance: No
Land Area: 2.35 sq. miles	Building Permits required: No
Most Recent Codification: 2002	

Geography

Seymour is the eastern-most incorporated community in Wayne County in the south-east portion of the county at coordinates 40° 40' 54" N, 93° 6' 42" W. The city encompasses an area of 1.0 square miles with a population density of 298 people per square mile according to the 2010 Census.

Population Data

As of the 2019 ACS, the total population of Seymour was 567 with a total of 295 households. This was a significant loss from 920 residents recorded in the 2010 Census. The community has seen a continuous population decline between 1990 and 2000 Seymour lost 59 people and 31 household and from 2000 to 2010 there were 109 people less and 41 less households.

Wayne County section on at risk groups, young children, the elderly, and those that that primarily speak another language besides English will generally identified as a "at risk groups." About 20% of Seymour's population is below 18 years old and 29% are above 65 years. As of the 2019 ACS, there were eight people that are considered linguistically isolated.

In the ACS, median household income for Seymour remained about the same from $34,231 to $34,318 in 2019. More than 67% of the households in Seymour had incomes less than $50,000 in 2019. About 24.6% of the population of Seymour have incomes below the 2019 Federal Poverty Guidelines.

Major Employers

Ten major employers are identified in Wayne County by the Location One Information System (LOIS) website.

Hy-Vee	Allerton Lumber Co
Wayne County Community Schools	Log Chain Apiary
Wayne County Hospital	NXMP, North America Inc
Country Clipper	East Penn
Shivver's	Taylor Fencing & Hardware

Structures

Approximately 55.7% of homes in Seymour were built prior to 1940 though there was a spike in new homes built in the 1970's with about 11% of the housing stock built during this decade. The majority of homes of homes in Seymour are heated with utility gas (68.6%) and 27.9% heat using electric. The majority (55.6%) of owner-occupied homes in Seymour were valued at less than $50,000 in 2019 and all are below $200,000.

Community Assets

Community assets are identified in the Appendix. Among the businesses given are Casey's and The Tap Eatery.

Exhibit 33: Seymour Critical Facilities		
Facility	**Location**	**Assessed Value**
N. Lift station	625 N 5th	
S Lift Station	Southlawn Cemetery	
Lagoon	J46	
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Water Plant	118 N 6th	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Water Tower		
Public Housing	N 7th St	$500,390

Seymour School District

Seymour School District has an estimated student enrollment of 227 students in 2020-21 school year. The current teacher to student ratio is approximately 13:1 and minority enrollment is 3%. Approximately 60% of students enrolled qualify for Free & Reduced Lunch. There are currently 27 staff members employed by this school district. Please see the Appendix for specific information.

Transportation

Seymour is served by a county-maintained road which used to be Iowa Highway 55 and is now County Road S60 which services north and south. Transportation east/west is on County Highway J46.

Seymour is served by the Canadian Pacific Railway which currently operates the former Milwaukee Railroad tracks. Seymour was also served by the CRI&P (Rock Island) until the early 1980s. This line passed on the southwest corner of the town square with the depot in this location. This line was abandoned when the Rock Island went bankrupt. It used to be part of the Golden State Route which was a luxury passenger train operated by the Rock Island and the Southern Pacific. The two railroad lines crossed at the western edge of Seymour and was protected by an interlocking tower until the Rock Island was abandoned.

Hazard Scoring & Ranking

The City of Seymour Mayor, Caleb Housh, participated throughout the mitigation process and identified priority hazards shown *in Hazards by Jurisdiction* in the Appendix. The members have identified the hazards of transportation incident, radiological incident, and hazardous materials incident as major concerns for that community.

Jurisdictional hazard rankings beyond region wide events (Tornado & Windstorm; Human Disease; Thunderstorm, Lightning & Hail; Severe Winter Storm; Terrorism; Extreme Heat; Animal, Plant, & Crop Disease; Earthquake; Drought; and Expansive Soils)

City of Seymour

1. Transportation Incident
2. Radiological Incident
3. Hazardous Materials Incident
4. Flash Flood
5. Grass & Wildland Fire
6. Infrastructure Failure
7. Sinkholes

Mitigation Strategies - Existing Strategies

- Fire Station has a storm warning system
- Local Part-time police cover the city limits
- Mobile communication trailer(s) located at Appanoose County Law Center; about 5-6 hours are needed to mobilize for neighboring counties.
- Sand or blade trucks are / can be used to clear paths for first responders in the event of road blockage (debris or heavy snow)
- Designated shelters at the Community Center.
- 28E agreements in place with surrounding jurisdictions for fire protection and hazardous materials containment.
- County-wide Emergency Operations Plan (EOP) is in place and maintained by Wayne County Emergency Management
- Weather radios were given to households in 2003
- The City participates in the National Flood Insurance Program (NFIP) with a Flood Insurance Rate Map dated 7/1/1987
- City ordinance requiring manufactured home tie-downs.
- Enhanced 9-1-1 emergency calling system through Next Generation radio systems
- NOAA Weather radios were provided to communities through a grant 10 years ago. Some are working but beginning to fail.
- Emergency Shelters are established
- Maintain a Debris Management Plan for the county.
- County has a Mass Casualty Preparation Plan at the local hospital.
- County has 100-amp mobile generator that can provide backup power to critical facilities if necessary.
- Emergency Alert notices are posted through the National Weather Service on weather radio, radios, televisions & cell phones.
- Emergency Alert Sirens can be activated locally or at Wayne County Law Center.
- Alert Iowa provides local or statewide access to emergency messaging to all residents in Wayne County.

Priority Strategies

The city was interested in pursuing many of the mitigation strategies but felt priority would be placed on the following:

Exhibit 34: Seymour Mitigation Strategies				
Mitigation Strategy Priorities	**Mitigation Ranking**	**Expense**	**Responsible Party**	**Timeline to Occur**
Generator hookups for critical facilities	1	Minimal	City Councils/BOS, critical facility property owners, Fire Departments	Ongoing
Encourage citizens to create family preparedness kits to be used in an emergency	2	Voluntary	Residents, Emergency Management, Fire Departments, etc	Ongoing
Ongoing Maintain a current plan for mass casualty preparation & up-to-date training	3	Minimal	Emergency management, city councils, first responders	Short term

Jurisdiction: Seymour Community School

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Public Education of warnings & self-protection	6	Minimal Expense	Emergency Management	Ongoing/Long term
Create a list of vulnerable people in communities that would need immediate help in a disaster		Minimal Expense	Local First Responders	Short Term
Designate shelter sites and provide with adequate supplies and overnight accommodations	2	Minimal	City councils, BOS, emergency management	Short-term
Safe Rooms in schools, mobile home parks, campgrounds, etc		Moderate to high – grant dependent	School administration	Long term

Risk Assessment Introduction

44 CFR Requirement §201.6(c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

A risk assessment was completed in a basic three-step process for Wayne County. First, hazards that can affect the planning region were identified. Second, possible impacts of each hazard were identified. And third, based on historical occurrences, potential severity and local knowledge, a priority level was assigned to each hazard.

Hazard Identification

In the Iowa Comprehensive Emergency Plan- Part B*: Iowa Hazard Mitigation Plan 2018*, a statewide risk assessment identifies a broad spectrum of hazards that can occur in the state, including natural, technological, and human-caused hazards. For Wayne County, all the hazards in the statewide plan are included in the risk assessment to analyze if appropriate for local Mitigation Planning. It was determined that no levees exist, nor fixed radiological locations exist in Wayne County. However, they are both combined elements with other hazards so will be considered are in the following risk assessment.

Type of Hazards identified by State of Iowa

Natural Hazards

A natural hazard is an event occurring due to climate, geology, or hydrology that will negatively impact people or the environment.

A. Animal, plant & Crop Disease
B. Drought
C. Earthquake
D. Expansive Soils
E. Extreme Heat
F. Flood (River & Flash)
G. Grass or Wildland Fire
H. Human Disease
I. Landslide
J. Severe Winter Storm
K. Sinkholes
L. Thunderstorm, Lightning, and Hail
M. Tornado and Windstorm

Technological Hazards

A technological hazard is an event involving a man-made structure, equipment, or substance that will negatively impact people or the environment.

A. Hazardous Materials Incident
B. Infrastructure Failure
C. Levee and Dam Failure
D. Radiological Incident
E. Transportation Incident

Human Caused Hazards

A human-caused hazard is an event occurring due to intentional human actions that will negatively impact people or the environment.

- Terrorism

Hazard Impact Assessment

To understand the potential impacts of hazards that can occur in Wayne County, profiles were prepared using historical data, existing hazard mitigation plans, local knowledge, and the risk assessment criteria in the *Iowa Hazard Mitigation Plan 2018*. Hazard profiles include a description of the hazard and possible areas of impact. Although Wayne County is a small portion of Iowa, there are variations in where hazards are likely to occur. For the risk assessment, hazards are categorized as region wide or local hazards. The hazard profiles also summarize the probability of future occurrences, potential magnitude and severity, amount of warning time, and typical duration of each hazard.

Hazard Prioritization Criteria

The information provided in the hazard impact assessment- probability, magnitude and severity, warning time, and duration – reflects the criteria used to assess risk. To determine the extent a mitigation strategy should focus on one or more hazards, the full set of hazards that can potentially affect the county prioritized using these criteria. Each criterion of the prioritization process is detailed in Exhibits 35-38. In the hazard profiles, each element of the assessment is discussed in the context of Wayne County.

Probability reflects the likelihood of the hazard occurring again in the future, considering both the hazard's historical occurrence and the projected likelihood of the hazard occurring in any given year. See scoring criteria in Exhibit 35-38.

Exhibit 35: Probability Scoring Criteria

Probability reflects the likelihood of the hazard occurring again in the future, considering both the hazard's historical occurrence and the projected likelihood of the hazard occurring in any given year.

	Score	Description
1	Unlikely	Less than 10% probability in any given year, history of events is less than 10% or event is unlikely but there is a possibility of occurrence.
2	Occasional	Greater than 10% up to 19% probability in any given year, history of events is greater than 10% up to 19%, or the event could possibly occur.
3	Likely	Greater than 19% up to 33% probability in any given year, history of events is greater than 20% up to 33% or the event is likely to occur.
4	Highly Likely	More than 33% probability in any given year, history of events is greater than 33% likely or the event is likely to occur.

The magnitude and severity of the impacts of a hazard event is related directly to the extent that a hazard affects a community. It is rated using technical measures specific to the hazard, which are ideally determined with standard scientific tables. This is also a function of when the event occurs, year-round or seasonal, the location affected, the resilience of a community, and the effectiveness of emergency response and disaster recovery efforts. See scoring criteria in Exhibit 36.

Exhibit 36: Magnitude/Severity Scoring Criteria

The magnitude and severity of the impacts of a hazard event is related directly to the extent that a hazard affects the community. It is rated using technical measures specific to the hazard, which are ideally determined with standard scientific scales. This is also a function of when the event occurs, year-round or seasonal, the location affected, the resilience of the community, and the effectiveness of emergency response and disaster recovery efforts.

	Score	Description
1	Negligible	Less than 10% of property severely damaged, shutdown of facilities and services for less than 24hrs and/or injuries/ illness treatable with first aid.
2	Limited	Less than 10% up to 25% of property severely damaged, shutdown of facilities and services for more than a week and/or injuries/illness do not result in permanent disability.
3	Critical	Less than 25% up to 50%of property severely damaged, shutdown of facilities and services for up to 2 weeks and/or injuries/ illness 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 or the speed of onset is the amount of warning time available before a hazard occurs. The average rather than shortest or longest warning time is considered in the hazard assessment. For many natural hazards, there is a considerable amount of warning time as opposed to the human caused hazards that occur instantaneously or without any significant warning time. See Exhibit 38.

Duration is the typical amount of time that the community is impacted by a hazard. As an example, a snowstorm will likely last several hours, whereas a lightning strike would last less than a second. See Exhibit 37.

Exhibit 37: Duration Scoring Criteria

Duration is the typical amount of time that the community is impacted by a hazard.

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

Exhibit 38: Warning Time Scoring Criteria

Warning time or the speed of onset is the amount of warning time available before a hazard occurs. The average rather than shortest or longest warning time is considered in the hazard assessment.

Score	Description
1	More than 24hrs warning time
2	More than 12 up to 24 hours warning time
3	6-12 hours warning time
4	Minimal or no warning (less than 6 hrs. warning)

Data Limitation

Data collected for many of the natural hazards is from the National Centers for Environmental Information (NCEI). This database is the most comprehensive and detailed available for natural hazards; however, there are some limitations. Information from this source can be queried by county, but the data returned is for an event. For example, if a tornado started in Wayne County, it would be counted as one event. Data for injuries, fatalities, and storm damage would be presented for the whole event in a set of query results for Wayne County, even if some of those effects occurred outside of that county.

Conversely, NCEI data is for reported effects, so damage that occurred may not be represented in the data. For example, if a blizzard event on 12/12/2012 has an episode narrative that begins, "A tremendous blizzard, one of the worst in memory…" and goes on to outline the closing of major shutdowns in one neighboring county and a death of a person in another adjacent county. The episode record in the queried table reports property damage and fatalities as $0 and 0, respectively. Despite these limitations, the NCEI data provides a comprehensive overview of frequency of hazard events, and often detailed information about hazard effects is included.

Ranking based on Scores

Using the rating scales described in the tables above, the formula used to determine each hazard's score, including weighting factors, is provided below:
(Probability x .45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = SCORE

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

These terms relate to the level of planning analysis to the hazard in the risk assessment process and are not meant to suggest that a hazard would have only limited impact. 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 (e.g., quantitative analysis or loss estimation), while those with a low planning significance were addressed in more general or qualitative ways.

The committee determined overview hazard ranking scores for the regional planning area. The results of this overview are provided below. Individual jurisdiction hazard prioritization can be found in the Appendix.

Hazard Prioritization

Once the Wayne County Hazard Mitigation Committee had identified the hazards, they examined each hazard in relation to the risk that hazard presented to each community. A representative from each community assigned a ranking to hazards and then and overall comprehensive ranking was given for the entire region of Wayne County. The comprehensive ranking hazards are listed below:

Overall, Wayne County Rankings

1. Severe Winter Storm
2. Thunderstorm, lightning & hail
3. Tornado & Windstorm
4. Extreme Heat
5. Drought
6. Hazardous Materials Incident
7. Infrastructure Failure
8. Transportation Incident
9. Grass & Wildland Fire
10. Flash flood
11. Radiological Incident
12. Human Disease
13. Sinkholes
14. Terrorism
15. Animal, Plant & Crop Disease
16. Landslide
17. Expansive Soils
18. River Flood
19. Dam Failure
20. Earthquake

Hazard Definitions

Natural Hazards

Dam Failure – The uncontrolled release of impounded water resulting in downstream flooding, which can affect life and property. There are 3 categories of dams: High Hazard (in an area that would cause serious threat of loss of life or serious damage to properties/businesses), Significant Hazard (damage would be limited to isolated homes, buildings, businesses or moderately traveled roads and no loss of human life), Low Hazard (damage would be limited to loss of dam, loss of livestock, agricultural land, low maintenance roads and loss of life unlikely).

Drought – prolonged lack of precipitation that produces severe dry conditions. There are 3 types of droughts relevant to this area: Metrological drought (lack of precipitation), hydrological drought (dwindling surface and groundwater supplies) and agricultural drought (lack of soil moisture).

Earthquake – is the rapid shaking of the earth caused by the sudden release of energy from the breaking and shifting of rock beneath the earth's surface. There are three general classes tectonic, volcanic, and artificially produced.

Expansive Soils – soils and soft rock that tend to swell or shrink excessively due to changes in moisture content.

Extreme Heat – defined as temperatures (including heat index) more than 100 degrees Fahrenheit or 3 consecutive days of 90+degrees Fahrenheit. Heat advisories are issued when temperatures reach 105 degrees Fahrenheit, and a heat warning is issued when temperatures reach 115 degrees Fahrenheit.

Flash Flood – an event where water levels rise at an extremely fast rate with little or no warning. Flash Flooding can be the result of intense rainfall in a brief time, rapid snowmelt, and release of an ice jam, frozen or saturated soils, or a combination of these conditions.

Grass or Wild land Fire – an uncontrolled fire that threatens life and property in either a rural or wooded area. Grass and wild-land fires can occur when conditions are favorable, such as during periods of drought when natural vegetation would be drier and subject to combustibility.

Hailstorm – created when a severe thunderstorm produces pellets or irregularly shaped balls of ice greater than one inch in diameter, which then fall to the earth with rain.

Landslide – is the downward and outward movement of slope-forming materials reacting to gravity. Masses of rock, soil, and/or debris can break loose and move down a slope.

Levee Failure – the loss of structural integrity of a levee wall, dike, berm, or adjacent soil by erosion, seepage, or soil saturation.

River Flood – the rising or overflowing of a river, tributary, or body of water to the adjacent lands not usually covered by water. Heavy spring rains, intense thunderstorms, snowmelt, levee or dam failure, or waterway obstructions can cause river flooding. Often flooding is the result of a combination of conditions.

Severe Winter Storm – severe winter conditions that affect day-to-day activities which can include blizzard conditions, heavy snow, blowing snow, freezing rain, heavy sleet, and extreme cold.

Sinkholes – the loss of surface elevation due to the removal of subsurface support. The primary cause of most subsidence are human activities such as underground mining of coal, groundwater or petroleum withdraw, and drainage of organic soils.

Thunderstorms & Lightning – Thunderstorms usually produce thunder, lightning, and rain but may also develop tornadoes and straight-line winds, micro-bursts, hail, and/or flooding. Lightning is an electrical discharge that results from the buildup of positive and negative charges in a thunderstorm.

Tornado – a violent whirling wind characteristically accompanied by a funnel shaped cloud extending down from a cumulonimbus cloud that progress in a narrow, erratic path. They are known for being extremely destructive and are usually visible due to water vapor from clouds and debris from the ground.

Windstorm – extreme winds associated with severe winter storms, severe thunderstorms, downbursts, and very steep pressure gradients. It may or may not be accompanied by rain or snow. It is difficult to separate windstorms and tornado damage when winds get above 64 knots.

Human Caused/Combination Hazards

Human Disease – an incident that is a medical, health or sanitation threat to the public such as contamination, epidemics, plagues, insect infestations, and pandemics.

Infrastructure Failure – an incident that has extended interruption of critical services, widespread breakdown, or collapse (part or all) of any public or private infrastructure that threatens life and property. This includes communication failure (including 911 & emergency personnel), energy failure (electric, gas or natural gas), structural failure (collapse of any public or private roads, bridges, towers & buildings), and structural fire (uncontrolled fire in populated areas that threaten life & property).

Animal/Crop/Plant Disease – An outbreak of disease that can be transmitted from animal to animal or plant to plant represents an animal/crop/plant disease. The disease outbreak will likely have a significant economic implication or public health impact resulting in potential production loss in crops and/or environmental damage.

Hazardous Materials – this encompasses fixed hazardous materials (accidental release of chemical substance or mixtures that present a danger to public health and safety), pipeline transportation (occurs when a break in a pipeline for risk of explosion or leak), and transportation of hazardous materials. This includes the accidental release of flammable or combustible, explosive, toxic, noxious, corrosive, oxidizable, an irritant or radioactive substances or mixtures that can pose a risk to life, health, or property possibly requiring evacuation.

Transportation Incident – a transportation accident involving any mode of transportation that directly threatens life and which results in property damage and/or death/injury and/or adversely impacts a community's capabilities to provide emergency

services. This includes air transportation, highway transportation, railway transportation, and waterway incident.

Terrorism – the use of multiple outlets to demonstrate unlawful force, violence, and/or threat against persons or property causing intentional harm for purposes of intimidation, coercion, or ransom in violation of the criminal laws of the United States. These actions may cause massive destruction and/or extensive casualties. This does include enemy attack, biological terrorism, agro-terrorism, chemical terrorism, conventional terrorism, cyber terrorism, radiological terrorism, and public disorder.

Radiological – an incident resulting in a release of radiological material in transport or at a fixed facility to include power plants, hospitals, laboratories, and the like. This does include fixed radiological incidents and transportation radiological incidents. (Potential transportation radiological incident is along the UP & DME rail line traveling Wayne County. This railroad is responsible for shipment of some nuclear waste materials.)

Goals & Objectives

Once the Planning Committee had a sense for what threats face their jurisdictions based on research and prioritized hazards, the Committee considered what should be done. Three broad goals were decided on and then detailed with more specific objectives which can be measured by actions and projects designed to address them.

Goal 1: Protect critical facilities, infrastructure, and other community assets from the impacts of hazards.

Objective 1.1 Seek mitigation projects that provide the highest degree of hazard protection at the least cost.
Objective 1.2 Strengthen partnerships and collaboration of jurisdictions, as well as invite corporate partners, education systems, agencies, and faith-based representatives to participate in emergency planning and recovery.
Objective 1.3 Utilize public funds/grant opportunities to protect critical facilities, public services & transportation entities.

Goal 2: Protect the health, safety & quality of life for Wayne County residents by minimizing the vulnerability of people and property in Wayne County.

Objective 2.1 Ensure that property owners can maintain & improve their properties.
Objective 2.2 Ensure that disaster recovery can proceed promptly following a disaster.
Objective 2.3 Provide back-up energy supplies in all vital assets identified in this plan.
Objective 2.4 Promote improving zoning codes, building codes, nuisance abatement, and health codes, especially in relation to areas with older buildings.
Objective 2.5 Improve protection of residents & structures from the effects of flooding.
Objective 2.6 Review the protocol, education & necessary medications/interventions to deal with airborne & human transmitted hazards that directly deal with impact of health & life.

Goal 3: Reduce losses due to natural and man-made hazards.

Objective 3.2 Review & upgrade warning systems and communications for sufficient coverage
Objective 3.3 Provide certified shelters/safe rooms
Objective 3.4 Provide adequate training, equipment and exercises to train responding emergency personnel.
Objective 3.5 maintain current & create new planning and exercises related to any terrorism event.
Objective 3.6 Identify and map the greatest risk potential of hazards to determine locations where improvements could be made.

Goal 4: Educate residents and visitors about local hazards and the resources available in the community.

Objective 4.1 Educate members of the county about hazards, how to be prepared, & shelter locations.

Goal 5: Apply public funds to hazard mitigation projects in an efficient and fair manner to minimize dependence on Federal Resources.

Objective 5.1 Utilize public funds/grant opportunities to protect critical facilities, public services, and transportation entities.

Hazard Profiles - Natural Hazards

Severe Winter Storm

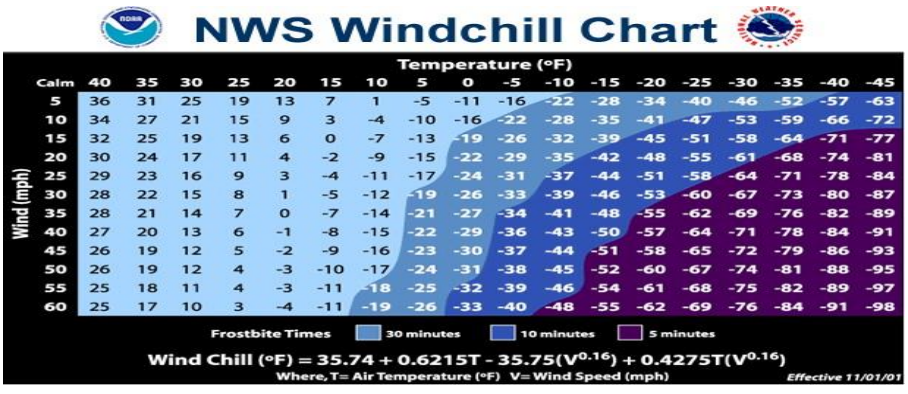
Severe winter weather conditions that affect day-to-day activities. These can include blizzard conditions, heavy snow, blowing snow, freezing rain, heavy sleet, and extreme cold. Blizzard conditions are defined as winter storms lasting at least three hours with sustained winds of 35mph or more, reduced visibility of ¼ mile or less, and whiteout conditions.

Blizzard conditions are defined as winter storms lasting at least three hours with sustained winds of 35mph or more, reduced visibility of ¼ mile or less, and whiteout conditions.

Winter storms are common during the winter months of October through April. The diverse types of extreme winter weather cause considerable damage. Heavy snows cause immobilized transportation systems, downed trees, and power lines, collapsed buildings, and loss of livestock and wildlife. Blizzard conditions are winter storms which last at least three hours with sustained wind speeds of 35 mph or more, reduced visibility of 1/4 mile or less, and white-out conditions. Heavy snows of more than six inches in a 12-hour period or freezing rain greater than 1/4-inch accumulation causing hazardous conditions in the community can slow or stop the flow of vital supplies as well as disrupting emergency and medical services. Loose snow begins to drift when the wind speed reaches 9 to 10 mph under freezing conditions. The potential for some drifting is substantially higher in open country than in urban areas where buildings, trees, and other features obstruct the wind.

Ice storms result in fallen trees, broken tree limbs, downed power lines and utility poles, fallen communications towers, and impassable transportation routes. Severe ice storms have caused total electric power losses over large areas of Iowa and rendered assistance unavailable to those in need due to impassable roads. Frigid temperatures and wind chills are dangerous to people, particularly the elderly and the young. Dangers include frostbite or hypothermia. Water pipes, livestock, fish and wildlife, and pets are also at risk from extreme cold and severe winter weather.

Exhibit 39: Wind Chill Chart



Source: National Oceanic and Atmospheric Administration, National Weather Service

Historical Occurrences

Iowa has had thousands of recorded winter storms: including heavy snow, ice storm, blizzards, or extreme wind-chills. In Iowa's history, there are many accounts where large numbers of death are due to the cold and blizzards. While we are not as vulnerable as the early settlers were, there are recent accounts of multiple deaths from snowstorms and extreme cold around the state. Between 2018 and December of 2020, there have been 1 injury and 1 death due to winter weather (data provided by the National Climactic Data Center).

Sixteen winter storm related Presidential Declarations for Major Disaster have been declared in Iowa since 1999, the first declaration occurred in 1991 resulting from an ice storm that affected 16 counties. Extensive damage occurred to power lines, including the collapse of numerous high-tension towers in north-central Iowa. The second declaration occurred in 1997 resulting from a severe winter storm that affected 13 counties.

The third and fourth declaration occurred in 2007 affecting 66 counties. The third declaration affected 48 counties and the fourth declaration affected 23 counties with five (5) counties counted in both declarations. These declarations resulted from a major winter storm with ice and heave snow combined with intense winds gusting to 50-55mph causing blizzard conditions. Some areas in Iowa received 16 inches of snow and coupled with the strong winds caused already weakened ice lined power lines to crumble and interstate highways to close due to drifting snow. This situation left approximately 250,000 plus Iowa citizens without electricity for ten plus days. In central Iowa, one county had twenty (20) miles of downed power poles that snapped due to power lines being coated with inches of ice coupled with the strong winds; high-tension towers collapsed. Due to the severity of the winter blizzard, the Governor signed a Governor's Emergency Declaration for all 99 counties in Iowa.

There have been 48 recorded winter storms, blizzard, cold/windchill, extreme cold/wind chill, and ice storms since 1996 including. No deaths are associated with these events and property damage totaling $42.36 million in personal property and $773.23K crop damage are recorded. In the past five years, there have been five events that caused approximately $75,000 in property damage.

Winter storms are a particular challenge for all small cities in southern Iowa. The strain they place on municipal budgets to clear transportation routes, on area utilities to repair damaged facilities, including power lines, and to homeowners and businesses to repair and maintain property can be significant. There have been 16 severe winter storms documented by NOAA during the past twenty years causing nearly $225K in property damage. In the past five years, there have been four winter storms that did not cause any extensive damage.

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	224.90K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	03/08/1999	00:00	CST	Winter Storm		0	0	10.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	12/10/2000	21:00	CST	Winter Storm		0	0	24.90K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/08/2001	23:00	CST	Winter Storm		0	0	50.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/14/2003	11:00	CST	Winter Storm		0	0	5.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/12/2007	22:30	CST-6	Winter Storm		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	12/22/2007	12:00	CST-6	Winter Storm		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/05/2008	10:00	CST-6	Winter Storm		0	0	10.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/17/2008	02:00	CST-6	Winter Storm		0	0	25.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/06/2010	13:00	CST-6	Winter Storm		0	0	25.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/29/2013	22:00	CST-6	Winter Storm		0	0	25.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/04/2014	12:00	CST-6	Winter Storm		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/01/2015	00:00	CST-6	Winter Storm		0	0	50.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	12/28/2015	04:00	CST-6	Winter Storm		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/11/2019	20:00	CST-6	Winter Storm		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/22/2019	15:00	CST-6	Winter Storm		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/16/2020	01:00	CST-6	Winter Storm		0	0	0.00K	0.00K
Totals:								0	0	224.90K	0.00K

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	75.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/18/1996	09:00	CST	Blizzard		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/26/1996	12:00	CST	Blizzard		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/28/1996	20:00	CST	Blizzard		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	12/09/2009	01:00	CST-6	Blizzard		0	0	50.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/01/2011	17:00	CST-6	Blizzard		0	0	25.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	11/25/2018	12:00	CST-6	Blizzard		0	0	0.00K	0.00K
Totals:								0	0	75.00K	0.00K

In addition to winter storms, there have been six blizzard events recorded in Wayne County from 1996-2019. There were no deaths, injuries, or damage reported for the region. However, the episode narrative described the blizzard of February 2011 as a tremendous blizzard, one of the worst in memory, impacted the region on February 1-2, 2011, as deep low pressure tracked from Texas to southern Indiana. Snowfall totals ranged from 10 to 20 inches with drifts as high as 7 feet. Blizzard conditions were widespread with visibilities near zero in heavy snow and winds gusting over 50-60mph.

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	0.00K	294.12K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/18/1996	02:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/01/1996	16:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	05/01/1996	00:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/09/1997	21:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/15/1997	21:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	09/21/1999	01:00	CST	Cold/wind Chill		0	0	0.00K	294.12K
Totals:								0	0	0.00K	294.12K

Approximately 6 Cold/wind chill events have been recorded from 1996-2019. The most significant event occurred in 1999 with all the damage recorded to Crop Damage.

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/05/2014	21:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	12/31/2017	06:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/01/2018	00:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/29/2019	21:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Extreme cold and wind chill are also included in the severe winter storm definition because it is a dangerous component of Iowa's winter season. There have been four documented extreme cold/wind chill from 2014-2020.

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	473.33K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	11/14/1996	16:00	CST	Ice Storm		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	12/21/1997	14:00	CST	Ice Storm		0	0	2.05K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/04/1998	06:30	CST	Ice Storm		0	0	20.40K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/14/1998	01:30	CST	Ice Storm		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	03/17/1998	02:00	CST	Ice Storm		0	0	5.88K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/11/1999	09:00	CST	Ice Storm		0	0	5.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/17/2000	20:00	CST	Ice Storm		0	0	50.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/08/2001	16:00	CST	Ice Storm		0	0	75.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/03/2005	01:00	CST	Ice Storm		0	0	25.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	11/29/2006	15:00	CST-6	Ice Storm		0	0	5.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	12/01/2007	06:00	CST-6	Ice Storm		0	0	50.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	12/10/2007	22:00	CST-6	Ice Storm		0	0	150.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	12/18/2008	18:30	CST-6	Ice Storm		0	0	5.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	12/27/2008	08:00	CST-6	Ice Storm		0	0	5.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/20/2010	01:00	CST-6	Ice Storm		0	0	75.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/15/2017	15:00	CST-6	Ice Storm		0	0	0.00K	0.00K
Totals:								0	0	473.33K	0.00K

In Iowa, ice storm events typically cause the greatest human loss and property damage associated with severe winter weather. From 1996-2019, there were 16 ice storms in the county causing $473K. There were no deaths or injuries reported.

Probability

Historical occurrences indicate that several winter storm events can occur annually in Wayne County, so the probability is high likely, which is greater than 33% chance is any given year. The frequency of severe winter storm events depends on the overall severity of a particular winter season. As historical data indicates, the region can be affected by several severe winter storm events in one year, but there can also be a year with few or no severe winter storm events.

Magnitude and Severity

The entire planning area is vulnerable to the effects of Severe Winter Storms. Winter storms tend to make driving more treacherous and can impact the response time of emergency vehicles. The probability of utility and infrastructure abruption or outages, increases during winter storms due to freezing rain accumulation on power lines. Elderly populations are especially vulnerable to the impacts of winter storms. Winter storms increase wear and tear on roadways also, but it is difficult to determine the amount of the expenses to maintain or recover from a storm.

Buildings with overhanging tree limbs are more vulnerable to damage during winter storms. Businesses experience loss of income because of closure due to power outages. Overhead power lines and infrastructure are also vulnerable to damages from winter storms. The weight from of the ice accumulation creates damage to power lines, as well as damage to the lines and equipment from falling trees and/or tree limbs due to the weight. Potential losses would include the cost of repair or replacement of damaged facilities and lost economic opportunities.

Exhibit 40: Estimated Electric Loss
2019 ACS

Jurisdiction	Population (2019)	Estimated Affected Population (10%)	Electric loss of use estimates @ $126/person/day
Unincorp County	27,276	273	$34,398
Allerton	513	51	$6,426
Clio	66	7	$882
Corydon	1,628	163	$20,538
Humeston	484	48	$6,048
Lineville	259	26	$3,276
Millerton	108	11	$1,386
Promise City	78	8	$1008
Seymour	567	57	$7,182

Secondary effects of loss of power could include ruptured water pipes in homes without electricity. Public safety hazards also include risk of electrocution from downed power lines. Specific amounts of estimated losses are not available due to the complexity and multiple variables with this hazard. The loss of use estimates is provided in the table below and were calculated using FEMA's publication "*What is a Benefit? Guidance on Benefit-Cost Analysis of Hazard Mitigation Project, June 2009*". The loss of use is provided in the heading s the loss of use cost per person per day of loss. The estimated loss of use provided for each jurisdiction represents the loss of service of the indicated utility for one day for 10 percent of the population. It is understood that in rural areas the typical loss of use may be for a longer period and a larger percentage of the population. These figures do not consider the physical damage to utility equipment and infrastructure.

It is difficult to estimate the precise totals of damage to Wayne County because of the widespread nature of Severe Winter Storms. The population most vulnerable and are most at risk to Severe Winter Storms are the elderly (over 65 years) and the very young (under 5 years). The following table summarizes the number of residents that are over 65 years and what percentage of the county this comprises.

Exhibit 41: Maximum Population Exposure 2019 ACSs						
Jurisdiction		**Population 65yrs & older**	**Population 18 years& younger**	**Population living below poverty guidelines**	**Residents living with a diagnosed disability**	**Old English Amish Population**
County	(6,429)	1,395 21.7%	1,618 25.2%	1,106 17.2%	922 16.4%	Estimated at 1,000
Allerton	(513)	71 14.3%	168 33.8%	164 32%	17 14.5%	
Clio	(66)	19 29%	12 18.2%	2 3%	7 10.6%	
Corydon	(1,628)	373 23%	416 25.6%	238 14.6%	254 16.6%	
Humeston	(484)	132 27.3%	121 25%	39 8%	108 22.3%	
Lineville	(259)	41 15.8%	43 16.6%	47 18%	33 12.7%	
Millerton	(108)	5 5%	33 30.6%	10 9.3%	1 1%	
Promise City	(78)	18 23%	13 16.7%	15 19.2%	19 24.4%	
Seymour	(567)	165 29%	113 19.9%	139 24.6%	125 22%	

During a winter storm event, people, pets, and livestock are susceptible to frostbite and hypothermia. The people primarily at risk are engaged in outdoor activity such as shoveling snow, digging out vehicles, or assisting stranded motorists. The elderly or young are also vulnerable during winter storm event. Businesses and schools often close during extreme cold or heavy snow conditions to protect the safety of patrons, workers, students, and bus drivers.

Heavy snow, blizzards, and ice storms can immobilize transportation systems, damage trees and power lines, and collapse buildings and communications towers. The potential for drifting snow is substantially high in open country than urban areas where buildings, trees, and other features obstruct the wind. Severe ice storms have caused total electric power outages over large areas of Iowa and rendered assistance unavailable to those in need due to impassable roads.

Exhibit 42: Maximum Population and Building Exposure Hazard Area 100% of Jurisdiction **Per County Assessor & Auditor									
	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Ag. Structures	
	#	Value	#	#	Value	#	Value	#	Value
Corydon	653	$46,228.630	1,628	154	$6,444,244	30	$1,646,910	--	$16,950
Seymour	300	$14,229,890	567	43	$2,391,070	--	--	--	$202,140
Promise City	53	$1,499,540	78	11	$323,660	--	--	--	$290
Allerton	214	$10,573,630	513	39	$1,133,490	23	$3,684,410	--	$27,540
Humeston	229	$11,579,130	484	105	$4,842,602	--	--	--	$44,280
Millerton	21	$583,570	108	8	$113,350	--	--	--	$15,530
Lineville	108	$3,996,920	259	24	$1,491,440	1	$96,330	--	$34,840
Clio	33	$1,021,740	66	37	$786,130	--	--	--	$16,950
Unincorp County	1,372	$132,846,220	2,726	59	$5,095,986	12	$3,394,880	--	$9,219,010

Regarding the transportation system, the Iowa Department of Transportation (IDOT), county road departments, and local governments are responsible for snow removal of snow and treatment of snow streets and highways. Severe winter storms conditions can slow or stop the flow of vital supplies and disrupt emergency services. In addition, the emergency needs of remote isolated residents for food or fuel, as well as for feed, water, and shelter for livestock may be difficult to fulfill.

A Wayne County severe winter storm can reach a critical level primarily due to the potential risk of human injury and death. It is possible a shutdown of services and facilities could last more than one week if the storm causes major power outages. This severity estimate is based on historical occurrences, the *Iowa Hazard Mitigation Plan 2018* and local knowledge.

Corydon

Facility	Location	Assessed Value
Lift stations (W & E)		
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community bldg.	501 S East St	$179,730
Sewer Lagoon	South St	
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Bath House (historical)	100 McKinley St	
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse	City Square	
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Water Dept		$20,340
Murphy Place Senior Housing	511 E Jackson	$875,890
Emergency Shelter locations		
Golf Course		$454,340
Sports Complex		
Fairgrounds		$273,330
Extension Office	220 E Jefferson	$132,670
Corydon Nursing & Rehab (Shelter Site)		
Walden Park Club House (Shelter Site)		
Corydon Head Start	605 S West St	
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510
Private In-home Daycare	2018 170 St	
Private In-Home Daycare	507 W Monroe St	
Private In-Home Daycare	418 W Madison St	
Private In-Home Daycare	1615 80th St	

Millerton

Facility	Location	Assessed Value
Lift station		
Post Office	313 N Main	
Sewer Lagoon		
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
Lift station	North edge of town	
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310
Sewer Lagoon	South of town	

Seymour

Facility	Location	Assessed Value
N. Lift station	625 N 5th	
S Lift Station	Southlawn Cemetery	
Lagoon	J46	
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Water Plant	118 N 6th	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Water Tower		
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
Lift station		
City Hall/ community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440
Public Housing		$204,950
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main St	$20,000
Library		$10,110

Lineville

Facility	Location	Assessed Value
Lift station	West 3rd St	
City Hall/ community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Sewer Lagoon	East Line St	
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Medical Clinic		$149,440
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170
Private In-Home Daycare	805 Main St	

Humeston

Facility	Location	Assessed Value
Lift station	6th & Blevens	$22,410
City Hall/ community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Water Tower		
Library		$375,480
Medical Clinic		
Elementary School		$60,000
Public Housing		
Humeston Senior Center (Shelter Site)		
Storage & Shop		$130,940

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Linville	
Nelson Round Barn(historical)	South of Allerton	
Pleasant Hill School (historical)	3 miles north of Lineville	

Loss Estimate

Countywide damage was established from the NCDC data base for some hazards up to 65 years. Loss factors were developed specific to the attributes of Severe Winter Storms throughout the region. These factors were able to provide an annual damage estimate by dividing the total loss by number of years of data. Per event damage calculated by dividing total loss by number of events. During the past 20 years, 16 severe winter storm events have caused $225,900 in property damage. Iowa State Mitigation Plan estimates an annual average loss of $11,000.

Warning Time

The NWS has developed effective weather notifications that are promptly and widely distributed to the public. Notifications made by the NWS include winter storm watch, winter storm warning, blizzard warning, winter weather advisory and freeze advisory . Radio, television, weather alert radios, and even smart phone applications provide current weather information. For winter storm events accurate information is available up to a few days in advance.

Duration

Although a severe winter storm typically occurs over several hours, the event can have lasting impacts on a community beyond a week. Dangerous road conditions and/or electrical power outage can affect a community, especially rural areas, for an extended period. It is also possible that a severe winter storm event can last several days due to multiple storms events occurring in short time.

Hazard Scoring & Ranking

Exhibit 43: Severe Winter Storms Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Risk Score
Overall County Scores	--	--	--	--	3.79
Wayne County	3	2	2	3	2.55
Allerton	4	3	3	2	3.35
Clio	1	1	1	1	1.0
Corydon	4	2	3	2	3.05
Humeston	4	3	1	3	3.15
Lineville	2	2	1	3	1.95
Millerton	4	2	1	2	2.75
Promise City	3	2	2	3	2.55
Seymour	4	2	2	3	3.0

Thunderstorm, Lightning & Hail

THUNDERSTORM: A thunderstorm is formed from a combination of moisture, rapidly rising warm air and a force capable of lifting air such as a warm and cold front, a sea breeze, or a mountain. All thunderstorms contain lightning. Thunderstorms may occur singly, in clusters or in lines. Thus, it is possible for several thunderstorms to affect one location in a few hours. Some of the most severe weather occurs when a single thunderstorm affects one location for an extended time.

LIGHTNING: 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." This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches a temperature approaching 50,000 degrees Fahrenheit in a split second. The rapid heating and cooling of air near the lightning causes thunder.

HAILSTORM: An outgrowth of a severe thunderstorm in which balls or irregularly shaped lumps of ice greater than 0.75 inches in diameter fall with rain.

Thunderstorms are common in Iowa and can occur singly, in clusters, or in lines. They are formed from a combination of moisture, rapidly raising warm air, and a lifting mechanism such as clashing warm and cold air masses. Most thunderstorms produce only thunder, lightning, and rain. Severe storms, however, can produce tornadoes, high straight-line winds above 58 mph, microburst's, lightning, hailstorms, and flooding. The NWS considers a thunderstorm severe if it produces hail at least 3/4-inch in diameter, wind 58 mph or higher, or tornadoes. High straight-line winds, which can often exceed 60 mph, are common occurrences and are often mistaken for tornadoes. 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." This flash of light usually 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.

Lightning associated with thunderstorms is itself a major hazard. In the United States, from 75 to 100 Americans are hit and killed each year by lightning. The power of lightning's electrical charge and intense heat can electrocute on contact, split trees, ignite fires and cause electrical failures. Although there are no recorded by NOAA in Wayne County during the past five years, many thunderstorms with lightning have occurred.

Hail is frozen water droplets formed inside a thunderstorm cloud. They are formed during the strong updrafts of warm air and downdrafts of cold air, when the water droplets are carried well above the freezing level to temperatures below 32 degrees Fahrenheit, and then the frozen droplet begins to fall, carried by cold downdrafts, and may begin to thaw as it moves into warmer air toward the bottom of the thunderstorm. This movement up and down inside the cloud, through cold then warmer temperatures, causes the droplet to add layers of ice and can become quite large, sometimes round, or oval shaped and sometimes irregularly shaped, before it finally falls to the ground as hail.

A hailstorm is an outgrowth of a severe thunderstorm in which pellets or irregularly shaped lumps of ice, otherwise known as hail, fall with rain. Hail can be smaller than a pea or large as a softball.

Exhibit 44: Tornado & Storm Research Organization Hailstorm Intensity Scale

Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	5-9	0.2-0.4	Pea	No damage
Potentially Damaging	10-15	0.4-0.6	Mothball	Slight general damage to plants, crops
Significant	16-20	0.6-0.8	Marble, grape	Significant damage to fruit, crops, vegetation
Severe	21-30	0.8-1.2	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
Severe	31-40	1.2-1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	41-50	1.6-2.0	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	51-60	2.0-2.4	Hen's egg	Bodywork of grounded aircraft dented; brick walls pitted
Destructive	61-75	2.4-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Destructive	76-90	3.0-3.5	Large orange > Soft ball	Severe damage to aircraft bodywork
Super Hailstorms	91-100	3.6-3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	>100	4.0+	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Potential Hazard Area

The potential hazard area for thunderstorm, lightning, and hail is the entire Wayne County area.

Historical Occurrences

There have been 30 heavy rain (thunderstorm) events recorded in the region from 1999-2019. Thunderstorms are the most frequently occurring natural hazard. There are several thunderstorms every year, and multiple storms often develop in an area within just a few days. The recorded thunderstorm events indicate there have been no deaths, zero reported injuries, and over $150K in property damage, and $50K in crop damage reported over the entire area impacted by the events.

The table below illustrates the events from the past 20 years:

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	150.00K	50.00K
SEYMOUR	WAYNE CO.	IA	08/24/2007	05:53	CST-6	Heavy Rain		0	0	150.00K	50.00K
SEYMOUR	WAYNE CO.	IA	06/12/2008	16:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
CORYDON	WAYNE CO.	IA	06/26/2008	02:45	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	07/24/2008	20:30	CST-6	Heavy Rain		0	0	0.00K	0.00K
ALLERTON	WAYNE CO.	IA	07/24/2008	20:30	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	07/24/2008	22:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
CAMBRIA	WAYNE CO.	IA	07/27/2008	17:20	CST-6	Heavy Rain		0	0	0.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	07/28/2008	05:59	CST-6	Heavy Rain		0	0	0.00K	0.00K
BETHLEHEM	WAYNE CO.	IA	07/04/2009	02:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
ALLERTON	WAYNE CO.	IA	08/27/2009	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	08/27/2009	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	07/04/2010	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	07/19/2010	18:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	07/19/2010	19:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	07/19/2010	19:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
ALLERTON	WAYNE CO.	IA	07/19/2010	19:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	09/10/2010	15:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	09/21/2010	14:30	CST-6	Heavy Rain		0	0	0.00K	0.00K
CORYDON	WAYNE CO.	IA	04/10/2013	07:10	CST-6	Heavy Rain		0	0	0.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	04/18/2013	05:52	CST-6	Heavy Rain		0	0	0.00K	0.00K
ALLERTON	WAYNE CO.	IA	10/30/2013	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
ALLERTON	WAYNE CO.	IA	06/03/2014	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEWAL	WAYNE CO.	IA	08/16/2014	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
CORYDON	WAYNE CO.	IA	08/16/2014	07:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	08/16/2014	07:45	CST-6	Heavy Rain		0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	08/23/2014	09:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	06/24/2015	05:30	CST-6	Heavy Rain		0	0	0.00K	0.00K
ALLERTON	WAYNE CO.	IA	07/11/2015	01:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	07/11/2015	01:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	07/11/2015	01:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	07/11/2015	01:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	07/28/2015	20:15	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	11/26/2015	07:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
CORYDON	WAYNE CO.	IA	11/26/2015	07:59	CST-6	Heavy Rain		0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	07/19/2016	13:15	CST-6	Heavy Rain		0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	09/01/2018	00:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	10/05/2018	13:15	CST-6	Heavy Rain		0	0	0.00K	0.00K
GENOA	WAYNE CO.	IA	05/18/2019	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	05/18/2019	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	05/28/2019	00:30	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	05/28/2019	00:30	CST-6	Heavy Rain		0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	08/18/2019	01:35	CST-6	Heavy Rain		0	0	0.00K	0.00K
ALLERTON	WAYNE CO.	IA	09/21/2019	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
ALLERTON	WAYNE CO.	IA	09/21/2019	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
CORYDON	WAYNE CO.	IA	09/21/2019	07:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
HARVARD	WAYNE CO.	IA	09/21/2019	07:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
ALLERTON	WAYNE CO.	IA	09/21/2019	07:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
GENOA	WAYNE CO.	IA	09/21/2019	07:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	09/28/2019	15:10	CST-6	Heavy Rain		0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	09/28/2019	16:25	CST-6	Heavy Rain		0	0	0.00K	0.00K
Totals:								0	0	150.00K	50.00K

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	50.00K	0.00K
CORYDON	WAYNE CO.	IA	08/03/2004	22:30	CST	Lightning		0	0	50.00K	0.00K
Totals:								0	0	50.00K	0.00K

The NCEI contains records of lightning events when lightning results in fatality, injury, and/or property or crop damage. From 1999- 2019, only nine lightning event is recorded. This data collection relies on community reporting and many residents do not report losses to property agencies.

Hailstorms cause nearly $1 billion dollars annually in property and crop damage in the United States. The peak hail activity coincides with the Midwest's peak agricultural season. Financial impacts resulting from damage to property is in the millions of dollars every year, most of which is covered by crop and hazard insurance.

Exposure to hail larger than a nickel can be dangerous and life threatening. Risk to response personnel is the same as the risk to others without shelter from the hail. Operations should not be affected to any significant degree. Damage to property, facilities, and infrastructure is usually limited to broken windows and damaged roofs.

The past 20 years have experience 38 hail events in Wayne County. The cumulative damage of these events on property amounted to $342 thousand and $233 thousand in crop losses.

The chart below provides a summary of NCDC recorded Hailstorms; property and crop damages are in thousands of dollars.

Location	County/Zone	St.	Date	Time	TZ.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	342.00K	233.00K
MILLERTON	WAYNE CO.	IA	09/22/2000	16:19	CST	Hail	1.75 in.	0	0	10.00K	10.00K
HUMESTON	WAYNE CO.	IA	04/08/2001	22:36	CST	Hail	0.88 in.	0	0	2.00K	0.00K
MILLERTON	WAYNE CO.	IA	04/08/2001	22:56	CST	Hail	1.75 in.	0	0	5.00K	0.00K
HUMESTON	WAYNE CO.	IA	06/01/2002	21:58	CST	Hail	1.75 in.	0	0	20.00K	5.00K
HUMESTON	WAYNE CO.	IA	06/01/2002	22:00	CST	Hail	2.75 in.	0	0	50.00K	5.00K
ALLERTON	WAYNE CO.	IA	06/01/2002	22:45	CST	Hail	2.50 in.	0	0	50.00K	5.00K
MILLERTON	WAYNE CO.	IA	04/30/2003	17:30	CST	Hail	1.00 in.	0	0	5.00K	0.00K
SEYMOUR	WAYNE CO.	IA	04/30/2003	18:55	CST	Hail	1.00 in.	0	0	5.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	05/08/2003	18:05	CST	Hail	2.75 in.	0	0	50.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	05/08/2003	18:07	CST	Hail	1.75 in.	0	0	25.00K	0.00K
HUMESTON	WAYNE CO.	IA	07/05/2003	18:14	CST	Hail	1.75 in.	0	0	10.00K	10.00K
SEYMOUR	WAYNE CO.	IA	07/08/2003	17:29	CST	Hail	1.00 in.	0	0	5.00K	10.00K
LINEVILLE	WAYNE CO.	IA	05/13/2004	03:15	CST	Hail	0.88 in.	0	0	1.00K	3.00K
ALLERTON	WAYNE CO.	IA	05/27/2004	11:26	CST	Hail	0.88 in.	0	0	1.00K	5.00K
PROMISE CITY	WAYNE CO.	IA	05/27/2004	12:15	CST	Hail	0.75 in.	0	0	0.00K	5.00K
ALLERTON	WAYNE CO.	IA	03/06/2005	22:15	CST	Hail	0.88 in.	0	0	1.00K	0.00K
HUMESTON	WAYNE CO.	IA	06/04/2005	20:15	CST	Hail	1.00 in.	0	0	5.00K	5.00K
HUMESTON	WAYNE CO.	IA	06/27/2005	20:50	CST	Hail	0.88 in.	0	0	2.00K	5.00K
CORYDON	WAYNE CO.	IA	06/27/2005	21:30	CST	Hail	1.00 in.	0	0	5.00K	5.00K
ALLERTON	WAYNE CO.	IA	08/28/2005	03:30	CST	Hail	0.88 in.	0	0	1.00K	5.00K
HUMESTON	WAYNE CO.	IA	11/27/2005	17:20	CST	Hail	0.88 in.	0	0	1.00K	0.00K
HUMESTON	WAYNE CO.	IA	11/27/2005	17:22	CST	Hail	0.88 in.	0	0	1.00K	0.00K
LINEVILLE	WAYNE CO.	IA	03/08/2006	17:20	CST	Hail	1.75 in.	0	0	10.00K	0.00K
CLIO	WAYNE CO.	IA	03/08/2006	17:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
CLIO	WAYNE CO.	IA	03/08/2006	17:36	CST	Hail	1.75 in.	0	0	10.00K	0.00K
SEYMOUR	WAYNE CO.	IA	03/12/2006	12:58	CST	Hail	1.00 in.	0	0	5.00K	0.00K
BENTONVILLE	WAYNE CO.	IA	08/07/2007	16:50	CST-6	Hail	0.88 in.	0	0	3.00K	25.00K
SEYMOUR	WAYNE CO.	IA	03/31/2008	14:51	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
SEYMOUR	WAYNE CO.	IA	06/19/2008	13:15	CST-6	Hail	0.75 in.	0	0	0.00K	5.00K
BETHLEHEM	WAYNE CO.	IA	07/21/2008	20:32	CST-6	Hail	0.75 in.	0	0	0.00K	10.00K
SEYMOUR	WAYNE CO.	IA	07/21/2008	20:42	CST-6	Hail	0.75 in.	0	0	0.00K	10.00K
CAMBRIA	WAYNE CO.	IA	07/27/2008	17:12	CST-6	Hail	0.88 in.	0	0	2.00K	10.00K
CAMBRIA	WAYNE CO.	IA	07/27/2008	17:16	CST-6	Hail	0.88 in.	0	0	3.00K	0.00K
SEWAL	WAYNE CO.	IA	07/27/2008	17:38	CST-6	Hail	1.25 in.	0	0	3.00K	10.00K
SEWAL	WAYNE CO.	IA	07/27/2008	17:38	CST-6	Hail	1.25 in.	0	0	3.00K	10.00K
SEWAL	WAYNE CO.	IA	07/27/2008	17:44	CST-6	Hail	1.75 in.	0	0	10.00K	10.00K
SEYMOUR	WAYNE CO.	IA	06/18/2010	20:08	CST-6	Hail	1.00 in.	0	0	2.00K	5.00K
HUMESTON	WAYNE CO.	IA	09/13/2010	17:20	CST-6	Hail	0.88 in.	0	0	0.00K	5.00K
LINEVILLE	WAYNE CO.	IA	05/25/2012	15:24	CST-6	Hail	1.00 in.	0	0	3.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	04/17/2013	06:33	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	05/28/2013	17:25	CST-6	Hail	1.25 in.	0	0	5.00K	5.00K
ALLERTON	WAYNE CO.	IA	06/14/2013	15:10	CST-6	Hail	0.75 in.	0	0	0.00K	5.00K
ALLERTON	WAYNE CO.	IA	06/14/2013	15:23	CST-6	Hail	1.25 in.	0	0	5.00K	25.00K
LINEVILLE	WAYNE CO.	IA	06/20/2013	17:35	CST-6	Hail	1.00 in.	0	0	0.00K	5.00K
CORYDON	WAYNE CO.	IA	07/02/2013	15:27	CST-6	Hail	1.00 in.	0	0	3.00K	10.00K
HUMESTON	WAYNE CO.	IA	02/20/2014	11:31	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	02/20/2014	11:32	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
LINEVILLE	WAYNE CO.	IA	06/03/2014	19:00	CST-6	Hail	1.75 in.	0	0	15.00K	5.00K
ALLERTON	WAYNE CO.	IA	09/15/2014	06:33	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	04/09/2015	12:28	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
LINEVILLE	WAYNE CO.	IA	07/13/2015	15:50	CST-6	Hail	1.25 in.	0	0	5.00K	0.00K
HUMESTON	WAYNE CO.	IA	06/21/2016	19:00	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	06/17/2017	16:46	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	05/14/2018	19:50	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	05/14/2018	19:52	CST-6	Hail	1.25 in.	0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	06/25/2019	16:55	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	06/25/2019	17:00	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
LINEVILLE	WAYNE CO.	IA	06/25/2019	18:06	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
Totals:								0	0	342.00K	233.00K

Probability

Iowa experiences on average between 30 and 50 thunderstorm days per year. Several of these thunderstorm days include Wayne County each year. Because of the humid continental climate in Iowa, the conditions that create severe thunderstorms are typically present. To become severe, a storm needs moisture to form clouds and rain, relatively warm and unstable air that can rise rapidly, and weather front and convective systems that lift air masses.

Wayne County it is highly likely a thunderstorm and lightning event will occur at least once each year, if not several times during a severe summer season. Thunderstorm and lightning events are the mostly frequently occurring hazard in the region. This probability estimate is based on historical occurrences, the *Iowa Hazard Mitigation Plan 2018* and local knowledge.

When considering historical occurrences for hail events, there is a high likelihood and probability of an event occurring at least once each year. Many years, Iowa has frequented severe weather and likely to experience several hail events in the spring and summer months.

Magnitude and Severity

Severe thunderstorms can be quite expansive with areas of localized severe conditions. Most severe thunderstorms cells are 5-25 miles wide with a larger area of heavy rain and strong winds around the main cell. Depending on the size, a thunderworm can affect several or just one community in the region.

Like tornadoes, thunderstorms and lightning can cause death, serious injury, and substantial property damage. Those in unprotected areas, mobile homes, or automobiles during a storm are at risk. Sudden strong winds often accompany a severe thunderstorm and may blow down trees across, power lines, homes, especially mobile homes, and businesses. High winds can also push vehicle off the road. Straight-line winds are typically responsible for most damage during a thunderstorm event.

Lightning presents the greatest immediate danger to people and livestock during a thunderstorm. It is the second most frequent weather-related killer in the U.S. with nearly 100 deaths and 500 injuries each year according to the *2010 Iowa Hazard Mitigation Plan*. Floods and flash floods are the number one cause of weather-related deaths in the United States. Livestock and people who are outdoors, especially under a tree or other natural lightning rods in or on water, or on or near hilltops are at risk from lightning. The power of lightning's electrical charge and intense heat can electrocute people and livestock on contact, split trees, ignites fires, and cause electrical failures.

Thunderstorms can produce hail that can cause injury, damage homes and businesses, break glass, and destroy vehicles. Flash floods and tornadoes can develop during thunderstorms as well. People who are in automobiles or along low-lying areas when flash flooding occurs and people who are in mobile homes are vulnerable to the impacts of severe thunderstorms. One or more severe thunderstorms occurring over a short period, especially on saturated ground, can lead to flooding and cause extensive power and communication outages as well as agricultural damage.

In Wayne County, when future thunderstorms event occurs, the magnitude and severity will likely be limited. Injuries will likely not result in permanent disability, although one

thunderstorm has resulted in one death. Severe damage could affect 10% to 25% of the county and any facility shutdown could last a week or more.

The land area affected by a hail event is often the same size or smaller than the area affected by the storm that produces the hail. Typically, a hail event occurs within a 15 miles diameter around the center of the storm. Historically hail events in the region have been widespread overall due to the movement of storms moving through the community.

Hail events are rarely a direct cause of death but can cause injuries to humans, pets, and livestock that are outdoors during a storm. Hail can cause widespread damage to buildings, infrastructure, and vehicles. Damage to buildings is usually limited to windows, roofs, and exteriors.

Agricultural crops are extremely vulnerable because a hailstorm can strip leaves or destroy plants. The peak time for hail events to occur coincides with the agricultural growth season making damage a common risk. Factoring crop damage, hail events can cause millions in damage annually in Iowa. It is important to note that most of the financial impacts of hail damage are covered by insurance.

In future hail events for Wayne County, the magnitude and severity of the event is likely to be limited based on historical occurrences. For property damage, 10%-25% could be severely damaged, and injuries would not likely result in permanent disability. There is a possibility that some facilities and services may shutdown, but the period would likely be short, lasting less than a week.

Hailstorms develop from severe thunderstorms and wide region can be vulnerable to such a storm. Although they occur in every state on the mainland, hailstorms occur primarily in the Midwestern states. The greatest risk in Wayne County is to crops and structures. Severe crop damage can occur because of storm with hail diameters of .8 inches. There is also a risk of injury to humans; however, the risk of serious injury is slight. Damage to vehicles and structures is usually covered by private insurance.

Exhibit 45: Maximum Population and Building Exposure Hazard Area 100% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structure	
	#	Value	#	#	Value	#	Value	#	Value
Corydon	653	$46,228.630	1628	154	$6,444,244	30	$1,646,910	--	$16,950
Seymour	300	$14,229,890	567	43	$2,391,070	--	--	--	$202,140
Promise City	53	$1,499,540	78	11	$323,660	--	--	--	$290
Allerton	214	$10,573,630	513	39	$1,133,490	23	$3,684,410	--	$27,540
Humeston	229	$11,579,130	484	105	$4,842,602	--	--	--	$44,280
Millerton	21	$583,570	108	8	$113,350	--	--	--	$15,530
Lineville	108	$3,996,920	259	24	$1,491,440	1	$96,330	--	$34,840
Clio	33	$1,021,740	66	37	$786,130	--	--	--	$16,950
Unincorp County	1372	$132,846,220	2726	59	$5,095,986	12	$3,394,880	--	$9,219,010

Corydon

Facility	Location	Assessed Value
Lift station (W&E)		
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community bldg.	501 S East St	$179,730
Sewer Lagoon	South St	
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Bath House (historical)	100 McKinley St	
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Water Dept		$20,340
Murphy Place Senior Housing	511 E Jackson	$875,890
Emergency Shelter locations		
Golf Course		$454,340
Sports Complex		
Fairgrounds		$273,330
Extension Office	220 E Jefferson	$132,670
Corydon Nursing & Rehab (Shelter Site)		
Walden Park Club House (Shelter Site)		
Corydon Head start	605 S West St	
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510
Private In-home Daycare	2018 170 St	
Private In-Home Daycare	507 W Monroe St	
Private In-Home Daycare	418 W Madison St	
Private In-Home Daycare	1615 80th St	

Millerton

Facility	Location	Assessed Value
Lift station		
Post Office	313 N Main	
Sewer Lagoon		
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
Lift station	North edge of town	
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310
Sewer Lagoon	South of town	

Seymour

Facility	Location	Assessed Value
N. Lift station	625 N 5th	
S Lift Station	Southlawn Cemetery	
Lagoon	J46	
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Water Plant	118 N 6th	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Water Tower		
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
Lift station		
City Hall/community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440
Public Housing		$204,950
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main St	$20,000
Library		$10,110

Lineville

Facility	Location	Assessed Value
Lift station	West 3rd St	
City Hall/com. Ctr.	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Sewer Lagoon	East Line St	
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Medical Clinic		$149,440
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170
Private In-Home Daycare	805 Main St	

Humeston

Facility	Location	Assessed Value
Lift station	6th & Blevens	$22,410
City Hall/com-munity center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Water Tower		
Library		$375,480
Medical Clinic		
Elementary School		$60,000
Public Housing		
Humeston Senior Center (Shelter Site)		
Storage & Shop		$130,940

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	
Nelson Round Barn (historical)	South of Allerton	
Pleasant Hill School (historical)	3 miles north of Lineville	

Loss Estimation

Countywide damage was established from the NCDC data base from the past 65 years. Loss factors were developed specific to the attributes of Thunderstorm & Lightning throughout the region. These factors were able to provide an annual damage estimate by dividing the total loss by number of years of data. Per event damage calculated by dividing total loss by number of events.

The past 20 years have produced 20 Thunderstorm events with heavy rain resulting in $150,000 in property damage. This indicates an annual loss estimate of $7,500. During this same period, $50,000 of crop damage occurred to produce an annual crop loss of $2,500.

The loss factors for hailstorms in the region were able to provide an annual damage estimate by dividing the total loss by number of years of data. Per event damage calculated by dividing total loss by number of events. During the past 20 years, 38 events have occurred with property damage being reported at $342,000. This indicates a loss of approximately $17,000 per year. The reported crop damage during the same timeframe was $233,000 for an annual loss of 11,650.

Warning Time

The National Weather Service issues severe thunderstorm watches and warnings as well as statements about severe weather and localized storms. These messages are broadcast over NOAA Weather Alert Radios and area television and radio stations. Weather forecasting and severe weather warnings issued by the National Weather Service usually provide residents and visitors adequate warning time of 12-24 hours. Problems arise when warnings are ignored and not understood.

Hail events can usually be predicted in conjunction with a severe storm that has conditions suitable for creating hail. The National Weather Service issues severe thunderstorm watches and warnings as well as statements about what type of severe weather might be produced during a storm. These messages are broadcast over NOAA Weather Alert Radios, television, and regular stations. Some hail events may occur without warning during periods of volatile severe weather, which are typically when conditions are ideal for a tornado.

Duration

Depending on the size and severity of a thunderstorm and lightning event, the negative impacts can affect a community for a relatively short period of time. Typically, thunderstorm and lightning events that occur in conjunction with other hazards like flash flood, flood, hail, tornado, etc. affect a community for an extended period due to damage and shutdown of facilities and services. A thunderstorm and lightning event independently will impact the region for less than a day. A hail event is typically short-term lasting not more than six hours. In most occurrences, hailstorm events are just a few minutes within a larger storm that can occur over several hours.

Hazard Scoring & Ranking

Exhibit 46: Thunderstorm, Lightning & Hail Hazard Score Calculation					
	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	2.74
Wayne County	4	3	3	4	3.55
Allerton	3	3	3	2	2.9
Clio	2	1	1	1	1.45
Corydon	1	1	4	1	1.45
Humeston	4	2	1	1	2.65
Lineville	3	2	3	2	2.6
Millerton	4	2	3	2	3.05
Promise City	3	2	4	2	2.75
Seymour	4	2	2	3	3.0

Grass or Wild Land Fire

WILDFIRE: An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures (FEMA).

GRASS FIRE: An uncontrolled fire in a grassy area. A grass or wild land fire is an uncontrolled fire that threatens life and property in either a rural or wooded area. Grass and wild land fires can occur when conditions are favorable, such as during periods of drought when natural vegetation would be drier and subject to combustibility.

Description

According to FEMA, fire is the fourth largest accidental killer in the United States and the most common disaster experienced by Americans. Most fire deaths occur because of fires beginning in the late evening when people are sleeping. In addition, 84% of fires are accidental, the remaining percentage are set intentionally.

Fires may also occur as a secondary effect from an initial disaster, such as lightning, high winds, tornadoes, or transportation disasters.

Grass and wildfires can occur when conditions are favorable such as during periods of drought when natural vegetation would be drier and subject to combustibility.

Past occurrences & severity

For most grass or wildfires, the number of people or properties impacted would be negligible. However, firefighters are vulnerable to health hazards resulting from the fires themselves as well as the physical stresses of fighting such fires. According to the National Interagency Fire Center, there have been 1,244 wildfires spanning 30,370 acres and 1,274 prescribed fires spanning 8,951 acres from 2002-May 31, 2010, in Iowa. These numbers, along with those reported in the Rocky Mountain region consist of only 3-4% of the reported national incidents and encompass 2-4% of total acres burned. There have been no recorded grass or wildfires in the NCDC database in Wayne County currently; however, the risk does exist especially if droughts affect the area. Anecdotal evidence suggests that there have been many grasses or wildfires in Wayne County despite the lack of documentation. Local fire department personnel indicate occurrence with structure fires is common but there has not been a documentation process.

Data was requested from the Iowa Department of Public Safety, and State Fire Marshall Division to provide information on previous occurrences of grass/wildland fires in the planning area. Through the National Fire Incident Reporting System (NFIRS), the Iowa State Fire Marshal's office collects and reports fire incidents throughout the state. NFIRS is a repository of statistical data report by participating fire departments. The State Fire Marshal's Division was unable to provide historical grass/wildland fire data currently. The Storm Events Database has no record of a wildfire occurring since 2000. Committee members spoke with their respective fire departments and discovered that many have heard stories of Grass fires long ago, but

none are able to recall recent occurrences within the past 20 years nor find documentation to support it.

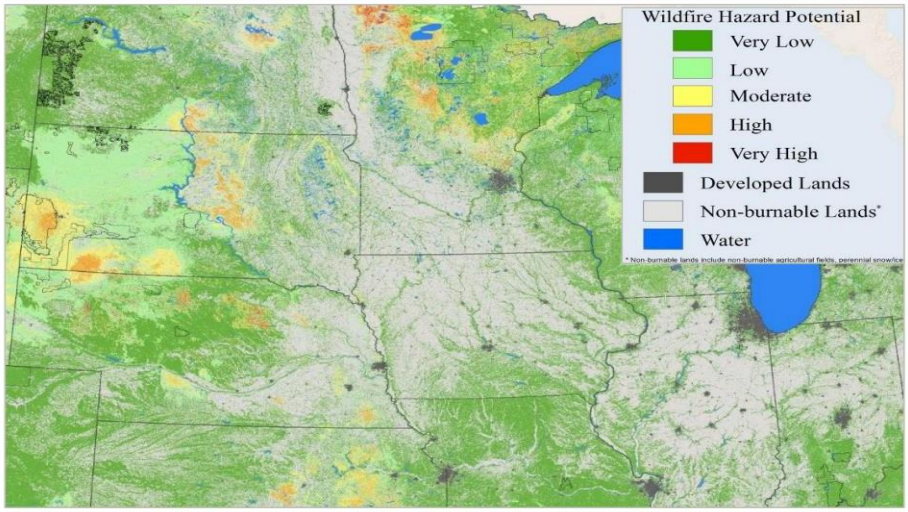
Hazard Risk Exposure

The table below summarized the maximum population and building exposure to Grass or Wildfire. Older structures with dated electrical systems that are not built to fire codes are at a particular risk. When a fire is occurring, it was acknowledged by the HMGP committee, that elderly, children, and people with disabilities are at greatest risk of death due to the fire. However, the unincorporated region has a low population density, and the risk is very low. Agricultural land where CRP land is burned and rural areas where debris is burned are very vulnerable to a Grass or Wildfire. There have been no recorded grass or wildfires in the NCDC database in Wayne County currently; however, the risk does exist especially if droughts affect the area. Anecdotal evidence suggests that there has been grass or wildfires in Wayne County despite the lack of documentation. Committee members told of a large grass fire many years ago that spread quickly and ended up burning a one-mile-wide strip from Seymour to Allerton. The committee did agree that agricultural areas where CRP land is burned, rural areas where debris is burned, and the wild land-urban interface areas are the most vulnerable. Of the approximate 285,213 acres in farms 71% is cropland, 6% woodland, 18% pasture, and approximately 4% for other uses. The HMPG committee estimated approximately 50% of residential structures, commercial structures, and industrial structures are in the Grass or Wildfire Hazard Area.

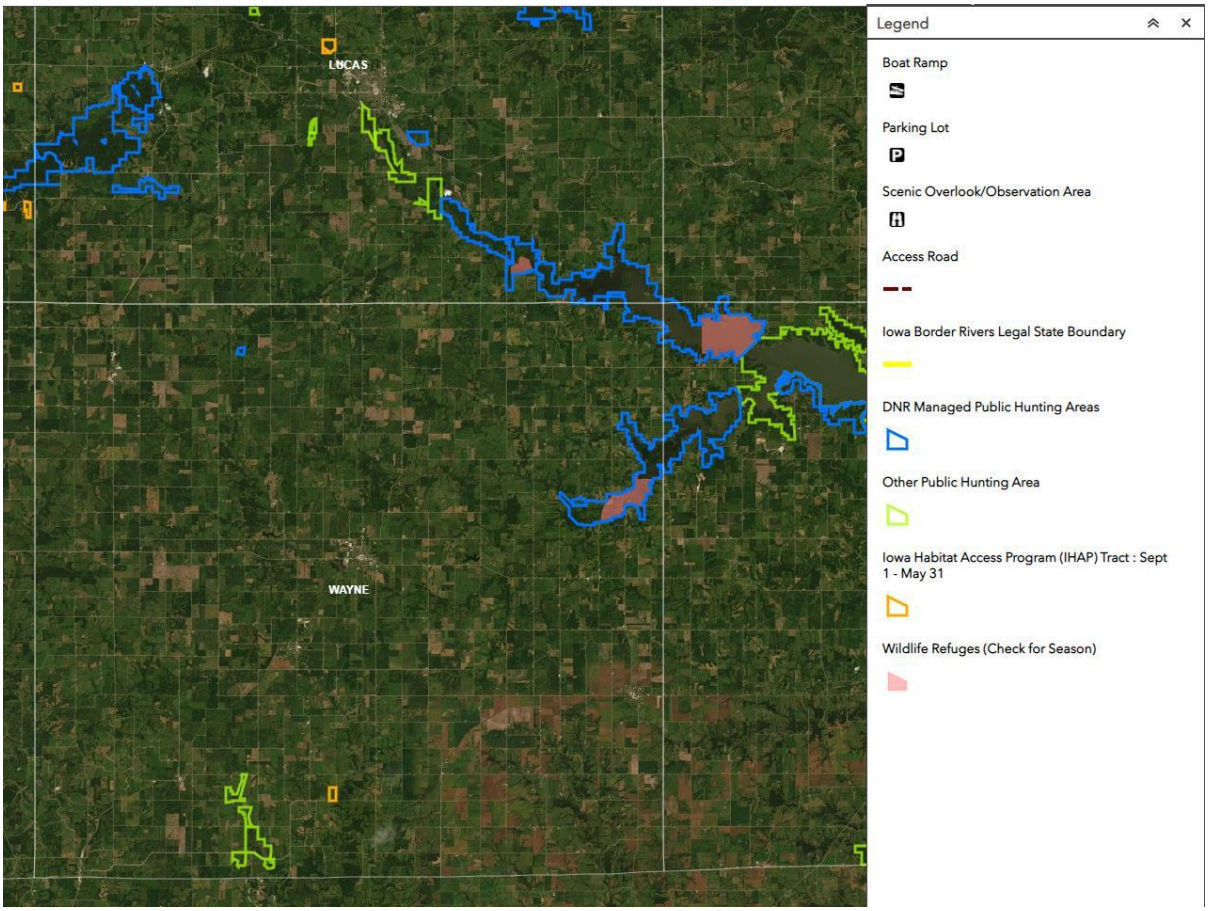
Potential Hazard Area

The potential hazard area for a severe winter storm is the entire region, including Wayne County. Concerns are for the Iowa DNR Wildlife Management Areas of Rathbun Wildlife Unit (150 acres in Wayne County), Medicine Creek Wildlife Area (1,013 acres), and Wolf Hollow Wildlife Area (40 acres). There are thousands of acres of natural habitat to hundreds of plant and animal species in these regional assets.

Exhibit 47: Wildfire Potential



Public Hunting Atlas (arcgis.com)



Area Name	WOLF HOLLOW WILDLIFE AREA
Acres	40
Habitat	Timber
Species	Deer, Squirrel, Rabbit

Iowa Habitat Access Program Tract

Area Name	IHAP WAYNE 1
Acres	80
Habitat	Grassland
Species	Deer, Turkey, Squirrel, Pheasant, Rabbit, Quail, Dove

Non-DNR Managed Public Hunting Area

Area Name	MEDICINE CREEK WILDLIFE AREA
Manager	Wayne CCB
Acres	1,013

DNR Managed Public Hunting Area

Area Name RATHBUN WILDLIFE AREA - USACOE

Acres 15,806

Habitat 1/4 Lake, 1/4 Timber, 1/2 Upland

Species Deer, Pheasant, Waterfowl, Quail, Dove

Wildlife Refuges: RATHBUN WILDLIFE AREA

WMA RATHBUN WILDLIFE AREA

TYPE Waterfowl

COMMENTS Coffey Marsh Refuge

ACRES 947.00

Exhibit 48: Maximum Population and Building Exposure Hazard Area 50% of Jurisdiction
**Per County Assessor & Auditor

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	326	$2,314,315	814	77	$3,223,122	15	$823,455	--	$,8475
Seymour	150	$7,114,945	283	21	$1,195,535	--	$	--	$101,070
Promise City	26	$749,770	39	5	$161,830	--	$	--	$145
Allerton	107	$5,286,815	256	19	$566,745	11	$1,842,205	--	$13,770
Humeston	114	$578,956	242	52	$2,421,301	--	$	--	$22,140
Millerton	10	$291,785	54	4	$56,675	--	$	--	$7,765
Lineville	54	$1,998,460	129	12	$745,720	--	$	--	$17,420
Clio	16	$510,870	33	18	$393,065	--	$	--	$8,475
Unincorp County	686	$66,423,110	1,363	29	$2,547,993	6	$1,697,440	--	$4,609,505

Loss Estimates

Countywide damage was established from the NCDC data base for some hazards up to 65 years. Loss factors were developed specific to the attributes of Grass or wild Land Fire throughout the region. These factors were able to provide an annual damage estimate by dividing the total loss by number of years of data. Per event damage calculated by dividing total loss by number of events. There are no NCDC events documented. Local information indicates that an estimated event at $450 to activate a fire department. Expense beyond activation would be calculate by the duration of the fire.

Hazard Scoring & Ranking

Exhibit 49: Grass or Wildland Fire Hazard Score Calculation					
	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores					1.34
Wayne County	2	1	4	1	1.9
Allerton	3	3	3	2	2.15
Clio	1	1	1	1	1.0
Corydon	1	1	4	2	1.55
Humeston	-	-	-	-	-
Lineville	2	2	4	2	2.3
Millerton	3	1	4	2	2.45
Promise City					
Seymour	1	2	2	4	1.75

Corydon

Facility	Location	Assessed Value
City Hall	501 S East St	$93,950
Community Bldg	501 S East St	$179,730
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington St	$119,640
Fire Station(new)	213 S Washington St	$136,900
Bath House (historical)	100 McKinley St	
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Water Dept		$20,340

Millerton

Facility	Location	Assessed Value
Post Office	313 N Main	
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310

Seymour

Facility	Location	Assessed Value
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Water Tower		
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
City Hall/community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
City Shop	101 N Central	$27,440
Public Housing		$204,950
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main St	$20,000
Library		$10,110

Lineville

Facility	Location	Assessed Value
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170

Humeston

Facility	Location	Assessed Value
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Water Tower		
Library		$375,480
Medical Clinic		
Elementary School		$60,000
Humeston Senior Center (Shelter Site)		
Storage & Shop		$130,940

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	
Nelson Round Barn (historical)	South of Allerton	
Pleasant Hill School (historical)	3 miles north of Lineville	

Animal/Crop/Plant Disease

An outbreak of disease that can be transmitted from animal to animal. The disease outbreak will likely have a significant economic implications or public health impact. The crop/plant pest infestation will likely have severe economic implications, cause significant crop production losses, or significant environmental damage. The crop/plant pests may also have implications for public health.

Description

An outbreak of disease that can be transmitted from animal to animal or plant to plant represents an animal/crop/plant disease. The crop/plant pest infestation will likely have severe economic implications, cause significant crop production losses, or significant environmental damage. The crop/plant pests may also have implications for public health. The introduction of some high consequence diseases may severely limit or eliminate our ability to move, slaughter, and export animals and animal products.

Response and recovery to infectious animal disease outbreaks will be lengthy, and many producers may never be able to return to business. There will be many indirect effects on our economy. Rumors of an infectious animal disease outbreak could cause considerable damage to the markets as was evidenced in an incident in Kansas in 2003 where the mere rumor of a Foot and Mouth Disease outbreak caused the market to plummet.

Crop/plant pest infestations can cause widespread crop/plant loss and severe economic hardship on farmers and landowners and related businesses. Once infestation occurs, the pest may become endemic, causing repeated losses in subsequent growing years. Loss of production will affect all related industries, such as fuel, food, synthetics, processors, etc.

Potential Hazard Area

The potential hazard area for the animal, plant, and crop disease hazard in Wayne County is primarily rural or recreation areas throughout the counties, although this hazard could affect urban areas as well.

An outbreak of disease that can be transmitted from animal to animal. The disease outbreak will likely have a significant economic implications or public health impact. The crop/plant pest infestation will likely have severe economic implications, cause significant crop production losses, or significant environmental damage. The crop/plant pests may also have implications for public health.

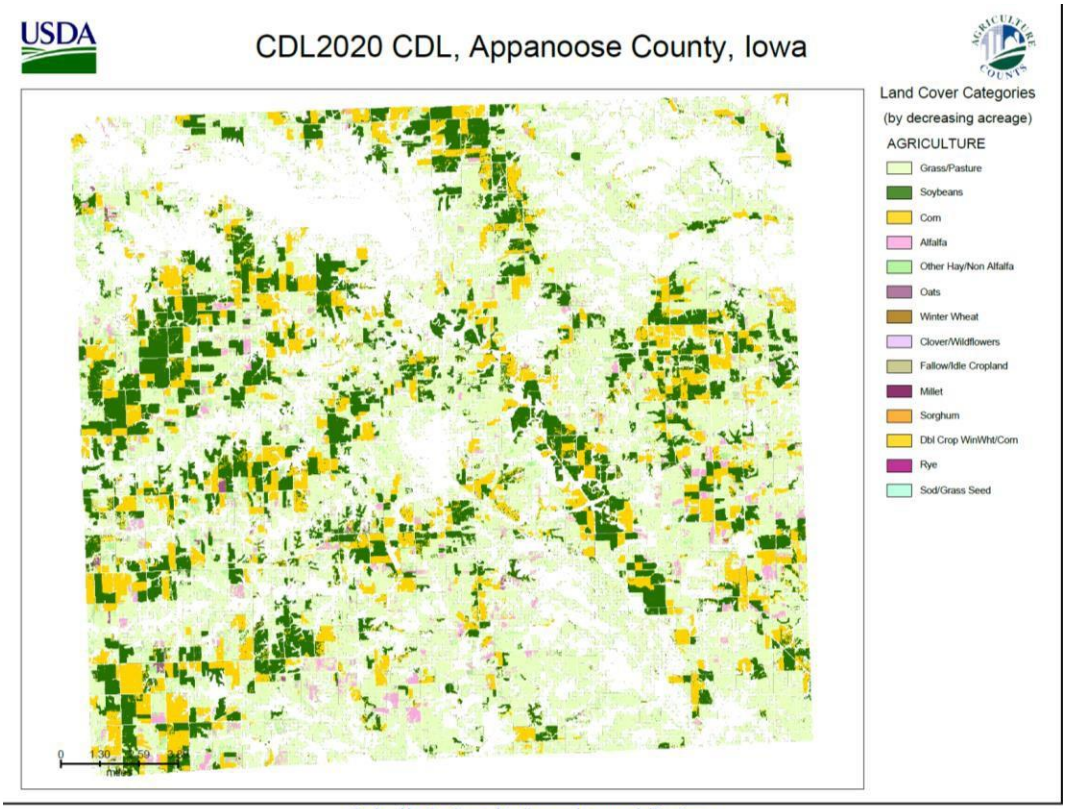
Exhibit 50: Wayne County Maximum Population & Building Exposure Animal/Plant/Crop Disease
2017 U.S. Agricultural Census

743 Farms in Wayne County	Estimated Market Values per farm		Type of Livestock	Estimated number in Wayne County
Land & buildings	$1,632,207		Cattle & calves	30,664
Machinery & Equipment	$159,124		Hogs & pigs	32,577
Ag product Sold	$123,524			

The movement of people, animals, animal products, wildlife, plants, crops, and potential disease/pest vectors could all cause the introduction of diseases/pests. Diseases/pests could also be introduced naturally, for example by hurricanes or jet streams. Emerging disease is also a threat such as West Nile Virus, new more virulent influenza strains, etc. Because many diseases/pests are not present in Iowa, our populations of animals, crops, and plants have no immunity and are highly susceptible.

As seen in Exhibit 51 the greatest USDA Cropland Data Layers are shown as grass/pasture, soybeans, and corn.

Exhibit 51: USDA Crop Coverage Maps



Historical Occurrences

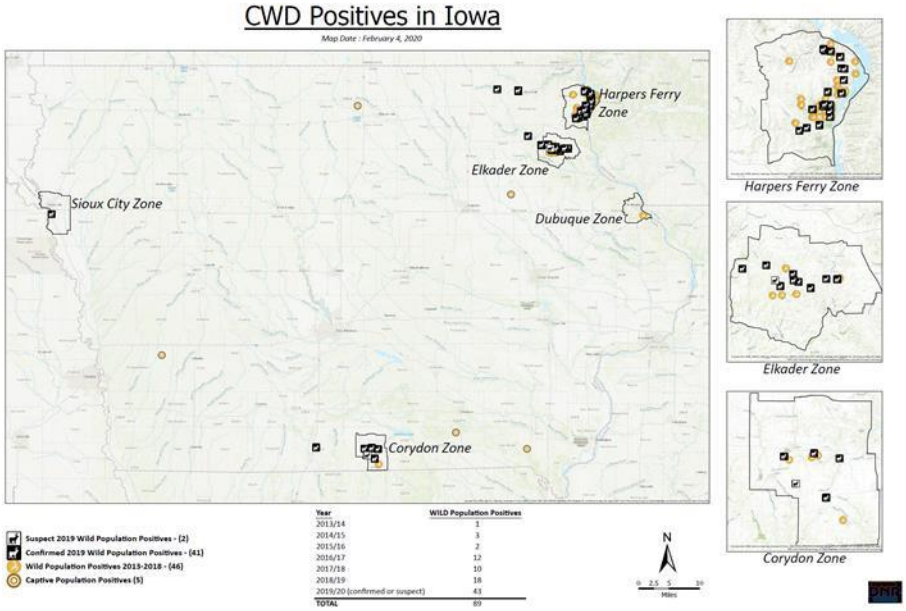
In Iowa, there are several major reportable animal diseases, which include the Avian Flu, Bovine Spongiform Encephalopathy (BSE or Mad Cow Disease), Chronic Wasting Disease, Exotic Newcastle Disease, Foot and Mouth Disease, Johne's Disease, Pseudorabies, Scrapies, and West Nile Virus. Reports from the Iowa Department of Agriculture and Land Stewardship (IDALS) and the Center for Food Security and Public Health at Iowa State University indicate minimal or no recent cases of most reportable animal disease in Iowa. The IDALS website reports only three Animal Health Alter Network alerts since August 2012.

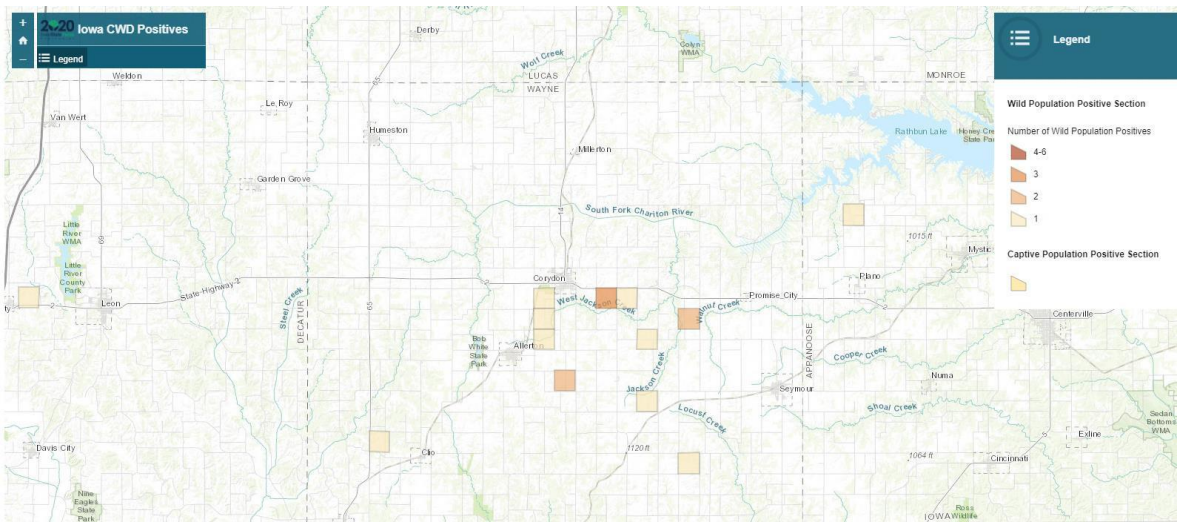
The U.S. saw the largest ever outbreak of highly pathogenic avian influenza in 2014-2015. Iowa was among one of the hardest hit states in the nation. The H5N2 strain struck 70 premises of commercial or backyard flocks in Iowa and

nationwide over 50 million commercial birds were lost to the virus or depopulation efforts meant to stop the spread of the disease. The outbreak led to an estimated $1.6 billion in direct losses and $3.3billion impact in US economy. In Iowa, the most significantly affected area was in the northwestern part of the state.

The Scrapie disease primarily affects sheep and incidences have significantly decreased over the past decade. Four areas of Iowa have confirmed cases of Chronic Wasting Disease (CWD) in captive Whitetail deer. Those herds were depopulated. CWD has also been observed in wild deer populations in four Iowa counties. Multiple documented cases were reported in Wayne County.

Exhibit 52: CWD Positive Locations in Iowa





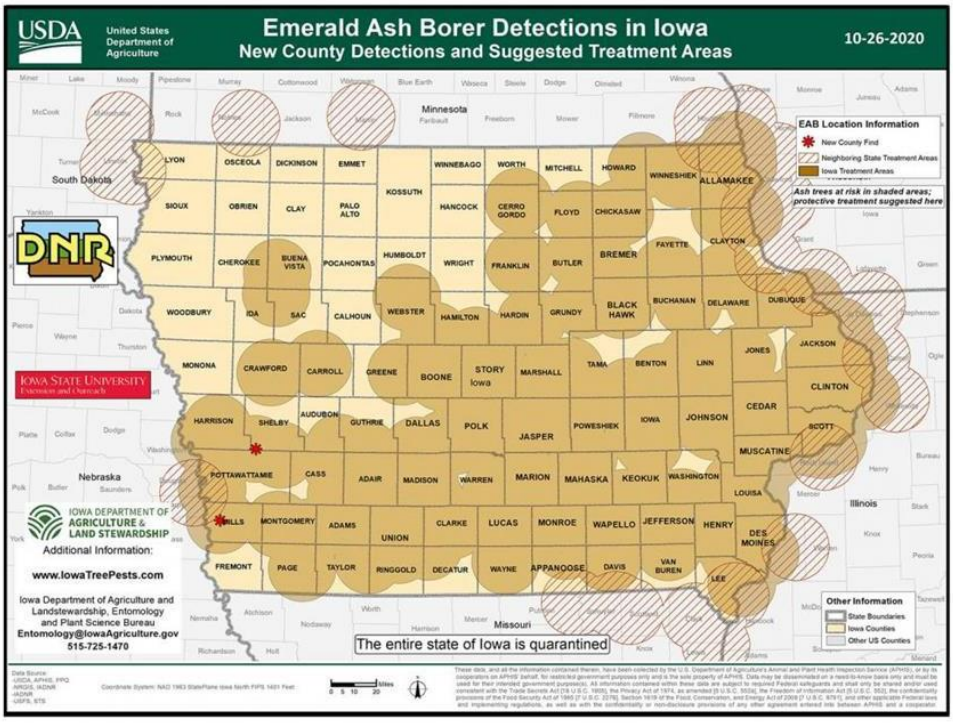
Iowa had 73 West Nile Virus cases in 2018, which was the second highest number since record keeping in 2003.

There were 10 confirmed cases of rabies in Iowa in 2017, which was 48% lower than the previous year and 8 of those were observed in wild animals. There were no confirmed cases in the Wayne County.

Plant disease and infestation occur throughout Iowa, but most cases are relatively isolated and have not reached an outbreak level. For Iowa's major crops, chemical and non-chemical methods are used to prevent and manage disease and infestations. Reports from Iowa State University Extension and Outreach have confirmed cases of historically uncommon crop disease like Physoderma, which is a fungus that can cause corn stalk to break, and Goss's Wilt, a bacterium that can destroy a corn plant. Disease affecting seedlings in corn and soybean crops were reported in 2013, primarily in southeast Iowa. In addition, pest populations that are resistant to genetic modification and chemical management methods have been confirmed across Iowa.

A major concern for the Iowa landscape is the Emerald Ash Borer, which is a beetle that infests and kills ash trees in large numbers. Efforts to eradicate beetle populations have proven to be too great to effectively protect a large area. In early 2014, the presence of the borer was confirmed in southern Iowa. (See Exhibit 53) The presence of the beetle was confirmed in Wayne County prior to 2018. A statewide quarantine is in place to prevent the spread of the insect to other states. Iowans are discouraged from transporting firewood to other counties in the state to prevent a statewide infestation.

Exhibit 53: Emerald Ash Borer Location in Iowa



Every year the Iowa Department of Agriculture and Land Stewardship (IDALS) conduct numerous animal disease investigations. In 2005, IDALS and USDA conducted 19 highly infectious disease investigations. Fortunately, the investigation results are negative. IDALS, under the direction of the state plant regulatory official works with Iowa's universities and industries to conduct regular crop/plant pest surveillance. Committee members indicate that there have been small amounts of Foot and Mouth Disease and random other disease the livestock can contract over the years. The incidents are small in numbers and where of no major concerns that have ever developed from them. Members discussed small bouts of Foot and Mouth Disease among livestock owners but acknowledge that it is not that uncommon and is not a widespread problem.

In 2014 the Avian Influenza A (H5N1), commonly referred to as the "Bird Flu" greatly affected the bird population in Iowa. By May of 2015 more than 9.5 million of cases have been reported throughout the state of Iowa. This includes 21 sites and spans across ten counties. Although it does not include Wayne County as this point, it is a very real possibility that the county will be affected. The governor recently declared a state of disaster to offer additional resources to handle this agricultural disaster.

The emerald ash borer (EAB), Agrilus planipennis, is an exotic insect pest from Asia. The flattened, creamy white larval stage feeds below the bark and cuts off the living, water and nutrient conducting vessels causing tree death. Adults are small elongated oval beetles that are metallic green in color. This insect colonizes the top of ash trees (Fraxinus species) first, then moves down the tree. EAB has been found in several Iowa counties. As of February 2014, all 99 counties in Iowa have been quarantined by the Iowa Department of Agriculture and Land Stewardship to slow the movement of this destructive pest to non-quarantined areas/states. A cooperative state and federal effort has developed the "Iowa Emerald Ash Borer Readiness Plan." EAB has also been found in 24 other states, including Illinois, Minnesota, Missouri, and Wisconsin, on Iowa's borders." (Iowa State University Extension & Outreach – Pesticide Safety Education Program)

Probability

An outbreak of disease that can be transmitted from animal to animal. The disease outbreak will likely have a significant economic implications or public health impact. The crop/plant pest infestation will likely have severe economic implications, cause significant crop production losses, or significant environmental damage. The crop/plant pests may also have implications for public health.

The movement of people, animals, animal products, wildlife, plants, crops, and potential disease/pest vectors could all cause the introduction of diseases/pests. Diseases/pests could also be introduced naturally, for example by hurricanes or jet streams. Emerging disease is also a threat such as West Nile Virus, new more virulent influenza strains, etc. Because many diseases/pests are not present in Iowa, our populations of animals, crops, and plants have no immunity and are highly susceptible.

Magnitude and Severity

If a major outbreak of an animal, plant, or crop disease were to occur in Wayne County, areas beyond the immediate location could potentially be impacted. If animals are affected, a major disease could significantly limit or eliminate the ability to move, slaughter, and export animals and animal products, which could result in a shutdown of facilities. A major disease outbreak could have widespread public health and economic impacts in Iowa, the nation and potentially the world. If crops and plants are affected there could be similar impacts to public health and industries associated with crops.

Warning Time

Animals and plants that are affected with a disease or pests can transmit the disease or pest before the issue is realized. Iowa would only have warning time if an event occurred in another state or region.

Duration

Response and recovery from a major disease or infestation is lengthy, with some producers potentially unable to sustain. Reoccurrence of diseases and infestations could cause repeated loss.

Hazard Scoring & Ranking

Exhibit 54: Animal, Plant & Crop Disease Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	1.08
Wayne County	2	2	4	4	2.5
Allerton	1	1	1	3	1.2
Clio	2	1	1	1	1.45
Corydon	1	1	-	-	-
Humeston	-	-	-	-	-
Lineville	-	-	-	-	-
Millerton	3	2	1	4	2.5
Promise City	2	1	1	3	1.65
Seymour	-	-	-	-	-

Tornado and Windstorm

A tornado is a violent whirling wind with a rotating funnel shaped cloud extending down. Rotating wind speeds can exceed 300 mph and travel across the ground at average speeds of 20-30 mph. A tornado path can be a few yards to a mile wide, but an average tornado is a few hundred yards wide. A tornado can move over land for distances ranging from short hops to miles.

Before 2007, the Fujita Scale was used to rate the magnitude of a tornado. The scale is a range of values for wind speed, frequency, average damage path width, and potential damage. The current rating scale is the Enhanced Fujita Scale, which uses more accurate ranges for wind speed and more detailed analysis of damage.

A windstorm is the extreme wind associated with severe storms. Windstorms may have a destructive path up to tens of miles wide. These events can produce straight line winds more than 64 knots. The Beaufort Scale, which ranges 0-12, is typically used to determine the magnitude of a windstorm.

Damage from severe thunderstorm winds account for half of all severe reports in the lower 48 states and is more common than damage from tornadoes. Wind speeds can reach up to 100mph and can produce a damage path extending for hundreds of miles. These winds are often called "straight-line" winds to differentiate the damage they cause from tornado damage. Strong thunderstorm winds can come from several different processes. Damaging winds are classified as those exceeding 50-60 mph.

Since most thunderstorms produce some straight-line winds because of outflow generated by the thunderstorm downdraft, anyone living in thunderstorm-prone areas of the world is at risk for experiencing this phenomenon.

High winds can result from thunderstorm inflow and outflow, or downburst winds when the storm cloud collapses, and can result from strong frontal systems, or gradient winds (high- or low-pressure systems) moving across a region. High winds are defined as speeds reaching 50 mph or greater, either sustaining (continuous) or gusting. Downdraft winds are from a strong thunderstorm downburst which causes damaging winds on or near the ground and can extend to as little as 2 ½ miles or extend over a hundred miles. Downdraft wind speeds can be from 80 mph up to 168 mph and occur quite suddenly as a thunderstorm cloud collapses. This is different from the winds associated with tornadoes. Winds associated with storms are convective. Non-convective winds are caused by fronts or gradient winds. These speeds can range from light breezes to sustained speeds of 80 to 100 mph. Windstorm/High Wind Events can be with little or no rain.

Exhibit 55: Wind Zones in the U.S.

Tornadoes are among the most unpredictable of weather phenomena. While tornadoes can occur almost anywhere in the world, they are most prevalent in the United States. According to the National Weather Service, about 42 people are killed because of tornadoes each year. Tornadoes

can occur in any state but are more frequent in the Midwest, Southeast, and Southwest. Tornado season runs ordinarily from March through August; however, tornadoes can strike at any time of the year if the essential conditions are present.

Thunderstorms and hurricanes spawn tornadoes when cold air overrides a layer of warm air, causing the warm air to rise rapidly. The winds produced from hurricanes, earthquake-induced fires, and wildfires have also been known to produce tornadoes. The frequency of tornadoes in the nation's midsection is the result of the recurrent collision of moist, warm air moving north from the Gulf of Mexico with colder fronts moving east from the Rocky Mountains.

Tornadoes were measured in intensity with the Fujita Scale which was then updated with the Enhanced Fujita Scale (EFS) in 2006. The EFS lowers the Fujita Scale threshold for each category ranging from 1 to 5 with 5 being the most intense with wind speeds more than 200 mph for at least 3 seconds (wind gusts). An additional scale is available called the Fujita-Pearson Scale which matches the Fujita Scale ratings and wind speeds with tornado path lengths and widths.

Exhibit 56: Fujita Scale

ORIGINAL FUJITA SCALE		ENHANCED FUJITA SCALE	
F5	261-318 mph	EF5	+200 mph
F4	207-260 mph	EF4	166-200 mph
F3	158-206 mph	EF3	136-165 mph
F2	113-157 mph	EF2	111-135 mph
F1	73-112 mph	EF1	86-110 mph
F0	<73 mph	EF0	65-85 mph

Source: National Oceanic and Atmospheric Administration, http://www.srh.noaa.gov/lch/jamb/jambalaya0407-5.php

Exhibit 57: Tornado Paths - LENGTH and Width

FUJITA-PEARSON TORNADO SCALE				
PEARSON RATING	LENGTH	WIDTH	FUJITA RATING	WIND SPEED
P0	0.3 - 0.9 MILES	6-17 YARDS	F0	40-72 MPH
P1	1.0-3.1 MILES	18-55 YARDS	F1	73-112 MPH
P2	3.2-9.9 MILES	56-175 YARDS	F2	113-157 MPH
P3	10.0-31.0 MILES	176-566 YARDS	F3	158-206 MPH
P4	32.0-99.0 MILES	0.3-0.9 MILES	F4	207-260 MPH
P5	100.0-315.0 MILES	1.0-3.1 MILES	F5	261-318 MPH

Source: http://www.stormfax.com/fujita.htm

The Beaufort Wind Scale shown below identifies winds over 73 mph as hurricane-force winds with accompanying damage.

Exhibit 58: Beaufort Wind Scale

Beaufort Number	Wind Speed (miles/hour)	Wind Speed (km/hour)	Wind Speed (knots)	Description	Wind Effects on Land
0	<1	<1	<1	Calm	Calm. Smoke rises vertically.
1	1-3	1-5	1-3	Light Air	Wind motion visible in smoke.
2	4-7	6-11	4-6	Light Breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	12-19	7-12	Gentle Breeze	Leaves and smaller twigs in constant motion.
4	13-18	20-28	11-16	Moderate Breeze	Dust and loose paper are raised. Small branches begin to move.
5	19-24	29-38	17-21	Fresh Breeze	Small trees begin to sway.
6	25-31	39-49	22-27	Strong Breeze	Large branches are in motion. Whistling is heard in overhead wires. Umbrella use is difficult.
7	32-38	50-61	28-33	Near Gale	Whole trees in motion. Some difficulty experienced walking into the wind.
8	39-46	62-74	34-40	Gale	Twigs and small branches break from trees. Cars veer on road.
9	47-54	75-88	41-47	Strong Gale	Larger branches break from trees. Light structural damage.
10	55-63	89-102	48-55	Storm	Trees broken and uprooted. Considerable structural damage.
11	64-72	103-117	56-63	Violent Storm	Widespread damage to structures and vegetation.
12	>73	>117	>64	Hurricane	Considerable and widespread damage to structures and vegetation. Violence.

Potential Hazard Area

A tornado is a violently rotating column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of 250 mph or more. Damage paths can be more than 1 mile wide and 50 miles long (FEMA 386-2 CD).

Historical Occurrences

The most severe tornado events that occurred in Wayne County was an EF2 rated, but the majority have been F1 or F0. Based on historical occurrences, the region will most likely be affected by a low rated tornado in the next five years although a higher magnitude tornado is possible.

Windstorms with gale force winds have also occurred in the region. Based on historical data, the region will most likely be affected by windstorm events rated 8 or higher on the Beaufort Scale, although hurricane force winds are possible.

During a tornado and windstorm event, everyone located in or near the path of the tornado is vulnerable. There are several groups of people who are especially vulnerable during tornado events. These people include mobile or manufactured

home residents, outdoor recreation and campground visitors, outdoor workers, motorists, elderly, young, disabled individuals with limited mobility and residents or workers in buildings without basements.

Generally, the destructive path of a tornado is a few hundred feet in width, but stronger tornadoes can leave a path of devastation up to a mile wide. Large hail, strong straight-line winds, heavy rains, flash flooding and lightning are also associated with severe storms and may cause considerable damage to a wider area. Tornado events rarely destroy entire neighborhoods or even communities.

Windstorms can have a destructive path that is several miles wide. Large hail, strong straight-line winds, heavy rains, flash flooding and lightning are also associated with windstorms and may cause considerable damage to a wider area. It is often difficult to separate windstorms and tornado damage when wind speed exceeds 64 knots.

Damage from a tornado or windstorm can range from broken tree branches, shingle damage to roofs and broken windows all the way to complete destruction of well-constructed buildings, infrastructure, and large trees. Tornadoes can also impact critical services, especially electrical power. Buried services such as water and gas are less vulnerable but can be negatively affected by their system components located above ground.

For Iowa and Wayne County, it is important to note varying degrees of crop damage can occur during a tornado or windstorm event. Wind can flatten fields, break plant stalks, or twist plants. Windstorm events can destroy a crop or cause limited damage that can reduce crop yields. Both circumstances can cause economic hardship for the agricultural sectors of Iowa and the county.

People living in mobile homes, homes that are built prior to building codes and homes in deteriorating conditions are particularly vulnerable to high winds. People in automobiles and campground are also at a greater risk. Generally, an injury is minor and seldom is death associated with a windstorm.

Committee members discussed the most vulnerable locations as campgrounds at Bobwhite, Corydon Lake, Lakeside (near Humeston), and Moore/Gosch Park, as well as mobile homes located throughout the region. Also, of critical concern is the aged (and possibly weak) housing structure in the area. See Exhibit 59.

Exhibit 59: Vulnerable Structures
2019 ACS

Jurisdiction	Number of Mobile Homes	Avg % of total mobile homes	Number of homes built prior to 1950	% Of homes built prior 1950
Allerton	31	12.2%	143	56.1%
Clio	0	0	27	79.4%
Corydon	44	5.6%	402	51.6%
Humeston	30	12%	85	34.1%
Lineville	14	9.9%	58	40.9%
Millerton	0	0	5	9%
Promise City	3	4.8%	43	68.2%
Seymour	23	6.6%	217	61.8%
TOTAL WAYNE CO	256	8%	1,358	42.3%

If a tornado or windstorm were to occur in Wayne County, the magnitude and severity would likely be limited. A future tornado event may result in injuries that do not result in permanent disability, 10%-25% of a jurisdiction's property severely damaged, and shutdown of facilities and services for approximately a week. This magnitude and severity estimated is based on historical occurrences, parameters defined in the *Iowa Hazard Mitigation Plan 2018* and local knowledge.

In the U.S., Iowa is ranked third in the number of tornadoes per 10,000 square miles. From 2017-2020, Iowa experienced 213 tornados or averaged 53 twisters per year. In Iowa most tornadoes occur in the spring and summer months, but twisters can and have occurred in every month of the year. Late afternoon to evening hour tornadoes are the most common, but they can occur at any time of the day. Historically, 40-50 tornadoes are confirmed in Iowa each year.

a. Injury or death related to tornadoes most often occurs when buildings collapse; people are hit by flying objects or are caught trying to escape the tornado in a vehicle.
b. Response personnel are exposed to the same risk as the public when caught in the storm without shelter.
c. Tornadoes can destroy government facilities just as they could other property. Disruption of critical services can also affect operations. Employees may be affected and unable to attend work-related issues.
d. Impacts can range from broken tree branches, shingle damage to roofs, and some broken windows, all the way to complete destruction and disintegration of well-constructed structures, infrastructure, and trees.
e. Tornadoes can impact many critical services, mainly electrical power. Buried services are not as vulnerable but can be affected by their system components that are above ground.
f. Tornadoes are naturally occurring phenomena. Damages to the environment could result from spills and other contaminants from the built environment.
g. Whole towns have been known to be "wiped off the map" such as Greensburg, KS in recent years. Economic impacts can result from direct damages to facilities or business disruption from the lack of critical services such as power, gas, or water.
h. Debris removal is a vital service that is often too vast for the jurisdiction to do without contractual assistance. These plans should be in place and monitored; a debris management plan is in progress including Wayne County.

Adequate warning is critical to the positive reputation of the jurisdiction. Responding in a timely manner and reconstructing the community is also important. Bringing critical services back online quickly will ensure the residents can begin their personal recovery process sooner.

Wayne County has had 7 recorded Tornadoes between 2000 and 2017. None of these Tornadoes has exceeded F2 status. A total of eight injuries, $2.251 million in property damage. The most recent tornado in 2017 is displayed as affecting "Genoa". This in an unincorporated region of the county, however, the city of Seymour was greatly impacted. Multiple houses were destroyed, and the local school building received significant damage.

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	2.251M	0.00K
CORYDON	WAYNE CO.	IA	06/23/2000	13:18	CST	Tornado	F0	0	0	1.00K	0.00K
SEWAL	WAYNE CO.	IA	03/21/2007	23:39	CST-6	Tornado	EF0	0	0	150.00K	0.00K
SEYMOUR	WAYNE CO.	IA	10/02/2007	16:35	CST-6	Tornado	EF1	0	0	100.00K	0.00K
LINEVILLE	WAYNE CO.	IA	04/10/2008	15:33	CST-6	Tornado	EF0	0	0	0.00K	0.00K
CAMBRIA	WAYNE CO.	IA	04/10/2008	15:49	CST-6	Tornado	EF0	0	0	0.00K	0.00K
SEWAL	WAYNE CO.	IA	11/11/2015	14:57	CST-6	Tornado	EF0	0	0	0.00K	0.00K
GENOA	WAYNE CO.	IA	03/06/2017	20:16	CST-6	Tornado	EF2	0	0	2.000M	0.00K
Totals:								0	0	2.251M	0.00K

High winds have been responsible for 72 recorded events since 1993 in Wayne County. However, many other high wind events are on record combined with thunderstorms since 1965. High winds tend to affect a large area so an event that impacts Wayne County is likely to include surrounding counties as well. The numbers charted below encompass more than Wayne County and so the impacts within the county are far less severe. One of the most significant events was on November 10, 1998, which affected 52 counties and resulted in $17.3 million in property damage, $260 thousand in crop damages, and one death. This amounts to about $333 thousand in property damage on average per county, however it is unlikely that each of the affected counties were impacted equally. The chart below provides a summary of NOAA recorded high wind events in the past five years; property and crop damages are in thousands of dollars.

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	650.11K	5.10K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/17/1996	21:00	CST	High Wind	55 kts.	0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/10/1996	12:00	CST	High Wind	56 kts.	0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	03/24/1996	17:00	CST	High Wind	54 kts.	0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/25/1996	09:30	CST	High Wind	52 kts.	0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	10/29/1996	11:00	CST	High Wind	57 kts.	0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/06/1997	09:00	CST	High Wind	55 kts.	0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/30/1997	12:00	CST	High Wind	52 kts.	0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/12/1998	08:00	CST	High Wind		0	0	50.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	11/10/1998	02:00	CST	High Wind	61 kts.	0	0	300.00K	5.10K
WAYNE (ZONE)	WAYNE (ZONE)	IA	03/08/2000	11:00	CST	High Wind	50 kts. E	0	0	10.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/07/2001	04:00	CST	High Wind	50 kts. M	0	0	50.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	03/09/2002	06:00	CST	High Wind	M	0	0	50.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/18/2004	15:10	CST	High Wind	35 kts. MS	0	0	80.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/27/2004	12:30	CST	High Wind	35 kts. MS	0	0	75.11K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/24/2006	09:30	CST	High Wind	37 kts. MS	0	0	10.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	01/26/2014	15:00	CST-6	High Wind	37 kts. ES	0	0	25.00K	0.00K
Totals:								0	0	650.11K	5.10K

High winds are also often associated with thunderstorms. NOAA has indicated 37 events of thunderstorm winds occurred in the past 20 years. The strongest wind was generated in March of 2007 at 70 knots. The most significant property damage came from a thunderstorm wind in September 2016 when an estimated $75K occurred. August of 2007 had the most extensive crop damage from thunderstorm wind with $65K.

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	832.00K	144.00K
CORYDON	WAYNE CO.	IA	06/23/2000	13:30	CST	Thunderstorm Wind	61 kts. E	0	0	20.00K	2.00K
PROMISE CITY	WAYNE CO.	IA	06/23/2000	13:40	CST	Thunderstorm Wind	61 kts. E	0	0	20.00K	2.00K
CORYDON	WAYNE CO.	IA	06/25/2000	17:49	CST	Thunderstorm Wind	52 kts. E	0	0	3.00K	0.00K
CORYDON	WAYNE CO.	IA	06/25/2000	17:57	CST	Thunderstorm Wind	52 kts. E	0	0	2.00K	0.00K
SEYMOUR	WAYNE CO.	IA	06/04/2001	03:00	CST	Thunderstorm Wind	52 kts. E	0	0	7.00K	0.00K
HUMESTON	WAYNE CO.	IA	06/14/2001	14:25	CST	Thunderstorm Wind	61 kts. E	0	0	10.00K	0.00K
SEYMOUR	WAYNE CO.	IA	09/07/2001	21:30	CST	Thunderstorm Wind	61 kts. E	0	0	25.00K	5.00K
HUMESTON	WAYNE CO.	IA	07/05/2003	18:14	CST	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
ALLERTON	WAYNE CO.	IA	07/05/2003	19:04	CST	Thunderstorm Wind	61 kts. EG	0	0	5.00K	0.00K
ALLERTON	WAYNE CO.	IA	07/05/2003	19:06	CST	Thunderstorm Wind	61 kts. EG	0	0	10.00K	0.00K
CORYDON	WAYNE CO.	IA	08/05/2003	16:04	CST	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
HUMESTON	WAYNE CO.	IA	08/20/2003	13:50	CST	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
CORYDON	WAYNE CO.	IA	08/27/2003	14:20	CST	Thunderstorm Wind	61 kts. EG	0	0	5.00K	50.00K
CORYDON	WAYNE CO.	IA	05/24/2004	19:19	CST	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
SEYMOUR	WAYNE CO.	IA	05/24/2004	19:47	CST	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
ALLERTON	WAYNE CO.	IA	05/30/2004	00:00	CST	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
CLIO	WAYNE CO.	IA	08/03/2004	22:15	CST	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
HUMESTON	WAYNE CO.	IA	08/18/2004	16:48	CST	Thunderstorm Wind	53 kts. MG	0	0	3.00K	0.00K
HUMESTON	WAYNE CO.	IA	08/26/2004	20:35	CST	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
CORYDON	WAYNE CO.	IA	06/04/2005	19:45	CST	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
HARVARD	WAYNE CO.	IA	03/21/2007	23:43	CST-6	Thunderstorm Wind	70 kts. EG	0	0	30.00K	0.00K
SEYMOUR	WAYNE CO.	IA	03/21/2007	23:49	CST-6	Thunderstorm Wind	70 kts. EG	0	0	30.00K	0.00K
SEYMOUR	WAYNE CO.	IA	03/21/2007	23:51	CST-6	Thunderstorm Wind	70 kts. EG	0	0	30.00K	0.00K
HUMESTON	WAYNE CO.	IA	08/07/2007	16:44	CST-6	Thunderstorm Wind	61 kts. EG	0	0	30.00K	5.00K
PROMISE CITY	WAYNE CO.	IA	08/22/2007	17:17	CST-6	Thunderstorm Wind	57 kts. EG	0	0	10.00K	65.00K
CORYDON	WAYNE CO.	IA	09/18/2007	15:44	CST-6	Thunderstorm Wind	60 kts. MG	0	0	15.00K	0.00K
CAMBRIA	WAYNE CO.	IA	09/18/2007	15:47	CST-6	Thunderstorm Wind	57 kts. EG	0	0	10.00K	10.00K
CORYDON	WAYNE CO.	IA	09/18/2007	15:50	CST-6	Thunderstorm Wind	57 kts. EG	0	0	10.00K	5.00K
CORYDON	WAYNE CO.	IA	09/18/2007	16:00	CST-6	Thunderstorm Wind	65 kts. EG	0	0	40.00K	0.00K
GENOA	WAYNE CO.	IA	04/10/2008	15:52	CST-6	Thunderstorm Wind	65 kts. EG	0	0	40.00K	0.00K
LINEVILLE	WAYNE CO.	IA	05/25/2008	21:15	CST-6	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
SEYMOUR	WAYNE CO.	IA	05/25/2008	21:33	CST-6	Thunderstorm Wind	52 kts. EG	0	0	15.00K	0.00K
SEWAL	WAYNE CO.	IA	06/01/2008	18:00	CST-6	Thunderstorm Wind	61 kts. EG	0	0	30.00K	0.00K
CORYDON	WAYNE CO.	IA	06/15/2008	10:22	CST-6	Thunderstorm Wind	52 kts. EG	0	0	15.00K	0.00K
SEWAL	WAYNE CO.	IA	06/15/2008	10:30	CST-6	Thunderstorm Wind	57 kts. EG	0	0	10.00K	0.00K
SEYMOUR	WAYNE CO.	IA	06/15/2008	10:37	CST-6	Thunderstorm Wind	57 kts. EG	0	0	10.00K	0.00K
HUMESTON	WAYNE CO.	IA	07/27/2008	17:10	CST-6	Thunderstorm Wind	52 kts. MG	0	0	3.00K	0.00K
CAMBRIA	WAYNE CO.	IA	07/27/2008	17:16	CST-6	Thunderstorm Wind	61 kts. EG	0	0	5.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	06/18/2010	19:45	CST-6	Thunderstorm Wind	65 kts. EG	0	0	50.00K	0.00K
SEYMOUR	WAYNE CO.	IA	06/18/2010	20:09	CST-6	Thunderstorm Wind	52 kts. EG	0	0	3.00K	0.00K
BETHLEHEM	WAYNE CO.	IA	05/21/2011	20:48	CST-6	Thunderstorm Wind	52 kts. EG	0	0	3.00K	0.00K
BETHLEHEM	WAYNE CO.	IA	07/23/2011	17:49	CST-6	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	07/23/2011	17:49	CST-6	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	07/23/2011	18:07	CST-6	Thunderstorm Wind	57 kts. EG	0	0	10.00K	0.00K
SEYMOUR	WAYNE CO.	IA	07/23/2011	18:13	CST-6	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
CORYDON	WAYNE CO.	IA	06/24/2013	12:15	CST-6	Thunderstorm Wind	61 kts. EG	0	0	20.00K	0.00K
HARVARD	WAYNE CO.	IA	04/12/2014	22:05	CST-6	Thunderstorm Wind	56 kts. EG	0	0	35.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	04/12/2014	22:18	CST-6	Thunderstorm Wind	65 kts. EG	0	0	20.00K	0.00K
ALLERTON	WAYNE CO.	IA	06/10/2015	18:15	CST-6	Thunderstorm Wind	56 kts. EG	0	0	25.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	07/28/2015	20:50	CST-6	Thunderstorm Wind	60 kts. EG	0	0	15.00K	0.00K
CORYDON	WAYNE CO.	IA	11/11/2015	15:05	CST-6	Thunderstorm Wind	56 kts. EG	0	0	5.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	11/11/2015	15:19	CST-6	Thunderstorm Wind	56 kts. EG	0	0	30.00K	0.00K
CORYDON	WAYNE CO.	IA	07/19/2016	13:37	CST-6	Thunderstorm Wind	56 kts. EG	0	0	5.00K	0.00K

SEYMOUR	WAYNE CO.	IA	07/19/2016	13:48	CST-6	Thunderstorm Wind	56 kts. EG	0	0	5.00K	0.00K
CORYDON	WAYNE CO.	IA	09/19/2016	17:21	CST-6	Thunderstorm Wind	61 kts. EG	0	0	20.00K	0.00K
HARVARD	WAYNE CO.	IA	09/19/2016	17:24	CST-6	Thunderstorm Wind	61 kts. EG	0	0	75.00K	0.00K
SEYMOUR	WAYNE CO.	IA	03/06/2017	20:20	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
HUMESTON	WAYNE CO.	IA	05/29/2018	16:14	CST-6	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
SEYMOUR	WAYNE CO.	IA	07/20/2019	18:10	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
Totals:								0	0	832.00K	144.00K

Probability

According to the Iowa Hazard Mitigation Plan 2018, Iowa averages 35 tornadoes per year. They are common across the state and seven tornadoes have been documented in Wayne County from 2000-2020. Funnel clouds, which are strong indicator of tornadoes, have been documented less often but have occurred several times. The average period between tornado and funnel cloud events is two years.

The entire United States is subject to various types of windstorm events. According to the Iowa Hazard Mitigation Plan 2018, Iowa experienced more than 1,500 windstorm events, including wind associated with thunderstorms, straight line wines and funnel clouds. Including the high wind events show in charts above. Wayne County has experienced wind events every year.

Looking toward the future, it is highly likely a tornado or windstorm event will occur in the region within the next five years. The estimated probability of a tornado event is approximately once every three years. This probability is based on historical occurrences, parameters defined in the *Iowa Hazard Mitigation Plan 2018* and local knowledge.

Magnitude and Severity

Wayne County is in the path known as "Tornado Alley" in the United States in which Tornadoes are most frequent. Tornado damage can be minimal from minor roof damage, broken glass, and windows to the extreme of destruction. People living in manufactured homes are particularly vulnerable to extreme wind events or Tornadoes. Older homes in deteriorating condition are also vulnerable, however there is no information about the number of homes needing rehabilitated. There are 1372 housing units located in the unincorporated areas of the County. It was acknowledged by the HMGP committee that there are many variables that dictate the vulnerability of structures or injured people. These factors include wind speed, time on the ground, length/width of the cell, population density, building density, age & construction of buildings and time of day. It was determined regardless of the strength; the most vulnerable population is the elderly, very young, people with disabilities, mobile homes, and structures that are prior to 1950's.

High winds can cause minor damage to major damage to homes and other buildings. Outdoor furniture, trash cans, yard debris, out buildings and other materials in the immediate vicinity of homes can become air borne missiles and dangerous to people and livestock. Loose shingles, broken tree limbs or trees down are also highly possible.

People living in mobile homes, homes that are built prior to building codes and homes in deteriorating conditions are particularly vulnerable to high winds. People in automobiles and campground are also at a greater risk. Generally, an injury is minor and seldom is death associated with a windstorm.

Committee members discussed the most vulnerable locations as the four campgrounds throughout the county and the mobile homes located throughout the county. Also, of critical concern is the aged (and possibly weak) housing structure in the area.

Exhibit 60: Vulnerable structures			
Number of Mobile Homes	**Number of homes built prior to 1960**	**Number of Camp slots at lakes in County (Bobwhite, Corydon Lake, Lakeside by Humeston, & Moore/Gosch Park)**	
256 8.0%	1,552 48.3%	101	**2019 ACS**

If a tornado or windstorm were to occur in Wayne County, the magnitude and severity would likely be limited. A future tornado event may result in injuries that do not result in permanent disability, 10%-25% of a jurisdiction's property severely damaged, and shutdown of facilities and services for approximately a week. This magnitude and severity estimated is based on historical occurrences, parameters defined in the *Iowa Hazard Mitigation Plan 2018* and local knowledge.

Exhibit 61: Maximum Population Exposure 2019 ACSs					
Jurisdiction	**Population 65yrs & older**	**Population 18 years& younger**	**Population living below poverty guidelines**	**Residents living with a diagnosed disability**	**Old English Amish Population**
County (6,429)	1,395 21.7%	1,618 25.2%	1,106 17.2%	922 16.4%	Estimated at 1,200
Allerton (513)	71 14.3%	168 33.8%	132% 64	17 14.5%	
Clio (66)	19 29%	12 18.2%	2 3%	7 10.6%	
Corydon (1,628)	373 23%	416 25.6%	238 14.6%	254 16.6%	
Humeston (484)	132 27.3%	121 25%	39 8%	108 22.3%	
Lineville (259)	41 15.8%	43 16.6%	47 18%	33 12.7%	
Millerton (108)	5 5%	33 30.6%	10 9.3%	1 1%	
Promise City (78)	18 23%	13 16.7%	15 19.2%	19 24.4%	
Seymour (567)	165 29%	113 19.9%	139 24.6%	125 22%	

Exhibit 62: Vulnerable Residential Structures				
Jurisdiction	**Number of Mobile Homes**		**Number of homes built prior to 1960**	
Unincorporated Co				
Allerton	31	12.2%	149	58.5%
Clio	0		29	85.3%
Corydon	44	5.6%	448	57.5%
Humeston	30	12%	98	39.3%
Lineville	14	9.9%	68	47.9%
Millerton	0		37	66.1%
Promise City	3	4.8%	44	69.8%
Seymour	23	6.6%	245	69.8%

2019 ACS

Exhibit 63: Maximum Population and Building Exposure Hazard Area 100% of Jurisdiction
**Per County Assessor & Auditor

	Residential Structures		**People (2019 ACS)**	**Commercial Structures**		**Industrial Structures**		**Agricultural Structures**	
	Number	**Value**	**Number**	**Number**	**Value**	**Number**	**Value**	**Number**	**Value**
Corydon	653	$46,228.630	1,628	154	$6,444,244	30	$1,646,910	--	$16,950
Seymour	300	$14,229,890	567	43	$2,391,070	--	--	--	$202,140
Promise City	53	$1,499,540	78	11	$323,660	--	--	--	$290
Allerton	214	$10,573,630	513	39	$1,133,490	23	$3,684,410	--	$27,540
Humeston	229	$11,579,130	484	105	$4,842,602	--	--	--	$44,280
Millerton	21	$583,570	108	8	$113,350	--	--	--	$15,530
Lineville	108	$3,996,920	259	24	$1,491,440	1	$96,330	--	$34,840
Clio	33	$1,021,740	66	37	$786,130	--	--	--	$16,950
Unincorp County	1,372	$132,846,220	2,726	59	$5,095,986	12	$3,394,880	--	$9,219,010

Corydon

Facility	Location	Assessed Value
Lift stations (W&E)		
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community Bldg	501 S East St	$179,730
Sewer Lagoon	South St	
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
10.Fire Station(new)	213 S Washington St	$136,900
Bath House (historical)	100 McKinley St	
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Water Dept		$20,340
Murphy Place Senior Housing	511 E Jackson	$875,890
Emergency Shelter locations		
Golf Course		$454,340
Sports Complex		
Fairgrounds		$273,330
Extension Office	220 E Jefferson	$132,670
Corydon Nursing & Rehab (Shelter Site)		
Walden Park Club House (Shelter Site)		
Corydon Head start	605 S West St	
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510
Private In-home Daycare	2018 170 St	
Private In-Home Daycare	507 W Monroe St	
Private In-Home Daycare	418 W Madison St	
Private In-Home Daycare	1615 80th St	

Millerton

Facility	Location	Assessed Value
Lift station		
Post Office	313 N Main	
Sewer Lagoon		
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
Lift station	North edge of town	
City Hall/ community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310
Sewer Lagoon	South of town	

Seymour

Facility	Location	Assessed Value
N. Lift station	625 N 5th	
S Lift Station	Southlawn Cemetery	
Lagoon	J46	
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint Bldg	522 West Wall	
Water Plant	118 N 6th	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Water Tower		
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
Lift station		
City Hall/community center (shelter site	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440
Public Housing		$204,950
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main st	$20,000
Library		$10,110

Lineville

Facility	Location	Assessed Value
Lift station	West 3rd St	
City Hall/ community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Sewer Lagoon	East Line St	
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Medical Clinic		$149,440
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170
Private In-Home Daycare	805 Main St	

Humeston

Facility	Location	Assessed Value
Lift station	6th & Blevens	$22,410
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Water Tower		
Library		$375,480
Medical Clinic		
Elementary School		$60,000
Public Housing		
Humeston Senior Center (Shelter Site)		
Storage & Shop		$130,940

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	Scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	
Nelson Round Barn (historical)	South of Allerton	
Pleasant Hill School (historical)	3 miles north of Lineville	

Loss Estimates

Countywide damage was established from the NCDC data base for some hazards up to 65 years. Loss factors were developed specific to the attributes of tornado throughout the region. These factors were able to provide an annual damage estimate by dividing the total loss by number of years of data. Per event damage calculated by dividing total loss by number of events. During the past 20 years, there have been 7 tornado events that caused $2,250,000 in damage. This estimates $112,500 annually in tornado damage to Wayne County. This timeframe did not experience any crop damage. Iowa State Mitigation Plan estimates an annual average loss of $404,000.

Loss factors were developed specific to the attributes of High Wind throughout the region. These factors were able to provide an annual damage estimate by dividing the total loss by number of years of data. Per event damage calculated by dividing total loss by number of events. During the past 24 years, approximately sixteen windstorms have caused $650,110 in damages. This estimates $27,088 annually. This timeframe Wayne County experienced approximately $5,100 in crop damage and estimates damaged $213 annually.

Warning Time

Advancement in weather forecasting has allowed tornado watches to be issued hours in advance of a tornado event. The best lead time is approximately 30 minutes. A tornado can change paths very rapidly limiting the amount of warning time for the people located in its path. Outside of weather forecasting, there may not be visible indicators of a tornado on the ground due to blowing dust or driving rain and hail that often is included in the storm and limits visibility.

A future tornado event in Wayne County will likely have minimal damage, less than six hours, or no warning time. The National Weather Service has developed a windstorm warning system that issues windstorm watches 12-24 hours in advance. Advisories are issued when existing or imminent windstorms could impact an area. Like tornado warnings, the typical warning time for a windstorm is 30 minutes. It is important to note that jurisdictions in Wayne County activate outdoor warning system for storm events that are predicted to have a wind speed of 70mph or greater, which are rated 11 and greater on the Beaufort scale. This warning time estimate is based on historical occurrences and local knowledge.

Duration

Normally a tornado will stay on the ground for no more than 20 minutes. However, a tornado can touch ground several times in different areas. Typically, local response during a tornado event is the immediate threat to life and property. After a tornado event, local response is for the individuals, services, and structures that are negatively impacted by the tornado.

Based on historical occurrences in the region, a series of tornadoes can develop in a few hours prolonging the amount of time jurisdictions can be impacted by a tornado event but the event lasts less than six hours. In Wayne County, a windstorm event can last several hours but usually not more than an entire day. This duration estimate is based on historical occurrences, parameters defined in the *Iowa Hazard Mitigation Plan 2018* and local knowledge.

Hazard Scoring & Ranking

Exhibit 64: Tornado & Windstorm Hazard Score Calculation					
	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall Scores	--	--	--	--	2.56
Wayne County	3	3	3	4	3.1
Allerton	3	2	2	1	1.9
Clio	1	1	1	1	1.0
Corydon	2	2	3	1	2.05
Humeston	3	3	2	1	2.65
Lineville	3	2	3	2	2.6
Millerton	4	2	3	1	2.95
Promise City	3	2	4	3	2.85
Seymour	1	3	4	4	2.35

Drought

Drought is a prolonged lack of precipitation that produces severe dry conditions. Four types of drought conditions are relevant in Iowa: meteorological drought, hydrological drought, agricultural drought, and socioeconomic drought. A meteorological drought is a lack of precipitation. A hydrological drought is a decline in surface and groundwater. An agricultural drought is a lack of moisture in soil, and socioeconomic drought is a shortage of water that affects people's daily usage.

There are three types of drought conditions that are relevant to Iowa:
METEORLOGIC DROUGHT: which refers to precipitation deficiency.

HYRDOLOGICAL DROUGHT: which refers to declining surface water and groundwater supplies.

AGRICULTURAL DROUGHT: which refers to soil moisture deficiencies.

Droughts can be spotty or widespread and last from weeks to a period of years. A prolonged drought can have serious economic impact on a community. Increased demand for water and electricity may result in shortages of resources. Moreover, food shortages may occur if agricultural production is damaged or destroyed by a loss of crops or livestock. While droughts are generally associated with extreme heat, droughts can and do occur during cooler months.

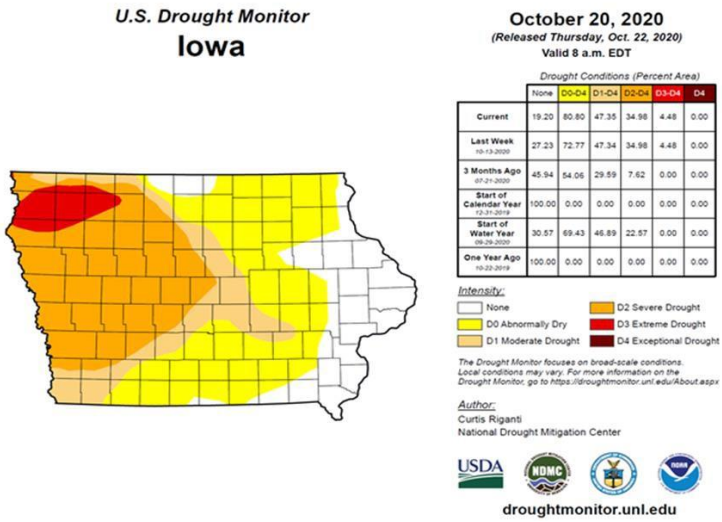
Potential Hazard Area

The potential hazard area for drought is across the entire county due to the widespread nature of this hazard. Typically, rural areas in Iowa are more severely impacted by this hazard

Historical Occurrences

A detailed weekly record of drought across the entire country is provided by the U.S. Drought Monitor. The monitor shows the percent of a selected area that is in drought conditions across five categories of drought. The drought categories are shown in Exhibit 65. From abnormally dry through exceptional, the categories reflect more severe conditions and impacts. In addition to the percentage of the area covered by different categories of drought, each record also contains a figure for Drought Severity and Coverage Index (DSCI). This number approximates the severity of the drought in a region with weighted sum of the categories of drought for the selected areas, i.e., 1 point per percentage point of area categorized as abnormally dry, 2 points per percentage point of area categorized as moderate drought, etc. Weeks with a higher DSCI score tend to exhibit more severe conditions than weeks with lower scores.

Exhibit: 65: Drought Monitor



According to the National Climatic Data Center, Iowa has had 15 periods of drought from 1999-2019. During this time, there was $97M in crop damages resulting from drought periods and $12M in property damage. The most common trend was the consistency of drought periods during the months of July through August; out of the fifteen periods, 11 of them were between July and August. While some may have been more severe than others, agricultural areas were impacted much more than the metropolitan areas where impacts were indirect.

Regionally, the East Central and Southeast portion of Iowa has experienced at least eight droughts in the last ten years. Mid- to South Central Iowa has experienced five to seven droughts since 1995, followed by the Northwest to North Central areas of Iowa experiencing three or four recorded events. The Southwest and Northeast portions of the State have not been as significantly impacted s other areas. The following map depicts a county level record of drought occurrences since 1995.

Drought is a naturally occurring hazard that occurs about every 20 years. The environmental impacts are usually short-term (resilient), and the natural environment is used to drought cycles. Drought more directly affects agricultural crops, livestock, natural vegetation, wildlife, and stream flows (fish and aquatic vegetation).

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	12.650M	97.650M
WAYNE (ZONE)	WAYNE (ZONE)	IA	07/20/1999	12:00	CST	Drought		0	0	0.00K	4.580M
WAYNE (ZONE)	WAYNE (ZONE)	IA	08/14/2000	00:00	CST	Drought		0	0	0.00K	4.690M
WAYNE (ZONE)	WAYNE (ZONE)	IA	09/01/2000	00:00	CST	Drought		0	0	0.00K	5.030M
WAYNE (ZONE)	WAYNE (ZONE)	IA	08/01/2001	00:00	CST	Drought		0	0	0.00K	11.350M
WAYNE (ZONE)	WAYNE (ZONE)	IA	08/01/2003	00:00	CST	Drought		0	0	12.650M	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	07/01/2012	00:00	CST-6	Drought		0	0	0.00K	45.000M
WAYNE (ZONE)	WAYNE (ZONE)	IA	08/01/2012	00:00	CST-6	Drought		0	0	0.00K	6.000M
WAYNE (ZONE)	WAYNE (ZONE)	IA	09/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	10/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	08/01/2013	00:00	CST-6	Drought		0	0	0.00K	21.000M
WAYNE (ZONE)	WAYNE (ZONE)	IA	07/25/2017	00:00	CST-6	Drought		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	09/01/2017	00:00	CST-6	Drought		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	10/01/2017	00:00	CST-6	Drought		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	07/24/2018	00:00	CST-6	Drought		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	08/01/2018	00:00	CST-6	Drought		0	0	0.00K	0.00K
Totals:								0	0	12.650M	97.650M

Probability

Based on the major periods of drought, the probability estimates for drought conditions occurring in Wayne County is likely greater than 85% any given year. Multiple short-term drought conditions or long-term drought conditions could occur in the region, Iowa, and the Midwest of the United States. Overall, the probability estimate is based on historical occurrences, *the Iowa Hazard Mitigation Plan 2018*, and local knowledge.

Magnitude and Severity

Droughts are typically widespread, affecting a large area. If a drought occurs in Wayne County, it is likely that most of southern Iowa or even the entire Midwest of the United Stated. Local conditions can be varied in intensity throughout the duration of the drought. People are vulnerable during a drought if water supplies are significantly reduced, but typically there are secondary sources of water that can prevent negative health impacts due to the lack of water. Most often, people are affected by higher food prices during and after major periods of drought. Wildlife and livestock are more likely to be vulnerable during drought when there is a limited supply of water.

The agricultural sector of the economy in Iowa would be impacted if widespread and long-term drought conditions were to occur. Due to reliance on precipitation and water supply for irrigation, crops are extremely vulnerable. Most often, rural areas experience most negative impacts.

A long term, severe drought can decrease stream flow and water table levels, which can limit the amount of water available to residents. In certain circumstances, it may be necessary to place restrictions on industries that use larger amounts of water.

Fire suppression may be challenging during drought conditions due to dry vegetation and limited water supply. Most property loss would likely be livestock and crops. However, infrastructure can be affected due to drying soils and low water levels around dams.

In Wayne County, a widespread drought conditions could severely damage up to 25% of property, primarily crops. Although the potential magnitude and severity of drought conditions would be considered limited regionwide, the direct impacts on the rural area would be the most critical. If drought conditions were severe enough to significantly reduce water supply, populated areas in the county could be directly impacted.

Countywide damage was established from the NCDC data base for some hazards up to 65 years. Loss factors were developed specific to the attributes of Drought throughout the region. These factors were able to provide an annual damage estimate by dividing the total loss by number of years of data. Per event damage calculated by dividing total loss by number of events. During the past 20 years, approximately 15 events have caused $12,650,000 in property damage and $97,650,000 in crop damage due to drought. This indicates and an annual loss of approximately $63.25M in property damage and $4.8M in crop damage annually in Wayne County. Iowa State Mitigation Plan estimates an annual average loss of $7,822,000.

Warning Time

Drought warning is related to the ability to predict conditions that produce drought, primarily precipitation and temperature. There are many variables, and it is difficult to predict a drought in advance. An area may already be in a drought before it is recognized. While drought warning may not come until the drought is already occurring, the secondary effects may be predicted weeks in advance.

Duration

Drought conditions are part of normal climate functions in the United States. According to Iowa and Wayne County drought history, most drought events affect the state for a period of a few months or a few weeks; however, climate variability can cause drought conditions for a period of a year or more.

Hazard Scoring & Rankings

Exhibit 66: Drought Hazard Score Calculation

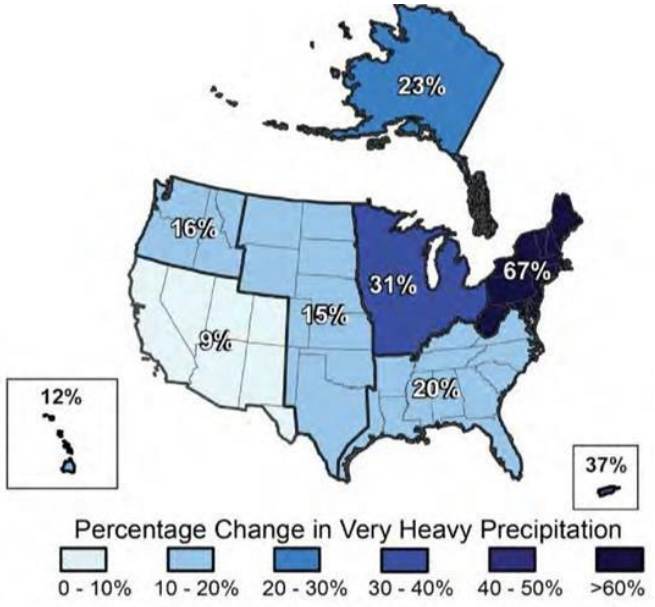
	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	1.75
Wayne County	4	3	4	4	3.7
Allerton	2	2	1	3	1.95
Clio	2	1	1	1	1.45
Corydon	2	2	1	4	2.05
Humeston	4	3	1	4	3.25
Lineville	2	2	1	4	3.05
Millerton	3	3	1	4	2.5
Promise City	2	1	1	4	1.75
Seymour	-	-	-	-	-

Flood (Flash & River)

In a ***flash flood*** event, water levels rise at an extremely fast rate with minimal to no warning. Common causes include heavy precipitation over a short period of time, rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces like pavement. Exhibit 67 displays a significant increase for occurrences of heavy precipitation events for the upper Midwest, including all of Iowa.

In a ***river flood*** event, water levels of a tributary or body of water exceed capacity and cover adjacent land that is not typically covered by water. In this plan, flooding of creeks and other water bodies is included in this hazard.

Exhibit 67: Increase in Very Heavy Precipitation in the U.S. 1958-2007



Source: Karl, T.R., J.M. Melillo, and T.C. Peterson(eds). 2009. Global Climate Change Impacts in the United States. U.S. Global Climate Change Research Program. Cambridge University Press and

http://www.globalchange.gov/publications/reports/scientific-assessments/us- impacts as cited in the 2010 Climate Change Impacts on Iowa report by the Iowa Climate Change Impacts Committee

Flooding causes more damage in the United States than any other severe weather-related event, an average of $5 billion a year. Flooding can occur in any of the 50 states or U.S. territories at any time of the year. Flash flooding can occur anywhere and is not confined to or near flood plains; once the soil is saturated, water will wash over it to lower lying areas. Damage is likely to be more severe in lower lying areas but can occur at higher ground as well.

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 for protective measures to be taken by those in its path. Flash flood waters move at very fast speeds and can roll boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. Flash flooding often results in higher loss of life, both human and animal, than slower developing river and stream flooding.

Two common terms to describe areas that are prone to flooding are 100-year flood plain and 500-year flood plain. The meaning of these terms is often confused; though they sound like a flood in the designated areas only happens once every 100 or 500 years, this interpretation is incorrect. What the designation means is that for a 100-year flood plain, the chance of a flood occurring in any given year is 1% which is statistically about once every 100 years. Likewise, for the 500-year flood plain, the chance is .2% chance of a flood occurring in any given year. Floods may certainly occur more frequently in either flood plain designation, but these would be rare occurrences.

Flash floods do not always occur in flood plains, during heavy downpours the capacity of the soil to absorb rain can be overwhelmed leading to water accumulating and running off the surface of the land. Similarly with compaction of soil due to build infrastructure such as roads and buildings heavy rain is limited in its local soil infiltration capacity leading to runoff. This runoff can accumulate very quickly resulting in flash flooding.

Potential Hazard Area

The potential hazard areas for a river flood are generally the areas designated as a floodplain by the Federal Emergency Management Agency. Refer to the risk assessment maps. The flood hazard layer is also shown in the critical facilities map for each jurisdiction. It should be noted that flooding is not limited to designated floodplains because uncommon climate conditions and changes in development patterns can affect what areas ultimately experience water inundation.

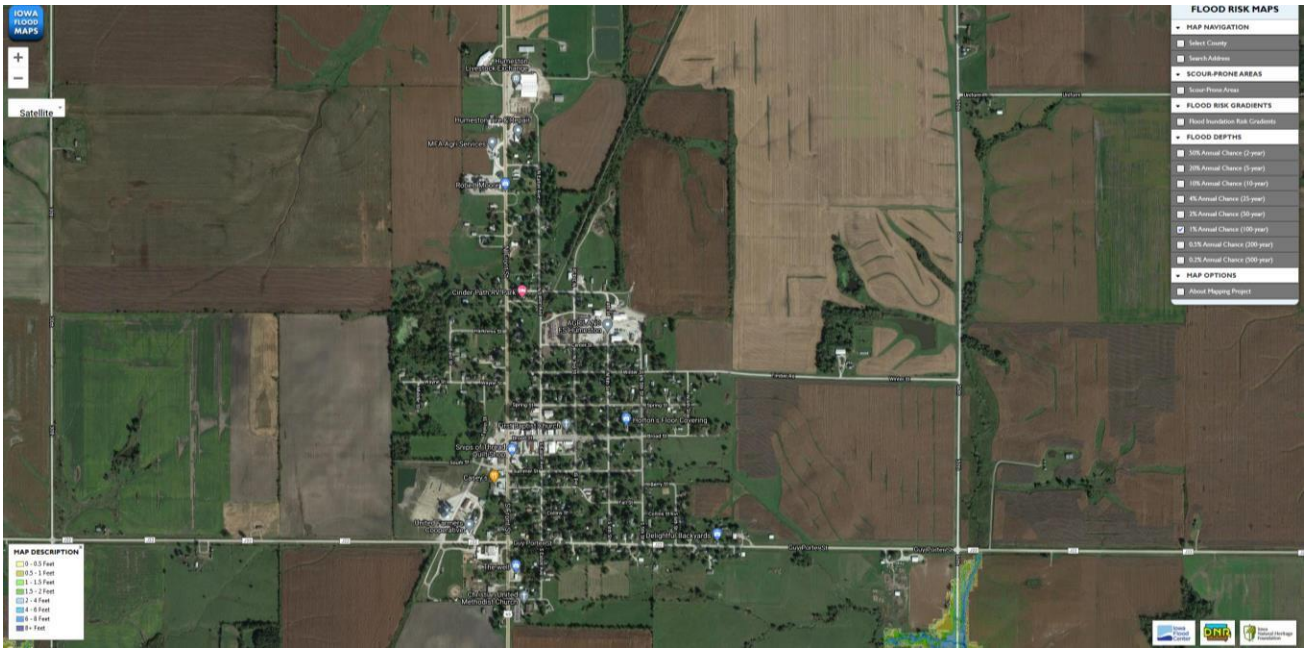
Exhibit 68: Vulnerable Communities

Name	Approx. Area	NFIP #
Seymour	5%	190655
Unincorporated Co	5%	190914

Flash flooding can occur in any area of the county. Certain areas have a greater potential to be affected due to factors such as low elevation, nearby waterways, insufficient storm water management, intense urban or agricultural development, etc. All jurisdictions in the planning area have identified at least minor flash flood issues, but most have persistent issues due to insufficient storm water management.

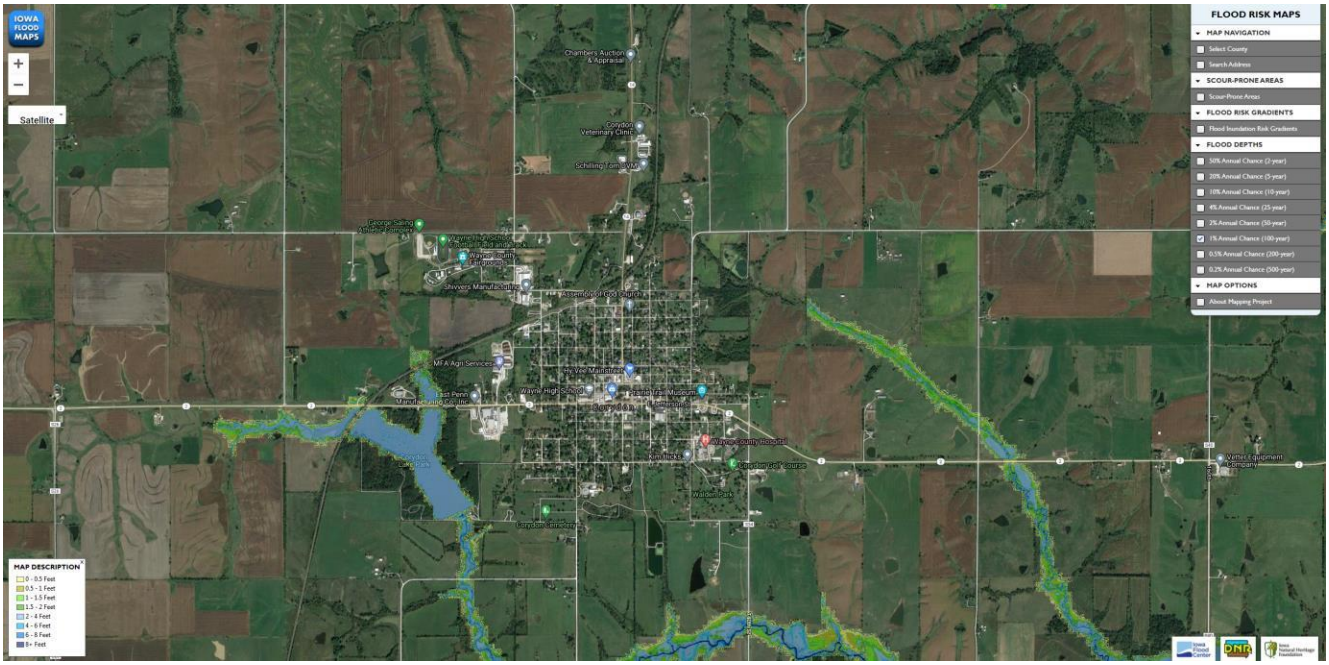
River Flooding Risk Assessment Maps

Humeston

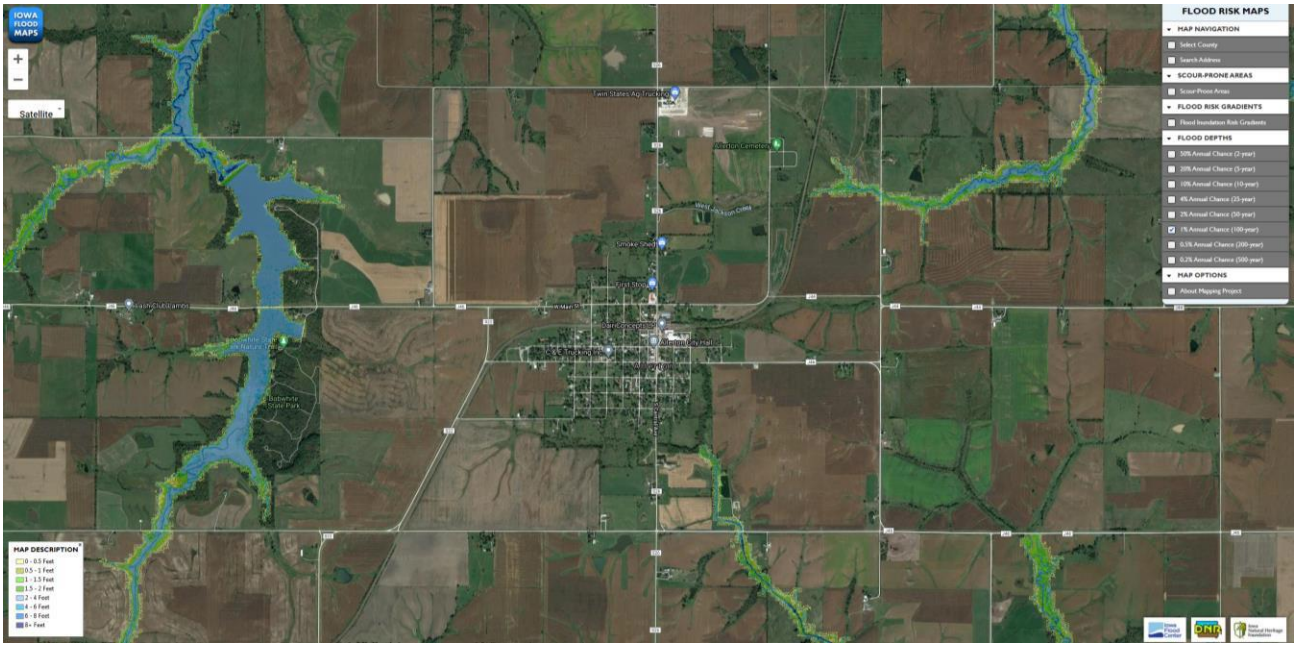


Millerton

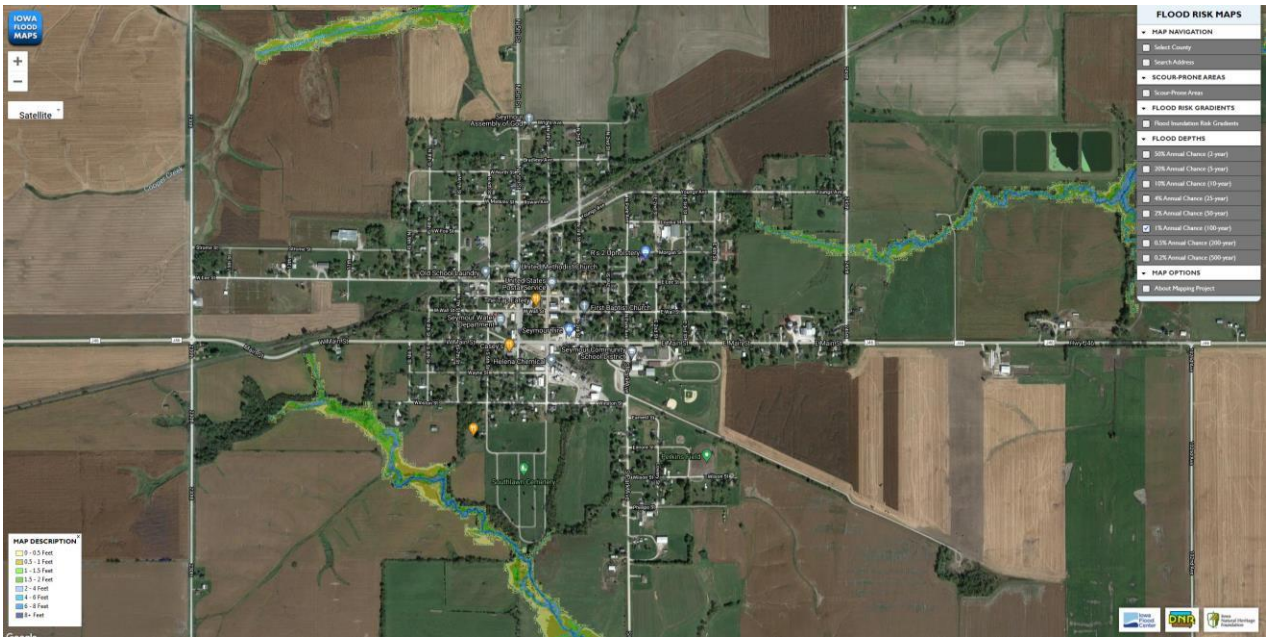
Corydon



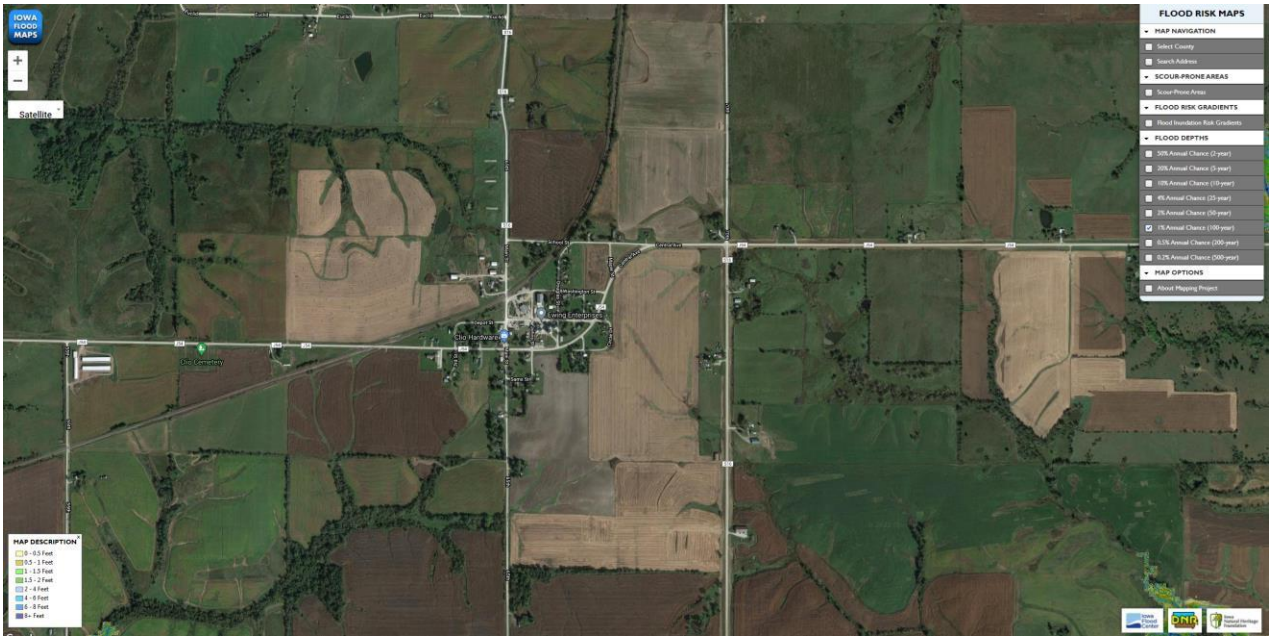
Allerton



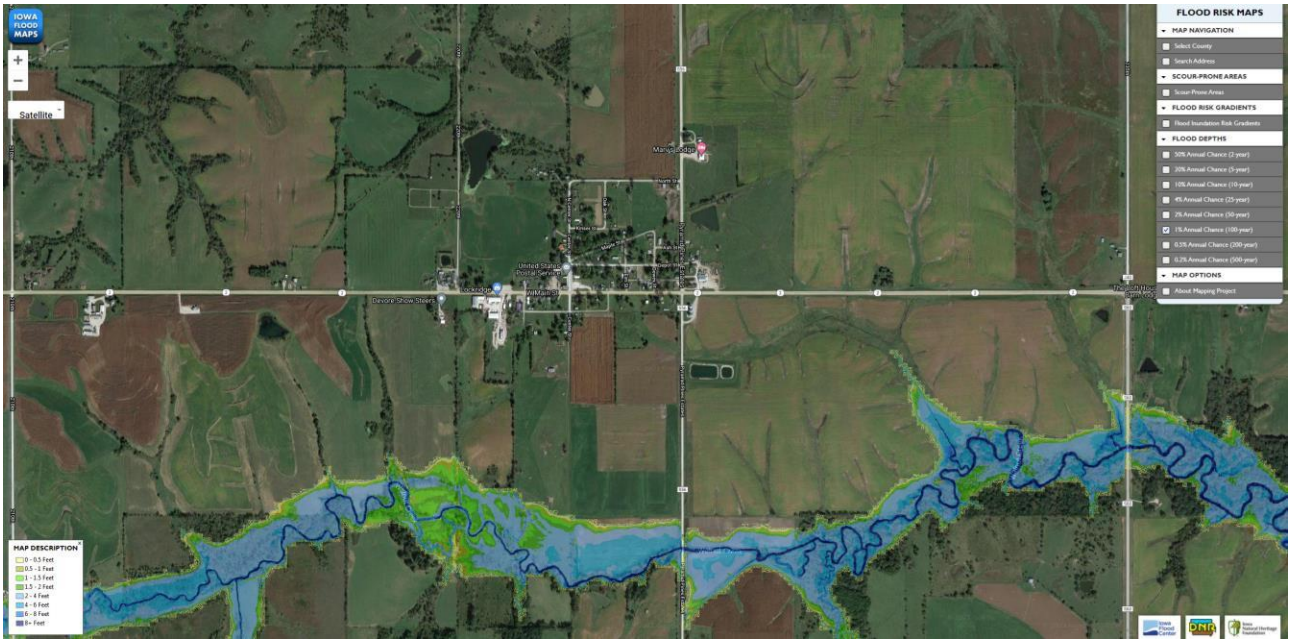
Seymour



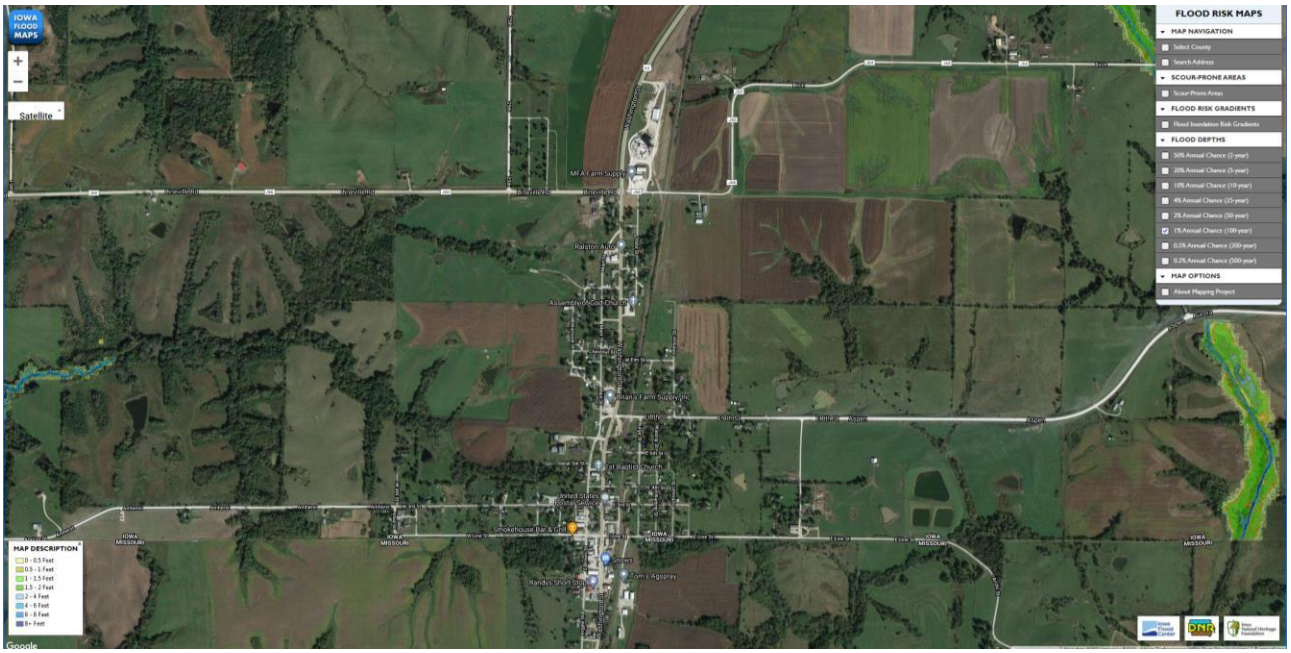
Clio



Promise City



Lineville



Northern Wayne County

Southern Wayne County

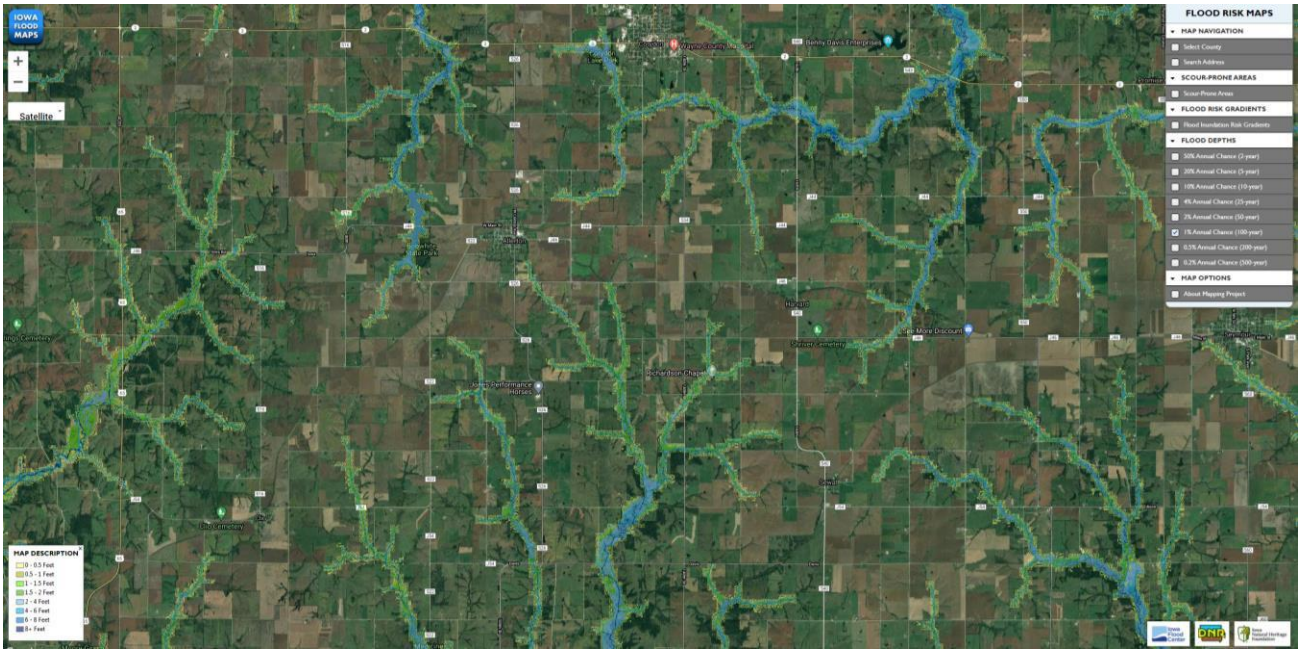


Exhibit 69: Maximum Population and Building Exposure Hazard Area 5% of Jurisdiction **Per County Assessor & Auditor									
	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Seymour	15	$ 711,494	28	2	$119,553	--	--	--	$ 10,107
Unincorp County	69	$ 6,642,311	14	3	$254,799	1	$169,744	--	$460,950

Historical Occurrences

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 latest significant event to affect Iowa occurred in June/July of 2008. This event resulted in a Presidential Disaster Declaration due to widespread personal and physical property losses. Since then, many flashflood events have occurred across Iowa though mostly localized events. The National Climatic Data Center lists 260 flash flooding events from 2017-2020. During this time there was one death, $23.56M in property damage and over $41M in crop damage due to flash flooding in Iowa.

a. Flash floods can result in death and injury, typically to individuals caught either in vehicles swept off roads or who may be in low-lying areas when fast moving water moves through
b. Flash floods can present a challenge to first responders by limiting access to a site or by requiring alternative modes of access such as by boat or helicopter; special training is often necessary for such rescues
c. Continuity of operations can be affected depending on the facilities impacted, transportation impacts, and delays in government responses
d. Property can be impacted either by being damaged by the force of flowing water, water damage inside buildings, and compromises to structural integrity due to erosion
e. Flash floods can quickly inundate areas thought to be out of flood-prone areas. Loss of life; property damage and destruction; damage and disruption of communications, transportation, electric service, and community services; crop and livestock damage and loss and interruption of business are common impacts from flash flooding.
f. Hazards of fire, health and transportation accidents, and contamination of water supplies are likely effects of flash flooding situations. Materials swept away by flood waters can contaminate and leave a lasting impact on the environment.
g. Most impacts are indirect due to disruption of business and damage to infrastructure on which industry and services rely upon.

Flash floods can be damaging to the reputation of the community if proper notification and warning are not given. Often the victim will blame development or other changes in the community as the cause of the flooding on their property.

From 1999 to 2019, there have been 27 recorded Flash Flood events in Wayne County. These Flash Flood events caused $4.59M in property damage with no injuries or loss of life reported. About $685K in crop damage has resulted from these events. The floods of 2008 and 2010 have created extensive damage throughout the rural portions of the county. Seven events have occurred in the past five years. The communities of Promise City and Millerton more commonly experience flash flooding events. The chart below provides a summary of NCDC recorded Flash Floods; property and crop damages are in thousands of dollars during the past twenty years:

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	4.590M	685.00K
COUNTYWIDE	WAYNE CO.	IA	06/25/2000	19:00	CST	Flash Flood		0	0	100.00K	25.00K
CORYDON	WAYNE CO.	IA	07/11/2004	17:00	CST	Flash Flood		0	0	15.00K	0.00K
CORYDON	WAYNE CO.	IA	06/27/2005	23:30	CST	Flash Flood		0	0	5.00K	5.00K
CORYDON	WAYNE CO.	IA	08/23/2007	21:28	CST-6	Flash Flood		0	0	150.00K	50.00K
CAMBRIA	WAYNE CO.	IA	08/24/2007	05:00	CST-6	Flash Flood		0	0	500.00K	100.00K
HARVARD	WAYNE CO.	IA	08/24/2007	05:23	CST-6	Flash Flood		0	0	500.00K	100.00K
MILLERTON	WAYNE CO.	IA	07/25/2008	03:48	CST-6	Flash Flood		0	0	50.00K	100.00K
CAMBRIA	WAYNE CO.	IA	07/27/2008	17:15	CST-6	Flash Flood		0	0	25.00K	0.00K
CAMBRIA	WAYNE CO.	IA	07/27/2008	18:00	CST-6	Flash Flood		0	0	15.00K	20.00K
PROMISE CITY	WAYNE CO.	IA	07/28/2008	06:01	CST-6	Flash Flood		0	0	25.00K	25.00K
HUMESTON	WAYNE CO.	IA	07/04/2009	06:00	CST-6	Flash Flood		0	0	50.00K	10.00K
BENTONVILLE	WAYNE CO.	IA	08/26/2009	20:30	CST-6	Flash Flood		0	0	2.500M	250.00K
HARVARD	WAYNE CO.	IA	06/15/2010	09:56	CST-6	Flash Flood		0	0	25.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	07/20/2010	03:00	CST-6	Flash Flood		0	0	25.00K	0.00K
ALLERTON	WAYNE CO.	IA	07/20/2010	05:30	CST-6	Flash Flood		0	0	100.00K	0.00K
MILLERTON	WAYNE CO.	IA	07/20/2010	06:00	CST-6	Flash Flood		0	0	50.00K	0.00K
MILLERTON	WAYNE CO.	IA	05/28/2013	19:55	CST-6	Flash Flood		0	0	50.00K	0.00K
SEYMOUR	WAYNE CO.	IA	05/28/2013	20:05	CST-6	Flash Flood		0	0	50.00K	0.00K
LINEVILLE	WAYNE CO.	IA	06/03/2014	22:30	CST-6	Flash Flood		0	0	10.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	08/23/2014	06:00	CST-6	Flash Flood		0	0	25.00K	0.00K
SEYMOUR	WAYNE CO.	IA	06/24/2015	22:26	CST-6	Flash Flood		0	0	0.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	06/25/2015	00:10	CST-6	Flash Flood		0	0	0.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	07/11/2015	09:45	CST-6	Flash Flood		0	0	100.00K	0.00K
CAMBRIA	WAYNE CO.	IA	07/27/2015	15:40	CST-6	Flash Flood		0	0	10.00K	0.00K
HUMESTON	WAYNE CO.	IA	07/29/2015	00:30	CST-6	Flash Flood		0	0	200.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	05/28/2019	17:12	CST-6	Flash Flood		0	0	10.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	09/28/2019	19:26	CST-6	Flash Flood		0	0	0.00K	0.00K
Totals:								0	0	4.590M	685.00K

There were no deaths or injuries due to flash flood events but there was nearly $5.6 million in property damage reported across the entire area affects by the hazard events. Of all property damage, $500,000 occurred during one flash flood event August of 2007.

Aside from severe winter storms and thunderstorm, lightning, and hail, flooding is the most persistent hazard that causes substantial damage in Wayne County. Unlike other weather-related hazards, the areas impacted, and the type of damage sustained is consistent.

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	50	1.915M	21.033M
WAYNE (ZONE)	WAYNE (ZONE)	IA	05/09/1996	06:00	CST	Flood		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	05/23/1996	15:00	CST	Flood		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	05/26/1996	12:00	CST	Flood		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/18/1997	18:00	CST	Flood		0	0	0.00K	0.00K
CORYDON	WAYNE CO.	IA	07/24/1997	02:00	CST	Flood		0	0	25.00K	15.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	03/30/1998	18:00	CST	Flood		0	0	10.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	05/07/1998	01:00	CST	Flood		0	0	25.00K	10.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	07/06/1998	03:00	CST	Flood		0	0	50.00K	100.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	10/17/1998	06:00	CST	Flood		0	0	70.00K	10.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	03/16/1999	06:00	CST	Flood		0	0	1.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/06/1999	18:00	CST	Flood		0	0	7.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/22/1999	06:00	CST	Flood		0	0	10.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	05/16/1999	21:00	CST	Flood		0	0	200.00K	25.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	06/09/1999	06:00	CST	Flood		0	0	50.00K	75.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	07/31/1999	06:00	CST	Flood		0	0	25.00K	10.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	06/24/2000	03:00	CST	Flood		0	0	50.00K	75.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	02/24/2001	12:00	CST	Flood		0	0	7.50K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	03/15/2001	15:00	CST	Flood		0	0	5.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	03/23/2001	18:00	CST	Flood		0	0	7.50K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	04/07/2001	21:00	CST	Flood		0	0	150.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	05/11/2001	06:00	CST	Flood		0	0	25.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	05/31/2001	15:00	CST	Flood		0	0	2.50K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	06/05/2001	03:00	CST	Flood		0	0	5.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	06/12/2001	15:00	CST	Flood		0	0	25.00K	50.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	10/23/2001	03:00	CST	Flood		0	0	5.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	05/11/2002	06:00	CST	Flood		0	0	10.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	05/22/2004	18:00	CST	Flood		0	0	100.00K	298.04K
ALLERTON	WAYNE CO.	IA	02/24/2007	23:00	CST-6	Flood		0	0	5.00K	0.00K
HUMESTON	WAYNE CO.	IA	04/26/2007	06:00	CST-6	Flood		0	0	250.00K	0.00K
PROMISE CITY	WAYNE CO.	IA	05/06/2007	18:00	CST-6	Flood		0	0	25.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	08/23/2007	23:30	CST-6	Flood		0	0	25.00K	50.00K
CONFIDENCE	WAYNE CO.	IA	03/02/2008	15:30	CST-6	Flood		0	0	50.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	04/18/2008	03:00	CST-6	Flood		0	0	10.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	05/24/2008	13:42	CST-6	Flood		0	0	0.00K	20.00K
CONFIDENCE	WAYNE CO.	IA	06/12/2008	12:12	CST-6	Flood		0	0	10.00K	10.00K
CONFIDENCE	WAYNE CO.	IA	06/26/2008	17:44	CST-6	Flood		0	0	5.00K	10.00K
CONFIDENCE	WAYNE CO.	IA	07/25/2008	01:50	CST-6	Flood		0	0	10.00K	50.00K
PROMISE CITY	WAYNE CO.	IA	07/25/2008	05:15	CST-6	Flood		0	0	25.00K	100.00K
CONFIDENCE	WAYNE CO.	IA	07/28/2008	00:51	CST-6	Flood		0	0	20.00K	50.00K
CONFIDENCE	WAYNE CO.	IA	09/12/2008	23:44	CST-6	Flood		0	0	0.00K	5.00K
CONFIDENCE	WAYNE CO.	IA	03/08/2009	11:01	CST-6	Flood		0	0	25.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	03/10/2009	04:41	CST-6	Flood		0	0	25.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	03/24/2009	09:38	CST-6	Flood		0	0	25.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	05/15/2009	13:17	CST-6	Flood		0	0	10.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	07/04/2009	06:56	CST-6	Flood		0	0	15.00K	10.00K
CAMBRIA	WAYNE CO.	IA	07/04/2009	10:07	CST-6	Flood		0	0	10.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	08/27/2009	00:51	CST-6	Flood		0	0	100.00K	25.00K
CONFIDENCE	WAYNE CO.	IA	03/10/2010	00:25	CST-6	Flood		0	0	25.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	04/24/2010	22:51	CST-6	Flood		0	0	50.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	05/11/2010	03:36	CST-6	Flood		0	0	10.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	05/13/2010	04:20	CST-6	Flood		0	0	25.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	06/05/2010	12:51	CST-6	Flood		0	0	50.00K	0.00K
HUMESTON	WAYNE CO.	IA	06/12/2010	12:00	CST-6	Flood		0	0	0.00K	20.000M
CONFIDENCE	WAYNE CO.	IA	06/14/2010	06:40	CST-6	Flood		0	0	100.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	07/05/2010	02:27	CST-6	Flood		0	0	10.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	07/20/2010	03:08	CST-6	Flood		0	0	10.00K	25.00K
CONFIDENCE	WAYNE CO.	IA	09/13/2010	22:26	CST-6	Flood		0	0	10.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	09/19/2010	12:34	CST-6	Flood		0	0	5.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	09/21/2010	19:24	CST-6	Flood		0	50	10.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	05/25/2011	06:41	CST-6	Flood		0	0	50.00K	0.00K
CONFIDENCE	WAYNE CO.	IA	06/25/2011	12:04	CST-6	Flood		0	0	50.00K	10.00K
Totals:								0	50	1.915M	21.033M

The 100-year floodplain estimates that 4.7% of the county is in this potential flood zone ("***A HAZUA-MH Assessment of Iowa's Vulnerability to Flooding***"). Nearly all this area of concern is in the rural region of the county. Several unincorporated communities are located close to or in low-lying areas around rivers or streams. Because boundaries of the unincorporated communities are not readily available, approximate area of these communities is not given. In river flooding events, the flood plains and flood zones are at the most risk, but this is not necessarily the case for flash floods as detailed previously.

Given the 1) rolling hill nature of Wayne County, 2) state highways pass through low-lying areas containing rivers or streams, and 3) the limited number of goods and services available in the county, severe flooding would impact most of the county. This was evidenced in the 2008 floods. Some of this impact is limited to traveling inconveniences.

Probability

Historical occurrences indicate that flash flood events can occur at least every other year, if not more in Wayne County. Minor flood events, which are not always reflected in the data available, but occur frequently. The probability estimate is highly likely that a major flash flood event will occur in the county. This is 33% or greater probability in any given year. River flooding events have an estimated probability is also highly likely, which is 33% in any given year. The probability estimate for flood hazards is based on historical occurrences and local knowledge.

Magnitude and Severity

Flood hazard mapping and vulnerability of life and property to river flooding are well identified in Wayne County. The Federal Emergency Management Agency (FEMA) has delineated the probable extent of the 100-year flood hazard areas. These maps are Flood Insurance Rate Maps (FIRMs), which show properties that have a 1% chance in any given year to be affected by floods. More information on designated floodplains can be found in the risk assessment maps.

In addition to current FIRMs, the Iowa Flood Center, Iowa Department of Natural Resources (IDNR) and FEMA partnered to develop the Iowa Flood Information System (IFIS). The IFIS is a web interface with interactive flood mapping and forecasting features that can be used to understand potential flood risk. More information can be found at www.iowafloodcenter.org. Flood inundation maps are another tool that has been implemented for Iowa communities and may be available for Wayne County jurisdictions. In the future, more detailed flood risk information will be provided through the RiskMap program, which is a partnership between FEMA and IDNR to provide watershed-based information and solutions.

A flash flood event can impact areas far from a tributary or body of water. Streets can become swift moving rivers, and basements can trap residents because flash floods can fill them with water in minutes. Nearly half of all flash flood fatalities are auto related. Motorists often try to traverse water-covered roads and bridges and are swept away by the current.

Buildings, infrastructure, and land can be eroded, extensively damaged, or destroyed in a flood event. Disruption or complete shutdown of essential facilities

and services like major travel routes, water distribution and wastewater treatment facilities often occur during severe flood events. Depending on severity, overall disruption may occur just a few hours causing minor inconvenience or up to months causing major environmental and economic impacts in the county and state.

Potential impacts of flooding include injury and loss of life. River flooding does not have as high of risk to human as does flash flooding mostly because of the slow onset of river flooding. People in a flood zone, downstream from a dam or levee, or in low-lying areas are especially vulnerable in any type of flood event. In addition, people located in areas with narrow stream channels, saturated soil, or on land with large amounts of impermeable surfaces are likely to be impacted in the event of significant rainfall.

The table below summarizes the maximum population and building exposure for flood events. The estimate of maximum population and building exposure based on an estimate of the Special Flood Hazard Areas of the unincorporated county. Wayne County LEPC specifically sites the areas of concern noting flash floods can happen anywhere at any time (FEMA), the entire county could be considered a hazard area. However, properties located in floodplains are at higher risk than those on high ground. The major low areas in Wayne County predominately lie in the rural region. There are two locations (180th & 200th roads) near the Chariton River that are more susceptible, and damage has occurred to the secondary roadways. One additional rural area just east of Promise City has an area that experiences flash flooding. This area suffers from poor drainage due to the small drainage tube. Past experiences have seen water flooding over Highway 2. The communities of Seymour and Humeston have all had limited experiences with flash flooding. The eastern portion of Seymour has had flash flooding incidents due to poor drainage. The city does intent to apply for state assistance in the next year to repair the storm/sewer drainage system. Humeston also has experience of flash flooding due to storm drainage issues that affected the school building and MFA (Missouri Farmer's Association).

Unincorporated region of the county. Appendix contains maps that will show specific locations.

Exhibit 70: Maximum Population and Building Exposure Hazard Area 25% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	#	Value	#	#	Value	#	Value	#	Value
Corydon	163	$11,557,157	407	38	$1,611,061	7	$411,727	--	$4,237
Seymour	75	$3,557,472	141	10	$597,767	--	--	--	$50,535
Promise City	13	$374,885	16	2	$80,915	--	--	--	$72
Allerton	53	$2,643,407	128	9	$283,372	5	$921,102	--	$6,885
Humeston	57	$2,894,782	121	26	$,1210,650	--	--	--	$11,070

Millerton	5	$145,892	27	2	$28,337	--	--	--	$,3882
Lineville	27	$999,230	64	6	$372,860	--	--	--	$8,710
Clio	8	$255,435	16	9	$196,532	--	--	--	$4,237
Unincorp County	343	$3,321,155	681	14	$1,273,996	3	$848,720	--	$2,304,752

Corydon

Facility	Location	Assessed Value
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community Bldg	501 S East st	$179,730
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Water Dept		$20,340
Murphy Place Senior Housing	511 E Jackson	$875,890
Emergency Shelter locations		
Sports Complex		
Fairgrounds		$273,330
Extension Office	220 E Jefferson	$132,670
Corydon Nursing & Rehab (Shelter Site)		
Corydon Head start	605 S West St	

Millerton

Facility	Location	Assessed Value
Post Office	313 N Main	
City shop	101Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
City Hall/ community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310

Seymour

Facility	Location	Assessed Value
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint Bldg	522 West Wall	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
City Hall/community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
City Shop	101 N Central	$27,440
Public Housing		$204,950
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main st	$20,000
Library		$10,110

Lineville

Facility	Location	Assessed Value
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Water Pump house & city shed	Washington St	$5,940
Medical Clinic		$149,440
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170

Humeston

Facility	Location	Assessed Value
Lift station	6th & Blevens	$22,410
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Library		$375,480
Medical Clinic		
Elementary School		$60,000
Public Housing		
Humeston Senior Center (Shelter Site)		
Storage & Shop		$130,940

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Unincorporated Wayne County

Facility	Location	Assessed Value
Nelson Round Barn(historical)	South of Allerton	
Pleasant Hill School(historical)	3 miles north of Lineville	

Countywide damage was established from the NCDC data base for some hazards up to 65 years. Loss factors were developed specific to the attributes of Flash Flooding throughout the region. These factors were able to provide an annual damage estimate by dividing the total loss by number of years of data. Per event damage calculated by dividing total loss by number of events. During the past 20 years, approximately 27 flash flooding events have occurred in Wayne County. The loss from these events totaled $4,590,000. This indicates an annual estimated loss of $229,500. This timeframe also had $685,000 in crop damage due to flash flooding. This would be an estimated $34,250 annually in crop loss. Iowa State Mitigation Plan estimates an annual average loss of $169,000.

Warning Time

Flash Floods are unpredictable, but there are factors that can indicate the likelihood of a flash flood event occurring in an area. Flash floods can occur within a few minutes or hours of excessive rainfall, a dam or levee failure or a sudden release of water held by an ice jam. Weather surveillance radar is being used to improve monitoring capabilities of small rainfall. Knowledge of the watershed characteristics, modeling, monitoring, and warning systems increase the predictability of flash floods. Depending on the location in the watershed,

warning times can be increased. The National Weather Service (NWS) forecasts the height of flood crests, the data, and the time the flow is expected to occur at a particular location.

Gauges along streams and rain gauges provide information for flood warnings. Warning is possible for river flood events because a flood usually develops over the course of several days. The NWS provides flood forecasts for Iowa and IFIS provides information and forecasts. Flood warnings are issued over mass notification systems and television stations. People in the path of river floods usually have time to take appropriate actions to limit harm to themselves and property.

Duration

Response to a flash flood event is usually shorter-term relative to a river flood event, requiring just days or weeks depending on the severity of the event. Response to a river flood event is usually extensive and requires days and even up to years to adequately recover.

Hazard Scoring & Ranking

Exhibit 71: Flash Flood Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	1.69
Wayne County	4	3	4	3	3.6
Allerton	2	2	3	2	2.15
Clio	1	1	1	1	1.0
Corydon	1	1	4	2	1.55
Humeston	4	3	1	3	3.15
Lineville	3	2	2	3	2.55
Millerton	2	1	3	2	1.85
Promise City	2	2	4	3	2.4
Seymour	2	1	3	3	1.95

Exhibit 72: River Flood Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	.681
Wayne County	4	3	3	3	3.45
Allerton	1	1	1	1	1
Clio	-	-	-	-	-
Corydon	-	-	-	-	-
Humeston	-	-	-	-	-
Lineville	-	-	-	-	-
Millerton	1	1	1	1	1
Promise City	-	-	-	-	-
Seymour	-	-	-	-	-

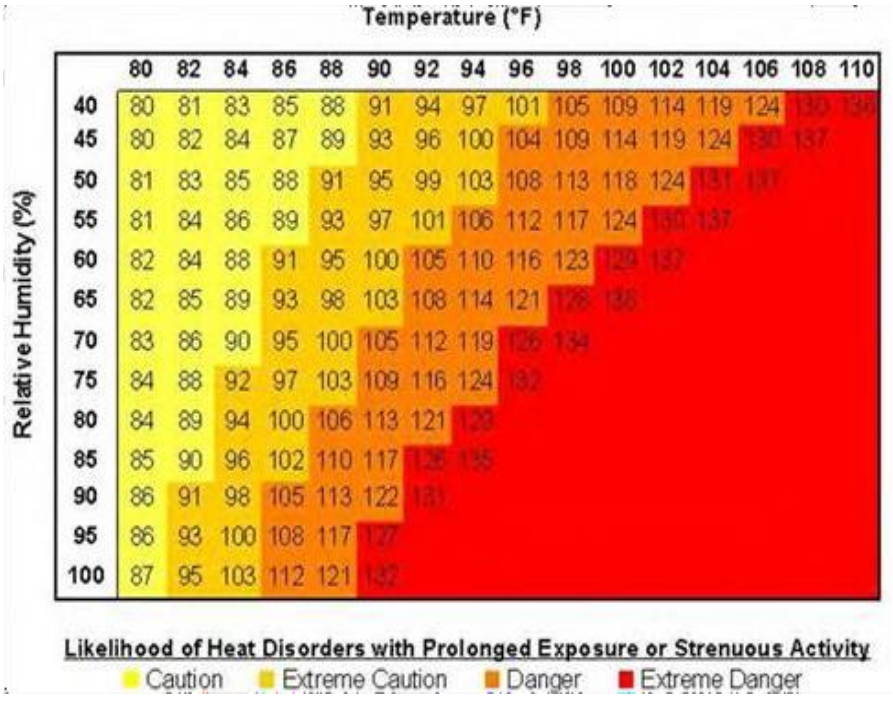
Extreme Heat

Extreme heat is a temperature hotter or more humid than average for a location at that time of year. This includes three successive days of 90+ degrees Fahrenheit or one day with a temperature or heat index more than 100 degrees Fahrenheit.

Description

Conditions for extreme heat are defined by summertime weather that is substantially hotter and/or more humid than average for a location at that time of year. This includes temperatures (including heat index) more than 100 degrees Fahrenheit or at least three (3) successive days of 90+ degrees Fahrenheit. A heat advisory is issued when temperatures reach 105 degrees, and a warning is issued at 115 degrees. The heat index is a number in degrees Fahrenheit that tells how hot it really feels when relative humidity is added to the actual air temperature. Exposure to sunshine can increase the heat index by at least 15 degrees. Extreme heat can impose stress on humans and animals. Heatstroke, sunstroke, cramps, exhaustion, and fatigue are possible with prolonged exposure 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.

Exhibit 73: Likelihood of Heat Disorders



Source: National Weather Service (NWS) http://www.nws.noaa.gov/os/heat/heat_index.shtml

Note: Exposure to direct sun can increase Heat Index values by as much as 15°F. The shaded zone above 105°F corresponds to a HI that may cause increasingly severe heat disorders with continued exposure and/or physical activity.

Potential Hazard Area

The potential hazard area for an extreme heat event will cover all of Wayne County. The table below summarizes the maximum population and building exposure to Extreme Heat. The health of the public and the economic impact on the agricultural community are the primary concerns with extreme heat. The segments of the public most at risk from extreme heat are the elderly, the very young, and individuals living below the poverty line. The estimated number of affected people in the table below is derived from the 2019 ACS. Those included in this calculation are residents over 65 years, children under 5 years, individuals living below the poverty line and people living with a diagnosed disability.

Economic impact on the agricultural sector could result from the damage to animals and crops. Livestock is particularly vulnerable to the effects of the extreme heat and there are approximately 30,664 cattle and 32,577 hogs. Roads, bridges, and railroad tracks are also susceptible to damage from extreme heat. The HMGP committee believes that the major effect of an extreme heat will be on livestock and crops. Livestock is particularly vulnerable. The 2017 Agricultural Census reports that the estimated market value of all livestock, poultry, and products in Wayne County is $38.6 million. Transportation facilities are also vulnerable to extreme heat. Most common type of damage is road buckles; however, Wayne County has not tracked the damage expenses directly related to this hazard.

Exhibit 74: Maximum Population Exposure
2019 ACSs

Jurisdiction	Population 65yrs & older	Population 18 years& younger	Population living below poverty guidelines	Residents living with a diagnosed disability	Old English Amish Population
County (6,429)	1,395 21.7%	1,618 25.2%	1,106 17.2%	922 16.4%	Estimated at 1,000
Allerton (513)	71 14.3%	168 33.8%	164 32%	17 14.5%	
Clio (66)	19 29%	12 18.2%	2 3%	7 10.6%	
Corydon (1,628)	373 23%	416 25.6%	238 14.6%	254 16.6%	
Humeston (484)	132 27.3%	121 25%	39 8%	108 22.3%	
Lineville (259)	41 15.8%	43 16.6%	47 18%	33 12.7%	
Millerton (108)	5 5%	33 30.6%	10 9.3%	1 1%	
Promise City (78)	18 23%	13 16.7%	15 19.2%	19 24.4%	
Seymour (567)	165 29%	113 19.9%	139 24.6%	125 22%	

Historical Occurrence

During the period between 1995 and 2014 experienced 20 extreme heat events. The heat wave that occurred in July of 1995 had a major impact across the entire state, temperatures ranged from 98 degrees to 108 degrees with heat indices reaching a high of 131 degrees. This event lasted two (2) days causing 3.8 million dollars of property damage and resulted in three (3) fatalities. The figure relating to property damage with this event was based on a combination of livestock losses

and transportation infrastructure damages. The following map depicts the number of extreme heat occurrences from 1994-2009.

During the summers of 1997 and 1998, there were combined total of 31 days when the high temperature was 90 degrees Fahrenheit or higher. There were three (3) periods when temperatures were 90 degrees or above for at least three (3) consecutive days during the summers of 2005-2006. Three periods of extreme heat between 1999 and 2019 resulted in zero deaths and $135K in property damage for the region including Wayne County.

Based on historical information, Iowa will likely experience around 26 days a year with temperatures above 90 degrees. There is a very good chance that there will also be period of at least three (3) consecutive days or more with temperatures in the 90s. It is also common for the temperature to hit 100 degrees or more once every three (3) years during the summer months.

Nationally, over the last 30 years, excessive heat accounts for more reported deaths annually than hurricanes, floods, tornadoes, and lightning combined. Response personnel could suffer heat stroke and dehydration working in extreme heat conditions. Transportation impacts include the loss of lift for aircrafts, softening of asphalt roads, buckling of highways and railways, and stress on automobiles and trucks (increase in mechanical failures).

Electric transmission systems are impacted when power lines sag in high temperatures. High demand for electricity also outstrips supply, causing electric companies to have rolling black outs. The demand for water also increases sharply during periods of extreme heat. This can contribute to fire suppression problems for both urban and rural fire departments.

Livestock and other animals are adversely impacted by extreme heat. High temperatures at the wrong time inhibit crop yields as well. Economic costs in transportation, agriculture, production, energy, and infrastructure. These direct costs could impact many other economic sectors indirectly.

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								0	0	135.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	07/15/2011	18:00	CST-6	Excessive Heat		0	0	135.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	07/20/2016	13:00	CST-6	Excessive Heat		0	0	0.00K	0.00K
WAYNE (ZONE)	WAYNE (ZONE)	IA	07/18/2019	12:00	CST-6	Excessive Heat		0	0	0.00K	0.00K
Totals:								0	0	135.00K	0.00K

Probability

Historical occurrences indicate that extreme heat events are occasional in Wayne County. Higher than normal temperatures due to climate change may increase the likelihood of an extreme heat event occurring in the state and county. The probability is likely, greater than 20% and up to 33% in any given year.

Magnitude and Severity

An extreme heat event typically affects a large geographic area, sometimes as large as an entire region in the United States. If an extreme heat event were to occur in Wayne County, a greater geographic area.

Humans, outdoor pets, and livestock are vulnerable during extreme heat events. Heatstroke, sunstroke, cramps, exhaustion, and fatigue can be caused by prolonged heat exposure and/or physical activity. Certain groups of people like the young, elderly, and outdoor workers are especially vulnerable to extreme heat events.

Rurals areas could see significant impact of livestock loss and reduced crop yields. Extreme heat events can damage buildings and infrastructure, which can result in shutdown of facilities for an extended period. Based on historical occurrences, the magnitude and severity of an extreme heat in Wayne County would likely be limited although the impacts could be more severe.

Countywide damage was established from the NCDC data base for some hazards up to 65 years. Loss factors were developed specific to the attributes of Extreme Heat throughout the region. These factors were able to provide an annual damage estimate by dividing the total loss by number of years of data. Per event damage calculated by dividing total loss by number of events. In the past 10 years, three events have with $135,000 property damage reported, no crop loss and no deaths. This indicates an annual estimated loss of $13,500.

Warning Time

Extreme heat events are predictable within a few degrees approximately three days before the event may occur. Variations in local conditions can affect the actual temperature within a matter of hours or even minutes so warning time may be less. Win as much warning time as possible, the National Weather Service will initiate alert procedure when the heat index is expected to exceed 105 degrees for at least two consecutive days.

Duration

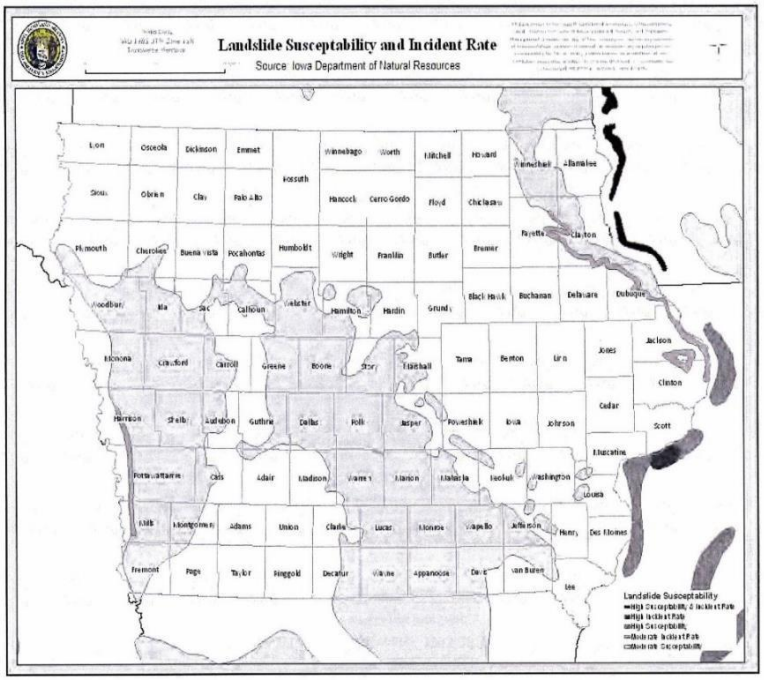
An extreme heat event is three consecutive days with 90+ degree Fahrenheit temperature or one day with a 100+ degree Fahrenheit temperature or heat index. Based on past extreme heat events in the state and Wayne County, an event can last a week or longer.

Hazard Scoring & Ranking

Exhibit 75: Extreme Heat Hazard Score Calculation					
	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	2.37
Wayne County	4	3	3	3	3.45
Allerton	4	3	1	3	2.4
Clio	2	1	1	1	1.45
Corydon	1	1	1	1	1
Humeston	4	2	1	3	2.85
Lineville	2	2	1	4	3.05
Millerton	4	3	1	3	3.15
Promise City	2	2	2	3	2.1
Seymour	2	2	1	3	1.95

Landslide

Exhibit 76: Landslide Susceptibility in Iowa



A landslide occurs when rock, earth or debris moves down a slope under the force of gravity and water. Landslides may be small or large and can move at slow or extremely high speed. I addition to geological conditions, landslides can occur because of rainstorms, fires, earthquakes, and development that modifies slope and drainage. Landslides may be small or large and can move at slow to extremely high speeds. A natural phenomenon, small scale landslides have been occurring in slide-prone areas of Iowa long before human occupation. New landslides can occur because of rainstorms, fires, earthquakes, and various human activities that modify slope and drainage.

Potential Hazard Area

The map in Exhibit 76: Landslide Risk depicts landslide susceptibility and incidents rates in Iowa according to the Iowa Department of Natural Resources. This shows that all of Wayne County has a moderate susceptibility and moderate incident rate of landslide. However, per the previous local hazard mitigation plans, region has likely to have occurred by are small, isolated, rarely cause significant damage worth reporting, and are for the most part relatively insignificant.

Historical Occurrence

There have been no reported landslides in Iowa resulting in injury or death, according to the *Iowa Hazard Mitigation Plan 2018.* Furthermore, no State agency documents occurrences of landslide in Iowa. The United States Geological Survey landslide susceptibility map shows 95% of the Wayne County is at moderate susceptibility, low incidence. Although no events have been reported, the HMPC estimates that slides have occurred, although are most likely are quite small affecting small and isolated tracks of land. No reported injuries or deaths have occurred because of this hazard

Probability

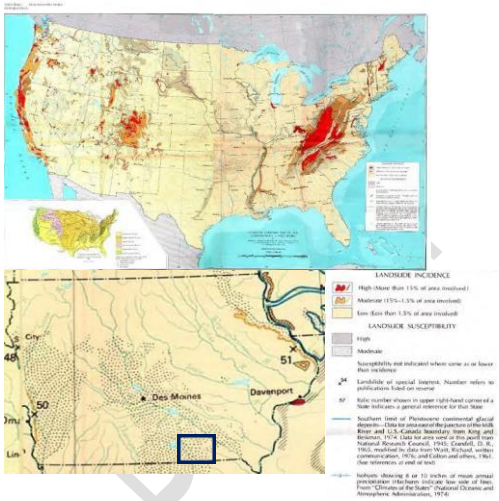
The HMPC determined the probability of future occurrence of a significant landslide in the planning area to be Unlikely.

Magnitude and Severity

There will continue to be intense rainfall events that may cause minor landslides in the planning area. But the damages would be relatively minimal and isolated. Wayne County has more "rolling hills" and lacks steep terrain, and therefore, most landslides would be small and affect an area about the size of a couple acres or less. Resulting damage from a landslide would be limited to minor property and infrastructure damage, and potentially limited interruption of essential facilities and services for a short period of time. HMPC members have not identified specific areas of development that are vulnerable to landslide, but the region is susceptible to these events.

The Cities of Allerton, Clio, Corydon, Humeston, Lineville, Millerton, and Promise City lie on flat ground and are not at risk of a landslide. Exhibit 77 shows that Wayne County has a moderate susceptibility and moderate incident rate of landslide. However, per the previous local hazard mitigation plans, region has likely to have occurred by are small, isolated, rarely cause significant damage worth reporting, and are for the most part relatively insignificant.

Exhibit 77: Landslide Risk



Source: U.S. Geological Survey, http://pubs.usgs.gov/pp/p1183/figures/map.jpg; Approximate location of Davis County is the purple

Exhibit 78: Maximum Population and Building Exposure Hazard Area 5% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Seymour	15	$711,494	28	2	$119,553	--	--	--	$10,107
Unincorp County	69	$6,642,311	14	3	$254,799	1	$169,744	--	$460,950

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	Scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	
Nelson Round Barn (historical)	South of Allerton	
Pleasant Hill School (historical)	3 miles north of Lineville	

Seymour

Facility	Location	Assessed Value
S Lift Station	Southlawn Cemetery	

Warning Time

Landslide events would be more likely to occur after a period of intense rainfall. Although that creates a window of time to increase the likelihood, a landslide could occur without warning.

Duration

The duration of the event would be a matter of seconds.

Hazard Scoring & Ranking

Exhibit 79: Landslide Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	.731
Wayne County	1	1	4	3	1.65
Allerton	1	1	1	1	1
Clio	-	-	-	-	-
Corydon	1	1	4	4	1.75
Humeston	-	-	-	-	-
Lineville	-	-	-	-	-
Millerton	1	1	4	1	1.45
Promise City	-	-	-	-	-

Expansive Soils

Soils and soft rock that trend to swell or shrink excessively due to changes in moisture content are commonly known as expansive soils. The effects of expansive soils are most prevalent in regions of moderate to high precipitation, where prolonged periods of drought are followed by long periods of rainfall.

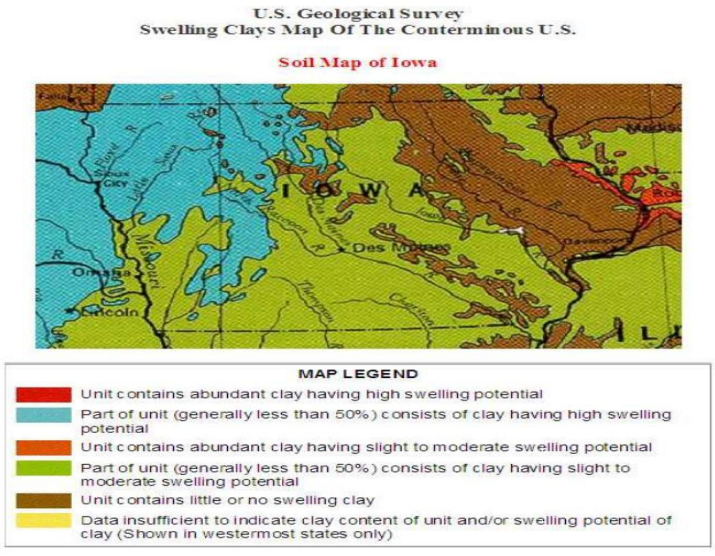
The content of swelling clay soils is low in Wayne County and there is lack of historical data for losses related to expansive soils statewide. The Iowa Hazard Mitigation Plan 2018 states, "At least, impact from this hazard has not attracted enough attention for anyone to keep track of losses due to the hazard. So, no comprehensive data is available to compare past losses across the state." (3-32). In addition, the US Geological Survey (USGS) as having soil that consists of less than 50% clay having slight to moderate swelling potential or little to no swelling clay.

The effects of expansive soils are most prevalent in regions of moderate to high precipitation, where prolonged periods of drought are followed by long periods of rainfall. The hazard occurs in many parts of the Southern, Central, and Western United States. Recent estimates put the annual damage from expansive soils as high as $7 billion. However, because the hazard develops gradually and seldom presents a threat to life, expansive soils have received limited attention, despite their costly effects.

Potential Hazard Area

Exhibit 80 shows a map of the swelling potential of soils in Iowa. Wayne County is in an area where generally less than 50 percent of the soil unit consists of clay having slight to moderate swelling potential, and a small area in the southeast of the region that has soil with no swelling clay potential.

Exhibit 80: U.S. Geological Map Survey



Source: "Swelling Clays Map of the Conterminous United States" by W. Olive, A. Chleborad, C. Frahme, J. Shlocker, R. Schneider and R. Schuster, 1989.

Historical Occurrences

The availability of data on expansive soils varies greatly. In or near metropolitan areas and at dam sites, abundant information on the amount of clay generally is available. However, for large areas of the U.S., little information is reported other than field observations of the physical characteristics of the clay.

Probability

The frequency of damage from expansive soils can be associated with the cycles of drought and heavy rainfall, which reflect changes in moisture content. However, in Wayne County, expansive soil events are somewhat infrequent or occasional and minor; most events involve minor damage to building foundations and retaining walls. No major events have been reported in the region. Regarding minor events, affected property owners, local governments, and businesses generally make any necessary repairs.

Infrequent or occasional events will continue to cause minor damage to paved areas and foundations in the county due to swelling soils, but it is unlikely that these damages will become greater in the future. New development should implement construction practices to lessen these impacts. The HMPC determined that damage to assets in the planning area is unlikely in any given year; the concern with this hazard is the cumulative effect of shrinking and swelling over many years.

Magnitude and Severity

While the entire planning area is vulnerable to some structural damage because of shrinking and expanding soils, there is no data available to determine damage estimates for this hazard. As indicated previously, individual property owners, local governments, and businesses pay for repairs to minor damages caused by this hazard. Underground utility lines such as water and sewer pipes are also at risk to damages associated with expansive soils. While all jurisdictions remain at risk, the primary concern is event damages that occur gradually over time. That said, there is no data to support damages and costs associated with this hazard. This hazard does not impact human safety.

Additional future development in the planning area will also be vulnerable to this hazard. That said, it is possible to build successfully and safely on expansive soils if stable moisture content can be maintained, or if the building can be insulated from any soil volume change that might occur. The procedure for future development efforts to mitigate the risk to structures is as follows (source: https://geology.com):

- Testing to identify any problems.
- Design to minimize moisture content changes and insulate from soil volume changes.
- Build in a way that will not change the moisture conditions of the soil.
- Maintain a constant moisture environment after construction.

Hazard Risk Exposure

Exhibit 81: Maximum Population and Building Exposure Hazard Area 100% of Jurisdiction **Per County Assessor & Auditor									
	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	#	Value	#	#	Value	#	Value	#	Value
Corydon	653	$46,228.630	1,628	154	$6,444,244	30	$1,646,910	--	$16,950
Seymour	300	$14,229,890	567	43	$2,391,070	--	--	--	$202,140
Promise City	53	$1,499,540	78	11	$323,660	--	--	--	$290
Allerton	214	$10,573,630	513	39	$1,133,490	23	$3,684,410	--	$27,540
Humeston	229	$11,579,130	484	105	$4,842,602	--	--	--	$44,280
Millerton	21	$583,570	108	8	$113,350	--	--	--	$15,530
Lineville	108	$3,996,920	259	24	$1,491,440	1	$96,330	--	$34,840
Clio	33	$1,021,740	66	37	$786,130	--	--	--	$16,950
Unincorp County	1,372	$132,846,220	2,726	59	$5,095,986	12	$3,394,880	--	$9,219,010

Corydon

Facility	Location	Assessed Value
Lift stations (W&E)		
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community Bldg	501 East St	$179,730
Sewer Lagoon	South St	
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Bath House (historical)	100 McKinley St	
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Water Dept		$20,340
Murphy Place Senior Housing	511 E Jackson	$875,890
Emergency Shelter locations		
Golf Course		$454,340
Sports Complex		
Fairgrounds		$273,330
Extension Office	220 E Jefferson	$132,670
Corydon Nursing & Rehab (Shelter Site)		
Walden Park Club House (Shelter Site)		
Corydon Head start	605 S West St	
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510
Private In-home Daycare	2018 170 St	
Private In-Home Daycare	507 W Monroe St	
Private In-Home Daycare	418 W Madison St	
Private In-Home Daycare	1615 80th St	

Millerton

Facility	Location	Assessed Value
Lift station		
Post Office	313 N Main	
Sewer Lagoon		
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
Lift station	North edge of town	
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main	$7,310
Sewer Lagoon	S. of town	

Seymour

Facility	Location	Assessed Value
N. Lift station	625 N 5th	
S Lift Station	Southlawn Cemetery	
Lagoon	J46	
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Water Plant	118 N 6th	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Water Tower		
Public HSG	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
Lift station		
City Hall/community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440
Public Housing		$204,950
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main st	$20,000
Library		$10,110

Lineville

Facility	Location	Assessed Value
Lift station	West 3rd St	
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Sewer Lagoon	East Line St	
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Medical Clinic		$149,440
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170
Private In-Home Daycare	805 Main St	

Humeston

Facility	Location	Assessed Value
Lift station	6th & Blevens	$22,410
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Water Tower		
Library		$375,480
Medical Clinic		
Elementary School		$60,000
Public Housing		
Humeston Senior Center (Shelter Site)		
Storage & Shop		$130,940

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	
Nelson Round Barn (historical)	South of Allerton	
Pleasant Hill School (historical)	3 miles north of Lineville	

Warning Time

The warning time for expansive soils is consistent with other geologic hazards that occur slowly overtime.

Duration

The duration of response to this hazard is limited in the State of Iowa. Although prolonged periods of drought are a primary indicator of risk followed by forecasted periods of precipitation, the response to expansive soils in Iowa is limited and is in large part coupled with response to f6lash flooding and river flooding.

Hazard Scoring & Ranking

Exhibit 82: Expansive Soils Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	.073
Wayne County	2	2	1	4	2.05
Allerton	1	1	1	1	1
Clio	1	1	1	1	1.0
Corydon	1	1	4	4	1.75
Humeston	-	-	-	-	-
Lineville	-	-	-	-	-
Millerton	2	1	3	1	1.75
Promise City	-	-	-	-	-
Seymour	-	-	-	-	-

Earthquake

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the Earth's surface. This shaking can cause buildings and bridges to collapse; disrupt gas, electric, and phone service; and sometimes trigger landslides, flash floods, and fires. The three general classes of earthquakes now recognized are: tectonic, volcanic, and artificially produced. While Iowa is not thought of as a state that can experience an earthquake, the New Madrid fault line is located where Missouri, Arkansas, Kentucky, and Tennessee meet. Additionally, the Wabash Valley seismic zone is located along the southeastern boarder of Illinois and Indiana.

EARTHQUAKE: A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates (FEMA).

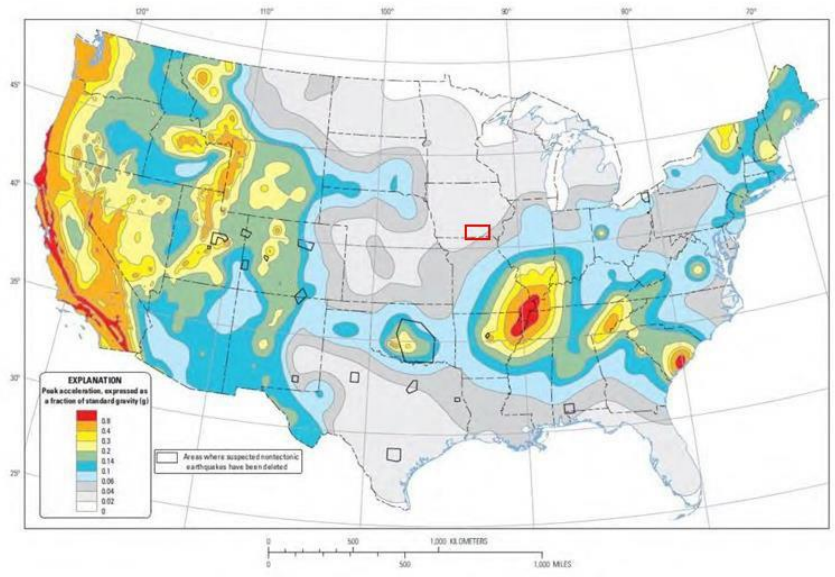
MERCALLI INTENSITY SCALE: The Mercalli Scale is based on observable damage which while is more subjective, is easier to comprehend for the general populace (USGS FAQ – Measuring Earthquakes). See the *Appendix for Modified Mercalli Scale for Earthquake Intensity*.

RICHTER SCALE: The Richter Scale is a measure of size and power of earthquakes; "as an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value" (USGS Visual Glossary – Richter Scale).

Potential Hazard Area

The potential hazard area for earthquake is all of Wayne County due to the widespread nature of this hazard. Typically, rural areas in Iowa are more severely impacted by this hazard.

Exhibit 83: 2% Probability of exceedance in 50 years map of peak ground acceleration



Source: United States Geological Survey, https://earthquake.usgs.gov

The possibility remains for Iowans to occasionally feel shaking from an earthquake; however, with the probability of damage occurring being so low.

The extent or severity of earthquakes is usually measured in two ways: 1. Magnitude Measurement utilizes the Richter Magnitude Scale and 2. Severity Measurement utilizes the Modified Mercalli Intensity Scale.

Richter Magnitude Scale

The Richter Magnitude Scale was developed in 1935 by Charles F. Richter of the California Institute of Technology as a mathematical device to compare the size of earthquakes. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded by seismographs. Adjustments are included for the variation in the distance between the various seismographs and the epicenter of the earthquakes. On the Richter Scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude 5.3 might be computed for a moderate earthquake, and a strong earthquake might be rated as magnitude 6.3. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude; as an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.

Modified Mercalli Intensity Scale

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and finally - destruction. Although numerous intensity scales have been developed over the last several hundred years to evaluate the effects of earthquakes, the one currently used in the United States is the Modified Mercalli (MM) Intensity Scale. It was developed in 1931 by the American seismologists Harry Wood and Frank Neumann. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead, it is an arbitrary ranking based on observed effects.

The Modified Mercalli Intensity value assigned to a specific site after an earthquake has a more meaningful measure of severity to the nonscientist than the magnitude because intensity refers to the effects experienced. The lower numbers of the intensity scale generally reflect the way the earthquake is felt by people. The higher the number of the scale are based on observed structurally damage. Structural engineers usually contribute information for assigning intensity values of VIII or above.

Historical Occurrences

Iowa has experienced the effects of only a few earthquakes in the past 175 years. The epicenters of thirteen (13) earthquakes have been in the state with the majority along the Mississippi River. The first know occurrence was in 1867 near Sidney in southwest Iowa. The most recent occurrence was in 2004 near Shenandoah in southwest Iowa. The largest Iowa earthquake (Mercalli magnitude VI) occurred near Davenport in southeast Iowa in 1934. Only the most recent of

these events was instrumentally recorded. Outside Iowa the most recent quakes were in the 1960's occurring in Illinois and Missouri. While more than twenty (20) earthquakes have occurred in or around Iowa, over the past 175 years they have not seriously impacted the state.

The strongest earthquake in Iowa occurred in Davenport in 1934 and resulted in only slight damage. Estimated effects of a Richter scale 6.5 magnitude earthquake along the New Madrid Fault Zone Suggest that Iowans in four southeast counties could experience trembling buildings, some broken dishes, and cracked windows. About 29 other counties, from Page (southwest) to Polk (central) to Muscatine (southeast), could experience vibrations like the passing of a heavy truck; rattling of dishes, creaking of walls, and swinging of suspended objects. Specific parts of central Iowa could sustain different levels of damage due to the soundness of the structures. A published FEMA report using the HAZUS-MH software determined the loss associated with such an event would result in approximately $1,068,000 in damages to the State of Iowa. These losses are mainly attributed to the extreme southeastern portion of the state. In the spring of 2008, slight tremors could be felt in parts of Iowa resulting from an Earthquake originating in southeastern Illinois.

Iowa has experienced minor effects from only a few earthquakes in the past 175 years. The epicenters of 13 earthquakes have been in the State with the majority along the Mississippi River. The strongest earthquake in Iowa occurred in Davenport in 1934. This earthquake resulted in only slight damage, according to the *State of Iowa Hazard Mitigation Plan, 2018*.

Exhibit 84: Historical Earthquakes in Iowa

Date	Nearest Town	Mercalli Intensity
4/28/1867	Sidney, IA / Nebraska City, NE	IV
12/9/1875	Sidney, IA / Nebraska City, NE	III
4/13/1905	Wayland, MO / Keokuk, IA	IV-V
1/26/1925	Waterloo, IA	II
11/12/1934	Davenport, IA \ Rock Island, IL	VI
1/5/1935	Rock Island, IL / Davenport, IA	III
1/5/1935	Rock Island, IL / Davenport, IA	IV
2/26/1935	Burlington, IA	III
10/11/1938	Inwood, IA	V
11/8/1938	Dubuque, IA	II
11/24/1939	Davenport, IA / Rock Island, IL	II-III
4/20/1948	Oxford, IA	IV
7/16/2004	Shenandoah, IA	III

Probability

Exhibit 83; demonstrates the probabilistic ground motions with a 2 percent probability of exceedance. The red square shows the approximate regional boundary. As shown in this graphic, the probabilistic ground motions with a 2 percent probability of exceedance in the next 50 years is 0.04 peak acceleration, expressed as a fraction of standard gravity (g). The probability of a significant earthquake in any given year is "Unlikely".

The 2014 U.S. Geological Survey (USGS) National Seismic Hazard Maps display earthquake ground motions for various probability levels across the United States and are applied in seismic provisions of building codes, insurance rate structures, risk assessments, and other public policy. The updated maps represent an assessment of the best available science in earthquake hazards and incorporate new findings on earthquake ground shaking, faults, seismicity, and geodesy. The USGS National Seismic Hazard Mapping Project developed these maps by incorporating information on potential earthquakes and associated ground shaking obtained from interaction in science and engineering workshops involving hundreds of participants, review by several science organizations and State surveys, and advice from expert panels and a Steering Committee.

The new probabilistic hazard maps represent an update of the seismic hazard maps; previous versions were developed by Petersen and others (2008) and Frankel and others (2002), using the methodology developed Frankel and others (1996). Algermissen and Perkins (1976) published the first probabilistic seismic hazard map of the United States which was updated in Algermissen and others (1990).

Exhibit 85: Maximum Population and building Exposure

Maximum Population and Building Exposure Hazard Area 100% of Jurisdiction **Per County Assessor & Auditor									
	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	653	$46,228.630	1628	154	$6,444,244	30	$1,646,910	--	$16,950
Seymour	300	$14,229,890	567	43	$2,391,070	--	--	--	$202,140
Promise City	53	$1,499,540	78	11	$323,660	--	--	--	$290
Allerton	214	$10,573,630	513	39	$1,133,490	23	$3,684,410	--	$27,540
Humeston	229	$11,579,130	484	105	$4,842,602	--	--	--	$44,280
Millerton	21	$583,570	108	8	$113,350	--	--	--	$15,530
Lineville	108	$3,996,920	259	24	$1,491,440	1	$96,330	--	$34,840
Clio	33	$1,021,740	66	37	$786,130	--	--	--	$16,950
Unincorp County	1,372	$132,846,220	2726	59	$5,095,986	12	$3,394,880	--	$9,219,010

Corydon

Facility	Location	Assessed Value
Lift stations (W&E)		
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community Bldg	501 S East St	$179,730
Sewer Lagoon	South St	
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Bath House(historical)	100 McKinley St	
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Water Dept		$20,340
Murphy Place Senior Housing	511 E Jackson	$875,890
Emergency Shelter locations		
Golf Course		$454,340
Sports Complex		
Fairgrounds		$273,330
Extension Office	220 E Jefferson	$132,670
Corydon Nursing & Rehab (Shelter Site)		
Walden Park Club House (Shelter Site)		
Corydon Head start	605 S West St	
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510
Private In-home Daycare	2018 170 St	
Private In-Home Daycare	507 W Monroe St	
Private In-Home Daycare	418 W Madison St	
Private In-Home Daycare	1615 80th St	

Millerton

Facility	Location	Assessed Value
Lift station		
Post Office	313 N Main	
Sewer Lagoon		
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
Lift station	North edge of town	
City Hall/com-munity center	112 Main St	$51,550
Post Office	1st & Main St	$7,310
Sewer Lagoon	South of town	

Seymour

Facility	Location	Assessed Value
N. Lift station	625 N 5th	
S Lift Station	Southlawn Cemetery	
Lagoon	J46	
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Water Plant	118 N 6th	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Water Tower		
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
Lift station		
City Hall/community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440
Public Housing		$204,950
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main st	$20,000
Library		$10,110

Lineville

Facility	Location	Assessed Value
Lift station	West 3rd St	
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Sewer Lagoon	East Line St	
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Medical Clinic		$149,440
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170
Private In-Home Daycare	805 Main St	

Humeston

Facility	Location	Assessed Value
1.Lift station	6th & Blevens	$22,410
2.City Hall/community center	422 N Eaton Ave.	$52,170
3. Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Water Tower		
Library		$375,480
Medical Clinic		
Elementary School		$60,000
Public Housing		
Humeston Sr Center (Shelter Site)		
Storage & Shop		$130,940

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	
Nelson Round Barn (historical)	South of Allerton	
Pleasant Hill School (historical)	3 miles north of Lineville	

The National Seismic Hazard Maps are derived from seismic hazard curves calculated on a grid of sites across the United States that describe the annual frequency of exceeding a set of ground motions. Data and maps from the 2014 U.S. Geological Survey National Seismic Hazard Mapping Project are available for download. Maps for available periods (0.2 s, 1 s, PGA) and specified annual frequencies of exceedance can be calculated from the hazard curves. Figures depict probabilistic ground motions with a 2% probability of exceedance. Spectral accelerations are calculated for 5% damped linear elastic oscillators. All ground motions are calculated for site conditions with Vs30=760 m/s, corresponding to NEHRP B/X site class boundary.

Wayne County is in an area where the probability of exceeding horizontal peak gravity acceleration by 1-2% is 10% over a period of 50 years. In other words, there is a 90% chance that any earthquake in the next 50 years affecting the region will not exceed an acceleration of 1-2% of the force of gravity. Based on recurrence intervals for small earthquakes, scientists estimate a 90% chance of a Richter magnitude 6.0 earthquake in the New Madrid Fault Zone by 2040. A magnitude 6.5 in New Madrid would create a magnitude 4 effect in Iowa resulting in little or no damage.

Magnitude and Severity

Although a damaging event is unlikely, the potential impacts could be costly in the more urban areas of the County. Most structures in Wayne County are not built to withstand earthquake shaking, but because of the relatively low magnitude of a possible quake, property damage would likely be very minor.

The main impacts to the county from a New Madrid Earthquake would be related to incoming evacuees from areas more heavily damaged by the event. This could result in a shortage of short-term lodging, such as hotel rooms and extended stay establishments. Depending on the magnitude of the earthquake, shelters may be designated in the region as evacuee shelter locations. If this occurred, assistance would be coordinated through the Emergency Management Assistance Compact (EMAC) between the State of Iowa and State governments of impacted areas.

Duration

The duration of response to this hazard is limited in the State of Iowa. Although prolonged periods of drought are a primary indicator of risk followed by forecasted periods of precipitation, the response to expansive soils in Iowa is limited and is in large part coupled with response to flash flooding and river flooding.

Hazard Scoring & Ranking

Exhibit 86: Earthquake Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	0.53
Wayne County	1	1	4	4	1.75
Allerton	1	1	1	1	1
Clio	1	1	1	1	1.0
Corydon	1	1	4	4	1.75
Humeston	-	-	-	-	-
Lineville	-	-	-	-	-
Millerton	1	1	4	1	1.45
Promise City	1	3	4	4	2.35
Seymour	-	-	-	-	-

Human Disease

This hazard encompasses the following consolidated hazards from the 2007 mitigation plan: human disease incident, and pandemic human disease. This includes a medical, health, or sanitation threat to the public (such as contamination, epidemics, plagues, insect infestations, and pandemics).

An incident related to human disease is defined as a medical, health, or sanitation threat to the public (such as contamination, epidemics, plaques, and insect infestation). Public health action to control infectious disease in the 21st century is based on the 19th century discovery of microorganisms as the cause of many serious diseases (i.e., cholera & TB). Disease control resulted from improvements in sanitation and hygiene, the discovery of antibiotics, and the implementation of universal childhood vaccination programs. Scientific and technological advances played a major role in each of these areas and are the foundation for today's disease surveillance and control systems. Scientific findings have contributed to a new understanding of the evolving relationship between humans and microbes. As of January 1, 2010, sixty (60) infectious disease were designated as notifiable at the national level. A notifiable disease is one for which regular, frequent, and timely information regarding individual cases is considered necessary for the prevention and control of the disease.

Human disease is defined as a disease that has spread around the world to many people. The word, "pandemic", means that disease has caused illness in a person on nearly every continent. Many diseases throughout history of the world have been pandemic. Examples are HIV/AIDS/Influenza. A pandemic will have widespread economic and societal implications for our state. Response and recovery to a pandemic will likely be lengthy.

Potential Hazard Area

The potential hazard area for human disease events in the entire county. An incident related to human disease is defined as a medical, health, or sanitation threat to the public (such as contamination, epidemics, plagues, and insect infestation). Public health action to control infectious diseases in the 21st century is based on the 19th century discovery of microorganisms as the cause of many serious diseases (e.g., cholera and TB). Disease control resulted from improvements in sanitation and hygiene, the discovery of antibiotics, and the implementation of universal childhood vaccination programs. A pandemic human disease is defined as a disease that has spread around the world to many people. The word, "pandemic", means that a disease has caused illness in a person on nearly every continent. Many diseases throughout the history of the world have been pandemic. Examples are HIV/AIDS/Influenza. A pandemic will have widespread economic and societal implications for our state. Response and recovery to a pandemic will likely be lengthy. Considering that the manner that the diseases can spread so quickly, all residents can be considered at risk, however, the most vulnerable population considered are the elderly, youth, and disabled residents.

The individuals that travel internationally and have high exposure to potential vectors of disease are the most susceptible. See Exhibit 87. Greater than 20% of Iowa's population is considered high risk. The elderly population of Wayne County

comprise up nearly 20% according to the 2018 ACS with a youth population (under age 19) of nearly 25%. About 45% of Wayne County may be considered at high risk based on age alone.

Locations that are susceptible to such diseases would include assisted care facilities and school districts. There are approximately 20 retirement homes or residential care facilities throughout the county. The thousands of children attending school throughout the four-county region.

Exhibit 87: Maximum Population Exposure
2019 ACSs

Jurisdiction	Population 65yrs & older	Population 18 years& younger	Population living below poverty guidelines	Residents living with a diagnosed disability	Old English Amish Population
County (6,429)	1,395 21.7%	1,618 25.2%	1,106 17.2%	922 16.4%	Estimated at 1,000
Allerton (513)	71 14.3%	168 33.8%	164 32%	17 14.5%	
Clio (66)	19 29%	12 18.2%	2 3%	7 10.6%	
Corydon (1,628)	373 23%	416 25.6%	238 14.6%	254 16.6%	
Humeston (484)	132 27.3%	121 25%	39 8%	108 22.3%	
Lineville (259)	41 15.8%	43 16.6%	47 18%	33 12.7%	
Millerton (108)	5 5%	33 30.6%	10 9.3%	1 1%	
Promise City (78)	18 23%	13 16.7%	15 19.2%	19 24.4%	
Seymour (567)	165 29%	113 19.9%	139 24.6%	125 22%	

Historical Occurrence

There are 49 reportable communicable disease and infectious conditions in Iowa that hospitals and other health care providers must report to their county public health department. Iowa County Public Health investigates these diseases and maintains reports and are shared with the Iowa Department of Public Health (IDPH) and the Centers for Disease Control and Prevention (CDC). IDPH releases an annual report of notifiable and other diseases.

The **Ebola virus disease (EVD)**, **Ebola hemorrhagic fever (EHF)**, or simply **Ebola** is a disease caused by an ebolavirus. Symptoms start a few days, or weeks, after contracting the virus, with a sore throat, fever, headaches, and muscle pain. Typically, diarrhea, vomiting, and a rash follow, along with decreased function of the kidneys and liver. Around this time, people who are affected may begin to bleed both within the body and externally. The virus may be acquired upon contact with bodily fluids or blood of an infected animal or other human. It has not been known to spread through the air. It is thought that fruit bats are a carrier and may spread the virus without being affected. After human infection occurs, the disease could spread between people, as well. Male survivors may be able to transmit the disease through semen for close to two months after being treated. To make a property diagnosis, typically other diseases with similar

symptoms such as cholera, malaria, and other viral hemorrhagic fevers are initially excluded. To confirm a diagnosis, samples of blood are tested for viral RNA, viral antibodies, or the virus itself.

Other disease that are passed to humans from insects include Lyme disease, West Nile, and Rocky Mountain spotted fever. Lyme disease and Rocky Mountain spotted fever are transmitted by a tick bite. There were 193 cases of Lyme disease in Iowa during 2014 (no new cases in Wayne County – only 2 from 2002-2006). This is a 10% increase from the average of the three years prior. There were 10 cases of Rocky Mountain spotted fever in Iowa (none in Wayne County), but six of the ten cases were identified in southern Iowa.

West Nile cases have decreased dramatically in the past year. In 2014, the state saw a 66% decrease in the number of cases to IDPH. There were no documented cases in Wayne County.
In 1976 the disease was first identified in Sudan and parts of Zaire. Outbreaks typically occur in tropical regions of sub-Saharan Africa. From 1976, the World Health Organization (WHO) has reported over 1,716 new cases. The largest outbreak to date is the ongoing 2014 West African Ebola Outbreak, which is affecting Sierra Leone, Guinea, Nigeria, and Liberia.

The recent annual reports have dedicated a specific chapter to the surveillance of influenza. According to the 2016 annual report, the 2016-2017 flu season was worse in nearly every measure compared to the 2015-2016 season. The 2017 annual report stated that there were 270 influenza-related deaths in Iowa in the 2017-2018 flu season, more than the previous two flu seasons combined. It was also noted that 79% of those deaths were among person with a reported underlying health condition. IDPH reported "widespread" statewide influenza activity to the CDC for 10 consecutive weeks during that season. While the rate of infections from influenza increases and decreases seasonally in a predictable manner, many people will have some immunity from previous exposure and vaccinations and receiving an annual inoculation can help prevent the spread of hospitalizations due to influenza. In contrast, pandemic flu occurs when a new strain of influenza causes global outbreak. People have little to no immunity to these viruses because there is no past exposure to them or similar viruses. They can also occur any time of the year and not just in a "season". According to *the 2013 Iowa Hazard Mitigation Plan*, there have been four influenza pandemics in Iowa since 1900, each occurring approximately 30 years apart. The H1N1 outbreak in 2009-2010 was the most recent event. This event killed fewer people in Iowa than the 2017-2018 seasonal flu.

The Coronavirus appeared in the United States in January of 2020. The highly contagious virus was declared a national public health emergency by the end of January. COVID-19 made its appearance in early March in Iowa and prompted the governor to issue a "partial activation" of state of emergency operations. The President of the United States declared a national emergency in March as well. Universities, colleges, and schools began to offer online classes or closed to prevent the spread of the disease. By the end of March, Iowa had declared a public health disaster and businesses were forced to shut down and created an economic hardship for many in the country. In the first year of the virus, Iowa experienced approximately 5,642 (1%) of the 534,000 deaths in the United States. The first vaccines were approved in December 2020 and citizens are still struggling to receive them at this time.

Probability

Historically, pandemics occur approximately every 30 years in Iowa. Influenza occurs every year all over the world. The virus spreads through a population for a few months and will disappear or move to another country due to travel. Influenza usually occurs in the fall and winter months in the U.S., but it is usually manageable at the local level. However, given the status of the coronavirus and the spread continuing, this ongoing event could continue to occur for several years.

Magnitude and Severity

When a human disease event was to occur, the area of effect, severity of symptoms or loss of human life would be determined by the communicability and virulence of the disease. The impacted area could vary from a neighborhood to a community to and entire county or more. Public health agencies work to reduce the spread of diseases and use community-based prevention, monitor current infectious disease trends, and provide early detection and treatment for infected persons.

Today's society is so mobile, diseases can move rapidly across the state and nation within months, weeks and even days. Many diseases on the national notification list result in serious illness and even death. Some diseases are treatable but for many others only the symptoms are treatable.

Typically, the people who are especially vulnerable during a human disease event are the elderly, young, people with chronic medical conditions and people who engage in high-risk behaviors. People who travel internationally and have a higher exposure to potential vectors of the disease are the most susceptible. The population under eighteen in Wayne County account for 25% and the elderly make up 22% of the total population. With such as high percentage of the population at risk, the magnitude and severity of a human disease event can reach a critical level.

Locations that are susceptible to such diseases would include assisted care facilities and school districts. There is one retirement homes or assisted care facilities in Wayne County. The only one is in Corydon. The children (age 18 and under) attending Wayne Community Schools are located throughout the communities include: Corydon 416, Seymour 113, Promise City 15, Allerton 168, Humeston 121, Millerton 33, Clio 12, and Lineville 43.

According to Iowa Department of Public Health, a clinic visits to the doctor costs an estimated $84-$200 and a visit to the emergency room will be approximately $50-$1600. A disease or epidemic event may put a higher-than-normal strain on public health services. It would also likely have an economic impact as well.

Warning Time

Healthcare workers are usually the first to diagnose disease and become the first line of defense. Wayne County Public Health, IDPH, and the U.S. CDC monitor reports submitted by health care providers, hospitals, and labs to identify patterns. Monitoring agencies are proactive in providing information to the health care community on medical concerns.

The public is reminded to prepare for typical human disease events like influenza before the common time of year this virus spreads throughout Iowa and the U.S. For other human disease events, the public is informed of initial outbreak, which are confirmed cases of a disease, so for most human disease events there is minimal to no warning.

A potential event exists for a human disease to occur from contamination of water supplies from infrastructure failure, flooding, or other hazards there is minimal to no warning for the public. The IDNR and local governments issue warning as soon as possible but the contamination is already present in water supplies.

Duration

A response to highly infectious disease occurs continuously but the direct effects of a human disease event such as a pandemic can occur for months at a time.

Hazard Scoring & Rankings

Exhibit 88: Human Disease Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	1.55
Wayne County	2	3	2	3	2.4
Allerton	2	3	3	4	2.35
Clio	1	1	1	1	1.0
Corydon	3	2	1	4	2.5
Humeston	-	-	-	-	-
Lineville	-	-	-	-	-
Millerton	3	2	1	3	2.4
Promise City	2	1	1	4	1.75
Seymour	1	1	1	1	1

Sinkholes

The loss of surface elevation due to the removal of subsurface support defines a sinkhole. Sinkholes range from broad, regional lowering of the land surface to localized collapse. The primary causes of most subsidence are human activities: Underground mining of coal, groundwater or petroleum withdraw, and drainage of organic soils. In addition, this is due to the erosion of limestone of the subsurface.

Historical Occurrences

While there are no recorded sinkholes in or immediately surrounding the incorporated cities, there is a possibility of subsidence occurring. The prevalence of mines under a large proportion of the communities provides the potential of large areas within the county being damaged by mine cave-ins. The Iowa Department of Natural Resources monitors and maps sinkholes and mines in Iowa. Not all the mines under Wayne County are fully mapped; the extents of some mines are estimated.

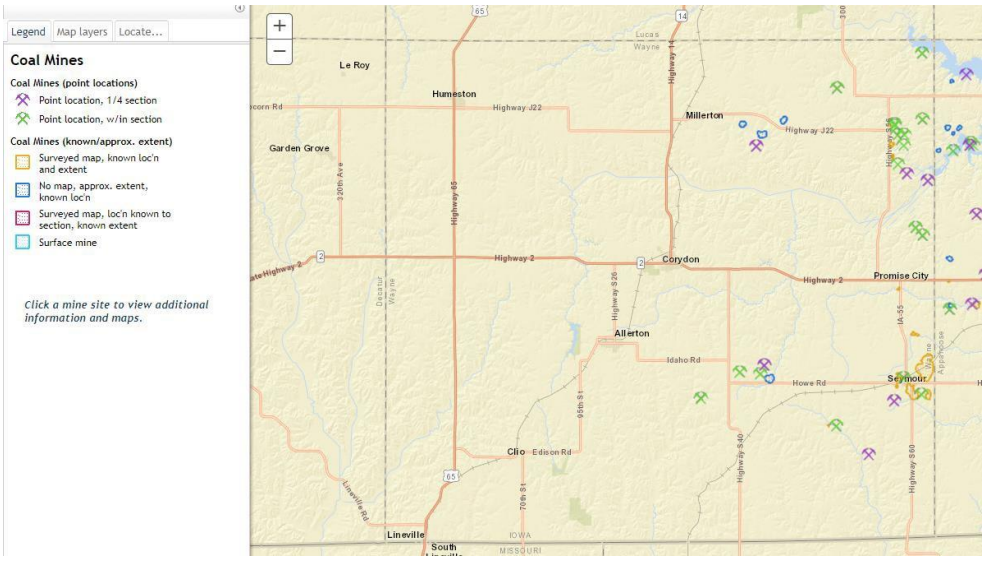
Potential Hazard Area

The table below displays the maximum population and building exposure at risk with Sinkholes. Given the history of mining in Wayne County, mine subsidence may well be of concern for the county and its communities. However, due to poorly mapped conditions, we can only estimate the locations of the abandon mines. The participating jurisdictions know of estimated shafts but do not have precise, mapped locations.

Sinkholes, also known as subsidence, come in two primary forms in Iowa, Karst subsidence and Mine subsidence. Mine subsidence occurs when a mine or part of a mine collapses causing surface land to create a basin or hole. Karst subsidence occurs as water dissolves underlying rock creating a gap that ultimately collapses. Most of Iowa's sinkholes occur in rural areas where their main impact is rendering some land unsuitable for row-crop agriculture. Sinkholes have also resulted in the failure of farm and other types of ponds, roads, and one sewage-treatment lagoon. As sinkholes sometimes allow surface runoff to directly enter bedrock aquifers, their presence has a potential impact on groundwater quality.

The prevalence of mines under a large proportion of the communities provides the potential of large areas within the county being damaged by mine cave-ins. The Iowa Department of Natural Resources monitors and maps sinkholes and mines in Iowa. Not all the mines under Wayne County are fully mapped; the extents of some mines are estimated. Based on these mapping limitations, the condition of at least some of the mines is presumably not fully known. Historical data collected gives estimated locations of such mines but there is no precise mapping to be able to identify target areas. History indicates that there were approximately 37 different mining companies throughout Wayne County. Many of them do not have precise mapping, however Wayne County officials indicate that they are monitoring an abandon mining area north of Promise; in the Right Township, sections 23-26. There are additional mines on the east county line that is adjacent to Appanoose County, who has a very rich history of coal mining. Included in that region are mines in the Seymour area.

Exhibit 89: Wayne County Coal Mine Map [Iowa Coal Mines (iowadnr.gov)]



Probability

The prevalence of mines under a large proportion of the communities provides the potential of large areas within the county being damaged by mine cave ins. The Iowa Department of Natural Resources monitors and maps sinkholes and mines in Iowa. Not all the mines under Wayne County are fully mapped; the extents of some mines are estimated. Based on these mapping limitations, the condition of at least some of the mines is presumably not fully known. Historical documents state that there were mines surrounding or under many of the communities in Wayne County. The local HMP committee believes there is a likelihood that a sinkhole due to mining could occur any given year.

Magnitude and Severity

Sinkholes, also known as subsidence, come in two primary forms in Iowa, Karst subsidence and Mine subsidence. Mines subsidence occurs when a mine or part of a mine collapses causing surface land to create a basin or hole. Karst subsidence occurs as water dissolves underlying rock creating a gap that ultimately collapses. Most of Iowa's sinkholes occur in rural areas where their main impact is rendering some land unsuitable for row-crop agriculture. Sinkholes have also resulted in the failure of farm and other types of ponds, roads, and one sewage-treatment lagoon. As sinkholes sometimes allow surface runoff to directly enter bedrock aquifers, their presence has a potential impact on groundwater quality.

Damage consists primarily of direct structural damage and property loss and depreciation of land values, but also includes business and personal losses that accrue during periods of repair.

Generally, land subsidence possesses a greater risk to property than to life. Damage to property, facilities and infrastructure would only occur if the event undermined foundations.

Exhibit 90: Maximum Population and Building Exposure Hazard Area 10% of Jurisdiction **Per County Assessor & Auditor									
	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Seymour	30	$1,422,989	56	4	$239,107	--	--	--	$20,214
Promise City	5	$149,954	7	1	$32,366	--	--	--	$29
Allerton	21	$1,057,363	51	3	$113,349	2	$368,441	--	$2,754
Unincorp County	137	$13,284,622	272	5	$509,598	1	$339,488	--	$921,901

Allerton

Facility	Location	Assessed Value
City Hall/com-munity center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440
Public Housing		$204,950
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	
Nelson Round Barn (historical)	South of Allerton	
Pleasant Hill School (historical)	3 miles north of Lineville	

Promise City

Facility	Location	Assessed Value
1.Lift station	North edge of town	
2.City Hall/com-munity center	112 Main St	$51,550
4. Post Office	1st & Main St	$7,310
6. Sewer Lagoon	South of town	

Seymour

Facility	Location	Assessed Value
N. Lift station	625 N 5th	
S Lift Station	Southlawn Cemetery	
Lagoon	J46	
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Water Plant	118 N 6th	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Water Tower		
Public HSG	N 7th St	$500,390

Loss Estimate

There are no documented events that have occurred to provide a loss estimate.

Warning Time

Regional lowering occurs gradually over time, while the collapse of abandoned mines can occur suddenly. Collapse is one that can be properly mitigated if measures are taken structurally below the ground to compensate for the presents of mine caverns.

Duration

The response tied to sinkholes is related to securing the immediate threat to life and property including immediate reroute of traffic from the affected infrastructure and search and rescue in the case of structural collapse.

Hazard Scoring & Ranking

Exhibit 91: Sinkholes Hazard Score Calculation					
	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County	--	--	--	--	1.34
Unincorporated County	1	1	4	4	1.75
Seymour	1	1	1	1	1

Technological Hazards

Dam Failure

A dam failure is the uncontrolled release of impounded water resulting in downstream flooding, which can affect life and property. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, and poor construction, vandalism, or terrorism cause dam failures. Dams are constructed for a variety of uses, including flood control, erosion control, water supply impoundment, hydroelectric power generation and recreation.

Levee failure can be attributed to the loss of structural integrity of a flood wall or berm by erosions, piping, saturation, or under seepage causing water to inundate normally dry areas. Wayne County has no levees identified by the National Levee Database.

The thresholds for when a dam falls under State regulation are outlined in Iowa Administrative Code 567-71.3 and are listed below. The thresholds are primarily based on both dam height and water storage volumes. State regulated dams are those dams that meet the following:

In rural areas:

a. *Any dam designed to provide a sum of permanent and temporary storage exceeding 50 acre-feet at the top of dam elevation, or 25 acre-feet if the dam does not have an emergency spillway, and which has a height of 5 feet or more.*

b. *Any dam designed to provide permanent storage more than 18 acre-feet, and which has a height of 5 feet or more.*

c. *Any dam across a stream draining more than 10 square miles.*

d. *Any dam located within 1 mile of an incorporated municipality, if the dam has a height of 10 feet or more, stores 10 acre-feet or more at the top of dam elevation and is situated such that the discharge from the dam will flow through the incorporated area.*

Low head dams:

Any low head dam on a stream draining 2 or more square miles in an urban area, or 10 or more square miles in a rural area.

Dams are classified into three (3) categories based on the potential risk to people and property should a failure occur. The classification may change over time because of development downstream from the dam since its construction. Older dams may not have been built to the standards of its new classification. Below are the hazard classifications defined by Iowa Department of Natural Resources (DNR):

- High Hazard – A structure shall be classified as high hazard if located in an area where failure may create a serious threat of loss of human life or result in serious damage to residential, industrial, or commercial areas, important public utilities, public buildings, or major transportation facilities.

- Local High Hazard dams – None in Wayne County (nearby that could affect Wayne County include Appanoose 1, Lucas 1)
- Federal dams identified in State Major Dam Inventory – None in Wayne County however, Lake Rathbun in Appanoose County could impact river flow and the regional water supply.

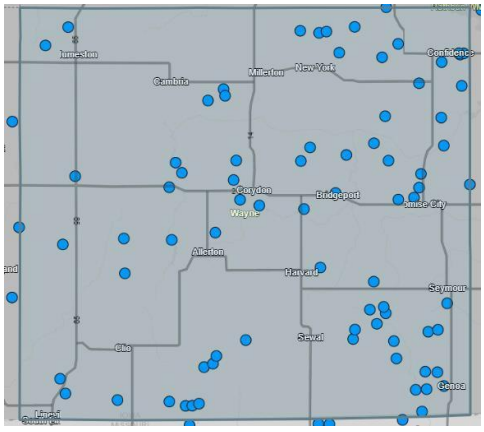
- Moderate (Significant) Hazard – A structure shall be classified as moderate hazard if located in an area where failure may damage isolated home or cabins, industrial or commercial buildings, moderately traveled roads or railroads, interrupted major utility services, but without substantial risk of loss of human life. In addition, structures where the dam and its impoundment are of 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, shall be considered moderate hazard for design and regulatory purposes unless a higher hazard class is warranted by downstream conditions.
  - Local Significant Hazard dams – 4 Wayne County
    ** Bobwhite State Park, Corydon City Lake, Lakeside Park near Humeston, & Medicine Creek Wildlife Area.

- Low Hazard – A structure shall be classified as a low hazard dam if located in an area where damages from a failure would be limited to loss of the dam, loss of livestock, damages to farm outbuildings, agricultural lands, and lesser used roads, and where loss of human life is considerably unlikely.
  ** 71 Wayne County dams

Potential Hazard Area

Dam hazard potential classifications have nothing to do with the material condition of the dam, only the potential for death and/or destruction due to the size of the dam, the size of the impoundment, and the characteristics of the area downstream from the dam. The Iowa Department of Natural Resources (DNR) tracks all dams in Iowa with a height of 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) feet of storage regardless of height.

Exhibit 92: Wayne County Dam Locations National Inventory of Dams (damsdev.net)



Dam Profiles

There are six bodies of water that have dams in Wayne County. Each reservoir once served as the source of water for a community prior to the creation of large rural water system. The water bodies are listed below:

Bobwhite State Park – Allerton

As Wayne County's only State Park, Bobwhite State Park offers an abundance of activities. This 390-acre park, with a 90-acre lake, has facilities for: Hiking (3 miles), picnicking, swimming, boating (restricted to electric motors only), camping (you can even "pitch your tent" where 500 covered wagons camped on the original 1846 Mormon Pioneer Trail). A Park Ranger is located at the park year-round. The Park is located one mile west of Allerton.

City of Corydon Lake Park

Corydon Lake Park 1 mile southwest of Hwy. 2. Corydon Reservoir was constructed in 1919 and is in south central Iowa on the west edge of Corydon, Iowa. The reservoir is an on-stream impoundment on a tributary of West Jackson Creek. The reservoir has a surface area of 58 acres when completely full and is split into two sections by railroad tracks. The main area of the reservoir is 52 acres, and the remaining 6 acres are a shallow marsh like area. The mean depth of the reservoir is approximately 5.9 feet, and the volume is almost 15 million cubic feet when full. Corydon Reservoir is located within the Corydon Lake Park (approx. 160 acres), managed by the Wayne County Conservation Board. The park and reservoir are used primarily for camping, fishing, boating, picnicking and hiking.

Lakeside Park – Humeston

Located one mile north of Humeston on Hwy 65, is an 86-acre park with facilities for: Camping (with or without electrical hookups, drinking water, and pit toilets), fishing on its 45-acre lake, and picnicking areas.

Moore-Gosch Memorial Park

Located one mile north of Lineville on Hwy 65, is a 29-acre park featuring facilities for: Camping (with or without electrical hookups, drinking water, and pit toilets), fishing on the 12-acre lake, and picnicking areas.

Medicine Creek Wildlife Area

Located 5 miles east of Lineville, is a 1028-acre area with facilities for: Hunting and fishing, as well as upland timber ground, a restored prairie area, and 140 acres of wetland. The dam was washed away in 2019 during a heavy rainfall thunderstorm. The only impact was to adjacent cropland. It is currently under construction for repair.

Seymour Lake Park

Located one quarter of a mile south of Seymour on county road S60, is rustic park with facilities for: Camping (20 undesignated campsites for tent camping and restrooms), fishing on its 24-acre lake (with boat ramp), and picnicking areas.

The National Dam Inventory indicates that there are five "Significant Hazard Dams" in Wayne County. A "Significant Hazard Dam" in the State of Iowa Mitigation plan is determined if it's located in an area where failure may dam failure may damage isolated homes or cabins, industrial/commercial buildings, moderately traveled roads or railroads, interrupts major utility services, but without substantial risk of loss of human life. In addition, structures where the dam and its impoundment are of themselves of public importance, such as dams associated with public water supply systems, public recreation, etc. The most direct impact of a dam failure of Bobwhite Lake on Bobwhite State Park grounds would be one a section of the unincorporated region of Wayne County. The topography of the area the lake would dissipate the water. The only major structure at risk of damage would be a rural bridge located downstream. Other "significant" Hazard Dams include City of Corydon Lake, Lakeside Park near Humeston, and Medicine Creek Wildlife Area (located 5 miles east of Lineville).

There would be limited significant damage from each of these sources as the drainage would occur in the rural region waterway. Primary damage would be to secondary roads and agricultural land. Limited damage would occur to roads and properties in the failure of Corydon Lake dam. Lakeside Park is in the unincorporated region near Humeston and would affect secondary roads and agriculture crops. Medicine Creek Wildlife area is a wetland east of Lineville that contains water as flood mitigations for that region. Should the dam systems fail around Medicine Creek agricultural fields would be inundated.

Exhibit 93: Wayne County Significant Hazard Dams
https://nid.sec.usace.army.mil

Dam Name	NID #	Hazard Class	Dam Ht. (ft.)	Max Storage (acre-ft.)	River	Owner
Bobwhite Lake Dam	IA01384	Significant	27	1,800	South Fork Chariton River	Iowa DNR
Corydon Reservoir Dam	IA01641	Significant	26	870	Tr-West Jackson Creek	City of Corydon
Rock Valley Lake Dam	IA03900	Significant	39	1,232	Tr-South Fork Chariton River	Darrell Coddington
Humeston Reservoir Dam	IA01383	Significant	31	900	Tr-Chariton River	City of Humeston
Heritage Point Lake Dam	IA01151	Significant	47	1,943	Tr-South Chariton River	Heritage Point Lake, LC

There are 71 low hazard dams identified throughout the county, but primary damage would occur to the unincorporated region of the county. A Low Hazard dam is defined if it is in an area where damages from a failure would be limited to loss of the dam, loss of livestock, damages to farm outbuildings, agricultural lands, and lesser used roads and where loss of human life is considered unlikely. Maximum risk would be to the roadways and bridges throughout the county. For example, a breach of Seymour Lake would release water to a rural region of the county. A larger concern would be the impact that could occur to highway S60, a few rural homes and a possibly a couple homes on the edge of the city limits.

Historical Occurrences

There have been two historical occurrences in the State of Iowa; one event occurred in 1968 in Waterloo when the Virden Creek Dam failed. The incidence claimed one life, and the dam is no longer in existence. There was concern during the very wet period of 1993 that water would overtop Saylorville Reservoir. With the outfall flowing at full capacity and water flowing out of the spillway, the reservoir did not overtop the dam. The second occurrence happened when the Lake Delhi dam failed in July of 2010. The 92-year-old dam was breached at nine-mile-long lake that was owned by a local homeowner's recreation association. The breach occurred at a 300-foot section of the earthen portion of the dam near the concrete structure. The breach caused significant property loss, an evacuation of as many as 700 near the dam, as well as severe economic impacts to the tourism industry in the area.

Locally, Medicine Creek Wildlife wetland experience a dam washout after a period of heavy rain in 2019. Drainage was provided by a box culvert which was washout and collapsed.

Magnitude and Severity

The following chart summarizes the maximum population and building exposure to Dam Failure. Dam Failure is the uncontrolled release of impounded water resulting in downstream flooding which can affect life and property. Flooding, Earthquakes, blockages, lack of maintenance, improper operation and poor construction, vandalism, or terrorism cause Dam Failures. Dams are constructed for a variety of uses, including flood control, erosion control, water supply impoundment, hydroelectric power generation and recreation. The most direct impact of a dam failure of Bobwhite Lake on Bobwhite State Park grounds would be one a section of the unincorporated region of Wayne County. The topography of the area the lake would dissipate the water. The only major structure at risk of damage would be a rural bridge located downstream. Other "significant" Hazard Dams include City of Corydon Lake, Lakeside Park near Humeston, and Medicine Creek Wildlife Area (located 5 miles east of Lineville).

There would be limited significant damage from each of these sources as the drainage would occur in the rural region waterway. Primary damage would be to secondary roads and agricultural land. Limited damage would occur to roads and properties in the failure of Corydon Lake dam. Lakeside Park is in the Unincorporated region near Humeston and would affect secondary roads and agriculture crops. Medicine Creek Wildlife area is a wetland east of Lineville that contains water as flood mitigations for that region. Should the dam systems fail around Medicine Creek agricultural fields would be inundated.

There approximately are 71 low hazard dams identified throughout the county, but primary damage would occur to the unincorporated region of the county. A Low Hazard dam is defined if it is in an area where damages from a failure would be limited to loss of the dam, loss of livestock, damages to farm outbuildings, agricultural lands, and lesser used roads and where loss of human life is considered unlikely. Maximum risk would be to the roadways and bridges throughout the county. For example, a breach of Seymour Lake would release water to a rural region of the county. A larger concern would be the impact that

could occur to Highway S60, a few rural homes and a possibly a couple homes on the edge of the city limits.

Exhibit 94: Maximum Population and Building Exposure Hazard Area 10% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	65	$4,622,863	162	15	$644,424	3	$164,691	--	$1,695
Seymour	30	$1,422,989	56	4	$239,107	--	--	--	$20,214
Unincorp County	137	$13,284,622	272	5	$509,598	1	$339,488	--	$921,901

Seymour
No critical Facilities affected.

Corydon
No critical facilities affected by dam failure. One small storage building at the base of dam.

Unincorporated Wayne County
Only agricultural land would be affected by dam failure in the unincorporated region of the county.

Loss Estimate

There have been no dam failures in Wayne County to calculate an estimated loss. The loss would vary upon the extent of the dam failure and location. Damage would include crops, roads, bridges, and a great expense would occur for cleanup.

Warning Time
There is little to no warning if structures are not monitored, which are likely to be small private dams. Because major structures are monitored, if the levee or dam were to fail, there would likely be several hours for the vulnerable areas downstream to evacuate. Due to the potential impacts, a minimal warning time is the preferred estimate.

Duration
Response to a dam or levee failure would be extensive and require wide ranging recovery efforts for reconstruction of the original flood control structures and any damaged property.

Hazard Scoring & Ranking

Exhibit 95: Dam Failure Hazard Score Calculation					
Jurisdiction	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County	--	--	--	--	0.68
Unincorporated County	1	1	4	4	1.75
Allerton	1	1	1	1	1
Corydon					
Millerton	1	1	4	2	1.55

Infrastructure Failure

This hazard encompasses the following hazards: communication failure, energy failure, structural failure, and structural fire. This includes an extended interruption, widespread breakdown, or collapse (part or all) of any public or private infrastructure that threatens life and property.

COMMUNICATION FAILURE – is the widespread breakdown or disruption of normal communication capabilities. This could include major telephone outages, loss of local government radio facilities, long-term interruption of electric broadcast services, emergency 911, law enforcement, fire, emergency medical services, public works and emergency warning systems are just a few of the vital services which rely on communication systems to effectively protect citizens. Business and industry rely heavily on various communication media as well. Mechanical failure, traffic accidents, power failure, line severance, and weather can affect communication systems and disrupt service. Disruptions and failures can range from localized and temporary to widespread and long-term. If switching stations are affected, the outage could be more widespread. Thus, the SHMT supports developing interoperability throughout the state.

ENERGY FAILURE – an extended interruption of service either electric, petroleum or natural gas, which by an actual or impending acute shortage of usable energy could create a potential health problem for the population and possibly mass panic. International events could potentially affect supplies of energy producing products while local conditions could affect distribution of electricity, petroleum, or natural gas. The magnitude and frequency of energy shortages are associated with international markets. Local and state events such as ice storms can disrupt transportation and distribution systems; if disruptions are long lasting, public shelters may need to activate to provide shelter form extreme cold or extreme heat. Stockpiles of energy products eliminate short disruptions but can increase the level of risk to the safety of people and property near the storage site.

STRUCTURAL FAILURE – The collapse (part or all) of any public or private structure including roads, bridges, towers, and buildings is considered a structural failure. A road, bridge or building may collapse due to the failure of the structural components or because the structure was overloaded. Natural events such as heavy snow may cause the roof of a building to collapse (under the weight of the snow). Heavy rains and flooding can undercut and washout a road or bridge. The age of the structure is sometimes independent of the cause of the failure. Enforcement of building codes can better guarantee that structures are designed to hold-up under normal conditions. Routine inspections of older structures may alert inspectors to “weak” points. The level of damage and severity of the failure is dependent on factors such as the size of the building or bridge, the number of occupants of the building, the time of day, day of the week, amount of traffic on the road or bridge, and the type, and amount of the products stored in the structure.

Civil Structures may fail in a variety of modes. The unprecedented growth in technology has resulted in a host of problems related to complex structures, special materials, and severe operational and environmental loads, such as fire, excessive vibrations, explosion, high-energy piping failures, missiles, and

earthquakes. Except for misuse, accidental or environmental loads, the causes of failure may be found in deficiencies of design, detailing, material, workmanship, or inspection. With eh aging structures in the country along with problems with new materials discussed above, structural failure will continue to occur. Efforts to inspect and maintain these structures will lessen the probability of a failure but not guarantee that it will not happen in the future. Internal weaknesses can be hidden from inspectors and not be realized until it is too late.

STRUCTURAL FIRE – A structural fire is an uncontrolled fire in populated areas that threatens life and property and is beyond normal day-to-day response capability. Structural fires present a far greater threat to life and property and the potential for much larger economic losses. Modern fire codes and fire suppression requirements in new construction and building renovations, coupled with improved fire-fighting equipment, training, and techniques lessen the chance and impact of a major urban fire. Most structural fires occur in residential structure, but the occurrence of a fire in a commercial or industrial facility could affect more people and pose a greater threat to hose near the fire or fighting the fire because of the volume or type of the material involved.

Potential Hazard Area

The potential hazard area for infrastructure failure is all of Wayne County but would be likely to concentrate in and around cities.

Past Occurrences & Severity

COMMUNICATION FAILURE - No widespread communication failures have occurred in Iowa. Local incidents: due to weather conditions, equipment failure, excavation incidents, or traffic accidents have been reported, the outages were usually resolved in a timely manner. Widespread communication losses are unlikely due to backup systems and redundant system designs. Local communication failures are likely to affect small areas of a country. Communications failures have presumably occurred in Wayne County; however, documentation is not readily available.

ENERGY FAILURE- The energy crisis of the 1970's had significant impact on many consumers in Iowa. High inflation and unemployment were associated with the excessive dependence on foreign oil during the early and mid-1970's. An energy shortage of that magnitude has not affected Iowa in recent years. Only when free market forces cease to provide for the health, welfare, and safety of the citizens governments can take appropriate actions to limit the effects of an energy shortage. Energy Failure in Wayne County can and has involved real or perceived gasoline shortages and downed power lines. The most recent occurrence was in 2007 when a severe ice storm crippled this area. Essentially all of Wayne County experienced Energy Failure or disruption for 3-5 days.

STRUCTURAL FAILURE - There have been several sporadic structural failures across the state. They have included homes, commercial structures, and communication towers. There is no central collection point for this information. There has not been any anecdotal information identified stating that such a failure has occurred in Wayne County.

STRUCTURAL FIRE - Structural fires are almost a daily occurrence in some communities. Nearly all are quickly extinguished by on-site personnel or local fire departments. Fire fatalities have increase from 2006 through 2010 (191) to 231 in 2016-2020. There have been several fires that have occurred within Wayne County; however, nearly all these fires there have been individual house fires or small fires. Many of the home fires were accidental home fires caused by children playing with matches, homeowners' negligence, lightning strikes, or rodents chewing electrical wiring.

Probability

No widespread communications failure has occurred in Iowa or Wayne County. Local incidents due to weather conditions, equipment failure, excavation incidents, and traffic accidents have been reported, but outages have usually been resolved in a timely manner. Widespread and long-term communications losses are unlikely are unlikely due to backup systems and redundant system designs.

An extended interruption of electric, petroleum, or natural gas service, which by an actual or impending acute shortage of usable energy, could create a potential health problem for the population and possibly even mass panic. International events could potentially affect supplies of energy producing products while local conditions could affect distribution of electricity, petroleum, or natural gas. The magnitude and frequency of energy shortages are associated with international markets.

Local and state events such as severe winter storms can disrupt power distribution systems. If disruptions are long lasting, public shelters may need to be opened to provide shelter from extreme cold or extreme heat. Stockpiles of energy products like power generators and fuel can eliminate short disruptions.

In Wayne County, there have been structural failures, primarily structural damage from severe weather events. Throughout the region, local jurisdictions inspect and maintain structures or enforce local regulations to prevent failures that can cause injury, death, or property damage. Most often, structures are closed or decommissioned before a major failure event can occur, but there is still a likely probability of a failure occurring in the region.

Structural fires are a common occurrence in some communities, but nearly all are quickly extinguished by on-site personnel or local fire departments. In Wayne County, there have been structural fires requiring emergency responses and recovery efforts, but local capabilities have been sufficient. Despite comprehensive fire prevention and education in public, commercial, and residential structures, there is a likely probability for a major structural fire to occur in Wayne County.

Magnitude and Severity

Most critical communication systems have backup and redundant designs to provide continuity of service. It should be mentioned that Wayne County and neighboring counties have E911 communication centers based in each of their county seats. If a communications failure were to affect a main communication center, that entire county would be affected and at risk, especially if the failure event occurred during a hazard event.

Energy failure, or power outages, can be widespread and last for several hours or a few days. Depending on the time of year, an extend period without power can be dangerous in extreme cold or heat conditions. In addition, power outages can limit the use of pumps or other necessary equipment to protect structures during other hazards like flash flooding, which may affect an area during the outage.

Any structure in Wayne County could become hazardous in the event of flooding, earthquake, fire, high winds, or other natural events. All structures are vulnerable due to normal deterioration and natural elements. Increases in traffic volume and weight will likely increase vulnerability of transportation facilities in Iowa and the county.

The impacts of failed structures would likely be contained to the immediate are and adjacent properties. The area could be as small as the house and yard of a fallen chimney, or the area could be relatively extensive if a failure structure is a multi-story building or tall communication tower. Dam and levee failures would affect a much larger area and are discussed in a separate section.

Occupants of older structures with outdated electrical systems not built to current fire codes are particularly vulnerable to fire. Structures with combustible materials are more vulnerable than steel or concrete structures. In addition, structures without early detection systems are more likely to be destroyed before containment by response agencies. Wayne County Emergency Management indicates that very few buildings around any of the county seat squares are equipped with such systems.

Structures in areas served by older, smaller, or otherwise inadequate water distribution infrastructure are also at significant risk. The fire death risk for elderly and children under five years of age are more than two times than the average population.

With modern equipment, training, fire detection devices, and building regulations and inspections, most fires can be quickly contained and limited to the immediate structure involved. Certain circumstances, such as the involvement of highly combustible materials or high winds, can threaten a larger area. The density of a neighborhood can also make occupants and structures more vulnerable due to the potential of fire spreading.

Communication Failure

Communication Failure is the widespread breakdown or disruption of normal communication capabilities. This could include major telephone outages, loss of local government radio facilities, long-term interruption of electronic broadcast services, emergency 911, law enforcement, fire, emergency medical services, public works, and emergency warning systems are just a few of the vital services which

rely on communication systems to effectively protect citizens. Business and industry rely heavily on various communication media as well. Mechanical failure, traffic accidents, power failure, line severance, and weather can affect communication systems and disrupt service.

Potentially the entire county could be vulnerable to a communications failure, especially if the local telephone system and radio system should fail. The cellular phones could be used as a back-up, however, that system could also fail do to the large number of calls going through or if the cell towers are damaged.

Energy Failure

An extended interruption of service electric, petroleum, or natural gas, which by an actual or impending acute shortage of usable energy could create a potential health problem for the population and possibly mass panic. International events could potentially affect supplies of energy producing products while local conditions could affect distribution of electricity, petroleum, or natural gas. The magnitude and frequency of energy shortages are associated with international markets. Local and state events such as ice storms can disrupt transportation and distribution systems; if disruptions are long lasting, public shelters may need to be activated to provide shelter from extreme cold or extreme heat.

Stockpiles of energy products eliminate short disruptions but can increase the level of risk to the safety of people and property near the storage site. The effects of an energy shortage would be felt throughout the state. Because the distribution systems are very well developed, local shortages can quickly be covered. Storm-related Energy Failures may impact a few homes or the entire community and surrounding areas. Response to such disruptions depends on the severity of the damage and the availability of staff to repair the system. During the holiday season, staff availability may be limited. Due to the rural population and the relative isolation of jurisdictions in the region in relation to more urbanized parts of Iowa, regional residents may face longer periods without energy.

Much like the storms in the winter of 2007, most all the jurisdictions profiled experienced a widespread Energy Failure due to a Severe Winter Storm. The area experienced this energy crisis for 2-3 days in the jurisdictions and 5-6 days in the un-incorporated regions. The hospital operated off generators, one shelter site had a generator and residents took shelter with each other.

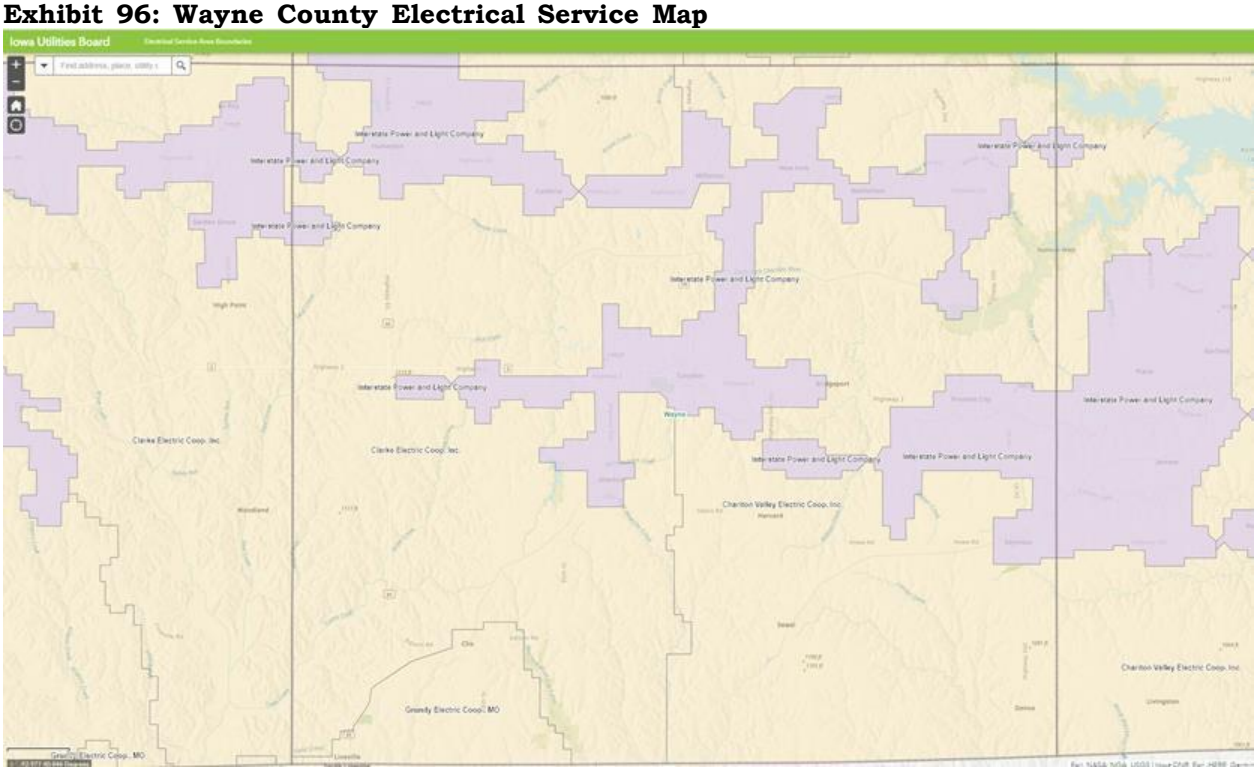
Iowa is almost entirely dependent on out-of-state resources for energy. Iowans purchase oil, coal, and natural gas from outside sources. As a result, world and regional fuel disruptions are felt in Iowa. Every community in the planning area is at risk to some type of utility/infrastructure failure. Business and industry in the urban areas are reliant on electricity to power servers, computers, automated systems, etc. Rural areas of the County are vulnerable as well, as modern agricultural practices are reliant on energy, such as electric milking machines and irrigation pivots.

Electric service provider maps are displayed in Exhibit 96. Generally, the smaller utility suppliers such as small electrical suppliers have limited resources for mitigation. This could mean greater vulnerability in the event of a major,

widespread disaster, such as a major flood, severe winter storm or ice storm. The municipal utilities that exist in the County purchase power on the wholesale market for resale to their customers. This may make them more vulnerable to regional shortages of power as well.

In the event of a large-scale event impacting water supply or wastewater treatment, homes and businesses with well-supplied water and septic systems for waste treatment would be largely unaffected. However, these systems may be prone to individual failure and do not have back-up systems in place in the event of failure, as larger systems might.

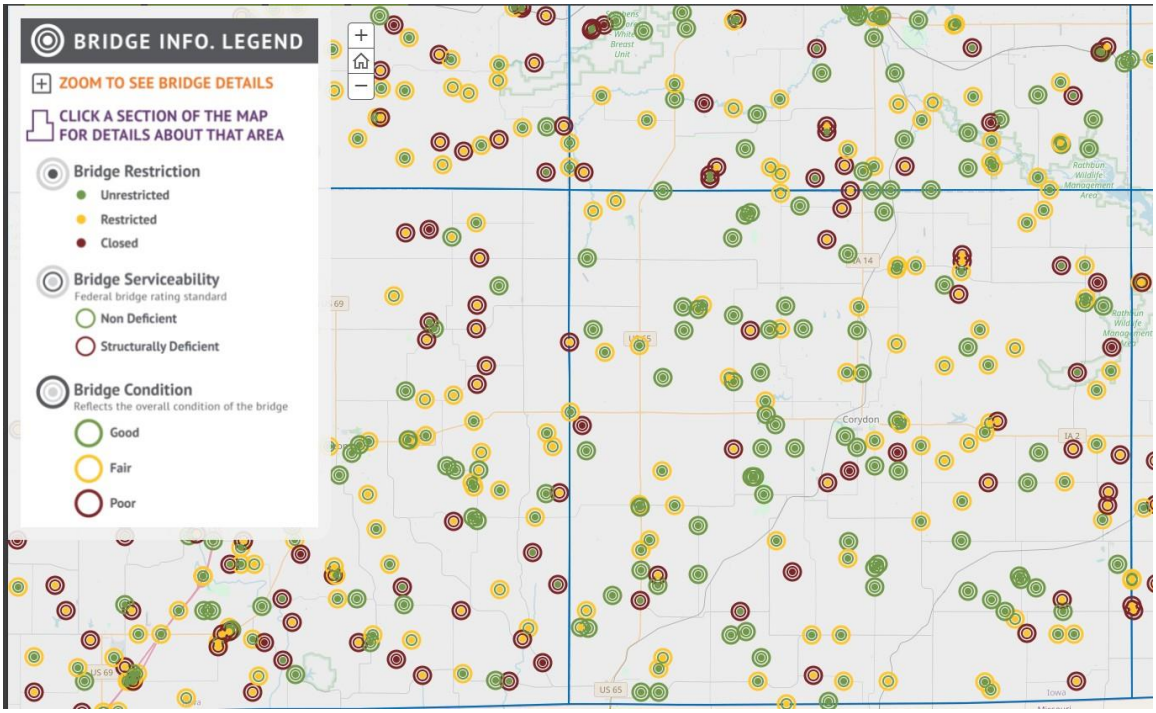
Exhibit 96: Wayne County Electrical Service Map



Structural Failure

A summary of the maximum population and building exposure for Structural Failure are stated in the table below. Given the age of homes throughout the unincorporated region, the risk of Structural Failures may be relatively high. Additionally, many of the buildings in Wayne County were constructed in the late 1800's and early 1900's prior to the advent of building codes in the United States. There are other concerns of the aging infrastructure in the communities throughout the region. All participating jurisdictions used vitrified clay tile to construct wastewater and storm sewer drains when the communities were developed in the mid to late 1800's. Many of these drainage systems in this area are deteriorating and crumbling and leaving communities in desperation. According to the Wayne County Engineer, "Wayne County has 161 bridges that we inspect (20 feet span or longer). Of those bridges, 31 are identified as "structurally deficient by Iowa DOT. We also have 6 that are closed to traffic. Our bridge inspection consultant also rates our bridges for projected remaining life." Overall bridge conditions are labeled as 69 "good", 61 "fair" and 31 in poor condition.

Exhibit 97: Wayne County Bridge Condition



Approximately 57.8% of homes in rural Wayne County were built prior to 1970 and many of homes were built prior to 1939. This area flourished in the late 1800's and early 1900's and that is when most of the structures were built. The aging stock of homes and all other structures creates the concern for Structural Failure anywhere throughout the county.

Exhibit 98: Maximum Population and Building Exposure Hazard Area 50% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	326	$2,314,315	814	77	$3,223,122	15	$823,455	--	$,8475
Seymour	150	$7,114,945	283	21	$1,195,535	--	$	--	$101,070
Promise City	26	$749,770	39	5	$161,830	--	$	--	$145
Allerton	107	$5,286,815	256	19	$566,745	11	$1,842,205	--	$13,770
Humeston	114	$578,956	242	52	$2,421,301	--	$	--	$22,140
Millerton	10	$291,785	54	4	$56,675	--	$	--	$7,765
Lineville	54	$1,998,460	129	12	$745,720	--	$	--	$17,420
Clio	16	$510,870	33	18	$393,065	--	$	--	$8,475
Unincorp County	686	$66,423,110	1,363	29	$2,547,993	6	$1,697,440	--	$4,609,505

Corydon

Facility	Location	Assessed Value
Lift stations (W&E)		
City Hall	501 S East St	$93,950
Community Bldg	501 S East	$179,730
Sewer Lagoon	South St	
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse		
Law Center		$32,640
Water Dept		$20,340

Millerton

Facility	Location	Assessed Value
Lift station		
Post Office	313 N Main	
Sewer Lagoon		

Promise City

Facility	Location	Assessed Value
Lift station	North edge of town	
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310
Sewer Lagoon	South of town	

Seymour

Facility	Location	Assessed Value
N. Lift station	625 N 5th	
S Lift Station	Southlawn Cemetery	
Lagoon	J46	
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Water Plant	118 N 6th	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
Water Tower		

Allerton

Facility	Location	Assessed Value
Lift station		
City Hall/community center (shelter site)	Central Ave	$54,030
Post Office	108 N Central	
Water Dept		$83,110
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000

Lineville

Facility	Location	Assessed Value
Lift station	West 3rd St	
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Sewer Lagoon	East Line St	
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Medical Clinic		$149,440

Humeston

Facility	Location	Assessed Value
Lift station	6th & Blevens	$22,410
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Water Tower		
Medical Clinic		

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	

Structural Fire is a great concern in this area and is summarized in the table below. Wayne County unincorporated area is relatively old indicating two things, 1) the wood and building materials used in its structures may be more flammable due to age and 2) structures may not meet more recent building and fire codes. Similarly, the absence of a zoning ordinance means that hazardous and flammable materials may be stored and used anywhere in town elevating the potential threat of fire spreading to homes that may not be otherwise subject to substantial fires. The age of structures in the County may make put them at more risk of fires due to faulty or substandard wiring and obsolete building methods. Older structures with outdated electrical systems not built to current fire codes are particularly vulnerable to fire.

Exhibit 99: FEMA Standard Values for Loss of Service
Source: FEMA BCA Reference Guide, June 2009

Power Loss	Cost of Complete Loss of Service
Loss of Electric Power	
Total Economic Impact	$126 per person per day
Loss of Potable Water Service	
Total Economic Impact	$93 per person per day
Loss of Wastewater Service	
Total Economic Impact	$41 per person per day
Loss of Road/Bridge Service	
Vehicle Delay Detour Time	$38.15 per vehicle per hour
Vehicle Delay Mileage	$0.55 per mile (or current federal mileage rate)

Fire Insurance Ratings were given previously in this document. The ratings indicate reason for concern with most of the communities in Wayne County scoring the near lowest possible at "7". This score indicates that the community's fire suppression program does not meet minimum requirements for the ISO. ISO is an organization that provides data, analysis, and decision-making support for various professions about risk.

Exhibit 100: Maximum Population and Building Exposure Hazard Area 50% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	326	$2,314,315	814	77	$3,223,122	15	$823,455	--	$8,475
Seymour	150	$7,114,945	283	21	$1,195,535	--	$	--	$101,070
Promise City	26	$749,770	39	5	$161,830	--	$	--	$145
Allerton	107	$5,286,815	256	19	$566,745	11	$1,842,205	--	$13,770
Humeston	114	$578,956	242	52	$2,421,301	--	$	--	$22,140
Millerton	10	$291,785	54	4	$56,675	--	$	--	$7,765
Lineville	54	$1,998,460	129	12	$745,720	--	$	--	$17,420
Clio	16	$510,870	33	18	$393,065	--	$	--	$8,475
Unincorp County	686	$66,423,110	1,363	29	$2,547,993	6	$1,697,440	--	$4,609,505

Corydon

Facility	Location	Assessed Value
City Hall	501 S East St	$93,950
Community Bldg	501 S East St	$179,730
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington	$136,900
Bath House (historical)	100 McKinley St	
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Water Dept		$20,340

Millerton

Facility	Location	Assessed Value
Post Office	313 N Main	
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main	$7,310

Seymour

Facility	Location	Assessed Value
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Water Tower		
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
City Hall/community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
City Shop	101 N Central	$27,440
Public Housing		$204,950
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main St	$20,000
Library		$10,110

Lineville

Facility	Location	Assessed Value
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170

Humeston

Facility	Location	Assessed Value
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Water Tower		
Library		$375,480
Medical Clinic		
Elementary School		$60,000
Humeston Senior Center (Shelter Site)		
Storage & Shop		$130,940

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	
Nelson Round Barn (historical)	South of Allerton	
Pleasant Hill School(historical)	3 miles north of Lineville	

Loss Estimate

Countywide damage was established from the NCDC data base for some hazards up to 65 years. Loss factors were developed specific to the attributes of Infrastructure Failure throughout the region. These factors were able to provide an annual damage estimate by dividing the total loss by number of years of data. Per event damage is calculated by dividing total loss by number of events. Based on countywide fire statistics, the loss from a structure fire can vary from $0 to a complete loss or hundreds of thousands of dollars.

Warning Time

A communications failure would likely occur with little or no warning. It is usually impossible to predict a communications failure. Some communications may be shut down for a short period of time for improvements or maintenance. These disruptions are usually made during periods of low demand and the people who rely on the m are given notice that the system will be out of service.

A typical, more frequent type of energy failure occurs because of severe weather and does not have a warning. During such events, the warnings of severe weather could be considered a warning for potential energy failure, however, it is difficult to predict when or if utilities will be impacted. Overall, this type of energy failure cannot b e predicted.

The failure of a structure would likely occur suddenly with little or no warning. Inspection and maintenance of public structures and enforcement of local regulation usually prevents failure or removes people who are vulnerable. Casual hazards can include fire, explosion, overloading of ice and snow, earthquakes, flooding, high wind, erosion, chemical corrosion, subsidence, and lack of general upkeep. While fires usually start with little or no warning time, alert devices can allow time for responders to contain the fire and allow occupants to evacuate.

Duration

Communication failure and energy failure are usually widespread in nature and may require outside resources to assist the region in emergency response. In contrast, structural failure and fires can usually be handled by local response personnel.

Hazard Scoring & Ranking

Exhibit 101: Infrastructure Failure Hazard Score Calculation					
	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	1.89
Wayne County	2	2	4	4	2.5
Allerton	2	2	3	2	2.15
Clio	1	1	1	1	1.0
Corydon	1	2	1	3	1.5
Humeston	1	2	4	1	1.75
Lineville	2	3	4	2	2.6
Millerton	1	1	4	1	1.45
Promise City	1	2	4	3	1.95
Seymour	1	3	4	3	1.25

Hazardous Materials

The hazard encompasses the following hazards: fixed hazardous materials, pipeline transportation, and transportation hazardous materials. This includes accidental release of flammable or combustible, explosive, toxic, noxious, corrosive, oxidizable, an irritant or radioactive substances or mixtures that can pose a risk to life, health, or property possibly requiring evacuation.

Generally, a hazardous materials incident includes the accidental release of flammable, explosive, toxic, noxious, corrosive, oxidizing, or radioactive substances, irritants, or mixtures that can pose a risk to life, health or property possibility requiring evacuation. A hazardous materials event includes fixed hazardous materials, transportation of hazardous materials, and pipeline transportation.

A ***fixed hazardous materials*** incident is the accidental release of hazardous materials during handling, storage, or production at a facility. Fixed incidents generally affect a localized area.

A ***transportation hazardous materials incident*** involves the accidental release of hazardous materials during the transport of the materials. Transportation incidents generally affect the area where the incident occurs.

A pipeline transportation incident occurs when a break in a pipeline creates the potential for an explosion or leak of dangerous substance (oil, gas, etc.) possibly requiring evacuation. An underground pipeline incident can be caused by environmental disruption, accidental damage, or sabotage. Incidents can range from a small, slow leak to a large rupture where an explosion is possible.

About 5 interstate pipelines operate in the state under federal pipeline jurisdiction. There are many high-pressure gas mains throughout the state which supply residential and industrial users. People and property with pipelines on their land or nearby are the most at risk. People excavating earth near a pipeline are also at risk. Whether the greater hazard is posed to those upwind or downwind from a site depends on the product spilled, for example - natural gas is lighter than air. Private homes and business served by natural gas have smaller diameter pipelines connected to their structure.

Potential Hazard Area

The potential hazard area for a hazardous materials event is conditionally identified as the entire region. Areas surrounding facilities using hazardous materials, which are required to report materials through a Tier II form or along transportation infrastructure are immediate potential hazard areas. The Appendix, provide Risk Assessment maps for the locations of these facilities. There are 35 miles of gas/hazardous liquid lines in Wayne County. Exhibit 102 show the approximate locations of pipelines and the locations of pipeline spills since 2002.

If materials are released in the air or water, the potential hazard area may be expanded downwind or downstream of the incident. LP Gas for heating fuel. Liquid petroleum is not by nature toxic but can cause asphyxiation through oxygen deprivation. LP Gas is heavier than air so it will sink to the lowest places possible and is flammable. Stores of anhydrous ammonia in the county pose health and safety threats to potentially large areas of the county and are potential targets for meth producers as a source of raw materials.

Exhibit 102: Pipelines in Wayne County (Source: Pipeline and Hazardous Materials Safety Administration, National Pipeline Mapping System, https://pvnpms.phmsa.dot.gov/PublicViewer/)

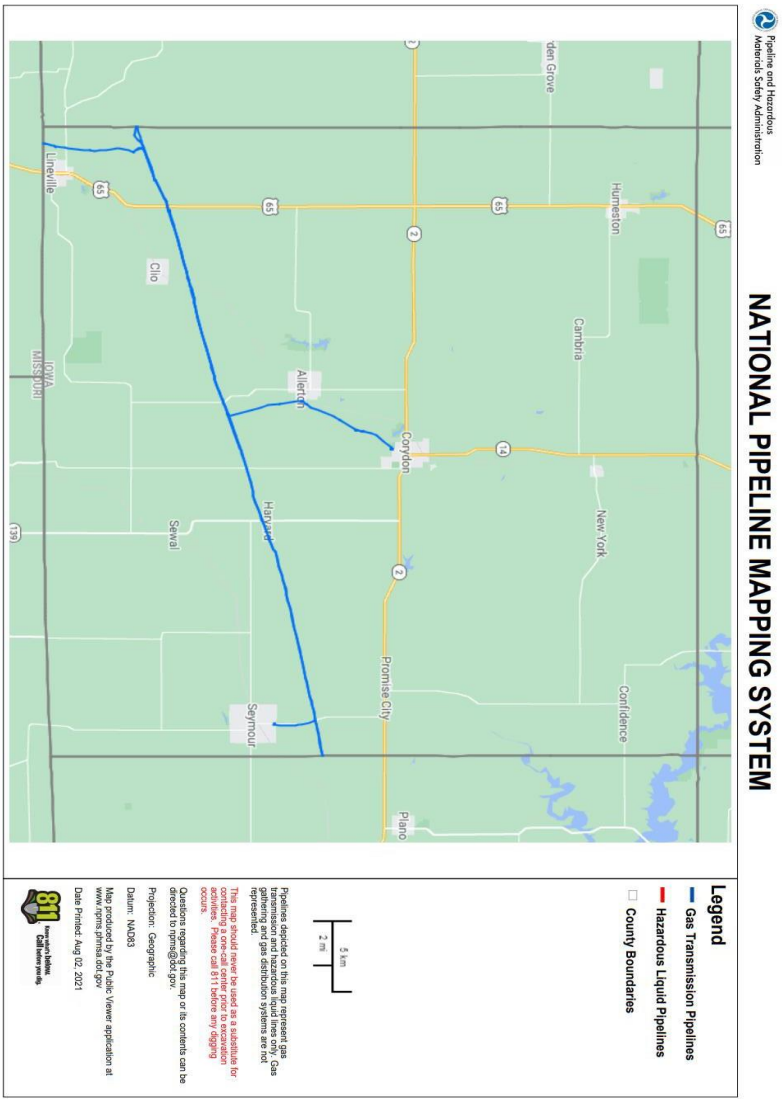


Exhibit 103: Wayne County Underground Storage Tanks

Registration No.	Leak No.	Name	Address	Status	Insurer	Policy End Date
198605091		ANR PIPELINE COMPANY	2868 15TH ST Lineville, IA 501470000	Regulated tanks - r/f		
198912235		BILL BARRETT	RTE 1 Seymour, IA 525900000	Non-regulated Farm/Res <1100 -active		
198605941		BOB WHITE STATE PARK	RR 1 BOX 124A Allerton, IA 500080000	Regulated tanks - r/f		
198603758	7LTA73	BOB'S FOOD MARKET	400 MAIN STREET Seymour, IA 525900000	Regulated tanks - r/f	CHASE MANHATTAN BANK	12/15/2000
198606561	8LTB20	CASEY'S GENERAL STORE 1125	207 FRONT ST Humeston, IA 50123	Regulated tanks - active	CASEYS MARKETING CO	08/31/2021
198912327		CASEY'S GENERAL STORE 1511	500 W MAIN ST Seymour, IA 52590	Regulated tanks - active	CASEYS MARKETING CO	08/31/2021
198605571	7LTO20	CASEY'S GENERAL STORE 2315	220 N WASHINGTON ST Corydon, IA 50060	Regulated tanks - active	PMMIC	05/16/2022
198602061		CITY OF HUMESTON	BROAD ST Humeston, IA 501230000	Regulated tanks - r/f		
198605521	8LTI84	CLIO OIL COMPANY	Central Ave Clio, IA 500520000	Non-regulated hoist oil tanks - active		
198600509		COATES PROPERTY	1 COATES DR Corydon, IA 500600000	Non-regulated Farm/Res <1100 -active		
198602835	7LTB55	CORYDON BP	510 E JEFFERSON ST Corydon, IA 50060	Regulated tanks - r/f	PMMIC	06/17/2008
198603926		CORYDON CONOCO	214 W JEFFERSON ST Corydon, IA 50060	Regulated tanks - active	PMMIC	07/01/2021
198603927		CORYDON OIL CO	214 W JEFFERSON STREET Corydon, IA 50060-	Regulated tanks - r/f		
198605145		D AND K STANDARD	107 S LAFAYETTE Corydon, IA 500600000	Regulated tanks - r/f		
198608732		ELDON & SHIRLEY SPIDLE	WEST HIGHWAY 2 Corydon, IA 500600000	Regulated tanks - r/f		
199717966	9LTF63	FIRST STOP	400 N CENTRAL AVE Allerton, IA 50008	Regulated tanks - active	PMMIC	09/15/2021
198609283	7LTF24	IDOT	101 E ENGLISH Corydon, IA 500600000	Regulated tanks - r/f		
198607543	9LTG11	JOHNSON OIL CO	303 W. MAIN Seymour, IA 525900000	Regulated tanks - r/f	None	
198606125		MCDANIELS SERVICE STATION	BOX 54 HIGHWAY 2 Promise City, IA 525830000	Regulated tanks - r/f		
198601335		MORMON TRAIL COMM SCHOOL		Regulated tanks - r/f		
199016688		N/A	201 E HANCOCK Corydon, IA 500600000	Non-regulated Farm/Res <1100 -active		
198602972		Not Known	511 W MAPLE Corydon, IA 500600000	Regulated tanks - r/f		
198605548	7LTU69	RICHARD OIL CO	109 S FRONT Humeston, IA 501230000	Regulated tanks - r/f		
198603928		ROD OWENS DX STATION	201 CENTRAL AVE N Allerton, IA 500080000	Regulated tanks - r/f		
198600369	9LTQ09	ROD'S AUTO INC	101 E JACKSON ST Corydon, IA 50060-1408	Regulated tanks - r/f	PMMIC	12/29/2012

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Registration No.	Leak No.	Name	Address	Status	Insurer	Policy End Date
198608992		RUARK GARAGE INC		Regulated tanks - r/f		
198608815		SEARS & SON TRUCKING	1205 WASHINGTON STREET Lineville, IA 501470000	Regulated tanks - r/f		
198600669		SEYMOUR COMMUNITY SCHOOL	MAIN STREET Seymour, IA 525900000	Regulated tanks - r/f		
198605546	7LTJ88	SEYMOUR CONOCO	236 N 5TH Seymour, IA 525900000	Regulated tanks - r/f		
198603993		STREET TOWN & CO INC	217 BROAD Humeston, IA 501230000	Regulated tanks - r/f		
198603994	7LTF10	STREET TOWN&COUNTRY	412 S FRONT Humeston, IA 50123	Regulated tanks - r/f		
198912969		VANDELL AUTOMOTIVE	HIGHWAY 65 Humeston, IA 50123	Regulated tanks - r/f		
198605579		WAYNE COMMUNITY HIGH SCHOOL	102 N DEKALB ST Corydon, IA 500600000	Regulated tanks - r/f		
198602231		WAYNE COUNTY ENGINEER	713 SECOND AVE Corydon, IA 500600000	Regulated tanks - r/f		
198602199		WAYNE COUNTY HOSPITAL	417 S East St Corydon, IA 50060	Regulated tanks - r/f		

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Exhibit 104: Wayne County Leaking Underground Storage Tanks

Leak No.	Leak Classsification	Registration No.	Name	Address
7LTA73	No Action Required	198603758	BOB'S FOOD MARKET	400 MAIN STREET Seymour, IA 525900000
8LTB20	No Action Required	198606561	CASEY'S GENERAL STORE 1125	207 FRONT ST Humeston, IA 50123
7LTO20	No Action Required	198605571	CASEY'S GENERAL STORE 2315	220 N WASHINGTON ST Corydon, IA 50060
8LTI84	No Action Required	198605521	CLIO OIL COMPANY	
7LTB55	No Action Required	198602835	CORYDON BP	510 E JEFFERSON ST Corydon, IA 50060-1812
9LTF63	No Action Required	199717966	FIRST STOP	400 N CENTRAL AVE Allerton, IA 50008
7LTF24	No Action Required	198609283	IDOT	101 E ENGLISH Corydon, IA 500600000
9LTG11	High Risk	198607543	JOHNSON OIL CO	303 MAIN Seymour, IA 525900000
7LTU69	No Action Required	198605548	RICHARD OIL CO	109 S FRONT Humeston, IA 501230000
9LTQ09	No Action Required	198600369	ROD'S AUTO INC	101 E JACKSON ST Corydon, IA 50060-1408
7LTJ88	No Action Required	198605546	SEYMOUR CONOCO	236 N 5TH Seymour, IA 525900000
7LTF10	No Action Required	198603994	STREET TOWN&COUNTRY	412 S FRONT Humeston, IA 50123-

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According to the Iowa Utilities Board (IUB) and the United States Department of Transportation Pipeline and Hazardous Materials Safety Administration, 43 pipeline accidents, incidents, or service outages were reported from 2000-2009 resulting in a total of six (6) injuries. Most incidents that occur are caused by third party damage to the pipeline, often due to construction or some other activity that involves trenching or digging. With development occurring at an unprecedented rate and the ground becoming more and more congested with utilities, the probability of an underground pipeline incident is significant. Petroleum and natural gas pipeline accidents occur with some regularity, but they usually have a limited impact and are quickly and adequately handled by pipeline company emergency crews and local and state responders. Pipeline operators are required to coordinate all safety preparedness and response activities with the communities. Continuing to plan, train, and exercise emergency procedures help to limit the occurrence and severity of incidents.

According to the National Transportation Safety Board (NTSB), there have been no pipeline incidents in Wayne County since 1969. However, there have been pipeline explosions and fires in Iowa during this time.

Transportation of Hazardous Materials

Unincorporated County- Transportation Hazardous Material

This creates the potential of an incident of hazardous materials in transportation on any highway or gravel road. An increased risk occurs along the Union Pacific Railroad and DME Rail in Wayne County.

Corydon - Transportation Hazardous Material

U.S. Highway 65 and State Highways 2 and 15 offers an increased potential for a Transportation of Hazardous Materials incident. As well as semis frequently transport along this roadway in addition to local farmers that commonly transport Anhydrous Ammonia tanks. The Transportation of Hazardous Materials is common in a rural area due to critical farming chemicals. This creates the potential of an incident of hazardous materials in transportation on any roadway.

Hazard Risk Exposure

The potential hazard area for a hazardous materials event is conditionally identified as the entire region. Areas surrounding facilities using hazardous materials, which are required to report materials through a Tier II form or along transportation infrastructure are immediate potential hazard areas. The ESF-10 Plan in the Appendix provides Risk Assessment maps for the locations of these facilities. There are 57 natural gas distribution operators in the State of Iowa and 41 intrastate and five interstate natural gas transmission pipelines. The map in Exhibit 102 shows the approximate locations of the estimated 35 miles of pipelines in Wayne County. If materials are released in the air or water, the potential hazard area may be expanded downwind or downstream of the incident. LP Gas for heating fuel. Liquid petroleum is not by nature toxic but can cause asphyxiation through oxygen deprivation. LP Gas is heavier than air so it will sink to the lowest places possible and is flammable. Stores of anhydrous ammonia in the county pose health and safety threats to potentially large areas of the county and are potential targets for meth producers as a source of raw materials.

Exhibit 105: Fixed Hazardous Materials Potential Locations

	% of homes using LP Gas, tanks, bottles	Underground Storage Tanks (open/closed)	Above Ground Storage Tanks
Wayne County	26% (711)	25	30
Allerton	.9% (2)	2	0
Clio	68% (19)	1	6
Corydon	1% (8)	11	6
Humeston	51% (106)	3	16
Lineville	13% (17)	1	0
Millerton	11% (6)	0	0
Promise City	55% (26)	1	0
Seymour	.7% (2)	4	2
	2019 ACS	*UST Finder (arcgis.com)*	*Tanks (iowadnr.gov)*

FIXED HAZARDOUS MATERIALS – The table below summarizes the maximum threat to residents and structures that can be affected by Fixed Hazardous Materials. The manufacturing plants, automobile repair, gas stations, and farmyards are potential sites for hazardous materials incidents in Wayne County.

The manufacturing plants, automobile repair, and gas stations are potential sites for hazardous materials incidents in Wayne County. There are seven gas and/or farm stores located in Corydon, three in Lineville, one in Seymour, one in Allerton, one in Clio, and three in Humeston that are at a higher rate for possible incident.

A fixed hazardous materials incident is the accidental release of chemical substances or mixtures, which presents a danger to the public health or safety, during production or handling at a fixed facility. A hazardous substance is one that may cause damage to persons, property, or the environment when released to soil, water, or air. Chemicals are manufactured and used in ever-increasing types and quantities, each year, over 1,000 new synthetic chemicals are introduced, and as many as 500,000 products pose physical or health hazards and can be defined as "hazardous chemicals". Hazardous substances are categorized as toxic, corrosive, flammable, irritant, or explosive. Hazardous material incidents generally affect a localized area, and the use of planning and zoning can minimize the area of impact.

The largest concern for fixed hazardous materials lies in the company of East Penn Manufacturing. The facility builds batteries and contains many chemicals. They do not partner with local emergency response teams for disaster procedures. Emergency management is uncertain about all the types of chemicals and potential hazards in this building.

Chemical spills can occur anytime there is a traffic accident as oil, gasoline, and other fluids used in vehicles are released. Dumping of household cleaners, paints, and old oil can happen at any time and are more likely in areas where people do not understand hazardous materials laws.

Several homes (29.1%) in Wayne County use LP Gas for heating fuel. Liquid petroleum is not by nature toxic but can cause asphyxiation through oxygen deprivation. LP Gas is heavier than air so it will sink to the lowest places possible and is flammable. Concern lies in the community of Humeston because natural gas is not provided to the community and majority of household's heat by propane. In fact, the school has two large propane tanks located just outside of the building. Stores of anhydrous ammonia in the county pose health and safety threats to potentially large areas of the county and are potential targets for meth producers as a source of raw materials.

Fixed hazardous materials could potentially affect three in-home daycare facility, one preschool, and Wayne Community Schools all in the city limits of Corydon. There are no vulnerable populations identified at an increased risk in the unincorporated region of the county. The Appendix contains maps that will show specific locations.

According to the Iowa Department of Natural Resources, there are 15 sites in Wayne County that because of the volume or toxicity of the materials on site were designated as Tier II Facilities under the Superfund Amendments and Reauthorization Act. There are 4 Tier II facilities in Corydon, 3 each in Seymour and Humeston. See Exhibit 106.

Exhibit 106: Tier II Facilities in Wayne County

FACILITY	SECTION 302 EHS CHEMICAL NAME	LEPC Planning Concentric Circle	School, Day Care Centers, Preschools, Care Facilities Within LEPC Planning Concentric
Helena Agri-Enterprises, LLC 120 S 4th St Seymour, IA		.10 Mile	--
Helena Agri-Enterprises, LLC -NH3 Plant 3310 Garden Rd Seymour IA	Anhydrous Ammonia	2 miles	School
Grand River Mutual Telephone Company 107 W Oak St Allerton IA	Sulfuric Acid	.10 miles	none
Dairy Farmers of America 211 N Central Ave Allerton IA	Nitric acid, sulfuric acid	.10 miles	none
MFA Agri-Services-2184 Hwy 2 W Corydon IA	Anhydrous Ammonia	2 miles	Preschool, school, hospital, medical clinic, group home, public health
MFA Agri-Services 204 Birch St Lineville IA	Anhydrous Ammonia	2 miles	None
Agriland FS, Inc 420 N 4th St Humeston IA	Anhydrous Ammonia	2 miles	School
United Farmers' Cooperative 319 W Guy Porter Humeston IA	Anhydrous Ammonia	2 miles	School
East Penn Manufacturing 2185 Hwy 2 W Corydon IA	Sulfuric Acid	.10 miles	none
US Cellular 1906 120th St Corydon IA	Sulfuric Acid	.10 miles	none
US Cellular 1198 Hwy 65 Humeston IA	Sulfuric Acid	.10 miles	none
US Cellular 2389 S 60th Seymour IA	Sulfuric Acid	.10 miles	none
Grand River Mutual Telephone Company 218 S Franklin St Corydon IA	Sulfuric Acid	.10 miles	none
ITCM Saling, ITC Midwest 1880 128th St Corydon IA	Sulfuric Acid	.10 miles	none
US Cellular 2859 45th St Lineville IA	Sulfuric Acid	.10 miles	none

TRANSPORTATION OF HAZARDOUS MATERIALS - The Transportation of Hazardous Materials is common in a rural area due to critical farming chemicals. This creates the potential of an incident of hazardous materials in transportation on any state highway or gravel road. A Particular area of concern is Iowa State Highways 2, 14, and 65 offers an increased potential for a transportation of Hazardous materials incident. As well as semis frequently transport along this roadway in addition to local farmers that commonly transport Anhydrous Ammonia tanks. Additional risks can occur along any of the railroad lines in the county.

Exhibit 107: Maximum Population and Building Exposure Hazard Area 25% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	163	$11,557,157	407	38	$1,611,061	7	$411,727	--	$4,237
Seymour	75	$3,557,472	141	10	$597,767	--	--	--	$50,535
Promise City	13	$374,885	16	2	$80,915	--	--	--	$72
Allerton	53	$2,643,407	128	9	$283,372	5	$921,102	--	$6,885
Humeston	57	$2,894,782	121	26	$,1210,650	--	--	--	$11,070
Millerton	5	$145,892	27	2	$28,337	--	--	--	$,3882
Lineville	27	$999,230	64	6	$372,860	--	--	--	$8,710
Clio	8	$255,435	16	9	$196,532	--	--	--	$4,237
Unincorp County	343	$3,321,155	681	14	$1,273,996	3	$848,720	--	$2,304,752

Corydon

Facility	Location	Assessed Value
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Law Center		$32,640
Corydon Nursing & Rehab (Shelter Site)		

Millerton

Facility	Location	Assessed Value
Sewer Lagoon		
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
Lift station	North edge of town	
Sewer Lagoon	South of town	

Seymour

Facility	Location	Assessed Value
N. Lift Station	625 N 5th	
S Lift Station	Southlawn Cemetery	
Lagoon	J46	
Street Maint bldg.	522 West Wall	
Water Plant	118 N 6th	
Medical Clinic		$88,280
School		$3,519,260

Allerton

Facility	Location	Assessed Value
Lift station		
City Shop	101 N Central	$27,440
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main St	$20,000

Lineville

Facility	Location	Assessed Value
Lift station	West 3rd St	
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Sewer Lagoon	East Line St	
Water Pump house & city shed	Washington St	$5,940
Medical Clinic		$149,440

Humeston

Facility	Location	Assessed Value
Lift station	6th & Blevens	$22,410
Fire & First Responders	228 Broad St	$147,900
Medical Clinic		
Storage & Shop		$130,940

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	
Nelson Round Barn (historical)	South of Allerton	
Pleasant Hill School (historical)	3 miles north of Lineville	

PIPELINE INCIDENT - A Pipeline Incident occurs when a break in a pipeline creates the potential for an explosion or leak of a dangerous substance (oil, gas, etc.) possibly requiring evacuation. An underground pipeline incident can be caused by environmental disruption, accidental damage, or sabotage. Incidents can range from a small slow leak to a large rupture where an explosion is possible. Inspection and maintenance of the pipeline system along with marked gas line locations and an early warning and response procedure can lessen the risk to those near to the pipelines.

About 5 interstate pipelines operate in the state under federal pipeline jurisdiction. There are many high-pressure gas mains throughout the state which supply residential and industrial users. People and property with pipelines on their land or nearby are the most at risk. People excavating earth near a pipeline are also at risk. Whether the greater hazard is posed to those upwind or downwind from a site depends on the product spilled, for example - natural gas is lighter than air. Private homes and business served by natural gas have smaller diameter pipelines connected to their structure.

The underground pipelines cross public streets, roads, and highways as well as streams. Iowa's natural environment is also vulnerable to contamination from an underground pipeline incident. A natural gas pipeline exists from the southwest corner of Wayne County across the entire county at Seymour. This gas line begins north of Lineville and extends north 6 miles, and angles east to the northern edge of Seymour city limits. Service lines are spur north into the eastern edge of Allerton and continues to the south edge of Corydon. The largest threat of an event would be the booster station located near Lineville. This natural gas station has the potential to create a large disaster should an explosion occur. This pipeline does continue at a northeast angle to the edge of the communities of Clio, Allerton, and Corydon. Millerton & Promise City – No pipeline has been identified

Exhibit 108: Maximum Population and Building Exposure Hazard Area 5% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	33	$,2311,431	81	8	$3,222,212	1	$82,345	--	$847
Seymour	15	$711,494	28	2	$119,553	--	--	--	$10,107
Promise City	3	$79,977	4	1	$16,183	--	--	--	$15
Allerton	11	$528,682	26	2	$56,674	1	$184,220	--	$1,377
Humeston	11	$578,957	24	5	$242,130	--	--	--	$2,214
Millerton	1	$29,179	5	0	$5,667	--	--	--	$776
Lineville	5	$199,846	13	1	$74,573	--	--	--	$1,742
Clio	2	$51,087	3	2	$39,306	--	--	--	$847
Unincorp County	69	$6,642,311	14	3	$254,799	1	$169,744	--	$460,950

Corydon

Facility	Location	Assessed Value
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community Bldg	501 S East St	$179,730
Sewer Lagoon	South St	
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Law Center		$32,640
Water Dept		$20,340
Murphy Place Senior Housing	511 E Jackson	$875,890
Emergency Shelter locations		
Corydon Nursing & Rehab (Shelter Site)		
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510

Seymour

Facility	Location	Assessed Value
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Water Plant	118 N 6th	
Fire Dept, City Hall, & Library	105 N 5th	$339,070

Allerton

Facility	Location	Assessed Value
Lift station		
City Hall/com-munity center (shelter site)	Central Ave	$54,030
Water Dept		$83,110
City Shop	101 N Central	$27,440
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	

Transportation of Hazardous Materials

The Transportation of Hazardous Materials is common in a rural area due to critical farming chemicals. This creates the potential of an incident of hazardous materials in transportation on any state highway or gravel road. A Particular area of concern is Iowa State Highways 2, 14, and 65 offers an increased potential for a transportation of Hazardous materials incident. As well as semis frequently transport along this roadway in addition to local farmers that commonly transport Anhydrous Ammonia tanks. Additional risks can occur along any of the railroad lines in the county.

Exhibit 109: Maximum Population and Building Exposure Hazard Area 50% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	326	$2,314,315	814	77	$3,223,122	15	$823,455	--	$,8475
Seymour	150	$7,114,945	283	21	$1,195,535	--	$	--	$101,070
Promise City	26	$749,770	39	5	$161,830	--	$	--	$145
Allerton	107	$5,286,815	256	19	$566,745	11	$1,842,205	--	$13,770
Humeston	114	$578,956	242	52	$2,421,301	--	$	--	$22,140
Millerton	10	$291,785	54	4	$56,675	--	$	--	$7,765
Lineville	54	$1,998,460	129	12	$745,720	--	$	--	$17,420
Clio	16	$510,870	33	18	$393,065	--	$	--	$8,475
Unincorp County	686	$66,423,110	1,363	29	$2,547,993	6	$1,697,440	--	$4,609,505

Corydon

Facility	Location	Assessed Value
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community Bldg	501 S East St	$179,730
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington St	$119,640
Fire Station(new)	213 S Washington St	$136,900
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510

Millerton

Facility	Location	Assessed Value
Post Office	313 N Main	
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310

Seymour

Facility	Location	Assessed Value
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
City Hall/community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000

Lineville

Facility	Location	Assessed Value
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Medical Clinic		$149,440

Humeston

Facility	Location	Assessed Value
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Medical Clinic		
Humeston Senior Center (Shelter Site)		

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Unincorporated Wayne County

Facility	Location	Assessed Value

Magnitude and Severity

People, pets, livestock, and vegetation near facilities producing, storing, or transporting hazardous substances are at risk. Some hazardous materials may cause immediate death, disablement, or sickness if absorbed through the skin, injected, ingested, or inhaled. Some chemicals may cause painful or damaging burns to skin if they come in direct contact with your body.

Population downstream, downwind, and downhill of a released substance are particularly vulnerable. Depending on the characteristics of the substance released, a larger area may be in danger from explosion, absorption, injection, ingestion, or inhalation. Occupants of areas previously contaminated by a persistent material may also be harmed either directly or through consumption of contaminated food and water.

Most hazardous materials incidents are localized and are quickly contained or stabilized by the highly trained fire departments and hazardous materials teams. Depending on the characteristic of hazardous material or the volume of product involved, the affected area can be as small as a room in a building or as large as 5 square miles or more. Many times, additional regions outside the immediately affected area are evacuated for precautionary reasons. More widespread effects occur when the material contaminates a source of water.

Facilities are required to have an off-site consequence plan that addresses the population of the surrounding area. Responding personnel are required to be trained to HAZMAT Operations Level to respond to the scene, and those personnel that come into direct contact with the substances released are required to have HAZMAT Technician level training.

Throughout Wayne County, there are fixed facilities with hazardous materials-farm cooperatives, manufacturers, water, and wastewater treatment facilities, etc. In addition, the region has several highway travels routes, railroad lines, and pipelines. Refer to the risk of assessment maps for transportation incident.

Hazardous material incidents can be widespread and severe, but historical occurrences in the region had negligible impact. It is most likely that hazardous materials incidents will continue to have negligible impacts, although it is possible an incident can be severe.

Loss Estimates

Estimated loss numbers would vary by occurrence and location. Fixed Hazardous Materials could place more than $64.5 million of property at risk. Pipeline Incident could potentially damage beyond $113 Million in property. Transportation of Hazardous Materials includes areas along UP & DME Railroad and potentially Highways 2, 14 and 65. The estimates place more than $62 Million in property at risk of a potential loss.

Warning Time

Hazardous materials incidents usually occur rapidly with minimal or no warning. Even if reported immediately, people in the area have little time to react and/or evacuate. During some events, sheltering in-place is the best alternative to evacuation because there is no time to evacuate safely. Mass notification systems, television, radio, and weather radios disseminate emergency messages about incidents.

Duration

A hazardous materials incident can affect a community for a short period of time if the amount of material is relatively small and well-contained. On the other hand, a hazardous materials incident can be widespread, extremely dangerous and require long-term remediation and recovery. Response to a hazardous release is generally limited to the immediate effects, but response is expanded for environmental emergencies.

Hazard Scoring & Ranking

Exhibit 110: Hazardous Materials Incident Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	1.95
Wayne County	1	1	4	3	1.65
Allerton	1	2	4	2	1.85
Clio	1	1	1	1	1.0
Corydon	1	1	4	3	1.65
Humeston	1	1	4	1	1.45
Lineville	2	2	4	2	2.3
Millerton	2	2	4	1	2.2
Promise City	1	3	4	3	2.25
Seymour	1	3	4	3	2.25

Transportation Incident

A transportation incident is generally an accident involving any mode of transportation that directly threatens life and results in a combination of death, injury, property damage, or adverse impacts to community's capabilities to provide emergency services.

An air transportation incident may involve a military, commercial or private aircraft. Air transportation incidents can occur in the air or on the ground. In addition, incidents can occur at or near an airport, in remote unpopulated areas, residential areas or dense urban areas.

A highway transportation incident can be a single or multi-vehicle incident requiring response exceeding normal daily capabilities.

A railway transportation incident may include derailment, collision, and at-grade highway crossing accidents. Train incidents can result from a variety of causes including human error, mechanical failure, faulty signal, or problems with the track. Results of an incident can range from minor "track hops" to catastrophic hazardous materials incidents and even human or animal causalities.

A waterway incident involves any incident with a water vessel. In addition, waterway incidents may include events in which a person or object fall through the ice on partially frozen bodies of water.

Description

AIR TRANSPORTATION INCIDENT- an air transportation incident may involve a military, commercial, or private aircraft. Air transportation is playing a more prominent role in transportation as a whole; airplanes, helicopters, and other modes of air transportation are used to transport passengers for business and recreation as well as thousands of tons of cargo. A variety of circumstances can result in an air transportation incident; mechanical failure, pilot error, enemy attack, terrorism, weather conditions, and on-board fire can all lead to an incident at or near the airport. Air transportation incidents can occur in remote unpopulated areas, residential areas, or downtown business districts. Incidents involving military, commercial, or private aircraft can also occur while the aircraft is on the ground.

HIGHWAY TRANSPORTATION INCIDENT – can be a single or multi-vehicle incident that requires responses exceeding normal day-to-day capabilities. An extensive surface transportation network exists in Iowa; residents, travelers, business, and industry rely on this network daily. Hundreds of thousands of trips a day are made on the streets, roads, highways, an interstate in the state. If the designated capacity of the roadway is exceeded, the potential for a major highway incident increase. Weather conditions play a major factor in the ability of traffic to flow safely in and through the state as does the time of day (rush hour) and day of the week. Incidents involving buses and other high-occupancy vehicles could trigger a response that exceeds the normal day-to-day capabilities of response agencies.

RAILWAY TRANSPORTATION INCIDENT - is a train accident that directly threatens life and/or property, or adversely impacts a community's capabilities ability to provide emergency services. Railway incidents may include derailments, collisions, and highway/rail crossing accidents. Train incidents can result from a variety of causes; human error, mechanical failure, faulty signals, and/or problems with the track. Results of an incident can range from minor "track hops" to catastrophic hazardous materials incidents and even human/animal casualties. With the many miles of track in Iowa, vehicles must cross the railroad tracks at numerous at-grade crossings.

WATERWAY INCIDENT - a waterway incident is an accident involving any water vessel that threatens life and/or adversely affects a community's capability to provide emergency services. Waterway incidents will primarily involve pleasure craft on rivers and lakes. In the event of an incident involving a water vessel, the greatest threat would be drowning, fuel spillage, and/or property damage. Water rescue events would largely be handled by first responding agencies. Waterway incidents may also include events in which a person, persons or object falls through the ice on partially frozen bodies of water.

Potential Hazard Area

The potential hazard area for a transportation incident is the entire Wayne County area but transportation infrastructure and surrounding areas are the primary potential hazard areas. For an air transportation incident, any area below a flight path in the county could be affected. A waterway incident, any body of water and the surrounding areas could be affected.

Historical Occurrences

AIR TRANSPORTATION - Since 1967, there have been 333 fatal air transportation incidents/accidents in Iowa (Iowa National Transportation Safety Board). Of these incidents, 2 were two were in Wayne County. there have been no aviation accidents or incidents in Wayne County in the last ten years. Only a few major accidents have impacted Iowa since 1935 but numerous less severe accidents have occurred around the state in both large and small cities. In August 2014, there was a small aircraft accident near Russell that killed two people. Two people were also injured in a personal aircraft accident on a private runway near Corydon in July 2017.

An air transportation incident may involve a military, commercial, or private aircraft. Air transportation is playing a more prominent role in transportation as a whole; airplanes, helicopters, and other modes of air transportation are used to transport passengers for business and recreation as well as thousands of tons of cargo. A variety of circumstances can result in an air transportation incident; mechanical failure, pilot error, enemy attack, terrorism, weather conditions, and on-board fire can all lead to an incident at or near the airport. Air transportation incidents can occur in remote unpopulated areas, residential areas, or downtown business districts. Incidents involving military, commercial, or private aircraft can also occur while the aircraft is on the ground.

HIGHWAY TRANSPORTATION INCIDENT- Numerous major and minor traffic accidents occur daily in Iowa and result in property damage and injury, major accidents involving multiple vehicles and serious injury are not uncommon. As the volume of traffic on Iowa streets, highways, and interstates increase, the number of traffic accidents will increase. The combination of large number of people on the road, unpredictable weather conditions, potential mechanical problems, and human error create the potential for transportation accidents. The Department of Transportation does not make accident data available for cities under 5,000 residents online so obtaining an accurate number of traffic accidents is difficult for some communities.

Wayne County Roadway Transportation Incident

Exhibit 111: Wayne County Iowa Transportation System

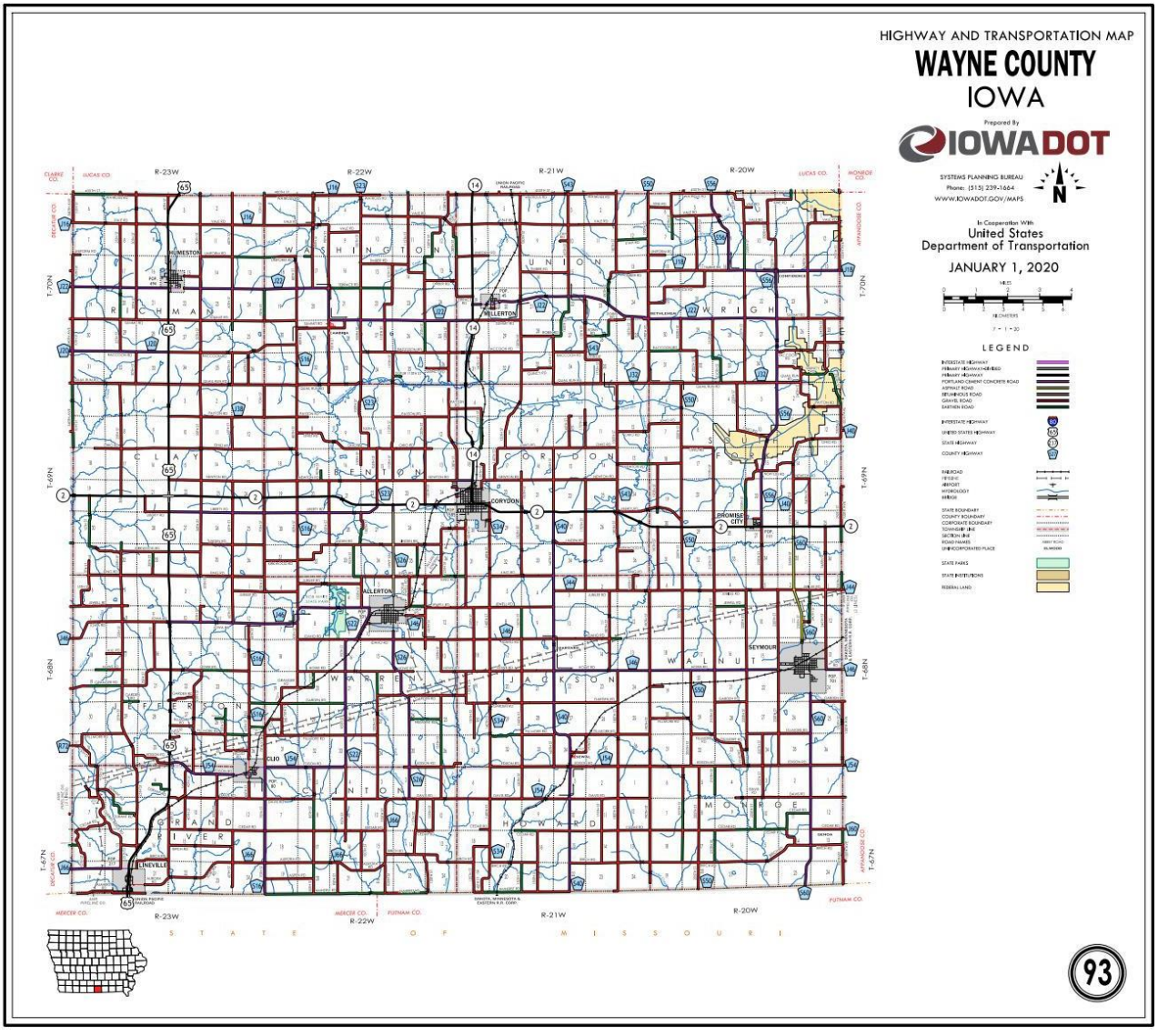
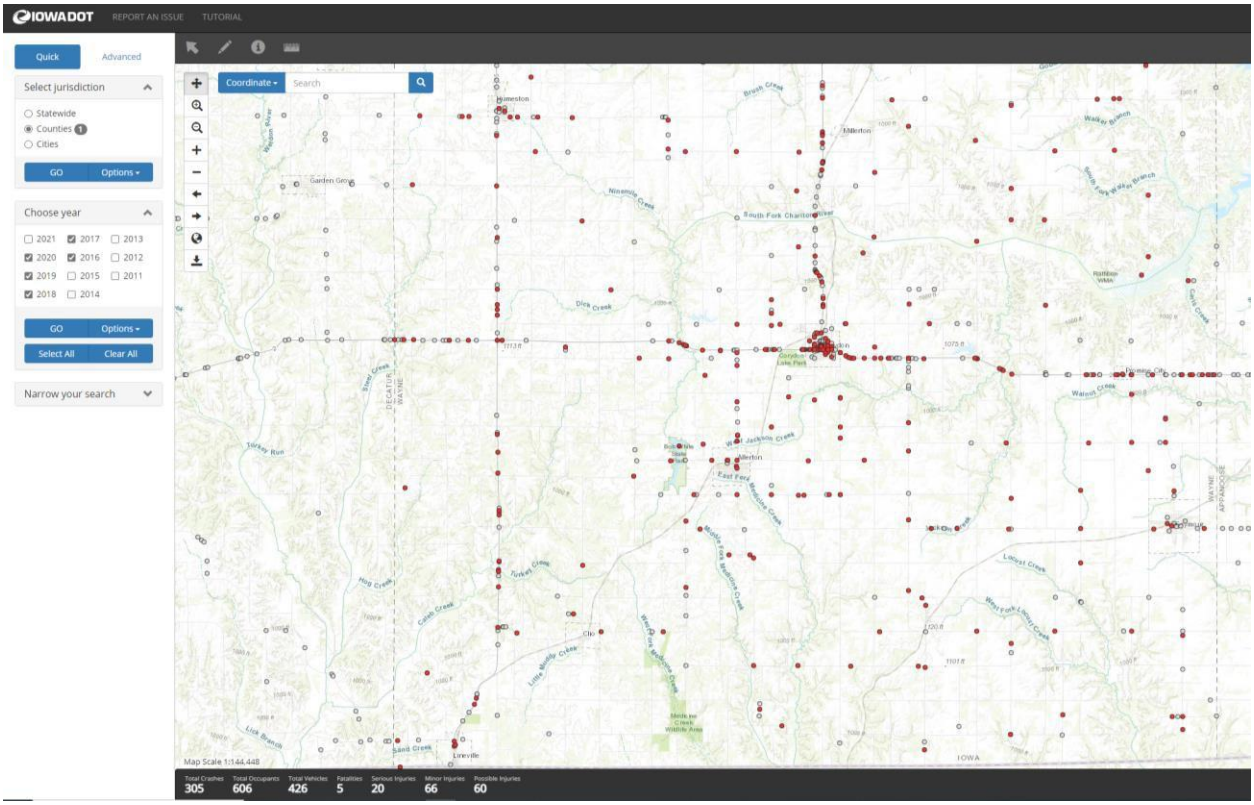


Exhibit 112: Wayne County Regional Auto Crashes							
Location	***Year***	***Crashes***	***Fatal***	***Serious Injury***	***Minor Injury***	***Possible Injury***	***# Vehicle affected***
Wayne County	2016	49	0	1	15	12	66
	2017	55	4	3	8	12	80
	2018	65	0	6	13	11	92
	2019	74	1	7	13	12	107
	2020	62	0	3	17	13	81
5yr Total		305	5	20	66	60	426
Source: Iowa DOT, Iowa Crash Analysis Tool, December 2020							

Exhibit 113: Crash Locations in Wayne County
(Source: Iowa DOT, Iowa Crash Analysis Tool, December 2020)



RAIL TRANSPORTATION - From 1994 to 2020, there have been 13 documented rail incidents in Iowa investigated by the NTSB. These incidents range from minor "rail jumps" to passenger train derailments. None of these were in Wayne County.

Iowa DOT indicates that there have been 2 train accidents (not at Grade-Crossings), 4 highway-rail incident and 1 "other" accident during the past 10 years in Wayne County. (Workbook: Accident/Incident Master Dashboard (dot.gov))

WATERWAY INCIDENT - There have been no disasters causing waterway incidents in Iowa. There have been numerous search and rescue events involving a single person or small boats with only a few people on board. Small-scale incidents on the state's lakes and rivers have resulted in the loss of life from commercial purposes in Iowa are the Mississippi and Missouri Rivers.

The remaining type of transportation incidence is a waterway incidence. Exhibit 114 displays information about the type of recreational boating accidents in Iowa. Comprehensive accident data is not available at the local or county level. Lake Rathbun in Appanoose County that provides commerce and leisure activities for the region. There are also numerous small lakes, ponds, and creeks located throughout the county that are used for recreation.

Exhibit 114: Iowa Recreational Boating Accidents 2009-2019

ACCIDENT EVENT	ACCIDENTS	VESSELS	INJURIES	DEATHS
Capsizing	47	47	31	23
Collision with Fixed Object	52	56	38	1
Collision with Floating Object	10	10	4	1
Collision with Recreational Vessel	69	138	43	7
Collision with submerged object	14	14	7	2
Collision with vessel	41	83	31	2
Fall Overboard	45	48	25	19
Fire/explosion (fuel)	14	14	11	0
Fire/Explosion (not fuel)	2	2	2	0
Flooding/swamping	40	42	14	6
Grounding	35	35	7	0
Other	9	9	10	1
Person departed vessel	19	20	9	8
Person ejected from vessel	28	29	26	6
Person struck by propeller	10	11	9	1
Person struck by vessel	9	12	11	0
Sinking	1	1	0	0
Skier mishap	76	79	81	1

Source: United States Coast Guard Boating Safety Resource Center, January 2020

Potential Hazard Area

The potential hazard area for a transportation incident is the entire Wayne County area but transportation infrastructure and surrounding areas are the primary potential hazard areas. For an air transportation incident, any area below a flight path in the county could be affected. A waterway incident, any body of water and the surrounding areas could be affected.

AIR TRANSPORTATION INCIDENT- Maximum population and building exposure to an Air Transportation Incident. There is not a "Basic Service Airport" nor "General Service Airport" as acknowledged by the National Plan of Integrated Airport System (NPIAS). There are approximately 4 privately owned airports throughout the Wayne County Region. One is northeast of Millerton about 3 miles, one is on the northeast edge of Corydon's city limits, another is 7 miles east of Corydon alongside Iowa State Highway 2, and the last one is located between Corydon and Allerton (approximately 1.5 miles northeast of Allerton). Wayne County Memorial Hospital also offers emergency flight service with the location of a helipad on grounds of the hospital at the southeast edge of Corydon. It is estimated 3% of the population could be affected in the county when a 3-mile radius is considered around each airport location.

An airway incident places the people aboard as the most vulnerable. Statistics from the National Transportation Safety Board and the airline industry show that the majority (over 75%) of airplane crashes and accident occur during the takeoff or landing phases of a flight. As a result, developed areas adjacent to the airports and in airport flight paths are particularly vulnerable to this hazard. For areas away from the airport, a smaller percentage of the population would be directly impacted. Because of the frequency of aircraft in the skies above areas away from the airport, these areas would not be considered as vulnerable.

Since most airway incidents occur during takeoffs and landings, the spatial extent of most incidents would occur on airport grounds or adjacent areas.
An air transportation incident may involve a military, commercial, or private aircraft. Air transportation is playing a more prominent role in transportation as a whole; airplanes, helicopters, and other modes of air transportation are used to transport passengers for business and recreation as well as thousands of tons of cargo. A variety of circumstances can result in an air transportation incident; mechanical failure, pilot error, enemy attack, terrorism, weather conditions, and on-board fire can all lead to an incident at or near the airport. Air transportation incidents can occur in remote unpopulated areas, residential areas, or downtown business districts. Incidents involving military, commercial, or private aircraft can also occur while the aircraft is on the ground.

Exhibit 115: Maximum Population and Building Exposure Hazard Area 5% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	33	$,2311,431	81	8	$3,222,212	1	$82,345	--	$847
Unincorp County	69	$6,642,311	14	3	$254,799	1	$169,744	--	$460,950

Highway Transportation Incident

The chart displays the number of structures that are located within 50 yards of a highway and could potentially be affected by a Highway Transportation Incident. Given the reliance on private vehicles and trucking in rural Iowa, the probability of an accident on any given roadway is relatively high. The county has the county has three state highways that are identified in the county. Highway 65 transports traffic north and south and goes through the communities of Lineville and Humeston. This places approximately 95% of business buildings and 50% residential structures in Lineville. Humeston would have approximately 50% of businesses and 30% of residential homes in each community at risk of being in a Highway Transportation Incident because they are within 100 yards of the roadway.

Highway 2 extends east and west through Wayne County and enters the city limits of Corydon and Promise City. Highway 2 intersects the center of Promise City and places 50% of homes and businesses at risk. The City of Corydon has two major highways that pass through the center of the city. Highway 2 passes on the south side of the Wayne County Courthouse and on the community's business square district. Iowa State highway 14 offers travel north from Corydon and into Lucas County. This highway spurs off the north side of the business square. The combination of the two highways in the city of Corydon places approximately 85% of businesses and 45% of private residential structures at risk.

The people who use the surface transportation system a lot are the most vulnerable in a highway transportation incident. Travelers, truckers, delivery personnel, and commuters are always at risk that they are on the road. During rush hours, holidays, and major events the number of people on the road significantly increase and therefore so does the likelihood of an incident.

Wayne County has many city streets, county roads, and Iowa highways (see Exhibit 111 or the Appendix). Highway incidents are usually contained to areas on the roadway or directly adjacent to the road. Very few highway incidents affect areas outside the traveled portion of the road and right-of-way. Extensive segments of the transportation system can be impacted during significant weather events, such as a large snowstorm, when multiple and separate accidents occur. The area of impact could extend beyond the localized area if the vehicles involved transportation hazardous materials.

CRIP, UP, and ICE all have rail lines in Wayne County and cross through multiple communities. People and property near railroad tracks, crossings, sidings, switching stations, and loading/unloading points are at most risk. Those away from the railroad tracks and facilities are vulnerable only to large-scale incidents including those in which hazardous materials are involved.

Exhibit 116: Maximum Population and Building Exposure Hazard Area 10% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	65	$4,622,863	162	15	$644,424	3	$164,691	--	$1,695
Seymour	30	$1,422,989	56	4	$239,107	--	--	--	$20,214
Promise City	5	$149,954	7	1	$32,366	--	--	--	$29
Allerton	21	$1,057,363	51	3	$113,349	2	$368,441	--	$2,754
Humeston	23	$1,157,913	48	10	$484,260	--	--	--	$4,428
Millerton	2	$58,357	10	81	$11,335	--	--	--	$,1553
Lineville	11	$399,692	25	2	$149,144	--	--	--	$3,484
Clio	3	$102,174	6	3	$78,613	--	--	--	$1,695
Unincorp County	137	$13,284,622	272	5	$509,598	1	$339,488	--	$921,901

Corydon

Facility	Location	Assessed Value
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community Bldg	501 S East St	$179,730
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,38 0
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510

Millerton

Facility	Location	Assessed Value
Post Office	313 N Main	
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310

Seymour

Facility	Location	Assessed Value
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
City Hall/community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000

Lineville

Facility	Location	Assessed Value
City Hall/com. center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Medical Clinic		$149,440

Humeston

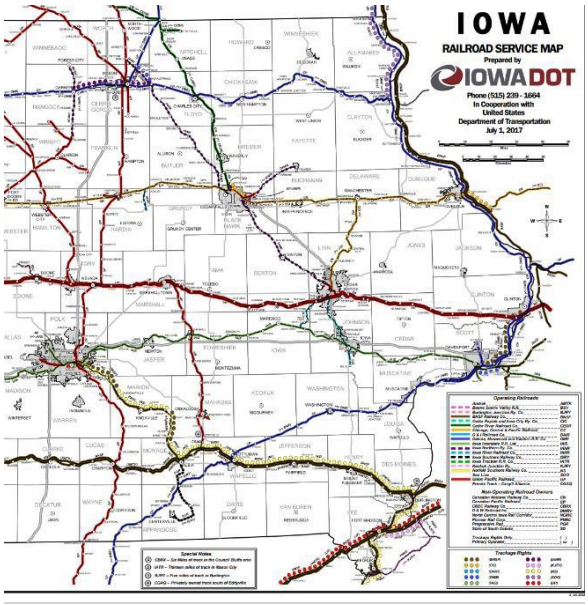
Facility	Location	Assessed Value
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Medical Clinic		
Humeston Senior Center (Shelter Site)		

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Exhibit 117: Maximum Population and Building Exposure Hazard Area 10% of Jurisdiction **Per County Assessor & Auditor									
	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	65	$4,622,863	162	15	$644,424	3	$164,691	--	$1,695
Seymour	30	$1,422,989	56	4	$239,107	--	--	--	$20,214
Promise City	5	$149,954	7	1	$32,366	--	--	--	$29
Allerton	21	$1,057,363	51	3	$113,349	2	$368,441	--	$2,754
Humeston	23	$1,157,913	48	10	$484,260	--	--	--	$4,428
Millerton	2	$58,357	10	81	$11,335	--	--	--	$,1553
Lineville	11	$399,692	25	2	$149,144	--	--	--	$3,484
Clio	3	$102,174	6	3	$78,613	--	--	--	$1,695
Unincorp County	137	$13,284,622	272	5	$509,598	1	$339,488	--	$921,901

Railroad Incident Maximum Population and building exposure for Rail Transportation Incident is displayed below. Multiple rail lines in the unincorporated region of Wayne County place many at risk in the event of a Rail Transportation Incident and the maximum population and building exposures are shown in the table below. There are three railroad companies that operate lines in Wayne County: CRIP, UP, AND ICE. The CRIP rail line offers service on two lines that extend out of Allerton to the east and the other to the north. UP has the connecting rail lines that continue service south through the communities of Clio and Lineville at the Iowa/Missouri state line. UP also controls the rail line through the city of Corydon and extends north through Millerton.



ICE railroad operates a rail line that continues from Appanoose County into the southeast corner Wayne County. This line dissects the community of Seymour and continues into Missouri southwest of this city. There are numerous crossings present the opportunity for train-vehicle or pedestrian accidents.

Rail and highway incidents are usually limited to areas in and near at-grade crossing. Rarely will an incident result in widespread effects. The direct area of impact is usually quite small but depending on the vehicle(s) and materials involved, the effects could reach miles beyond the incident. Harmful products may contaminate streams, rivers, bodies of water, water distribution systems and storm water systems. The ability of the response agencies to contain the product on-scene usually limits the area affected.

Corydon

Facility	Location	Assessed Value
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Sports Complex		
Fairgrounds		$273,330

Millerton

Facility	Location	Assessed Value
City shop	101 Thatcher	$4,210

Seymour

Facility	Location	Assessed Value
Street Maint bldg.	522 West Wall	

Allerton

Facility	Location	Assessed Value
City Hall/community center (shelter site)	Central Ave	$54,030
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main St	$20,000
Library		$10,110

Lineville

Facility	Location	Assessed Value
Lift station	West 3rd St	
City Hall/ community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Sewer Lagoon	East Line St	
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Medical Clinic		$149,440
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170
Private In-Home Daycare	805 Main St	

Humeston

Facility	Location	Assessed Value
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Water Tower		
Library		$375,480
Medical Clinic		

Waterway Incident

Passengers on a pleasure watercraft are most vulnerable in a waterway incident. The maximum extent of a waterway incident would be limited. Impacts would not extend beyond the immediate incident scene unless there is spillage of a toxic substance. The only exception would include search and rescue events that could expand the area.

ALLERTON, CLIO, HUMESTON, LINEVILLE, MILLERTON, & PROMISE CITY WATERWAY INCIDENT – There are no bodies of water or streams in the city limits of any of these communities.

SEYMOUR WATERWAY INCIDENT – There are limited places that would allow for a waterway incident to occur in the city limits of Seymour. There are small streams and small ponds on the outskirts of the city limits. The ponds could hold small fishing boats.

CORYDON WATERWAY INCIDENT - Corydon Lake is located on the west and south side of the community. The facility allows small fishing boats.

UN-INCORPORATED WATERWAY INCIDENT – There are multiple locations in rural Wayne County that could potentially experience a waterway incident. Although, none are considered large bodies of water, they are navigable by small boats. This region of Iowa is known for abundant fishing. The following bodies of water are frequently explored by outdoorsmen and families: Bobwhite, Corydon Lake, Lakeside near Humeston, and Moore/Gosch Park. Risk of a waterway incident can occur in many locations throughout the un-incorporated region of Wayne County and the following chart displays the maximum population at risk (Source 2019 US Census). A drowning or contamination spill has the potential of occurring at any of these. The campers or visitors of any lake could be affected by a waterway incident because the proximity to a body of water.

Exhibit 118: Maximum Population Exposure
2019 ACSs

Jurisdiction		Population 65yrs & older	Population 18 years& younger	Population living below poverty guidelines	Residents living with a diagnosed disability	Old English Amish Population
County	(6,429)	1,395 21.7%	1,618 25.2%	1,106 17.2%	922 16.4%	Estimated at 1,000
Allerton	(513)	71 14.3%	168 33.8%	164 32%	17 14.5%	
Clio	(66)	19 29%	12 18.2%	2 3%	7 10.6%	
Corydon	(1,628)	373 23%	416 25.6%	238 14.6%	254 16.6%	
Humeston	(484)	132 27.3%	121 25%	39 8%	108 22.3%	
Lineville	(259)	41 15.8%	43 16.6%	47 18%	33 12.7%	
Millerton	(108)	5 5%	33 30.6%	10 9.3%	1 1%	
Promise City	(78)	18 23%	13 16.7%	15 19.2%	19 24.4%	
Seymour	(567)	165 29%	113 19.9%	139 24.6%	125 22%	

Loss Estimates

Loss estimates can vary by incident and severity. Insurance Research Council indicates that the average Highway transportation incident claim $3,231 in damages per event. It is estimated that more than $31 Million in property at risk of damage during a Rail Transportation Incident. The severity and loss estimate would be dependent about the size of the event and the cargo transported.

Probability

Since 1964 there has been several air transportation incidents resulting in one fatality in the county. Flight patterns over the region include several municipal airports which present a risk for air transportation incident. A limited history of air transportation incident occurring in the future, but the risk does exist. As part of the larger transportation incident hazard, an air transportation incident has an unlikely probability, especially relative to a highway transportation incident.

A few major and minor traffic accidents occur every day in Wayne County. These accidents result in injury, death, and property damage in approximately 20% of incidents. Although traffic engineering, inspection and maintenance of infrastructure, land use management, and the readiness of local response agencies have increase, highway incidents continue to occur. When the traffic volume in the region is increasing, the number of traffic accidents also rises. The combination of large numbers of people on the road, wildlife, weather conditions, potential mechanical problems, and human error increases the probability of a transportation incident in the region. Overall, a highway transportation incident is likely.

There have been 20 train accidents in 10 years in the region. Although recent incidents have not been fatal or exceeded local capabilities, rail traffic will continue and there for create an occasional probability of a rail incident occurring.

There have been few waterway incidents across Iowa and Wayne County that have exceeded local capabilities. There has been search and rescue events involving a single person or small boats with only a couple of people on board. Small scale incidents have resulted in loss of life from pleasure craft collisions and falls from vessels, but the probability of a water way incident is unlikely.

The magnitude and severity are estimated to be limited for transportation incidents. A transportation incidence could result in injuries, up to 10% to 25% of property damage, and shutdown of facilities for a week. The property damage estimate is estimated high because if a transportation incident were to occur in a small jurisdiction, a high percentage of the community can be impacted. Overall, the magnitude and severity estimate are based on historical occurrences, existing hazard mitigation plans, the *Iowa Hazard Mitigation Plan 2018* and local knowledge.

Given the reliance on private vehicles and trucking in rural Iowa, the probability of an accident on any given roadway is high, each jurisdiction can anticipate (or have a 33%) at least one accident in the next year, not all will necessarily be serious.

Exhibit 119: Jurisdictions with a State Highway	
Name	Highways
County	2, 14, 65
Corydon	2, 14
Promise City	2
Lineville	65
Humeston	65

The SHMT & the local committee analyzed has evaluated the probability that a serious highway transportation incident occurring in Iowa is very likely to occur any given year. Wayne County plans to join efforts with Iowa DOT to perform a Highway Safety Audit to identify locations that have a greater probability of

Warning Time

The amount of warning time prior to an aircraft accident could vary from several minutes to a matter of seconds. Crew aboard a troubled aircraft can radio to ground crew to prepare for the incident, but little can be done to lessen the direct effect of the impact. There is rarely adequate time to do more than position on-site emergency response personnel.

There is usually no warning of a highway incident. During snowstorms and other severe weather events that impede travel, travelers, response agencies, and hospitals alike can be notified of hazardous travel conditions. Flash flooding is a common travel hazard in Wayne County. Warnings are often issued several hours before the flooding may occur.

Like other transportation incidents, a railway incident would occur without any warning. There may be a limited amount of time to warn those in the pathway of the harmful effects.

Leading causes of waterway incidents are inclement weather and operator error, which bot can occur without warning. Weather forecasts are available days in advance and would give ample time to take shelter away from water.

Duration

All transportation incidents of rail, air, and waterway related hazards are likely to create more intensive response and resources to protect life and safety of those affected.

Hazard Scoring & Ranking

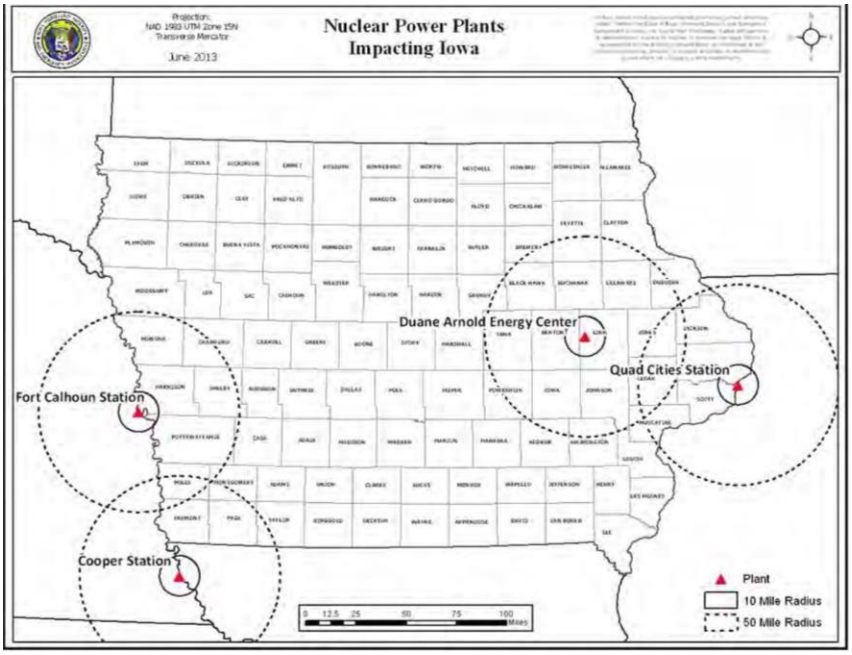
Exhibit 120: Transportation Incident Hazard Score Calculation					
	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	1.86
Wayne County	1	1	4	3	1.65
Allerton	2	2	4	2	1.95
Clio	1	1	1	1	1.0
Corydon	1	1	4	2	1.55
Humeston	-	-	-	-	-
Lineville	3	3	4	2	3.05
Millerton	2	1	4	2	2.0
Promise City	2	2	4	2	2.3
Seymour	1	3	4	4	2.35

Radiological

This hazard encompasses fixed radiological incidents and transportation radiological incident, which involves an incident resulting in a release of radiological material in transport or at a fixed facility to include power plants, hospitals, laboratories, and other facilities with radioactive material. Primary focus on nuclear power plants. There are three nuclear facilities in adjacent states and the buffer zones reach into Iowa. The only nuclear power plant in Iowa is in Linn County. None of the four facilities are near Wayne County.

Hospitals and some Industrial facilities are other types of fixed facilities that may house radioactive materials. Sources of radioactive materials may include medical products, radioactive waste from hospitals or laboratories, and industrial products. Small amounts of products exist in a few locations and all within buildings. Trained people use the equipment, and it is properly handled and stored.

Exhibit 121: Nuclear Power Plants in Iowa



Description

FIXED RADIOLOGICAL INCIDENT - An incident resulting in a release of radiological material at a fixed facility to include power plants, hospitals, laboratories, and the like is a fixed radiological incident. Although the term "nuclear accident" has no strict technical definition, it refers to events involving the release of significant levels of radiation. Most commercial nuclear facilities in the United States were developed in the mid-1960 and are designed to withstand aircraft attack.

Therefore, they should withstand most natural hazards even though they may not have been specifically designed for those forces. Emergency classifications are divided into four categories. Each call for a response from plant and government personnel. From least to most severe, the classifications are:

- Unusual Event
- Alert
- Site Area Emergency
- General Emergency

FIXED RADIOLOGICAL INCIDENT – There are no fixed radiological facilities in Wayne County

TRANSPORTATION RADIOLOGICAL INCIDENT – This is described as an incident resulting in a release of radioactive material during transportation. Transportation of radioactive materials through Iowa over the interstate highway system is considered a radiological hazard. The transportation of radioactive material by any means of transport is licensed and regulated by the federal government. When these materials are moved across Iowa highways, Iowa officials are notified, and appropriate escorts are provided. As a rule, there are two categories of radioactive materials that are shipped over the interstate highways. Low level waste consists primarily of materials that have been contaminated by low level radioactive substances but pose no serious threat except through long-term exposure. These materials are shipped in sealed drums within placarded trailers. The danger to the public is no more than wide array of other hazardous materials. High-level waste, usually in the form of spent fuel from nuclear plants, is transported in specially constructed casks that are built to withstand a direct hit from a locomotive.

Potential Hazard Area

The potential hazard area for a radiological incident is primarily the transportation modes throughout Wayne County.

FIXED RADIOLOGICAL INCIDENT - There are no fixed radiological facilities in Wayne County.

TRANSPORTATION RADIOLOGICAL INCIDENT - Primary risk of a transportation radiological incident would occur on the roadway systems throughout the county. The greatest likelihood would be along Highways 2, 14 and 65.

Historical Occurrences

FIXED RADIOLOGICAL INCIDENT – Since 1990, the Quad Cities Nuclear Power Plant has had 17 Unusual Events, 7 Alerts, and no Site Area Emergencies or General Emergencies. Since 1990, the Cooper Nuclear Power Plant has had 18 Unusual Events, 1 Alert, and no Site Area Emergencies or General Emergencies. Since 1990, Ft. Calhoun Nuclear Power Plant has had 17 Unusual Events, 2 Alerts, and no Site Area Emergencies or General Emergencies.

TRANSPORTATION RADIOLOGICAL INCIDENT – Since 1990, hundreds of shipments have been made through Iowa. There have been no occurrences of a radiological incident in Iowa. Transportation accidents are the most common type of incident involving radioactive materials because of the sheer number of radioactive shipments. Rail and highway routes for the shipment of radioactive waste have been identified and mapped. At this time, no specific route is identified in Wayne County unless transported on highways.

Magnitude and Severity

Sources of radioactive materials include medical products, industrial products, nuclear power plant fuel, nuclear weapons, and radioactive waste from hospitals, laboratories, nuclear reactors, and military facilities.
In over 50 years of nuclear power production in the U.S., no deaths or injuries from radiation have been recorded among the public. Each of the nuclear facilities in the country identifies a 10-mile radius Emergency Planning Zone and a 50-mile radius Ingestion Pathway Zone.

Specialized training is needed to respond to these types of incidents. If inadequately trained personnel attempt to respond, the impacts could be the same as those for the public exposed the toxic materials. Proper training and equipment reduce the risk to response personnel. A few to a few dozen people may be impacted by an immediate release with a small amount of contamination.

If the land and facilities cannot be used for weeks, months or even years, the loss of production would be devasting. Economic impacts would be multi-sector and long-lasting in the surrounding area.

TRANSPORTATION RADIOLOGICAL INCIDENT – The maximum population and building exposure to transportation of radiological materials is shown in the chart below. The county Areas of vulnerability would be those located near the rail system. The county has three state highways that are identified in the county. Highway 65 transports traffic north and south across the county and go through the communities of Lineville and Humeston. Highway 2 extends east and west through Wayne County and enters the city limits of Corydon and Promise City. State Highway 14 offers travel north from Corydon and into Lucas County. Additional risks of transportation of radiological material can occur along the rail lines in Wayne County. There are three railroad companies that operate lines in Wayne County: CRIP, UP, AND ICE. The CRIP rail line offers service on two lines that extend out of Allerton to the east and the other to the north. UP has the connecting rail lines that continue service south through the communities of Clio and Lineville at the Iowa/Missouri state line. UP also controls the rail line through the city of Corydon and extends north through Millerton. ICE railroad operates a rail line that continues from Appanoose County into the southeast corner Wayne County. This line dissects the community of Seymour and continues into Missouri southwest of this city. It is estimated that only the north half of each location (that closest the roadway) would be affected.

Exhibit 122: Maximum Population and Building Exposure Hazard Area 10% of Jurisdiction **Per County Assessor & Auditor									
	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	65	$4,622,863	162	15	$644,424	3	$164,691	--	$1,695
Seymour	30	$1,422,989	56	4	$239,107	--	--	--	$20,214
Promise City	5	$149,954	7	1	$32,366	--	--	--	$29
Allerton	21	$1,057,363	51	3	$113,349	2	$368,441	--	$2,754
Humeston	23	$1,157,913	48	10	$484,260	--	--	--	$4,428
Millerton	2	$58,357	10	81	$11,335	--	--	--	$,1553
Lineville	11	$399,692	25	2	$149,144	--	--	--	$3,484
Clio	3	$102,174	6	3	$78,613	--	--	--	$1,695
Unincorp County	137	$13,284,622	272	5	$509,598	1	$339,488	--	$921,901

Corydon

Facility	Location	Assessed Value
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community Bldg	501 S East	$179,730
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington St	$136,900
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510

Millerton

Facility	Location	Assessed Value
Post Office	313 N Main	
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310

Seymour

Facility	Location	Assessed Value
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
City Hall/community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000

Lineville

Facility	Location	Assessed Value
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Medical Clinic		$149,440

Humeston

Facility	Location	Assessed Value
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Medical Clinic		
Humeston Senior Center (Shelter Site)		

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Loss Estimates

There are no fixed radiological facilities in Wayne County for any potential loss. The estimated loss for a transportation radiological is difficult to predict without any history for comparison.

Warning Time

A radiological release in Iowa could result from an incident in handling or transporting radioactive materials. This accident could occur with little to no warning. Ionizing radiation cannot be detected with human senses. Detection instruments are needed to indicate the existence of radiation. Distance from the incident would dictate the amount of time needed to avoid exposure from damaging radiation.

Duration

Responding to the effects of radiological releases in Iowa is extensive and will require resources and assistance from several Federal agencies to determine and evaluate the threat to life and the environment in the affected areas.

Hazard Scoring & Rankin

Exhibit 123: Radiological Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
Overall County Scores	--	--	--	--	1.59
Wayne County	1	1	4	4	1.75
Allerton	1	1	1	1	1
Clio	1	1	1	1	1.0
Corydon	1	1	4	2	1.55
Humeston	--	-	-	-	-
Lineville	2	3	4	2	2.6
Millerton	1	1	4	2	1.55
Promise City	1	2	4	3	1.95
Seymour	1	3	4	4	2.35

Human Caused Hazard

Terrorism

This hazard encompasses the following hazards of enemy attack, biological terrorism, agro-terrorism, chemical terrorism, conventional terrorism, cyber terrorism, radiological terrorism, and public disorder. This includes the use of multiple outlets to demonstrate unlawful force, violence, and/or treat again persons or property causing intentional harm for purposes of intimidation, coercion, or ransom in violation of the criminal laws of the United States. These actions may cause massive destruction and/or extensive casualties.

Description

ENEMY ATTACK – is an incident that would cause massive destruction and extensive casualties. An all-out war would affect the entire population. Some areas would experience direct weapons' effects: blast, heat, and nuclear radiation; others would experience indirect weapons' effect, primarily radioactive fallout.

PUBLIC DISORDER – Mass demonstrations, or direct conflict by large groups of citizens, as in marches, protest rallies, riots, and non-peaceful strikes are examples of public disorder. These are assembling of people together in a manner to interfere with public peace to constitute a threat, and with use of unlawful force or violence against another person, or causing property damage or attempting to interfere with, disrupting, or destroying the government, political subdivision, or group of people. Labor strikes and work stoppages are not considered in this hazard unless they escalate into a threat to the community. Vandalism is usually initiated by a small number of individuals and limited to a small target group or institution. Most events are within the capacity of local law enforcement.

BIOLOGICAL TERRORISM – use of biological agents against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom can be described as biological terrorism. Liquid or solid contaminants can be dispersed using sprayers/aerosol generators or by point of line sources such as munitions, covert deposits and moving sprayers. Biological agents may pose viable threats from hours to years depending upon the agent and the conditions in which it exists. Depending on the agent used and the effectiveness with which it is deployed, contamination can be spread via wind and water. Infections can be spread via human or animal vectors.

AGRO-TERRORISM – Causing intentional harm to an agricultural product or vandalism of agricultural/animal related facility is agro-terrorism. This category covers a large variety of incidents from potential to intentional introduction of disease; vandalism of facilities; theft of agricultural products, machinery, or chemicals; release of animals; and contamination of agricultural products. Depending on the type of action taken, the implications will vary greatly. Activities could include the following examples: animal rights activities who release mink or lab animals; disgruntled employees who intentionally contaminated bulk milk tanks or poison animals; eco-terrorists who destroy crops/facilities; theft of agricultural products, machinery, or chemicals; or criminals who vandalize agricultural facilities.

CHEMICAL TERRORISM - this involves the use or threat of chemical agents against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion, or ransom. Liquid/aerosol or dry contaminants can be dispersed using sprayers or other aerosol generators; liquids vaporizing from puddles/containers; or munitions. Chemical agents may pose viable threats for hours to weeks depending on the agent and the conditions in which it exists. Contamination can be carried out of the initial target area by persons, vehicles, water, and wind. Chemicals may be corrosive or otherwise damaging over time if not mitigated.

CONVENTIONAL TERRORISM - The use of conventional weapons and explosives against persons or property in violation of the criminal laws of the United States for purposes of intimidations, coercion or ransom is conventional terrorism. Hazard affects are instantaneous; additional secondary devices may be used, lengthening the time duration of the hazard until the attack site is determined to be clear. The extent of damage is determined by the type of quantity of explosive. Effects are static other than cascading consequences, incremental structural failures, etc. Conventional terrorism can also include tactical assault or sniping from remote locations.

CYBER ATTACK- Electronic attack using one computer system against another to intimidate people or disrupt other systems is a cyber-attack. Cyber terrorism may last from minutes to days depending upon the type of intrusion, disruption, or infection. Generally, there are no direct effects on the built environment, but secondary effects may be felt depending upon the system being terrorized. Inadequate security can facilitate access to critical computer systems, allowing them to be used to conduct attacks.

RADIOLOGICAL TERRORISM – This is the use of radiological materials against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom. Radioactive contaminants can be dispersed using sprayers/aerosol generators, or by point of line resources such as munitions, covert deposits, and moving sprayers or by the detonation of nuclear device underground, at the surface, in the air or at high altitude.

Potential Hazard Area

The entire Wayne County is for a terrorism event.

Historical Occurrences

There have not been any serious terrorism events in Wayne County.

ENEMY ATTACK – The federal government monitors the international political and military activities of other nations and would notify the State of Iowa of escalating military threats. There are many small military installations in Iowa; most are Iowa National Guard assets spread throughout the state comprised of various military unites and functions. There have been no enemy attacks on or in Iowa in modern times. The only history of enemy attack dates to the days of settlement and the Civil War in the 1800's. The breakup of the Soviet Union and other Soviet-Bloc nations has ended the Cold War. However, an enemy attack is still a

possibility due to international conflicts and the large number of weapons still in existence throughout the world.

PUBLIC DISORDER – Large-scale civil disturbances rarely occur, but when they do they are usually an offshoot or result of one or more of the following events; 1) labor disputes where there is a high degree of animosity between the participating parties; 2) high profile/controversial laws or other governmental actions; 3) resource shortage caused by a catastrophic event; 4) disagreements between special interest groups over a particular issue or cause; 5) a perceived unjust death or injury to a person held in high esteem or regard by a particular segment of society. There have been numerous labor disputes and protests in Iowa, but these have remained non-violent. Other non-peaceful incidents have occurred in the state, but within the state, but within the response capabilities of local law enforcement.

BIOLOGICAL TERRORISM - Iowa has not been immune to acts of terrorism or sabotage, the state has experienced many threats in the past. Most incidents have been limited to reported "suspect" powders, actual threats, and hoaxes. Beginning in October 2001, following the original "Anthrax" scares, we experienced many responses for suspicious powders. Following the development of a threat assessment/response protocol the number of responses were reduced; and now average a few responses each month. All of the biological terrorism incidents that have occurred were in the metropolitan areas. There have been 1237 threats in the U.S. from 2008-2016 and less than 25 threats in Iowa. Most of the substances happened in the postal locations. None contained an actual hazardous or toxic substance.

AGRO-TERRORISM – Incidents such as this have occurred in the state of Iowa. Over the past 10 years, Iowa has experienced at least 10 incidents in which animal rights activities have vandalized or released animals in our agricultural facilities. Additionally, there has been vandalism to agricultural facilities or incidents of disgruntled employees causing damage to animals and animal products. There are frequent cases of theft of agricultural machinery, products, and chemical.

CHEMICAL TERRORISM - Iowa has not been immune to acts of terrorism or sabotage. The chemical terrorism history, fortunately, has been limited. We experience at least one event in 2005, where a subject mailed "rat poison" to several state and local officials. One of the letters was torn open in a mail-sorting machine in Des Moines, which led to the closure of the Main Post Office and the Emergency Room of Mercy Medical Center. We have experienced at least one event where subjects broke into a city's water supply, and it was suspected that chemicals may have been deposited in the water supply. We have experienced many releases of anhydrous ammonia by persons engaged in clandestine drug manufacturing. At least two events occurred in Des Moines between 2007 and 2009 but were later assessed as non-threatening and non-criminal.

CONVENTIONAL TERRORISM - The state of Iowa has experienced many bomb threats in the distant and recent past. During the spring of 2002, 18 pipe bombs were found in mailboxes in five states stretching from Illinois to Texas, including Iowa. Six people were injured in the bombings in Iowa and Illinois.

CYBER ATTACK- Cyber-security and critical infrastructure protection are among the most important national security issues facing our country today, and they will only become more challenging in the years to come. Recent attacks on our infrastructure components have taught us that security has been a relatively low priority in the development of computer software and internet systems. These attacks not only have disrupted electronic commerce but have also had a deliberating effect on public confidence in the internet.

RADIOLOGICAL TERRORISM – There is no history of radiological terrorism in Iowa. Since there is almost no record of acts of nuclear terrorism, an approach other than the traditional approach to probability of occurrence is needed to estimate the probability.

Probability

The Federal Government monitors the international political and military activities of other nations and would notify the State of Iowa of escalating military threats. There are many small military installations in Iowa; most are Iowa National Guard assets spread throughout the state comprised of various military unites and functions.

There have been no enemy attacks on or in Iowa in modern times. The only history of enemy attack dates to early settlement and the Civil War in the 1800s. Wayne County has few areas of dense population and development locations and would be an unlikely target for during a conventional terrorism attack.

Despite not experiencing a full terrorism event, Iowa has experienced many terrorist threats. Most incidents have been limited to "suspect" powders, actual threats, and hoaxes. Beginning in 2001, Iowa experienced many responses of suspicious powders after the original "Anthrax" scare.

Incidents of agro-terrorism have occurred in Iowa. In the past ten years, Iowa has experienced incidents in which animal rights activists have vandalized or released animals in agricultural facilities. There have been cases of vandalism of agricultural facilities or incident of disgruntled employees causing damage to animals and animal products.

Chemical terrorism has been limited in Iowa. Throughout the country public officials have received suspicious letters and this can happen in Iowa. In 2005, a subject mail rat poison to several state and local officials. One of the letters was torn open in a mail-sorting machine in Des Moines, which led to the closure of the Main Post Office and the Emergency Room of Mercy Medical Center.

Cyber terrorism is difficult to track incidents and threats, but there are definite incidents where account information has been jeopardized. Many of these notifications are concerning private companies where there could be financial concerns with data breach. There are multiple businesses in Wayne County that could be potential targets for cyber terrorism.

There have been no radiological incidents in Iowa. The greatest concern lies with unstable international countries that have the potential to develop nuclear

weapons. It is unlikely that radiological terrorism could affect the Midwest United States, but potential targets are in Iowa.

As for public disorders, there have been no recent mass demonstrations or conflicts with large groups of people in Wayne County. There is always a possibility of a march, protest rally, or non-peaceful strike however the probability is low in this region.

Labor strikes and work stoppages are not considered part of this hazard unless they become a threat to the community. Vandalism is usually initiated by a small number of individuals and limited to a small target group or institution. Overall, most events are within the capacity of local law enforcement.

Recent national events have increased awareness of school safety. Although there has not been a major incident in Wayne County, local schools complete training to teach staff how to respond during a potential intruder. Most schools have also installed limited access entrance systems.

Magnitude and Severity

For all types of terrorism, people who are targets, people located within targets or people located within or near a targeted area are extremely vulnerable. The potential injuries and deaths caused by terrorism event depends on the type of terrorism, the scale of the event, and whether the terrorism attempt is successful. In general, it is difficult to assume who and what structures could be potential targets.

The type, scale and success of a terrorism attempt will also determine how much of the county will be affected. Some terrorism attempts are limited in scale with specific targets while others are widespread. Some terrorism attempts are limited in scale with specific targets while others may be widespread. If a terrorism event is large scale, it is likely that it would affect more than a local county or even the region. Aside from public disorder type events, a terrorism event in Wayne County has the potential to affect the entire region.

Hazard Risk Exposure

Exhibit 124: Maximum Population and Building Exposure Hazard Area 100% of Jurisdiction
****Per County Assessor & Auditor**

	Residential Structures		People (2019 ACS)	Commercial Structures		Industrial Structures		Agricultural Structures	
	Number	Value	Number	Number	Value	Number	Value	Number	Value
Corydon	653	$46,228.630	1,628	154	$6,444,244	30	$1,646,910	--	$16,950
Seymour	300	$14,229,890	567	43	$2,391,070	--	--	--	$202,140
Promise City	53	$1,499,540	78	11	$323,660	--	--	--	$290
Allerton	214	$10,573,630	513	39	$1,133,490	23	$3,684,410	--	$27,540
Humeston	229	$11,579,130	484	105	$4,842,602	--	--	--	$44,280
Millerton	21	$583,570	108	8	$113,350	--	--	--	$15,530

Lineville	108	$3,996,920	259	24	$1,491,440	1	$96,330	--	$34,840
Clio	33	$1,021,740	66	37	$786,130	--	--	--	$16,950
Unincorp County	1,372	$132,846,220	2726	59	$5,095,986	12	$3,394,880	--	$9,219,010

Corydon

Facility	Location	Assessed Value
Lift stations (W&E)		
City Hall	501 S East St	$93,950
City shop	511 Maple	
Co Road yard	703 Fairground Rd	$313,190
Community Bldg	501 S East St	$179,730
Sewer Lagoon	South St	
Museum		$1,598,270
Library (historical)	112 S Franklin St	$48,830
Fire Station(old)	213 S Washington	$119,640
Fire Station(new)	213 S Washington	$136,900
Bath House (historical)	100 McKinley St	
Wayne County Hospital (Shelter Site)	109 Broad	$13,157,380
Courthouse		
Historic Square		
Wayne Community School	213 Jefferson	$4,520,270
Law Center		$32,640
Water Dept		$20,340
Murphy Place Senior Housing	511 E Jackson	$875,890
Emergency Shelter locations		
Golf Course		$454,340
Sports Complex		
Fairgrounds		$273,330
Extension Office	220 E Jefferson	$132,670
Corydon Nursing & Rehab (Shelter Site)		
Walden Park Club House (Shelter Site)		
Corydon Head start	605 S West St	
Magical Beginnings Early Child-hood Center	701 E Marion St	$401,510
Private In-home Daycare	2018 170 St	
Private In-Home Daycare	507 W Monroe St	
Private In-Home Daycare	418 W Madison St	
Private In-Home Daycare	1615 80th St	

Millerton

Facility	Location	Assessed Value
Lift station		
Post Office	313 N Main	
Sewer Lagoon		
City shop	101 Thatcher	$4,210

Promise City

Facility	Location	Assessed Value
Lift station	North edge of town	
City Hall/community center	112 Main St	$51,550
Post Office	1st & Main St	$7,310
Sewer Lagoon	South of town	

Seymour

Facility	Location	Assessed Value
N. Lift station	625 N 5th	
S Lift Station	Southlawn Cemetery	
Lagoon	J46	
Community center (Shelter Site)	135 N 5th	
Post Office	230 4th N	$105,420
Street Maint bldg.	522 West Wall	
Water Plant	118 N 6th	
Fire Dept, City Hall, & Library	105 N 5th	$339,070
Medical Clinic		$88,280
School		$3,519,260
Water Tower		
Public Housing	N 7th St	$500,390

Allerton

Facility	Location	Assessed Value
Lift station		
City Hall/community center (shelter site)	Central Ave	$54,030
Legion	Pine	$23,380
Post Office	108 N Central	
Water Dept		$83,110
City Shop	101 N Central	$27,440
Public Housing		$204,950
Allerton Centennial Building/Fire Station (shelter site)	103 Central S	$112,920

Clio

Facility	Location	Assessed Value
City Hall	414 Main St	$20,000
Motor Grader shed	414 Main St	$20,000
Library		$10,110

Lineville

Facility	Location	Assessed Value
Lift station	West 3rd St	
City Hall/community center	111 Main St	$55,330
Ambulance garage/Fire Dept	207 Main St	$26,630
Post Office	220 Brown St	$13,890
Sewer Lagoon	East Line St	
Water Pump house & city shed	Washington St	$5,940
Water tower	Brimm St	
Medical Clinic		$149,440
Public Housing		$188,810
Lineville Senior Center (Shelter Site)		$23,170
Private In-Home Daycare	805 Main St	

Humeston

Facility	Location	Assessed Value
Lift station	6th & Blevens	$22,410
City Hall/community center	422 N Eaton Ave.	$52,170
Fire & First Responders	228 Broad St	$147,900
Post office		$22,960
Museum	422 N Eaton Ave	$59,260
Water Tower		
Library		$375,480
Medical Clinic		
Elementary School		$60,000
Public Housing		
Humeston Senior Center (Shelter Site)		
Storage & Shop		$130,940

Wayne Community School

Facility	Location	Assessed Value
Campus	102 North Dekalb St	$4,520,270

Unincorporated Wayne County

Facility	Location	Assessed Value
Water Towers (5)	scattered	
Natural Gas Booster Station	South of Allerton & near Lineville	
Nelson Round Barn (historical)	South of Allerton	
Pleasant Hill School (historical)	3 miles north of Lineville	

Loss Estimate

The likelihood of terrorism is low in this rural area of the United States. Any event could have significant loss of life and/or property. The greatest risk and potential loss would include the industries that Dairi-Concepts, East Penn and Shivvers.

Warning Time

The United States federal government monitors worldwide political and military activity. The citizens and states would be put on heightened alert during periods of intense political or military conflict. With Iowa's position in the center of the

United States, there would likely be significant warning of an impending enemy attack.

Acts of terrorism can be immediate and often come after little or no warning. There are occasions when terrorists have warned the targeted organization beforehand, but often the attack comes without previous threat. Terrorists threaten people and facilities through "bomb threats" and other scare tactics. Even in it is a shallow threat, precautions must be taken to ensure the safety of the people and property involved.

In most incidents we would have no warning time. The only exception would be if someone called in a threat. Acts of terrorism can be immediate and often come after no warning. There are occasions where terrorists have warned the targeted organization beforehand, but often the attacks come without previous threat.

Even if it is an unlikely threat, precautions must be taken to ensure the safety of the people and property involved. Explosions are usually instantaneous; additional secondary devices may be used, lengthening the duration of the hazard until the attack site is determined to be clear.

Duration

The response to all sources of terrorism is extensive and will result in the need for outside resources and response from federal agencies in both the investigation of a crime scene and in the response to the direct threats to life and property.

Hazard Scoring & Ranking

Exhibit 125: Terrorism Hazard Score Calculation

	Probability	Magnitude/Severity	Warning Time	Duration	Weighted Score
County Scores	--	--	--	--	1.12
Wayne County	1	1	4	4	1.75
Allerton	2	2	3	1	2.05
Clio	1	1	1	1	1.0
Corydon	1	1	4	4	1.75
Humeston	1	1	4	1	1.45
Lineville	-	-	-	-	-
Millerton	1	1	4	3	1.65
Promise City	1	2	4	3	1.95
Seymour	-	-	-	-	-

Presidential Disaster Declarations

The Robert T. Stafford Disaster Relief and Emergency Assistance Act Authorized the President of the United States to issue a disaster declaration when the President has determined that a disaster has caused damage of such severity that it is beyond the capabilities of state and local governments to respond. The Presidential Disaster Declaration allows the federal government to aid affected areas, such as Individual Assistance, Public Assistance, and Hazard Mitigation Assistance.

In the past 20 years, Wayne County has been in a Presidentially Declared Disaster 10 times, which is approximately once every two years. Refer to Exhibit 126 for the recent hazard events that led to those declarations and the Public Assistance and Individual Assistance approved in response. In all declarations, the county Wayne County was among other counties covered by the declaration. One declaration was in response to winter weather, which could be classified as a severe winter storm event in this plan. Seven declarations were in response to hazards associated with spring and summer weather. Within this plan they would be considered as flood (flash flood and river flood); thunderstorm, lightning, and hail; and tornado and windstorm hazard events.

Exhibit 126: Wayne County Presidential Disaster Declarations 2013-2020

Date	Declaration	Hazard
2020	DR-4483	COVID
2019	DR-4421	Flooding
2015	DR-4234	Severe Storms, Tornadoes, Flooding, & straight-line winds
2014	DR-4181	Severe Storms, Tornadoes, & Flooding
2013	DR-4119	Severe Storms, Straight line winds, & Flooding

In the following chapter, the hazards considered under this plan are prioritized based on the data collection for the risk assessment. The hazard events that were deemed to exceed local response capabilities, i.e., received a Presidential Declaration, reinforce the priority levels that result from the weighted average of four criteria: Probability, magnitude and severity, warning time, and duration. The winter weather and summer weather hazards that cause these events are all rated with the highest priority level and have wrought extensive loss across the region.

Mitigation Operations and Resources

Local governments in Iowa are subject to Iowa Code, which gives the authority to protect the health, safety, and welfare of its residents and levy taxes to provide services. Participating jurisdictions have similar authority, but each jurisdiction varies in terms of size and governmental priorities. When developing a mitigation strategy in a multi-jurisdictional planning area, it is important to distinguish the variation in operations and resources among jurisdictions to ensure the mitigation strategy is feasible. In other words, it is important to consider whether each community has the expertise or access to the resources needed to complete a project. The Appendix will display the operations and resources for each participating jurisdiction are included. The tables will be like what is seen below:

Exhibit 127: Common County Operations & Resources	
Officials, Commissions, & Committees	Board of Supervisors Emergency Management Commission County Conservation Board Economic Development Board Wayne Environmental Health Iowa Soil & Water Conservation District Board
Staff & Departments	Assessor's Office Attorney's Office Auditor's Office Community services Conservation Office Department of Human Services Emergency Medical Services Engineer's Office & Secondary Roads Department Environmental Services General Assistance Office County Transportation Medical Examiner's Office Public Health Office Recorder's Office Sheriff's Office Treasurer's Office Veteran's Affairs Office Weed Commissioner Emergency Management Board
County Services	Road & bridge maintenance Stormwater system maintenance Snow removal Vegetation management in public areas Law enforcement & response Emergency medical response Well & septic permits. Treasurer & Recorder services Transportation services Generators for sheriff's office, all radio tower sites, & ambulance service County website
Contracted or Agreement Services	Police & fire protection mutual aid agreements County Soil & Water Conservation District
Policies, Programs, & Plans	Capital Improvement Program County Code of Ordinances Floodplain ordinance & management program County Emergency Management Plan Coordinate with Iowa Dept of Natural Resources Coordinate with Iowa Dept of Public Health Multi-Jurisdictional Hazard Mitigation Plan Debris Management Plan Watershed Management Plan
Financial & Other Resources	County Budget Bonds Grants Donations

Mitigation Progress Update

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

For jurisdictions with existing hazard mitigation plans, it is important to document the mitigation actions that have been completed since the plan was adopted. The jurisdictions that participated in the previously approved plan completed mitigation actions that significantly reduce the risk of high priority hazards in the community.

The following section provides an update on the completed mitigation actions. A table is included that displays information about priority actions, whether the action was included in the previous plan, and notes on other work completed. Generally, in a jurisdiction's progress update, the mitigation actions that were included in the previous hazard mitigation plan show a commitment to and documented progress toward completing mitigation actions.

It should be noted that although a mitigation action may be included in a jurisdiction's progress update as a completed mitigation action, the mitigation action may not necessarily be excluded from the jurisdiction's updated mitigation strategy in this plan. Most hazard mitigation actions are ongoing in nature, as risk and vulnerability change throughout a jurisdiction. In addition, most mitigation actions require multiple projects over a span of time that extends beyond the five-year life of a hazard mitigation plan, which is often due to the cost of completing large or multi-stage mitigation actions.

During the meeting, previous mitigation actions were being evaluated and jurisdictions updated local accomplishments and challenges. Some of the main accomplishments include Seymour and Lineville purchasing new generators; Corydon has been removing dilapidated structures, active shooter trainings have occurred at schools, courthouses, and businesses in the region;.

The existing mitigation strategies were reviewed, and the committee felt were still pertinent for the hazards identified. The mitigation actions considered by the committee were included in this plan and were then prioritized based on several criteria, whether they address a high-risk hazard, how many hazards they address, what kind of priority each strategy is, the estimated timeline, and the estimated cost. The logic of this was much like ranking the hazards, the actions with the broadest positive impact would be naturally raised to the top of the list while those that would be costly or be limited in impact would naturally fall to the bottom.

Exhibit 128: 2017 Wayne County Mitigation Action Status

2016 Mitigation Strategy	Community Progress Notes	Include this Strategy in 2022 Plan?
Public Education & outreach of warnings & self-protection	Ongoing	Yes
First responders in jurisdictions create list of vulnerable people in communities that would need immediate help in a disaster	Ongoing	Yes
Develop Emergency Response Team post-disaster	Fire Departments & First Responders	Yes
Search & Rescue Training/Equipment for First Responders	All fire departments and EMT require annual training and recertification	Yes
Continuity of Operations Plans for post-disaster	Ongoing	Yes
Personal preparation- smoke detectors, fire extinguishers, etc.	Ongoing	Yes
Maintain current evacuation plans for buildings, schools, & cities	Seymour: City has approved Fire Departments & First Responders	Yes
Improve road & bridge conditions	Corydon: new asphalt on 6 blocks & ongoing Seymour: installing new Main St; Other small communities is ongoing as finances allow	Yes
Educate first responders, workers, & public on handling chemical emergencies	Fire Departments & First Responders	Yes
New storm shelter and heating/cooling shelter that meet tornado safe standards		Yes
Weather Radios for citizens	Seymour: Fire Dept distributed to residents	Yes
Acquisition & Installation of early storm warning systems	Promise City has new system Lineville has sirens @ fire station	Yes
Generators for shelters/critical facilities	Seymour: Got a new generator to power city facilities; Promise City Community Center is a shelter site with a generator Lineville: Installed electric generator @ community building & purchased generator	Yes
Current Mass casualty plan	Responsibility of Emergency Management & has developed protocol after COVID-19 Pandemic	Yes
Support additional law enforcement training	Corydon: has 28E with sheriff's office	Yes
Manufactured home tie-down regulations/ordinances		Yes
Temporary Debris Disposal Plan	Corydon & Seymour: have a designated brush dump	Yes
Burning Restrictions	Seymour: city requires approval before all burns	Yes
Rehabilitate deteriorating buildings or removal of dilapidated structures	Corydon: 2 properties improved & private person purchasing & cleaning up other properties Seymour: Multiple buildings have been removed Lineville: removed several deteriorating bldgs.	Yes
Safe rooms in schools, mobile home parks, campgrounds, fairgrounds, hospital, etc.		Yes
Encourage residents & public buildings to have carbon dioxide & smoke detectors	Ongoing	Yes
Critical infrastructure protection from terrorism	Ongoing	Yes
Hazardous material disposal plan		Yes
Secure funding for vacant/collapsed buildings to remove	Seymour: City has worked with IDNR for asbestos testing & removal funds Corydon applied 20/21 but denied	Yes

Building code enforcement	No jurisdiction has Building Code Enforcement staff	Yes
Storm water management ordinance	Seymour: Updated & approved recently	Yes
Flood insurance by homeowners		Yes
NFIP Participation	Seymour & Wayne County enrolled	Yes
Digging hotline/pipeline safety regulations education	Utility companies have begun promotional pieces on TV & radio	Yes
Use new GIS mapping to change zoning, ordinances, etc.	Corydon: in process of GIS mapping manholes, water shutoffs, curb stops, etc. Seymour: Currently utilizes for utility locations	Yes
Immunization Plans – scheduled & emergency situations	County Health Department responsible for & would cooperate with Wayne County Hospital if necessary	Yes
Hazard occurrence collection & reporting		Yes
Acquisition or relocation of buildings in floodplain		Yes
Water storage saving plan-reduce usage	Ongoing	Yes
Locate, maintain, or remove/replace septic tanks		Yes
Flood proofing structures by owners	Ongoing	Yes
Review floodplain management & enforcement for effectiveness		Yes
Pest management by cities through regulations of property maintenance	Would be address through building code enforcement for jurisdictions. Environmental Health can monitor also	Yes
Waste Disposal Enforcement		Yes
Assessment risk for terrorism	Ongoing	Yes
Collection & protection of vital records by private residents	Ongoing	Yes
Expand hazard area for mapping & mine evaluation	Iowa DNR has developed mapping locations of known mines in the area. Information and research continue to be gathered for other locations	Yes
Establish local hazardous materials capabilities		Yes
Surge Protection/lightning protection	Ongoing	Yes
Radon Mitigation		Yes
Evaluate/maintain dams in county	Iowa DNR monitors high & significant hazard dams. Low hazard, local dams need to be regularly evaluated by private owners.	Yes

During the meeting, previous mitigation actions were being evaluated and jurisdictions updated local accomplishments and challenges. A full chart of strategies and progress is provided in the Appendix. The existing mitigation strategies were reviewed, and the committee felt were still pertinent for the hazards identified. The mitigation actions considered by the committee were included in this plan and were then prioritized based on several criteria, whether they address a high-risk hazard, how many hazards they address, what kind of priority each strategy is, the estimated timeline, and the estimated cost. The logic of this was much like ranking the hazards, the actions with the broadest positive impact would be naturally raised to the top of the list while those that would be costly or be limited in impact would naturally fall to the bottom.

This would mean that the actions toward the top of the list should be where the County's mitigation efforts should be directed, however where opportunities to pursue lower ranked actions arise, they should be taken so long as they do not preclude taking an action with a broader positive impact is possible. For example, if grant funds for a project are available that would address an action ranked near the middle of the spectrum, then the County or any jurisdiction should pursue the grant opportunity. If such a grant opportunity is presented and it could be used for two or more identified actions, then it should be directed toward the highest ranked of the potential projects where practicable.

Mitigation Strategies

44 CFR Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section presents the mitigation strategy updated by the committee based on the updated risk assessment. The mitigation strategy was developed through a collaborative group process and consists of updated general goal statements to guide the jurisdictions in efforts to lessen disaster impacts, as well as specific mitigation actions that can be put in place to directly reduce vulnerability to hazards and losses. The following definitions are based upon those found in the March 2013 Local Mitigation Planning Handbook.

Actions toward the top of the list should be where the County's mitigation efforts should be directed, however where opportunities to pursue lower ranked actions arise, they should be taken so long as they do not preclude taking an action with a broader positive impact is possible. For example, if grant funds for a project are available that would address an action ranked near the middle of the spectrum, then the County or any jurisdiction should pursue the grant opportunity. If such a grant opportunity is presented and it could be used for two or more identified actions, then it should be directed toward the highest ranked of the potential projects where practicable.

Each action is profiled along similar lines as the hazards. Each action profile contains a description of the action, estimated cost with either an approximate dollar amount or listed as voluntary, minimal, moderate, or high. These categories are loosely defined as follows.

- Voluntary – reliant on donated time or resources
- Minimal – little or no cost, may be a nominal increase in day-to-day activities.
- Moderate – would likely require outside funds potentially from multiple sources or potential tax / fee increases.
- High – would require outside funds such as in the form of grant programs through State or Federal agencies

Prevention: Government administrative or regulatory measures or processes that influence the way land and buildings are developed and built. These measures also include public actions to reduce hazard losses to property and human health impacts. Examples include:

- Hazard mapping
- Studies/data collection and analysis to support prevention measures.
- Floodplain regulations
- Multi-jurisdictional agreements that reduce hazard risks
- Other regulatory measures or processes that reduce hazard risks.

Property Protection: Measures that involve modifying existing buildings or structures to protect them from a hazard, or removing buildings or structures from the hazard area, or providing insurance to cover potential losses. Examples include:

- Acquisition, elevation, or relocation of hazard-prone property
- Safe room/storm shelter retrofits
- Critical facility protection
- Risk reduction retrofits (modifications) to hazard prone properties.
- Studies/data collection and analysis to develop property protection measures.
- Continued National Flood Insurance Program (NFIP) participation

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

- Programs to improve awareness of hazard risk.
- Programs to improve awareness of hazard risk prevention and reduction.
- Education programs directed toward specialized audience, i.e. buildings, developers, and hazard prone neighborhoods

Natural Resource Protection: Measures that, in addition to minimizing hazard losses, preserve or restore the functions of natural systems. Examples include:

- Sensitive areas ordinance (development restrictions)
- Stream corridor restoration, watershed management
- Forest and vegetation management
- Wetland restoration and preservation

Emergency Services: Measures taken before, during and after a hazard event to protect people, and property; although these measures are not typically considered "mitigation, they significantly minimize the events impact and preserve the community's health and safety. Examples include:

- Emergency response facilities and personnel
- Hazard warning systems and equipment
- Health, safety, environmental risk prevention or reduction
- Emergency response infrastructure, equipment, planning, or training
- Emergency response services studies and data collection
- Emergency response communication systems

Structural Projects: These are measures that involve the construction and maintenance of structures and infrastructure that will reduce the impact of a hazard or redirect the impact away from people and property. Examples include:

- Channel modification/maintenance
- Dam and reservoir construction/maintenance
- Levee and floodwall construction and maintenance
- Safe room or storm shelter construction
- Infrastructure construction and maintenance
- Studies and data collection to develop structural projects.

Identification and Analysis of Mitigation Actions

During the first meeting the HMPC was reminded of the purpose of Hazard Mitigation planning and reviewed hazard risk assessment updates and data collection. Each jurisdiction was mailed a packet of information regarding the update to the Hazard Mitigation Plan in October of 2021. The packet included in the previous hazard mitigation strategies and requested representatives to indicated accomplishments. The status updates were provided via mail correspondence and HMP committee meetings.

When evaluating new mitigation strategies, members were able to consider the previous mitigation strategies as well as new mitigation options that were provided in: Validated plan goals, previous actions from 2016 Plan, Key Issues from Risk Assessment, FEMA's Mitigation Ideas Booklet, State Priorities for Hazard Mitigation Assistance Grants, and public opinion survey. Discussions were held to identify possible gaps that may exist between any problems identified and actions already developed to address it if any other potential options were recommended in FEMA's booklet. After considering all options, jurisdictions reviewed the materials to determine the final mitigation strategies for the plan update.

The jurisdictions were encouraged to be comprehensive and include all appropriate actions to work toward become more disaster resistant. Members were encouraged to maintain a realistic approach and remember that this "living document" will need to be updated as items are change, are accomplished, and may need deleted. Members were also instructed to consider the potential cost of each project in relation to the anticipated future cost savings.

Committee members worked to select mitigation strategies for each corresponding potential hazard and how the strategy will help accomplished the goals outlined in the plan. Below are the approved goals and the selected mitigation strategies to move towards accomplishing the goals:

Wayne County Selected Mitigation Actions

The table below provides the list of selected mitigation actions and which jurisdictions chose it:

Exhibit 129: Mitigation Actions					
Community	**Action Title**	**Responsible Entity**	**Hazards Addressed**	**Goal**	**Priority**
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Designate shelter sites and provide with adequate supplies and overnight accommodations	City councils, BOS, emergency management	Tornado, Windstorm, Thunderstorms and Lightning, Hailstorm	1, 2, 3, 5	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Maintain, improve, and protect public buildings, facilities, and utilities against all hazards	Private property owners, City Councils, BOS,	River Flooding, Severe Winter Storm, Tornado, Windstorm, Thunderstorms and Lightning, Hailstorm, Flash Flood, Drought, Extreme Heat, Grass/Wildland Fire, Dam Failure, Earthquake, Expansive Soils, Landslide, Sinkholes	1, 2, 3	M
Wayne County Unincorporated, Seymour, School	Pursue the construction of flood protection infrastructure in affected areas	City Councils, BOS	River Flooding, Flash Flood	1, 2, 3	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Install proper generator hookups at designated shelter sites to ensure shelters can support generator power	City Councils/BOS, critical facility property owners, Fire Departments	Dam/Levee Failure; Drought; Earthquake; Extreme Heat; Flash Flood; Grass/Wildland Fire; Hazardous Materials Incident; Infrastructure Failure; River Flooding; Severe Winter Storm. Thunderstorm/Lightning/Hail; Tornado/Windstorm	1, 2, 5	M

Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Purchase mobile generators and make them available to ensure that designated shelter sites and other critical infrastructure sites can be provided with supplemental power	City Councils/BOS, critical facility property owners, Fire Departments	Dam/Levee Failure; Earthquake; Extreme Heat; Flash Flood; Grass/Wildland Fire; Hazardous Materials Incident; Infrastructure Failure; River Flooding; Severe Winter Storm. Thunderstorm/Lightning/Hail; Tornado/Windstorm	1, 2, 3, 5	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Develop safe rooms in schools and critical public facilities	City Councils/BOS, critical facility property owners, school systems, hospitals	Tornado, Windstorm, Thunderstorms and Lightning, Hailstorm	1, 3, 4, 5	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Identify derelict, unsafe or structurally unsound buildings in the County and its communities and remove them to reduce safety concerns associated with collapse	City Councils/BOS, private property owners, Environmental Health	Earthquake; Infrastructure Failure; Severe Winter Storm; Thunderstorm/Lightning/Hail; Tornado/Windstorm	1, 2, 3	M
Wayne County Unincorporated, Seymour,	Acquisition or relocation of repetitive loss buildings in floodplain	City Councils/BOS	River Flooding	1, 2, 3, 5	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail	Encourage citizens to create family preparedness kits & have all hazards radio	Residents, Emergency Management, Fire Departments, etc	Animal/Plant/Crop Disease; Dam/Levee Failure; Drought; Earthquake; Expansive Soils; Extreme Heat; Flash Flood; Grass/Wildland Fire; Hazardous Materials Incident; Human Disease; Infrastructure Failure; Landslide; Radiological Incident; River Flooding; Severe Winter Storm; Sinkholes; Terrorism; Thunderstorm/Lightning/Hail. Tornado/Windstorm; Transportation	1, 2, 3, 4, 5	M

Elementary Community School			Incident		
Wayne County Unincorporated, Allerton, Promise City, Seymour, School	Provide data collection for expanded hazard area mapping of mine locations, abandon wells and sinkholes	Residents, City Councils, BOS, IDNR	Sinkholes	1, 2	L
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Improve sidewalks around public schools to increase public safety	Private homeowners, city councils, school districts	Transportation Incident	1, 2, 3	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Remove debris from areas prone to flash flooding	City Councils, BOS, Road/Maintenance Dept	Flash Flood	1, 2	H
Wayne County Unincorporated, Seymour,	Encourage compliance in the National Flood Insurance Program (NFIP)	City Councils, BOS	River Flooding, Flash Flood	1	H
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Make improvements to existing storm water and sewer systems	City Councils, Environmental Health	River Flooding, Severe Winter Storm, Thunderstorms and Lightning, Flash Flood, Expansive Soils	1, 2, 3	M

Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Follow county & jurisdictional infrastructure studies that identify repairs or replacement to culverts, ditches, and bridges to improve flow requirements	City Councils, BOS	Infrastructure Failure; River Flooding; Flash Flooding	1, 2, 5	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Evaluate all early storm warning sirens for proper coverage. Purchase & update as needed.	Fire Departments/ First Responders, City Councils, Emergency management	Tornado/Windstorm. Thunderstorm/Lightning/Hail	1, 3, 4, 5	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Public Education & Outreach of warnings & self-protection	Emergency management, public health, environmental health, city councils, residents	Flash flood, thunderstorm / lightning, Infrastructure failure, severe winter storm, hazardous materials incident, transportation incident, Windstorm/High Wind Event, river flooding, tornado, hailstorm, dam failure, sink hole, human disease incident, earthquake,	1, 2, 3, 4	H
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Develop, update, & publicize continuity of operations plan	Local government, City council, BOS	Flash Flooding, thunderstorm / lightning, Infrastructure Failure, severe winter storm, hazardous materials incident, transportation incident, Windstorm/High Wind Event River flooding, tornado, hailstorm, dam failure, sink hole, human disease incident, earthquake	1, 2, 3, 4, 5	H

Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Up-to-date Search & Rescue Training and equipment for First Responders	Fire Departments, First Responders, Local hospitals, city councils	Flash Flooding, Infrastructure Failure, Severe Winter Storm, Hazardous Materials Incident, Transportation Incident, River Flooding, Tornado, Windstorm/High Wind Event, Dam Failure, Sink Holes, Earthquake, Landslide	1, 2, 3, 4, 5	H
Wayne County Unincorporated, Seymour,	Flood proofing of properties	Private property owners	River flooding	1, 2	L
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Develop & maintain a current plan for Mass Casualty Preparation & Up-to-date training	Emergency management, city councils, first responders	Flash Flooding, Infrastructure Failure, Severe Winter Storm, Hazardous Materials Incident, Transportation Incident, River Flooding, Tornado, Human Disease Incident, Dam Failure, Sink Holes, Earthquake	1, 3	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Encourage Smoke/ Fire/ Carbon Monoxide Detectors & sprinkler systems	Private property owners, city councils, fire departments	Infrastructure Failure, Structure fire,	1, 5	H
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Designate shelter sites (including heating/cooling shelters) and provide with adequate supplies and overnight accommodations.	Emergency Management, City Councils,	Flash Flooding, thunderstorm / lightning, Infrastructure failure, severe winter storm, hazardous materials, Windstorm/High Wind Event, tornado, hailstorm, sink hole, earthquake	1, 2, 3, 5	M

Wayne County Seymour,	Flood Insurance by property owners	Private Property owners	River flooding	1, 2	H
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Regula maintenance of Heating/ cooling systems	Private Property owners		1, 2	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Collection & Protection of Vital Records by private residents	Local residents	Flash Flooding, Thunderstorm / Lightning, Infrastructure Failure, Severe Winter Storm, Hazardous Materials Incident, Transportation Incident, Windstorm/High Wind Event, River Flooding, Tornado, Hailstorm, Dam Failure, Sink Hole, Extreme Heat, Human Disease Incident, Earthquake, Landslide	1, 2, 4	L
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Promote & educate on Digging hotline/ pipeline safety regulations of pipelines education	City councils, BOS, pipeline companies,	Flash Flooding, tornado, sinkholes, pipeline,	1, 2, 4	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail	Health emergency plans for Immunization process – scheduled & emergency situations	Public health	Human Disease, Pandemic	1, 2, 3, 4	M

Elementary Community School					
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Develop local process for Hazard Occurrence Data Collection & reporting	Emergency management	ALL	1, 3, 4	L
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Tree Management/ Trimming by homeowners, utilities & county	Private companies, private property owners, city maintenance department	Infrastructure Failure, Severe winter storm, Windstorm/High Wind Event	1, 2	M
Wayne County Unincorporated, Corydon, Seymour	Residents should have Surge Protection/ Lightning Protection	Residents	Thunderstorm / Lightning, Communications Failure, Infrastructure failure	2, 4, 5	L
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour	Evaluate/ maintain/ repair area dams	IDNR, BOS, City Councils,	Flash Flooding, Infrastructure Failure, River Flooding, Dam Failure	1, 2, 3, 5	H
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour,	Jurisdictions establish Burning Restrictions	City Councils, BOS	Infrastructure, Hazardous Materials, Land & Wildfire	1, 2, 4	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour,	Jurisdictional Waste Disposal Enforcement	City Councils, BOS	Windstorm/High Wind Event, Hazardous Materials Incident, Tornado, Human Disease Incident	1, 2	L

Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour,	Jurisdictions establish Manufactured Home Tie-Down's regulation/ordinance	City Councils, BOS, Zoning Commissions	Infrastructure failure, river flooding, tornado, Windstorm/High Wind Events	1, 2	L
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour,	Jurisdictions establish & implement Building Code Enforcement	City Councils, BOS, Zoning Commissions	Severe winter storm, structural failure, structural fire, Human disease pandemic, Human disease incident, earthquake,	1, 2	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour,	Promote Radon/Lead Mitigation	Public Health	Human Disease	1, 2, 4, 5	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Jurisdictions and residents establish Water Storage Saving Plan to reduce usage	City Councils, residents	Infrastructure, Fire, Drought	1, 2	L
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour,	Storm water Management ordinance preventing illicit connections	City Councils, BOS, Zoning Commissions	Flash Flooding, Thunderstorm / Lightning, Severe Winter Storm, River Flooding, Sink Holes	1, 2	L
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Hazardous Materials Protection for Storm Shelters	City Councils, BOS,	hazardous materials, transportation incident, Infrastructure Failure, human disease incident	1, 2, 3, 4	M

Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour,	Establish natural and artificial Snow Fences/ Barriers on open roadways prone to drift	City Councils, BOS, Street/Roads Dept	Severe Winter Storms, Windstorm/High Wind Event	1, 2, 4, 5	L
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Assessment Risk for Terrorism	City Councils, BOS, Emergency Management,	All forms of terrorisms	1, 3	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Hazardous Material Disposal Program	Public Health, City Councils	hazardous materials, transportation incident, Infrastructure Failure, human disease incident	1, 2, 3	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour, Wayne County Hospital, Wayne Community School, Seymour Community School, Mormon Trail Elementary Community School	Establish & maintain Local Hazardous Materials Capabilities	Public Health, City Councils, First Responders	hazardous materials, transportation incident, Infrastructure Failure, human disease incident	1, 2	M
Wayne County Unincorporated, Allerton, Clio, Corydon, Lineville, Millerton, Promise City, Seymour,	Bury Powerlines	Private Companies, City Councils	Thunderstorm / Lightning, Infrastructure Failure, Hazardous Materials, Transportation Incident,		L

Implementation of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include an action strategy describing how the actions identified in paragraph (c)(2)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefits review of the proposed projects and their associated costs.

Jurisdictional representatives worked with others in their community to finalize the actions to be submitted to the updated mitigation strategy. Throughout the discussion of the types of projects that the committee would include in the mitigation plan, emphasis was placed on the importance of a benefit-cost analysis in determining project priority. The Disaster Mitigation Act regulations state that benefit-cost is the primary method by which mitigation projects should be prioritized. Recognizing the federal regulatory requirement to prioritize by benefit-cost and the need for any publicly funded project to be cost -effective. The HMPC decided to pursue implementation according to when and where damage occurs, available funding, political will, jurisdictional priority and priorities identified in the Iowa State Hazard Mitigation Plan.

Due to many variables that must be examined during project development, the benefit-cost review at the planning stage primarily consisted of a qualitative analysis. For each action, the jurisdictions included a narrative describing the types of benefits that could be realized with implementation of the action. Where possible, the cost was estimated as closely as possible with further refinement to occur as project development occurs. Cost-effectiveness will be considered in additional detail if/when seeking FEMA Hazard Mitigation Assistance grant funding or other grant funding for eligible projects identified in this plan. At that time, additional information will be researched to provide for a quantitative benefit-cost analysis.

Prioritized Mitigation Activities

Mitigation actions were evaluated by various factors as previously mentioned; each of the factors was assigned a numerical value to aid in ranking the actions according to their anticipated positive impacts and drawbacks. The numerical values that were substituted in for estimated cost and timelines are as follows.

Number of Hazard:

- Number of hazards that the mitigation strategy applies to and each it is worth one point toward that strategy.

Cost:

- Voluntary (+1) – reliant on donated time or resources
- Minimal (0)– little or no cost, may be a nominal increase in day-to-day activities
- Moderate (-1) – would likely require outside funds potentially from multiple sources or potential tax / fee increases
- High (-2)– would require outside funds such as in the form of grant programs through State or Federal agencies

Priority:

- High priority +2pt
- Medium priority +1pt
- Low priority 0

Timeline:

- Ongoing (+1) – activities that are currently in practice or are suspected to have been implemented previously
- Short Term (0) – relatively low cost, low complexity activities that may be implemented in the next year
- Medium Term (-1)– low to modest cost activities that may require more effort and / or time to properly implement such as review of regulatory measures for effectiveness or development of new regulations or programs, implementable within a period of 5 years and likely within 2-3 years
- Long Term (-2)– high cost and time-intensive activities that require outside funds, significant administrative investment (temporary or permanent), and generally involve construction, anticipated to take 5 years or more from time of initial planning to securing funding to completion of activity

Require Political Support?

- Yes 0pts
- No +1pt

Protect Life and/or Prevent Injuries?

- Yes +1pt
- No 0pt

Will it reduce or eliminate damage to structures or infrastructure?

- Yes +1pt
- No 0pts

This ranking system is crude, but it helps to organize the actions in a way that begins to show a prioritization of what can provide the biggest positive impact for the effort required to implement them. A more sophisticated ranking system may include weighting for various factors depending on community priorities and concerns.

The composite ranking of mitigation actions is as follows.

Exhibit 130: 2021 Wayne County Mitigation Action Ranking

Ranking	***Mitigation Strategy***	***Comprehensive County Score***
1	Maintain up-to-date Search & Rescue trainings, certification, and equipment for First Responders	19.6
2	Encourage citizens to create family preparedness kits to be used in case of emergency	17.2
3	Maintain a current plan for Mass Casualty Preparation & Up-to-date training	17.0
4	Establish a local Hazard Occurrence Data Collection & reporting system	15.25
5	NEW: Generator hookups for critical facilities	14.6
6	Provide Public Education & Outreach of warnings & self-protection	14.4
7	Develop Emergency Post-disaster response team & Operations Plan	12.8
8	Make improvements to existing storm water and sewer systems	11.6
9	Encourage weather radios for citizens	11.25
10	NEW: Designate shelter sites and provide with adequate supplies and overnight accommodations	11
11	NEW: Maintain, improve, and protect public buildings, facilities, and utilities against all hazards	10.2
12	NEW: Install/Purchase mobile generators and make them available to ensure that designated shelter sites and other critical infrastructure sites can be provided with supplemental power	10.2
13	Encourage flood proofing & Flood Insurance by property owners	9.25
14	Maintenance of Heating/ cooling systems	9.25
15	Promote Digging hotline/ pipeline safety regulations of pipelines education	9.0
16	Encourage Smoke/ Fire/ Carbon Monoxide Detectors & sprinkler systems	8.2
17	Educate first responders, workers, & public on handling chemical emergencies	8.2
18	Ensure current health emergency plans for mass Immunization process – scheduled & emergency situations	8.0
19	NEW: Encourage annual Tree Management/ Trimming by homeowners, utilities & county	7.8
20	New storm shelter & heating/cooling shelter that meet tornado safety standards	7.25
21	Provide Hazardous Materials Protection for all identified Storm Shelters	7.25
22	First responders in jurisdictions create a list of vulnerable people in communities that would need immediate help in a disaster	7.2
23	NEW; Bury Powerlines	7.0
24	Education residents on Radon/Lead concerns & how to mitigation	6.75
25	Encourage private residents to provide protection of Vital Records	6.67
26	Require Manufactured Home Tie-Down's regulation/ordinance	6.5

27	Utilize building code enforcement to identify derelict, unsafe or structurally unsound buildings in the region and help remove them to reduce safety concerns associated with collapse	6.5
28	Encourage annual Fireplace Maintenance	6.25
29	Encourage businesses & residents to have Surge Protection/ Lightning Protection	6.25
30	Implement local Burning Restrictions	5.6
31	Develop/Implement Storm water Management ordinance preventing illicit connections	5.17
32	Acquisition & installation of early storm warning sirens	4.2
33	Jurisdictional Waste Disposal Enforcement for all residents/businesses	3.75
34	Develop safe rooms in schools and critical public facilities	3.75
35	Use GIS mapping to change zoning, ordinances, etc.	3.33
36	Follow DOT, County Roads, & local studies to repair/replace bridges, culverts and ditches	3
37	Implement local Hazardous Materials Disposal Program	3.25
38	Establish Local Hazardous Materials Capabilities	3.25
39	Remove debris from areas prone to flash flooding	3.2
40	Evaluate/Replace municipal sirens and implement system upgrades	2.75
41	Educate residents to develop a Water Storage Saving Plan to reduce usage	2.75
42	Provide information & support Iowa DNR in identification of locations for sinkholes and abandoned wells and mines in the region	2.3
43	Pursue the construction of flood protection for infrastructure in affected areas	2.3
44	NEW; Jurisdictions install Snow Fences/ Barriers on open roadways prone to drift	2.25
45	Encourage compliance in the National Flood Insurance Program (NFIP)	2
46	Encourage buyouts of structures located floodplains and repetitive loss properties	1.6
47	Encourage flood proofing & Flood Insurance by property owners	1.6
48	Evaluate/ maintain/ repair area dams on routine basis	1.6
49	NEW: Improve sidewalks around public schools to increase public safety	1.25
50	Jurisdictions conduct annual Risk Assessment for Terrorism	.33
51	NEW: Follow County Infrastructure Study and repair or replace priority bridges	.25
52	Locate, maintain, remove, or replace septic tank	0

Prioritized Jurisdiction Mitigation Strategies

44 CFR Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section presents the mitigation strategy updated by the Regional Hazard Mitigation Planning Committee based on the updated risk assessment. The mitigation strategy was developed through a collaborative group process and consists of goals that guide the jurisdictions in efforts to lessen disaster impacts, as well as specific mitigation actions that can be put in place to directly reduce vulnerability to hazards and losses. The March *2013 Local Mitigation Planning Handbook* identifies "Mitigation Actions as specific actions that help achieve goals". The following are the priority mitigation strategies per jurisdiction:

Jurisdiction: Wayne County

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Maintain up-to-date Search & Rescue trainings, certification, and equipment for First Responders	1	Moderate	Fire Departments, First Responders, Local hospitals, city councils	Ongoing
Encourage citizens to create family preparedness kits to be used in case of emergency	2	Voluntary-Minimal	Residents, Emergency Management, Fire Departments, etc	Ongoing
Maintain a current plan for Mass Casualty Preparation & Up-to-date training	3	Minimal	Emergency management, city councils, first responders	Ongoing

Jurisdiction: Allerton

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Develop safe rooms in schools & critical facilities	1	High	City Councils/BOS, critical facility property owners, school systems, hospitals	Long term
Generator hook ups for critical facilities	2	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Short Term
Encourage weather radios for citizens	3	Minimal	Voluntary	Ongoing

Jurisdiction: City of Clio

Mitigation Strategy Priorities	Mitigation Score	Expense	Responsible Party	Timeline to Occur
Develop/Implement Storm water Management ordinance preventing illicit connections	11	Low	City Councils, BOS, Zoning Commissions	Ongoing
Install/Purchase mobile generators and make them available to ensure that designated shelter sites and other critical infrastructure sites can be provided with supplemental power	16	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Ongoing
Generator hook ups for critical facilities	12	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Short Term

Jurisdiction: City of Corydon

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Develop local process for Hazard Occurrence Data Collection & reporting	4	Minimal	Emergency management	Ongoing
Maintain up-to-date Search & Rescue trainings, certification, and equipment for First Responders	1	Moderate	Fire Departments, First Responders, Local hospitals, city councils	Ongoing
Designate shelter sites (including heating/cooling shelters) and provide with adequate supplies and overnight accommodations.	10	Minimal	Emergency Management, City Councils,	Short term

Jurisdiction: Wayne County Hospital

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
NEW: Generator hookups for critical facilities	5	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Short
Develop & maintain a current plan for Mass Casualty Preparation & Up-to-date training	3	Minimal	Emergency management, city councils, first responders	Short
Up-to-date Search & Rescue Training and equipment for First Responders	1	Moderate	Fire Departments, First Responders, Local hospitals, city councils	Medium

Jurisdiction: Wayne Community School

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Public Education of warnings & self-protection	6	Minimal Expense	Emergency Management	Ongoing/Long term
Create a list of vulnerable people in communities that would need immediate help in a disaster	22	Minimal Expense	Local First Responders	Short Term
Develop Emergency response team post-disaster	7	Minimal Expense	Emergency Management & First Responders	Short term
Safe Rooms in schools, mobile home parks, campgrounds, etc	34	Moderate to high – grant dependent	School administration	Long term

Jurisdiction: Humeston

Mitigation Strategy Priorities	Mitigation Score	Expense	Responsible Party	Timeline to Occur
NEW: Designate shelter sites and provide with adequate supplies and overnight accommodations	10	Minimal	Emergency Management, City Councils,	Ongoing
NEW: Install/Purchase mobile generators and make them available to ensure that designated shelter sites and other critical infrastructure sites can be provided with supplemental power	12	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Ongoing
Maintain up-to-date Search & Rescue trainings, certification, and equipment for First Responders	1	Ongoing	Fire Departments, First Responders, Local hospitals, city councils	Ongoing

Jurisdiction: Mormon Trail Elementary School

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Public Education of warnings & self-protection	6	Minimal Expense	Emergency Management	Ongoing/Long term
Create a list of vulnerable people in communities that would need immediate help in a disaster	22	Minimal Expense	Local First Responders	Short Term
Develop Emergency response team post-disaster	7	Minimal Expense	Emergency Management & First Responders	Short term
Safe Rooms in schools, mobile home parks, campgrounds, etc	34	Moderate to high – grant dependent	School administration	Long term

Jurisdiction: Lineville

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Maintain up-to-date Search & Rescue trainings, certification, and equipment for First Responders	1	High	Fire Departments, First Responders, Local hospitals, city councils	Ongoing
Maintain a current plan for Mass Casualty Preparation & Up-to-date training	3	Minimal	Emergency management, city councils, first responders	Short term
Encourage citizens to create family preparedness kits & have all hazards radio	2	Minimal	Residents, Emergency Management, Fire Departments, etc	Ongoing

Jurisdiction: Millerton

Jurisdiction: Promise City

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Designate shelter sites and provide with adequate supplies and overnight accommodations	10	Minimal	City councils, BOS, emergency management	Short-term
Maintain, improve, and protect public buildings, facilities, and utilities against all hazards	11	Moderate-High	Private property owners, City Councils, BOS,	Ongoing
Install proper generator hookups at designated shelter sites to ensure shelters can support generator power	5	Moderate	City Councils/BOS, critical facility property owners, Fire Departments	Medium

Jurisdiction: Seymour

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Generator hookups for critical facilities	1	Minimal	City Councils/BOS, critical facility property owners, Fire Departments	Ongoing
Encourage citizens to create family preparedness kits to be used in an emergency	2	Voluntary	Residents, Emergency Management, Fire Departments, etc	Ongoing
Ongoing Maintain a current plan for mass casualty preparation & up-to-date training	3	Minimal	Emergency management, city councils, first responders	Short term

Jurisdiction: Seymour Community School

Mitigation Strategy Priorities	Mitigation Ranking	Expense	Responsible Party	Timeline to Occur
Public Education of warnings & self-protection	6	Minimal Expense	Emergency Management	Ongoing/Long term
Create a list of vulnerable people in communities that would need immediate help in a disaster	22	Minimal Expense	Local First Responders	Short Term
Develop Emergency response team post-disaster	7	Minimal Expense	Emergency Management & First Responders	Short term
Safe Rooms in schools, mobile home parks, campgrounds, etc	34	Moderate to high – grant dependent	School administration	Long term

Mitigation Alternatives

Below is a listing of the mitigation alternatives considered and where applicable, which jurisdictions they would be for.

Constraints

In the planning committee's discussion of mitigation alternatives, certain constraints exist to the implementation of the various alternative strategies. One of the major constraints is availability of funding as the communities of Wayne County are small and lack the resources available in other areas of Iowa.

The criterion for a positive impact includes greater overall benefits than the costs of the alternative, local capabilities to fund, administer, or obtain funds for the alternative, and public acceptance of the alternative.

Mitigation Actions below are correlated with the established Goals and Objectives:

2022 Wayne County Regional HMP Goals & Strategies

Goal 1: Protect critical facilities, infrastructure, and other community assets from the impacts of hazards.

Objective 1.1 Seek mitigation projects that provide the highest degree of hazard protection at the least cost.

Strategy 1.A: Continuity of Operations Plan – Post Disaster
Strategy 1.B: Public Education & Outreach of Warnings – self-protection
Strategy 1.C: Community Emergency Response Team
Strategy 1.D: Local Hazardous Materials Capabilities
Strategy 1.E: Hazard Occurrence Data Collection & Reporting System
Strategy 1.F: Maintain Current Evacuation Plans
Strategy 1.G: Search & Rescue Training for First Responders
Strategy 1.H: Digging Hotline/Pipeline Safety Regulations
Strategy 1.I: Temporary Debris Disposal Plan
Strategy 1.J: Expanded Hazard Area Mapping & Mine Location
Strategy 1.K: Mass Casualty Preparation
Strategy 1.L: Replace or Install New Storm Warning System
Strategy 1.M: Weather Radios for Citizens
Strategy 1.N: Surge Protection/Lightning Protection
Strategy 1.O: Waste Disposal Enforcement
Strategy 1.P Flood Proofing of Properties
Strategy 1.R: Storm Water Management
Strategy 1.S: Generators for Storm Shelters
Strategy 1.T: New Storm Shelter/ Cooling & Heating Shelter Location
Strategy 1.U: Establish Burning Restrictions
Strategy 1.V: NFIP Participation
Strategy 1.W: Building Code Enforcement
Strategy 1.X: Collection & Protection of Vital Records
Strategy 1.Y: Acquisition or Relocation of Buildings in Floodplain
Strategy 1.Z: Hazardous Material Disposal Program
Strategy 1.AA: Safe Room in School, Mobile Home Parks, Campgrounds, Fairgrounds, etc.
Strategy 1.BB: Secure Funding for removal of Vacant/ Collapsed Buildings
Strategy 1.CC: Review Floodplain Management for Effectiveness
Strategy 1.DD: Flood Insurance by Homeowners
Strategy 1.EE: Rehabilitate Older Buildings
Strategy 1.FF: Water Storage saving Plan – Reduce Usage
Strategy 1.GG: Evaluate/Maintain/Repair Area Dams
Strategy 1.HH: Encourage Smoke/Fire/ Carbon Monoxide Detectors & sprinkler systems
Strategy 1.II: Immunization plans – Emergency & Scheduled
Strategy 1.JJ: Pest Management – through Property Regulations
Strategy 1.KK: Radon/Lead Mitigation
Strategy 1.LL: Critical Infrastructure Protection from Terrorism
Strategy 1.MM: Assessment Risk for Terrorism
Strategy 1.NN: Manufactured Home Tie-Down Regulation/Ordinance

Objective 1.2 Strengthen partnerships and collaboration of jurisdictions, as well as invite corporate partners, education systems, agencies and faith-based representatives to participate in emergency planning and recovery.

Strategy 1.A: Continuity of Operations Plan – Post Disaster
Strategy 1.B: Public Education & Outreach of Warnings – self-protection
Strategy 1.C: Community Emergency Response Team
Strategy 1.D: Create list of vulnerable people in communities
Strategy 1.E: Maintain Current Evacuation Plans
Strategy 1.F: Mass Casualty Preparation
Strategy 1.G: Weather Radios for Citizens
Strategy 1.H: Surge Protection/Lightning Protection
Strategy 1.I: Generators for Storm Shelters
Strategy 1.J: Safe Room in School, Mobile Home Parks, Campgrounds, Fairgrounds, etc.
Strategy 1.K: Support additional law enforcement training

Objective 1.3 Utilize public funds/grant opportunities to protect critical facilities, public services & transportation entities.

Strategy 1.A: Continuity of Operations Plan – Post Disaster
Strategy 1.B: Local Hazardous Materials Capabilities
Strategy 1.C: Search & Rescue Training for First Responders
Strategy 1.D: Replace or Install New Storm Warning System
Strategy 1.E: Weather Radios for Citizens
Strategy 1.F: Surge Protection/Lightning Protection
Strategy 1.G: Critical Infrastructure Protection from Terrorism
Strategy 1.H: Storm Water Management
Strategy 1.I: Generators for Storm Shelters
Strategy 1.J: New Storm Shelter/ Cooling & Heating Shelter Location
Strategy 1.K: Radon/Lead Mitigation
Strategy 1.L: Acquisition or Relocation of Buildings in Floodplain
Strategy 1.M: Safe Room in School, Mobile Home Parks, Campgrounds, Fairgrounds, etc.
Strategy 1.N: Secure Funding for removal of Vacant/ Collapsed Buildings
Strategy 1.O: Rehabilitate Older Buildings
Strategy 1.P: Evaluate/Maintain/Repair Area Dams
Strategy 1.Q: Encourage Smoke/Fire/ Carbon Monoxide Detectors & sprinkler systems

Goal 2: Protect the health, safety & quality of life for Wayne County residents by minimizing the vulnerability of people and property in Wayne County.

Objective 2.1 Ensure that property owners can maintain & improve their properties.

Strategy 1.A: Weather Radios for Citizens
Strategy 1.B: Surge Protection/Lightning Protection
Strategy 1.C: Flood Proofing of Properties
Strategy 1.D: Locate, maintain, or remove/replace septic tanks
Strategy 1.E: Tree Management/Trimming
Strategy 1.F: Flood Insurance by Homeowners
Strategy 1.G: Rehabilitate Older Buildings
Strategy 1.H: Encourage Smoke/Fire/ Carbon Monoxide Detectors & sprinkler systems
Strategy 1.I: Pest Management – through Property Regulations
Strategy 1.J: Radon/Lead Mitigation
Strategy 1.K: Manufactured Home Tie-Down Regulation/Ordinance
Strategy 1.L: Building Code Enforcement

Strategy 1.M: Establish Burning Restrictions
Strategy 1.N: Personal Preparation
Strategy 1.O: Waste Disposal Enforcement
Strategy 1.P: Hazardous Material Disposal Program
Strategy 1.Q: Create a contact list of vulnerable people in communities

Objective 2.2 Ensure that disaster recovery can proceed promptly following a disaster.

Strategy 1.A: Continuity of Operations Plan – Post Disaster
Strategy 1.B: Public Education & Outreach of Warnings – self-protection
Strategy 1.C: Community Emergency Response Team
Strategy 1.D: Local Hazardous Materials Capabilities
Strategy 1.E: Create a contact list of vulnerable people in communities
Strategy 1.F: Maintain Current Evacuation Plans
Strategy 1.G: Search & Rescue Training for First Responders
Strategy 1.H: Mass Casualty Preparation
Strategy 1.I: Temporary Debris Disposal Plan
Strategy 1.J: Generators for Storm Shelters
Strategy 1.K: Collection & Protection of Vital Records
Strategy 1.L: New Storm Shelter/ Cooling & Heating Shelter Location
Strategy 1.M: Water Storage saving Plan – Reduce Usage
Strategy 1.N: Immunization plans – Emergency & Scheduled
Strategy 1.O: Waste Disposal Enforcement
Strategy 1.P: Hazardous Material Disposal Program
Strategy 1.Q: Personal preparation
Strategy 1.R: Support additional law enforcement training

Objective 2.3 Provide back-up energy supplies in all vital assets identified in this plan.

Strategy 1.A: Continuity of Operations Plan – Post Disaster
Strategy 1.B: Search & Rescue Training for First Responders
Strategy 1.C: Community Emergency Response Team
Strategy 1.D: Local Hazardous Materials Capabilities
Strategy 1.E: Surge Protection/Lightning Protection
Strategy 1.F: Generators for Storm Shelters
Strategy 1.G: New Storm Shelter/ Cooling & Heating Shelter Location
Strategy 1.H: Tree Management/Trimming
Strategy 1.I: Water Storage saving Plan – Reduce Usage

Objective 2.4 Promote improving zoning codes, building codes, nuisance abatement, and health codes, especially in relation to areas with older buildings.

Strategy 1.A: Digging Hotline/Pipeline Safety Regulations
Strategy 1.B: Flood Proofing of Properties
Strategy 1.C: Storm Water Management
Strategy 1.D: Tree Management/Trimming
Strategy 1.E: Acquisition or Relocation of Buildings in Floodplain
Strategy 1.F: Secure Funding for removal of Vacant/ Collapsed Buildings
Strategy 1.G: Rehabilitate Older Buildings
Strategy 1.H: Water Storage saving Plan – Reduce Usage
Strategy 1.I: Pest Management – through Property Regulations
Strategy 1.J: Radon/Lead Mitigation
Strategy 1.K: Manufactured Home Tie-Down Regulation/Ordinance
Strategy 1.L: Building Code Enforcement
Strategy 1.M: Establish Burning Restrictions
Strategy 1.N: Waste Disposal Enforcement
Strategy 1.O: Hazardous Material Disposal Program
Strategy 1.P: Locate, maintain, remove or replace septic tanks

Objective 2.5 Improve protection of residents & structures from the effects of flooding.

Strategy 1.A: Personal Preparation
Strategy 1.B: Flood Proofing of Properties
Strategy 1.C: Storm Water Management
Strategy 1.D: Acquisition or Relocation of Buildings in Floodplain
Strategy 1.E: Review Floodplain Management for Effectiveness
Strategy 1.F: Maintain Current Evacuation Plans
Strategy 1.G: Search & Rescue Training for First Responders
Strategy 1.H: Flood Insurance by Homeowners
Strategy 1.I: Temporary Debris Disposal Plan
Strategy 1.J: Evaluate/Maintain/Repair Area Dams
Strategy 1.K: NFIP Participation
Strategy 1.L: Weather Radios for Citizens

Objective 2.6 Review the protocol, education & necessary medications/interventions to deal with airborne & human transmitted hazards that directly deal with impact of health & life.

Strategy 1.A: Public Education & Outreach of Warnings – self-protection
Strategy 1.B: Community Emergency Response Team
Strategy 1.C: Create a contact list of vulnerable people in communities
Strategy 1.D: Collection & Protection of vital records by private residents
Strategy 1.E: Immunization plans – scheduled & emergency situations

Goal 3: Reduce losses due to natural and man-made hazards.

Objective 3.2 Review & upgrade warning systems and communications for sufficient coverage

Strategy 1.A: Continuity of Operations Plan – Post Disaster
Strategy 1.B: Public Education & Outreach of Warnings – self-protection
Strategy 1.C: Community Emergency Response Team
Strategy 1.D: Replace or Install New Storm Warning System
Strategy 1.E: Weather Radios for Citizens

Objective 3.3 Provide certified shelters/safe rooms

Strategy 1.A: Hazardous materials protection for storm shelters
Strategy 1.B: Search & Rescue Training for First Responders
Strategy 1.C: Generators for Storm Shelters
Strategy 1.D: New Storm Shelter/ Cooling & Heating Shelter Location
Strategy 1.E: Safe Room in School, Mobile Home Parks, Campgrounds, Fairgrounds, etc.

Objective 3.4 Provide adequate training, equipment and exercises to train responding emergency personnel.

Strategy 1.A: Continuity of Operations Plan – Post Disaster
Strategy 1.B: Search & Rescue Training for First Responders
Strategy 1.C: Community Emergency Response Team
Strategy 1.D: Local Hazardous Materials Capabilities
Strategy 1.E: Mass Casualty Preparation
Strategy 1.F: Immunization plans – Emergency & Scheduled
Strategy 1.G: Critical Infrastructure Protection from Terrorism
Strategy 1.H: Hazard Occurrence Data Collection & Reporting System

Strategy 1.I: Educate first responders, workers & public on handling chemical emergencies
Strategy 1.J: Support additional law enforcement training

Objective 3.5 maintain current & create new planning and exercises related to any terrorism event.

Strategy 1.A: Continuity of Operations Plan – Post Disaster
Strategy 1.B: Search & Rescue Training for First Responders
Strategy 1.C: Community Emergency Response Team
Strategy 1.D Mass Casualty Preparation
Strategy 1.E: Critical Infrastructure Protection from Terrorism
Strategy 1.F: Assessment Risk for Terrorism
Strategy 1.G: Support additional law enforcement training

Objective 3.6 Identify and map the greatest risk potential of hazards to determine locations where improvements could be made.

Strategy 1.A: Digging Hotline/Pipeline Safety Regulations
Strategy 1.B: Expanded Hazard Area Mapping & Mine Location
Strategy 1.C: Locate, maintain, remove, or replace septic tanks
Strategy 1.D: Acquisition or Relocation of Buildings in Floodplain
Strategy 1.E: Secure Funding for removal of Vacant/ Collapsed Buildings
Strategy 1.F: Review Floodplain Management for Effectiveness
Strategy 1.G: Rehabilitate Older Buildings
Strategy 1.H: Evaluate/Maintain/Repair Area Dams
Strategy 1.I: Pest Management – through Property Regulations

Goal 4: Educate residents and visitors about local hazards and the resources available in the community.

Objective 4.1 Educate members of the county about hazards, how to be prepared, & shelter locations.

Strategy 1.A: Continuity of Operations Plan – Post Disaster
Strategy 1.B: Public Education & Outreach of Warnings – self-protection
Strategy 1.C: Community Emergency Response Team
Strategy 1.D: Search & Rescue Training for First Responders
Strategy 1.E: Personal Preparation
Strategy 1.F: Digging Hotline/Pipeline Safety Regulations
Strategy 1.G: Search & Rescue Training for First Responders
Strategy 1.H: Replace or Install New Storm Warning System
Strategy 1.I: Weather Radios for Citizens
Strategy 1.J: Surge Protection/Lightning Protection
Strategy 1.K: Educate first responders, workers & public on handling chemical emergencies
Strategy 1.L: Collection & Protection of Vital Records
Strategy 1.M: Safe Room in School, Mobile Home Parks, Campgrounds, Fairgrounds, etc.
Strategy 1.N: Encourage Smoke/Fire/ Carbon Monoxide Detectors & sprinkler systems
Strategy 1.O: Radon/Lead Mitigation
Strategy 1.P: Establish Burning Restrictions
Strategy 1.Q: Hazard Occurrence Data Collection & Reporting System

Goal 5: Apply public funds to hazard mitigation projects in an efficient and fair manner to minimize dependence on Federal Resources.

Objective 5.1 Utilize public funds/grant opportunities to protect critical facilities, public services, and transportation entities.

Strategy 5.1A: Develop, update & publicize Continuity of Operations Plan
Strategy 5.1B: Maintain Local Hazardous Materials
Strategy 5.1C: Provide up-to-date Search & Rescue Training and Equipment for First Responders
Strategy 5.1D: Evaluate all early storm warning sirens for proper coverage. Purchase & update as needed.
Strategy 5.1E: Encourage citizens to create family preparedness kits and NOAA all hazards Weather Radios.
Strategy 5.1F: Residents should have Surge Protection/Lightning Protection
Strategy 5.1G: Burying Power Lines
Strategy 5.1H: Make improvements to existing stormwater and sewer systems which may include elevating and/or protecting.
Strategy 5.1I: Purchase mobile generators and make available to any shelter sites and other critical infrastructure locations.

New Strategy 5.1J: Install proper generator hook ups for generators at shelter sites to ensure power.

Strategy 5.1K: Designate shelter sites (including heating/cooling shelters) and provide with adequate supplies and overnight accommodations.
Strategy 5.1L: Establish Natural & Artificial Snow Fences/Barriers
Strategy 5.1M: Acquisition or Relocation of repetitive loss Buildings in Floodplain
Strategy 5.1N: Develop Safe Rooms in School, Mobile Home Parks, Campgrounds, Fairgrounds, and other critical public facilities.
Strategy 5.1O: Identify and remove derelict, unsafe or structurally unsound buildings in the region and all jurisdictions to reduce safety concerns of collapse.
Strategy 5.1P: Evaluate & Rehabilitate Older Buildings when feasible.
Strategy 5.1Q: Evaluate/Maintain/Repair conditions of Area Dams.
Strategy 5.1R: Encourage Smoke/Fire/ Carbon Monoxide Detectors & sprinkler systems.
Strategy 5.1S: Promote Radon/Lead Mitigation
Strategy 5.1T: Critical Infrastructure Protection from Terrorism
Strategy NEW 5.1U: Follow County & jurisdictional infrastructure studies that identify repairs or replacement to culverts, ditches and bridges capable of meeting flow requirements.
Strategy NEW 5.1V: Continual evaluation and improvements to jurisdictional water lines/mains to ensure proper flow to fire hydrants.

Plan Maintenance Process

44 CFR Requirement 201.6(c)(4): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

This chapter provides an overview of the overall strategy for plan maintenance and outlines the method and schedule for monitoring, updating, and evaluating the plan. The chapter also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

With the adoption of this plan, the HMPC will continue to be tasked with the plan monitoring, evaluation, and maintenance. The participating jurisdictions and agencies, led by the Emergency Management Coordinator, agreed to:

- Meet annually to review the Hazard Mitigation Plan.
- Act as a forum for hazard mitigation issues.
- Disseminate hazard mitigation ideas and activities to all participants.
- Pursue the implementation of high priority, low- to no-cost recommended actions.
- Maintain vigilant monitoring in the forefront of community decision making by identifying plan recommendations when other community goals, plans, and activities overlap, influence or directly affect increased community vulnerability to disasters.
- Report on plan progress and recommended changes to the respective county Board of Supervisors and governing bodies of participating jurisdictions, and
- Inform and solicit input from the public.

The HMPC is an advisory body and can only make recommendations to county, city, town, or district elected officials. Its primary duty is to see the plan successfully carried out and to report to the community governing boards and the public on the status of the plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, hearing stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information in areas accessible to the public.

Plan Maintenance Schedule

The HMPC agrees to meet annually to monitor progress, discuss recent hazard events and changes in development that impact vulnerability, and update the mitigation strategy. The Emergency Management Coordinator will be responsible for initiating the plan reviews.

In coordination with the other participating jurisdictions, a written update of the plan will be submitted to the Iowa Homeland Security and Emergency Management Department and FEMA Region VII for approval within the required five-year cycle per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000, unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule.

Incorporation into Existing Planning Mechanisms

44 CFR Requirement §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Many of the small jurisdictions throughout the county do not have standing formal planning mechanisms such as a Comprehensive Plan or Capital Improvements Plan through which formal integration of mitigation actions can be documented. As a result, activities that occur in these small communities are developed through annual budget planning, regular City Council Meetings, and other community forums rather than a formal planning process. Planning mechanisms that do exist to some degree within the participating jurisdictions include:

Comprehensive Plans
Various ordinances of participating jurisdictions
Emergency Operations Plans
Infrastructure Plans
Capital Improvement Plans

Incorporation of Updated Hazard Plan into existing Planning Mechanisms

44 CFR Requirement §201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

Where possible, plan participants will use existing plans and/or programs to implement hazard mitigation actions. After the annual review of the Hazard Mitigation Plan, the Emergency Management Coordinator will provide the updated Mitigation Strategy with the status of each mitigation action to the County Board of Supervisors and County Department Heads as well as all Mayors, City Clerks, School District Superintendent, and governing boards requesting that the mitigation strategy be incorporated, where appropriate in other planning mechanisms.

Exhibit 131: Incorporation to Existing Documents

Current Planning Mechanisms	***Jurisdictions Currently in Place***	***Reviewed for information in HMP***	***Method of Incorporation***	***Who Responsible or Lead***
Comprehensive Land Use plan	Each County,	None	Review Each, develop in other jurisdictions	Zoning Commissions & staff, BOS
Capital improvement plan		Limited	Modernize each, develop plans if they are outdated	City of Centerville
Economic Development plan	Regional	Limited- out dated	Add a mitigation section to annual regional plan	CVPD, City of Centerville, Wayne County Economic Dev
Open space/ conservation plan	Each County	None	Incorporate mitigation projects affecting open spaces into plans	Conservation board/staff, city parks
Watershed Protection plan		None	Address mitigation actions in watershed areas	Emergency management Coordinator
Zoning Ordinance		Limited	Review zoning code concerning applicable hazards	Zoning commissions & staff, BOS
Building Codes		Yes	Update building codes for fire & wind standards	City councils, BOS
Tree Maintenance Codes	Limited but performed by each county & utility company	None	Consult with utilities	City of Centerville Utilities Dept, County Maintenance Dept
Soil erosion/ water control ordinance	Limited in the county	N.A.	Consult with RRWA	Emergency management coordinator
Solid/hazardous waste regulations	Optional for most jurisdictions in the region & limited enforcement	Yes	Review regulations as to what can be landfilled, add hazard maps	Landfill owner, Emergency Management Coordinator
Public Health Regulations	Each county has respective PH office	Yes, on Committee to provide recent initiatives	Collaborate with PH agencies to incorporate new protocols	Emergency Management Coordinator, Public Health Board, & staff
Historic District Programs		Yes	Provide data to assist in protecting properties	Development of groups with state IDED assistance
Long-Range Transportation Plan		Yes	Incorporate hazard maps & transportation improvement ideas	County engineer, CVTPA, IDOT, BOS
Water source plan	Counties each have through inter-governmental agreements	N. A	Include mitigation actions related to relevant hazards	RRWA

Stormwater Management program		Yes	Include mitigation actions related to flash flooding	City Councils, Emergency Management Coord,
Housing & Special Needs plan		N. A	Consider mitigation recommendations in housing plans & funding requests for improvements	City Councils, CVPD, hospitals, Emergency Management Coord
Administrative Operations processes-departments & boards	All jurisdictions	N. A	Convene meetings where possible, realignment of tasks, new or improved tasks & processes, & board goals are updated,	Emergency Management Coord, elected officials, clerks & board chairs
Comprehensive Economic Development Strategy	Regional Plan	Yes	Infrastructure development, location consideration,	Chariton Valley Planning & Development COG
County Multi-Jurisdictional Hazard Mitigation Plan	Each respective County	Yes	Extensive reference & information brought forward	Wayne Emergency Management Coordinator

The public will be involved in the plan maintenance process by publication of a Press Release after each annual review indicating the committee has met and providing a summary of mitigation action status updates and highlights of specific completed mitigation actions, as applicable. The public will be invited to provide comments on HMPC meeting outcomes and/or attend HMPC meetings.

The update process provides an opportunity to publicize success stories from the plan's implementation and seek additional public comment. When the HMPC reconvenes for the update, it will coordinate with all stakeholders participating in the planning process, including those who joined the HMPC after the initial effort, to update and revise the plan. Public notices will be posted through available website postings, community message boards, and social media outlets.

Wayne County Hazard Mitigation Plan
2022-2027

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