Butler County
IOWA

2020 Updated
Multi-Jurisdictional Hazard Mitigation Plan

Adopted By:

Butler County	03/03/2020
City of Allison	03/09/2020
City of Aplington	07/08/2020
City of Aredale	07/13/2020
City of Bristow	04/14/2020
City of Clarksville	04/06/2020
City of Dumont	03/12/2020
City of Greene	03/09/2020
City of New Hartford	03/04/2020
City of Parkersburg	04/06/2020
City of Shell Rock	03/03/2020

Aplington-Parkersburg Community School District	04/20/2020
Dike-New Hartford Community School District	03/16/2020
Waverly-Shell Rock Community School District	04/13/2020

Prepared By:

INRCOG
Iowa Northland Regional Council of Governments

Approved by FEMA: 06/03/2020
FEMA Approval Expiration: 06/03/2025

Funded By
Butler County Board of Supervisors

The Butler County Multi-Jurisdictional Hazard Mitigation Plan was adopted by Butler County on March 3, 2020. It was approved by FEMA on June 3, 2020 and will expire on June 3, 2025.

U.S. Department of Homeland Security
FEMA Region VII
11224 Holmes Road
Kansas City, MO 64131

FEMA

June 3, 2020

V. Joyce Flinn, Director
Iowa Homeland Security & Emergency Management Division
7900 Hickman Road, Suite 500
Windsor Heights, IA 50324

Subject: Review of the Butler County, Iowa Hazard Mitigation Plan

Dear Ms. Flinn:

The purpose of this letter is to provide the status of the above referenced Local Hazard Mitigation Plan, pursuant to the requirements of 44 CFR Part 201 - Mitigation Planning and the Local Multi-Hazard Mitigation Planning Guidance. The Local Hazard Mitigation Plan Review Tool documents the Region's review and the plan compliance with all required elements of 44 CFR Part 201.6. The Plan Review Tool also identifies the jurisdictions participating in the planning process. FEMA's approval will be for a period of five years effective starting with the approval date indicated below.

Prior to the expiration of the plan the community will be required to review and revise their plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval in order to continue to be eligible for mitigation project grant funding.

Plan Name	Date Submitted	Date Approved	Date of Plan Adoption	Date of Plan Expiration	Review Status
Butler County	May 11, 2020	June 3, 2020	March 3, 2020	June 3, 2025	Approved

If you have any questions or concerns, please contact Joe Chandler, Planning Team Lead, at (816) 283-7071.

Sincerely,

Catherine R. Sanders, Director
Mitigation Division

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Acknowledgements

Hazard Mitigation Planning Committee

Over the course of the planning process a number of individuals donated their time and efforts toward providing information, attending meetings, and providing input for the successful completion of the plan. The following is a list of people who participated in the development of this Butler County Multi-Jurisdictional Hazard Mitigation Plan/

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Chapter 1: Introduction

Introduction

Natural hazards have the potential to cause property loss, loss of life, economic hardship, and threats to public health and safety. While an important aspect of emergency management deals with disaster recovery – those actions that a community must take to repair damages, and make itself whole in the wake of a natural disaster – an equally important aspect of emergency management involves hazard mitigation. Hazard mitigation measures are efforts taken before a disaster happens to lessen the impact that future disasters of that type will have on people and property in the community. They are things you do today to be more protected in the future. Hazard mitigation actions taken in advance of a hazard event are essential to breaking the typical disaster cycle of damage, reconstruction, and repeated damage. With careful selection, hazard mitigation actions can be long-term, cost-effective means of reducing the risk of loss and help create a more disaster-resistant and sustainable community. The Butler County Multi-Jurisdictional Hazard Mitigation Plan (M-J HMP) was developed to assist in making the entire planning area (Butler County unincorporated and incorporated areas) less susceptible to these hazards.

What is a Hazard Mitigation Plan?

Generally, the first question asked when communities begin the process of preparing a Hazard Mitigation Plan (HMP) is very simply "What is a Hazard Mitigation Plan and what is its intended purpose?" First, it is imperative to define what precisely the term mitigation entails. One definition of the term is stated most succinctly by the Federal Emergency Management Agency (FEMA) as follows: *"Mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event. Mitigation, also known as prevention (when done before a disaster), encourages long-term reduction of hazard vulnerability. The goal of mitigation is to decrease the need for response as opposed to simply increasing the response capability." (www.fema.gov).*

A hazard mitigation plan is developed by local government(s) before a disaster occurs. The plan identifies local community policies, actions, and tools for on-going, short-, mid-, and long-term implementation to reduce risk and potential future losses of property and lives.

Purposes of Hazard Mitigation Planning

The following list identifies reasons to conduct hazard mitigation planning:

- **To facilitate protection** of the health, safety and economic security of residents, workers, visitors and property owners by mitigating the impacts of natural and manmade hazards.
- **To Influence decision making** in both the public and private sectors.

A hazard mitigation plan is developed by local government(s) before a disaster occurs. The plan identifies local community policies, actions, and tools for on- going, short-, mid-, and long-term implementation to reduce risk and potential future losses of property and lives.

- **To fulfill statutory requirements** of the Disaster Mitigation Act of 2000 – as of November 1, 2004 a community must have a FEMA-approved hazard mitigation plan in order to be eligible for FEMA project grant monies under programs such as the Flood Mitigation Assistance Grant program (FMA), Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Grant program (PDM), Severe Repetitive Loss Grant program (SRL), Repetitive Flood Claims Grant program (RFC), and certain categories of aid under the Public Assistance Grant program (PA).

Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning shall include: 1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; 2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have authority to regulate development, as well as businesses, academia and other private non-profit interests to be involved in the planning process; and 3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

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.

- **To fulfill contractual obligations** under the Hazard Mitigation Grant Program (HMGP).
- **To receive credit** under the Community Rating System (CRS).

What is a Multi-Jurisdictional Hazard Mitigation Plan?

A multi-jurisdictional hazard mitigation plan is a plan jointly prepared by more than one local government or jurisdiction. Local jurisdictions have the option to participate in a multi-jurisdictional hazard mitigation plan under the Disaster Mitigation Action of 2000 (DMA 2000). A local government is defined by Title 44 Part 201 Mitigation Planning in the Code of Federal Regulations (CFR) as *"any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity."*

The Butler County Multi-Jurisdictional Hazard Mitigation Plan planning area includes the following local jursidictions that participated in the planning process:

- City of Allison
- City of Aplington
- City of Aredale
- City of Bristow
- City of Clarksville
- City of Dumont
- City of Greene
- City of New Hartford
- City of Parkersburg
- City of Shell Rock
- Aplington-Parkersburg Community School District
- Dike-New Hartford Community School District
- Waverly-Shell Rock Community School District

Benefits of Multi-Jurisdictional Mitigation Planning

The benefits for jurisdictions that participate in the multi-jurisdictional mitigation planning include:

- Enables comprehensive approaches to mitigation of hazards that affect multiple jurisdictions;
- Allows economies of scale by leveraging individual capabilities and sharing costs and resources;
- Avoids duplication of efforts; and
- Imposes an external discipline on the process.

Planning Process

This multi-jurisdictional hazard mitigation plan is funded by the Butler County Emergency Management Commission and by the Butler County Board of Supervisors.

Figure 1: Hazard Mitigation Planning Process

The planning process for this HMP involved a variety of local decision makers and stakeholders within the planning area. The planning leaders were able to customize the process to meet the needs of the municipalities as well as the County. The process was developed around the requirements prescribed in FEMA's *Local Hazard Mitigation Crosswalk*, as well as FEMA's *State and Local Mitigation Planning How-to Guide* series of documents (FEMA 386-8 in particular). Figure 1 illustrates the key steps in the hazard mitigation planning process; the specifics of each planning step are provided below.

Step One: Organize Resources

The first step in developing the Multi-Jurisdictional HMP was to bring together a group of people from all jurisdictions within the planning area, who had a variety of knowledge and backgrounds and shared the goal of hazard mitigation.

Multi-Jurisdictional Planning Participation

Working in conjunction with the planning agency, Iowa Northland Regional Council of Governments (INRCOG), Butler County and the communities of Allison, Aplington, Aredale, Bristow, Clarksville, Dumont, Greene, New Hartford, Parkersburg and Shell Rock developed a list of departments and positions they determined would best represent the knowledgebase required to participate in the planning process. The local school districts also participated, including Aplington-Parkersburg, Clarksville, Dike-New Hartford, and Waverly-Shell Rock. The goal was to first establish a base committee and then invite other organizations and/or individuals as necessary.

Table 1: Butler County MJ-HMP Planning Committee Members		
Name	**Jurisdiction**	**Job Title/Position**
Jim Blockhus	Allison	Mayor
Glenda Miller	Allison	City Clerk
Jason Mehmen	Aplington	Mayor
Deb Prier	Aplington	City Clerk
Robert Hughes	Aplington-Parkersburg Schools	Superintendent
Rodney McKinney	Aredale	Mayor
Deana Hanson	Aredale	City Clerk
Trisha Boos	Bristow	City Clerk
Dennis Peterson	Bristow	Mayor
Tammy Fleshner	Butler County	Butler Cunty Public Health
David Scanlan	Butler County	Engineer
Jennifer Becker	Butler County	Public Health Director
Chris Showalter	Butler County EMA	EMA Coordinator
Bethany Carson	Clarksville	Clarksville Star
Lori Peterson	Clarksville	City Clerk
Jeff Kolb	Clarksville	Executive Director Butler County Development Alliance
Justin Stockdale	Dike-New Hartford Schools	Superintendent
Rhonda Schmidt	Dumont	City Clerk
Bill Christensen	Greene	Mayor
Jayne Knapp	Greene	City Clerk
Cory Wiegmann	Greene	Public Works Director
Gordy Ballhagen	New Hartford	Former Council Member
Shawna Hagen	New Hartford	City Clerk
Chris Luhring	Parkersburg	City Administrator
Harlan Schuck	Parkersburg	Councilman
Marilyn Hardee	Shell Rock	City Clerk
Larry Young	Shell Rock	Mayor
Mike Tellinghuisen	Shell Rock	Public Works Director

This initial group represented individuals from local government, law enforcement, fire and rescue, local emergency management, public utilities, local schools, public health, economic development, insurance, real estate, and citizen volunteers. Others invited to the meetings were State officials from the Iowa Homeland Security and Emergency Management office and an official from FEMA Region 7. Once established, this assembly was considered the Hazard Mitigation Planning Committee. Table 1 lists the Hazard Mitigation Planning Committee individuals.

Beyond this core group of individuals, public notices for all committee meetings were published in three newspapers, within the planning area, to inform neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties and residents of the planning process and to invite all interested parties to attend and contribute to the development of the plan. Prior to the adoption of the MJ HMP, each jurisdiction advertised and held public hearings. Public notices and public involvement materials can be found in Appendix K.

INRCOG organized the meetings in conjunction with the Butler County Emergency Management Coordinator. INRCOG was also responsible for compiling information and preparing the final document.

During each committee meeting, each jurisdiction was tasked with reviewing their previous HMP information (if applicable), updating/developing/providing new community fact information, updating/identifying/rescoring hazards, and reviewing/discussing and updating their previous mitigation activities (if applicable) and reprioritizing the activities. All activities that were completed from the previous plans were marked as such and determined if they were to be omitted from the plan update or continued. If a jurisdiction was not present at a meeting, materials were mailed/emailed and completed by said jurisdiction and returned to INRCOG for placement in the document.

Committee Meetings

Three public meetings were held at locations noted in Table 2. Each meeting was open to all residents and stakeholders in the planning area, as well as neighboring communities. As mentioned previously, these meetings were advertised in newspapers. Attendance for each meeting was documented and can be found in Attachment 10. Table 2 provides a list of public meetings.

Table 2: Meetings Summary

Location	Group	Date	Topic
Butler County Courthouse Emergency Operations Center	Planning Committee	06/27/19	Introductions, Overview of Planning Process, Review and Updates on Existing Mitigation Actions, Review and Update Community Profiles
Allison Community Center Allison Public Library	Planning Committee	07/25/2019	Complete Hazard Risk Assessments, Review and Amendment Hazard Mitigation Goals, Identify Potential Mitigation Actions and Concerns of Top Hazards
Butler County Courthouse	Planning Committee	1/23/2020	Review and Update Community Profiles, Finalize Plan.

Multi-Jurisdictional Plan Adoption

Once the Committee's feedback was addressed, a final draft HMP was prepared and sent to the County Board of Supervisors along with a resolution for adoption. Upon County adoption, the final draft HMP was submitted to Iowa Homeland Security and FEMA for their review and feedback; at which time the draft was presented to local City Councils for their adoption as well. Resolutions can be found in Appendix K.

Current & Previous Planning Documents Used

In addition to information obtained through the series of Committee Meetings, INRCOG also reviewed other previously prepared documents in order to gather supplementary information and contacted each jurisdiction for relevant information. These documents and data include:

- Butler County 2015 Multi-Jurisdictional Hazard Mitigation Plan;
- Butler County 2020 Emergency Response Plan;
- Butler County Comprehensive Emergency Management Plan 2010; Comprehensive Plans for Allison, Parkersburg, New Hartford and Shell Rock;
- Iowa State Hazard Mitigation Plan 2013; 2018;
- Plans, studies, reports, maps and technical information that were not available (FIRMs and data);
- Documentation of communities' current status in the National Flood Insurance Program (NFIP) and Community Rating System (CRS);
- Repetitive Loss Properties information;
- Reports of disaster and other hazard events that occurred within the last 5 years; and
- Butler County Floodplain Management Ordinance.

Step Two: Identify & Assess Hazards

Identify and Profile Hazards

Through the planning process, the hazards that pose a risk to the entire planning area, as well as unique hazards for each jurisdiction, were reviewed and updated. The identified hazards in this plan update have not changed from the 2015 plan. The committee elected to use the same set of hazards as identified in the State of Iowa's 2018 Hazard Mitigation Plan. Second, an updated assessment of the hazards was conducted that took into account historic occurrence, the number of people that would be or were impacted, the area of the planning area that was or would be affected, potential costs that the planning area, individuals, and organization have or may incur, the likelihood of future occurrence, and the amount of warning time before an event occurs. An updated composite score for each hazard was developed based on these factors. This process used information from previous and current hazard mitigation plans within the planning area, as well as the State of Iowa's Hazard Mitigation Plan.

Vulnerability Assessment

An updated vulnerability assessment was conducted to identify: repetitive loss structures and repetitive loss properties and population located in the identified hazard areas; inventory of existing and proposed buildings, infrastructure, and critical facilities located within identified hazard area boundaries; estimating potential losses; and analysis of development trends.

Step Three: Establish Mitigation Goals & Actions (Action Plan)

After Step Two was completed, a capability assessment was conducted on the planning area's existing policies, practices, programs, regulations, and activities that either increase or decrease the planning area vulnerability to the identified hazards. Through this assessment, areas that can be improved upon were identified and developed into "action steps." Early in the planning

Requirement §201.6(c)(5): For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted

process, meeting attendees identified broad goals that briefly stated what the plan should accomplish. Every action step should, if implemented, work toward one or more of the goals of the plan. An action step may suggest continuing a current mitigation effort or propose a new project altogether.

Many of the identified action steps were projects that the local jurisdictions could independently accomplish. Other identified action steps included efforts that either require the cooperation of two or more jurisdictions, or would not include the local jurisdiction at all. The intent is for each action step to be considered at least on an annual basis. In order to increase the likelihood that the entire planning area implements the plan, each action step identifies the parties that would most likely be responsible for completing an annual review of that step. During this step, the previous hazard mitigation plan for the planning area was consulted as a starting point in identifying goals and action steps.

Step Four: Implement the Plan and Monitor its Progress

After the hazards were assessed and the mitigation steps were identified, priorities were established by the committee, along with estimated costs. Some proposed action steps are small in scope and thus relatively low cost. However, other projects are broad in nature and would require more funding than a single jurisdiction can reasonably provide. Therefore, the final component of the plan suggests methods to implement the plan, how to keep the public involved, and what steps should be taken by the planning area to ensure that the concept of hazard mitigation is always a priority.

When implemented appropriately, mitigation projects can save lives, reduce property damage, be cost-effective, and environmentally sound. This, in turn, can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical community facilities, reduce exposure to liability, and minimize community disruption.

Chapter 2: Composite Community Profile

Figure 2: Butler County Location

Physical Attributes

Location of Butler County

Butler County is located in the northeastern quadrant of the State of Iowa. The county includes a number of incorporated cities including: Allison, Aplington, Aredale, Bristow, Clarksville, Dumont, Greene, New Hartford, Parkersburg and Shell Rock. Butler County is divided into 16 townships including: Albion, Beaver, Bennezette, Butler, Cold Water, Dayton, Fremont, Jackson, Jefferson, Madison, Monroe, Pittsford, Ripley, Shell Rock, Washington and West Point. The County itself encompasses a total area of approximately 582 square miles. The population is the 55th largest in the state with 14,867 residents (2010 Census). Allison is the county seat. It is in the center of the county, at the junction of State Highways 3 and 14. Please refer to Attachment #1: Location Map of the County, which includes the locations of the aforementioned communities.

History

Butler County was formed on January 15, 1851 from open land. It was named after Kentucky native William Orlando Butler, a General and hero of the Mexican-American War, who ran as Vice President of the United States in 1848. Until 1854, the county was governed by other counties. Only at this time did it have enough inhabitants to establish its own local government. The first court proceedings were conducted in a small log cabin of a settler. In 1858, the first courthouse was constructed in Clarksville. It was later sold to the school district, for use as a schoolhouse from 1863 until 1903.

Clarksville served as the first county seat, from 1854 to 1860, after which Butler Center became the seat. Allison was later named the county seat on January 10, 1881, due to Butler Center's inaccessibility during the winter.

Government Structure

Butler County is governed by a three-member Board of Supervisors. Each member represents a district. District #1 includes: Freemont, Butler, Jackson, Jefferson, Shell Rock, and part of Beaver townships north of 310th St. and east of County Road T55. District #1 also includes the City of Clarksville. District #2 includes: Bennezette, Coldwater, Dayton, Pittsford, Madison, Washington and West Point townships. District #2 also includes the cities of Allison, Aredale, Bristow, Dumont and Greene. District #3 includes: Ripley, Monroe, Albion and part of Beaver townships south of 310th St. and west of County Road T55. District #3 also includes the cities of Aplington, New Hartford, and Parkersburg. Each of Butler County's municipalities have a Mayor-City Council government structure.

Natural Environment

The planning area's terrain is generally a flat to rolling slope topography that characterizes the agricultural areas of northeast Iowa. There are several areas of steeper than normal slope with these being dispersed throughout the county adjacent to watercourses. The highest elevation in the county, exceeding 1,054 feet above mean sea level, is near the county seat of Allision while the lowest elevation of approximately 899 feet above mean sea level is found in the southwestern corner of the county.

The most visible geographic feature within the county is the Shell Rock River West Fork of the Cedar River, and Beaver Creek. The Shell Rock River flows through Greene, Clarksville and Shell Rock. The West Fork of the Cedar River travels through Dumont to the north of New Hartford. Beaver Creek flows from Aplington to New Hartford. See Attachment 2: Topographic Map of the County.

Soils

Seventy-five (75) percent of the planning area has soils with slopes of 5 percent or less. The planning area is abundantly supplied with a variety of soils other than productive agricultural soils. There are seven soil classifications for the planning area according to the United States Department of Agriculture:

- *Marshan-Coland-Flagler:* Nearly level to moderately sloping, poorly drained and somewhat excessively drained soils that formed in loamy sediment underlain by loamy, sandy, or gravelly alluvial sediment; on stream benches and bottomlands.
- *Cresco-Kenyon-Clyde*: Nearly level to strongly sloping, moderately well drained and poorly drained soils that formed in loamy sediment and the underlying glacial till; on uplands.
- *Dickinson-Sparta:* Nearly level to strongly sloping, well drained to excessively drained soils that formed in loamy and sandy material; on uplands.
- *Dinsdale-Klinger-Maxfield*: Nearly level to moderately sloping, well drained, somewhat poorly drained, and poorly drained soils that formed in loess and the underlying glacial till; on uplands.
- *Mt. Carroll-Downs-Garwin*: Nearly level to steep, well drained and poorly drained soils that formed in loess; on uplands.
- *Kenyon-Clyde-Floyd:* Nearly level to stronger sloping, moderately well drained to poorly drained soils that formed in loamy sediment and the underlying glacial till; on uplands
- *Rockton-Ostrander*: Nearly level to moderately sloping, well drained soils that formed in loamy sediment and the underlying glacial till and limestone residuum; on uplands.

Vegetation

The vast majority of rural Butler County is planted or sowed for corn and soybeans. Grass and brush are present in uncultivated and undeveloped areas of the county. Trees and grasses are often incorporated with otherwise urbanized areas in the county for aesthetics, shade, or erosion control.

There are problems associated with cultivation methods used in the rural areas of the county. The high percentage of cultivated land and the relatively low percentage of conservation methods used in farming cause excessive runoff during rain events. This can lead to problems that are discussed later in this plan, specifically erosion and silting in and around bridges and drainage ditches.

Climate

The climate is identified as having cold snowy winters with humid hot summers. The climate is located in the polar front zone, the battleground of polar and tropical air masses. Being far removed from moderating influences of a large body of water, seasonal contrasts are quite distinctive and weather highly variable. Ample precipitation throughout the year is increased in the summer by invading maritime tropical air masses from the Gulf of Mexico. Cold winters are dominated by continental polar masses from the arctic regions.

The annual precipitation average is 31.5 to 32.5 inches. Approximately 71% of a year's precipitation falls during the months of April to September. Precipitation can be expected to exceed one-half inch or more 20 days per year, or one-tenth inch or more 56 days a year. Precipitation can occur in amounts of multiple inches within one hour or less during intense rainstorms. These storms, usually associated with extreme humidity, are capable of causing extensive damage to infrastructure. Often times it is the intensity of these rainstorms that are as impactful as the frequency or duration. An extremely intense rainfall can render detention basins and small streams useless due to the extreme speed and onset of surface flow.

The annual temperature range is large, typical of a continental climate. January is the coldest month, averaging 18.6 degrees Fahrenheit. July is the warmest month averaging 74.3 degrees Fahrenheit.

Surface Water Systems

There are three watersheds that fall within the planning area borders. All three watersheds are tributaries to the Cedar River and flow across the county generally from the northwest to southeast. These watersheds, as defined by the United States Geological Survey, include the following:

- **Shell Rock River:** The Shell Rock watershed is present in the north and eastern quadrant of Butler County. The watershed is approximately 102 miles long and encompasses two states – Iowa and Minnesota. The Shell Rock River eventually flows into the Cedar River. The Shell Rock River and its tributaries drain approximately 31% of the county.
- **West Fork Cedar River:** The West Fork Cedar watershed flows from west to east through Butler County. The West Fork Cedar flows into the Cedar River,
- which eventually flows into the Mississippi River. The West Fork of the Cedar River and its tributaries drain approximately 47% of the county.
- **Beaver Creek:** Beaver Creek and its tributaries drain the remaining 22% of the county.

Infrastructure

Transportation Systems

Butler County has within its boundaries a variety of transportation systems. These systems include highways, gravel roads, blacktop roads, railway systems & transit. Access to bike and pedestrian trails for transportation is becoming more prevalent in the planning area. Additionally, efforts are being made to plan and extend recreational trails throughout the area.

State Highways present in Butler County include: Iowa 3, 14 & 57. In addition to the State Highway systems, the Secondary Road Department is in charge of construction and maintenance for all county roadways and bridges. This does not include roads on the State system such as IA3, IA14 and IA57. Butler County maintains over 200 miles of paved roads, approximately 700 miles of granular surfaced roads, 16 miles of unpaved roads, and 245 bridges.

Air travel is an important form of transportation and one airport is available in the county, which is the Allison Municipal Airport. The airport provides service to small, private aircraft only.

There are two freight rail lines that run through the county. The first is owned by the Canadian National Railway Company and is operated by the Chicago, Central & Pacific Railroad Company. This rail line runs east/west near the Butler/Grundy county line and runs through Aplington, New Hartford, Parkersburg and the unincorporated communities of Austinville and Sinclair. The second is owned and operated by the Iowa Northern Railway Company and runs northwest/southeast through the Clarksville, Greene, Shell Rock and the unincorporated community of Packard.

The Iowa Northland Regional Transit Commission (RTC) offers limited transit service to residents of Butler County. Currently, the county is served by RTC on a case-by-case basis depending on space and service timing considerations.

Potable Water Systems

Water service in the planning area is typically provided by private, individual or common wells. The wells tap rechargeable groundwater aquifers for water. In terms of need, the county does not foresee the need for a common or public water system. However, the county does want to protect the groundwater from depletion or contamination in order to maintain its supply of potable water.

Although not thoroughly developed, large rural water mains and storage facilities have the potential to supply water for purposes of firefighting. It is estimated that the water line would need to be at least six inches in order to supply effective pressure for actual firefighting. Smaller lines could serve as potential fill locations for tanker trucks. Further information for each community system can be in the Appendices.

Wastewater Treatment Facility and Collection System

There are several wastewater treatment facilities in the planning area, including in the cities of: Allison, Aplington, Clarksville, Dumont, Greene, New Hartford, Parkersburg, and Shell Rock. In the cities of Aredale and Bristow, each household is served by individual septic tanks. Further details on each community's wastewater treatment system can be found in the Appendix section.

In the rural part of the County, the primary means of disposing of sewage is by individual, on-site septic systems. These on-site systems include tanks and septic fields for disposal of household sewage. As with water service, the county does not envision the need for a common public sewage system. The county, however, does regulate on-site systems through ordinances, inspections and its Board of Health. Further information for each system can be in the Appendices.

Storm Water Systems

There are no established storm water systems in the planning area. Each city is in charge of its own program for managing storm water and pollution. Rural and unincorporated areas often rely on open ditches to handle storm water.

Other Utilities

The planning area is serviced by numerous utilities. Table 3 lists the utility providers for each jurisdiction.

Table 3: Primary Providers for Community Utilities in Butler County

Community	Electric	Natural Gas	Water	Sewer	Sanitation	Telephone/Internet	Cable
Allison	MidAmerican Energy	MidAmerican Energy	City of Allison	City of Allison	City of Allison	Dumont Telephone	Dumont Telephone
Aplington	City of Aplington	MidAmerican Energy	City of Aplington	City of Aplington	City Sanitary Service	Windstream	Windstream
Aredale	MidAmerican Energy	N/A	N/A	N/A	Jendro Sanitation	Rockwell Telephone	Rockwell Telephone
Bristow	MidAmerican Energy	MidAmerican Energy	City of Bristow	N/A	City Sanitary Service	Rockwell Telephone	Rockwell Telephone
Clarksville	MidAmerican Energy	MidAmerican Energy	City of Clarksville	City of Clarksville	City of Clarksville	Butler-Bremer Communications	Butler-Bremer Communications
Dumont	MidAmerican Energy	MidAmerican Energy	City of Dumont	City of Dumont	Jendro Sanitation	Dumont Telephone	Dumont Telephone
Greene	Alliant Energy	Black Hills Energy	City of Greene	City of Greene	Jendro Sanitation	Omnitel & Windstream	Omnitel
New Hartford	MidAmerican Energy	MidAmerican Energy	City of New Hartford	City of New Hartford	City Sanitary Service	Mediacom & Qwest	Mediacom
Parkersburg	MidAmerican Energy	MidAmerican Energy	City of Parkersburg	City of Parkersburg	City Sanitary Service	CenturyLink & Mediacom	CenturyLink & Mediacom
Shell Rock	MidAmerican Energy	MidAmerican Energy	City of Shell Rock	City of Shell Rock	Jendro Sanitation	Butler-Bremer Communications	Mediacom & Butler-Bremer Communications
Aplington-Parkersburg CSD	City of Aplington; MidAmerican Energy	MidAmerican Energy	City of Aplington; Parkersburg	City of Aplington; Parkersburg	City Sanitary Service	Windstream; CenturyLink; Iowa Communication Network	Mediacom
Dike-New Hartford CSD	MidAmerican Energy	MidAmerican Energy	City of Dike; New Hartford	City of Dike; New Hartford	City Sanitary Service	Mediacom & Qwest	Mediacom
Waverly-Shell Rock CSD	MidAmerican Energy	MidAmerican Energy	City of Shell Rock; Waverly	City of Shell Rock; Waverly	City of Shell Rock; Waverly	Butler-Bremer Communications	Butler-Bremer Communications
Unincorporated	Butler County REC, MidAmerican Energy, Alliant Energy	Black Hills Energy, MidAmerican Energy	Individual Wells	Individual Septic Tanks	Butler County Transfer Station	All services listed above	All services listed above

Source: Participating communities, 2019

Communication

Websites

Butler County, its communities, and its school districts have websites to provide the public with information. The public can use the following public websites for local news and announcements:

- Butler County: https://www.butlercoiowa.org/
- Allison: http://www.cityofallison.com/
- Aplington: https://www.aplingtonia.com/
- Clarksville: http://clarksvilleiowa.com/
- Greene: http://greeneia.org/
- Parkersburg: http://www.parkersburgia.com/
- Shell Rock: http://shellrockiowa.org/

Facebook Pages

Some of the smaller cities in Butler County do not have official websites. Instead, some use Facebook pages:

- Aredale: https://www.facebook.com/aredale.ia.us
- Bristow: https://www.facebook.com/bristow50611/
- Dumont: https://www.facebook.com/City-of-Dumont-Iowa-1557443014575462/
- New Hartford: https://www.facebook.com/pg/Grow-with-Us-New-Hartford-Ia-1128580327173593/about/

Newspapers

Butler County has four official county newspapers; all are published on a weekly basis. These newspapers include:

- Butler County Tribune-Journal
- Clarksville Star
- Greene Recorder
- Parkersburg Eclipse-News

Other regional newspapers published outside of the planning area include:

- Waterloo-Cedar Falls Courier
- Waverly Democrat
- Hampton Chronicle

Demographics

Population

Table 4 illustrates the population trends for Butler County, its incorporated communities, and the State of Iowa for the past 30 years. As is evident in the table, nearly all cities have experienced a decline in population, while the Statewide population has seen a moderate increase. the planning area has seen an overall decrease in population since 1990.

Table 4: Population Trends for Selected Communities

Community	1990	2000	2010	2015	% Change 2010-2015
Allison	1,000	1,006	1,029	1018	-1.07%
Aplington	1,034	1,054	1,128	1106	-1.95%
Aredale	88	89	74	72	-2.70%
Bristow	197	202	160	157	-1.88%
Clarksville	1,382	1,441	1,439	1407	-2.2%
Dumont	705	676	637	625	-1.83%
Greene	1,142	1,099	1,130	1110	-1.77%
New Hartford	683	659	516	509	-1.36%
Parkersburg	1,804	1,889	1,870	1947	+4.11%
Shell Rock	1,385	1,298	1,296	1319	-1.77%
Unincorporated Area	6,301	5,892	5,588	5269	-10.57%
Butler County (Total)	15,731	15,305	14,867	14,539	-2.22%
State of Iowa	2,776,831	2,926,324	3,046,355	3,123,899	2.55%

Source: State Data Center of Iowa, 2010

Population Projections

Projections are only estimates of future population; many factors have an effect on future population such as employment, housing, and educational opportunities. While some projections use some of this data to estimate future population, they cannot plan for unknown events, such as extreme changes in employment opportunities or the perilous effects of natural disasters.

The following projections are provided by the Washington D.C. based firm, Woods & Poole Economics, whose methodology for county projections is based upon several factors: population trends, income levels, employment by industry, earning by industry, inflation rates and net migration rates.

Table 5: Population Changes for Butler County

Year	Population	Percentage Change
1950	17,394	0.4%
1960	17,467	-2.9%
1970	16,953	4.2%
1980	17,668	-11.0%
1990	15,731	-2.7%
2000	15,305	-2.7%
2010	14,867	-2.9%

Source: State Data Center of Iowa, 2010

Table 6 shows the actual number change and the percentage change rate for each decade, based on the Woods & Poole estimates.

Table 6: Population Projections for Butler County

Year	Projected Population	Percentage Change
2020	14,849	-0.1% (from 2010)
2030	14,985	0.9%
2040	14,915	-0.5%
Source: Woods & Poole Economics, 2018		

Housing and Development Trends

According to 2010 Census data, there are 6,682 total housing units in the county (Table 7). Of these housing units, 4,994 are owner-occupied, 1,126 are renter-occupied, and 562 are vacant. According to the 2013-2017 American Community Survey, mobile homes make up 2.1% of the county's housing units. This is slightly less than the State's (3.7%). Communities with the largest number of mobile homes are Clarksville, New Hartford and the unincorporated area (Table 8). According to the 2010 Census, Butler County's total household population is 14,625. The average household size is 2.39 persons.

Table 7: Total Housing Units in Selected Communities

Community	1990	2000	2010
Allison	448	454	470
Aplington	439	470	505
Aredale	44	42	40
Bristow	98	89	84
Clarksville	571	611	619
Dumont	330	316	312
Greene	558	562	575
New Hartford	265	275	234
Parkersburg	808	850	870
Shell Rock	542	556	588
Unincorporated Area	2,380	2,353	2,385
Butler County (Total)	6,483	6,578	6,682
Source: US Census Bureau, 1990-2010 Censuses & 2013-2017 ACS			

Table 8: Total Mobile Homes in Selected Communities

Community	Number of Mobile Homes
Allison	9
Aplington	5
Aredale	0
Bristow	0
Clarksville	57
Dumont	5
Greene	8
New Hartford	22
Parkersburg	5
Shell Rock	2
Unincorporated Area	28
Butler County (Total)	141
State of Iowa	50,477
Source: 2013-2017 American Community Survey	

Age of Housing Stock

As illustrated in Table 9, approximately 41.9% of housing units in Butler County were built in 1939 or earlier. In the years following 1940, the largest numbers of housing units were built between 1970-1979. The 1980's and 1990's saw a dramatic decrease in housing units built, while the 2000's started to see a slow increase in the number of housing units being built in that timeframe. It should be noted that an older housing stock increases the vulnerability of a community, as older structures are more likely to be in inadequate condition, making them more susceptible to damage during severe weather events.

Table 9: Age of Housing Stock in Butler County

Year Built	Number of Units	Percentage of Housing Stock
2000 or later	675	10.0%
1990 to 1999	446	6.6%
1980 to 1989	322	4.8%
1970 to 1979	874	12.9%
1960 to 1969	573	8.5%
1950 to 1959	583	8.6%
1940 to 1949	454	6.7%
1939 or earlier	2,831	41.9%

Source: 2013-2017 American Community Survey

Value of Housing

Housing value within Butler County has dramatically increased over the years. According to the 2017 American Community Survey, the median value household for an owner-occupied unit in the county was $112,100.

While the planning area has experienced a slight increase in the number of housing units, it still remains below average compared to the state for owner occupied housing units. The State of Iowa had a median housing value of $137,200 according to Table 10.

Table 11 provides a list of median gross rent for each community. Butler County's median gross rent is $126 less than the State's. Of Butler County's jurisdictions, Greene has the least expensive median gross rent at $447 while New Hartford has the most expensive median gross rent at $706. Bristow, at the time of the survey, had no renters; therefore the rent value for Bristow value is listed as "NA," in Table 11.

Table 10: Median Value of Owner-Occupied Units

Community	2012	2017
Allison	$80,600	$86,600
Aplington	$91,300	$93,800
Aredale	$21,000	$28,800
Bristow	$45,800	$32,200
Clarksville	$81,200	$100,000
Dumont	$62,900	$56,500
Greene	$73,000	$80,300
New Hartford	$84,700	$81,400
Parkersburg	$109,200	$139,000
Shell Rock	$102,800	$118,900
Butler County	$97,500	$112,100
State of Iowa	$123,000	$137,200

Source: 2008-2012 American Community Survey; 2013-2017 American Community Survey

Table 11: Median Gross Rent

Community	Gross Rent
Allison	$548
Aplington	$604
Aredale	$613
Bristow	NA
Clarksville	$533
Dumont	$620
Greene	$447
New Hartford	$706
Parkersburg	$629
Shell Rock	$662
Butler County	$614
State of Iowa	$740

Source: 2013-2017 American Community Survey

Economy

Income

According to the 2013-2017 ACS estimate, the county's per capita income was $28,584. The median household income for the entire county was $53,937, which was lower than the statewide median of $56,570. The per capita and median household income for the county and its communities are listed in Table 13.

Table 12 identifies the percent of individuals which fell below the poverty level in a 12-month period. Butler County's poverty level is approximately 2.6% lower than the state average. However, the State's median household income is higher than the county median household income.

Table 13 identifies the per capita and median household income for each community. Bristow had the lowest per capita income at $15,758 and the highest percent of persons living in poverty (39.8%). New Hartford had the lowest percent of persons below the poverty level in the county at 6.8%. Greene had the highest per capita income of $30,675. Aplington had the highest median household income at $53,995.

Table 12: Percent of Individuals below Poverty Level

Community	Percent
Allison	7.1%
Aplington	11.6%
Aredale	13.7%
Bristow	39.8%
Clarksville	11.2%
Dumont	20.7%
Greene	10.6%
New Hartford	6.8%
Parkersburg	7.1%
Shell Rock	10.4%
Butler County	9.4%
Iowa (Total)	12.0%

Source: 2013-2017 ACS

Table 13: Per Capita & Median Household Income

Community	Per Capita Income	Median HH Income
Allison	$25,813	$53,350
Aplington	$28,776	$53,995
Aredale	$20,080	$34,167
Bristow	$15,758	$24,000
Clarksville	$22,349	$44,271
Dumont	$21,653	$42,708
Greene	$30,675	$44,107
New Hartford	$18,056	$50,875
Parkersburg	$26,273	$44,444
Shell Rock	$27,078	$52,578
Butler County	$28,584	$53,937
State of Iowa	$30,063	$56,570

Source: 2013-2017 American Community Survey

Employment Sectors

As Table 14 reveals, Butler County has a large percentage of its residents employed in the education, health and social services industry (22.7%), similar to the State of Iowa (24.3%).

Manufacturing is the second highest industry to employ with 19.1% of the county employed in this industry. The information industry employs the least amount of the population, with only 1.2% of residents employed.

Table 14: Employment Sectors/Industries in Butler County and Iowa				
Industry	**Butler County**		**State of Iowa**	
	Number	Percent	Number	Percent
Agriculture, forestry, fishing and hunting, and mining	494	6.6%	61,618	3.9%
Construction	510	6.9%	100,925	6.3%
Manufacturing	1,422	19.1%	241,327	15.1%
Wholesale trade	219	2.9%	46,221	2.9%
Retail trade	874	11.8%	186,277	11.6%
Transportation and warehousing, and utilities	342	4.6%	73,774	4.6%
Information	87	1.2%	26,772	1.7%
Finance and insurance, and real estate and rental and leasing	439	5.9%	121,725	7.6%
Professional, scientific, management, administrative & waste management serv	482	6.5%	117,560	7.3%
Educational services, and health care and social assistance	1,688	22.7%	387,957	24.3%
Arts, entertainment, and recreation, and accommodation and food services	283	3.8%	117,554	7.3%
Other services, except public administration	392	5.3%	68,339	4.3%
Public Administration	199	2.7%	49,669	3.1%
Source: 2013-2017 American Community Survey				

Major Employers

Major employers in Butler County include Unverferth Manufacturing, Flint Hills Resources, Flint Hills Resources, Menards Distribution Center, Allan Industrial Coatings, American Tool & Engineering, Heartland Windows, ABCM Corp. Nursing Homes (Allison, Aplington, Dumont), Clarksville Skilled Nursing and Rehabilitation Center, Shell Rock Healthcare Center, and Valley View Nursing Home.

As illustrated in Table 14, the education industry makes up the largest employment sector. Butler County has six public school districts providing K-12 education and employment. These districts include: Aplington-Parkersburg, Clarksville, Dike-New Hartford, North Butler and Waverly-Shell Rock Community Schools.

Chapter 3: Risk Assessment

This updated risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property and infrastructure to these hazards. The goal of the risk assessment is to estimate the potential loss in Butler County, including loss of life, personal injury, property damage and economic loss from a hazard event. The risk assessment process allows the community to better understand their potential risk to various hazards and provides a framework for developing and prioritizing mitigation actions to reduce the risk and impacts from future hazard events.

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and the probability of future hazard events.

Requirement §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

The risk assessment follows the methodology described in the FEMA publication 386-2, *Understanding Your Risks: Identifying Hazards and Estimated Losses* (2002), which includes a four-step process:

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type of all natural hazards that can affect the jurisdiction.

- Identify Hazards
- Profile Hazard Events
- Inventory Assets
- Estimate Losses

This section is divided into three parts: hazard identification, hazard profiles, and vulnerability assessment.

- **Hazard Identification** identifies the hazards that threaten the planning area and describes why some hazards have been omitted from further consideration.

- **Hazard Profiles** discusses the threat to the planning area and describes why some hazards have been omitted from further consideration.

- **Vulnerability Assessment** assess the total exposure to natural hazards, considering critical facilities and other community assets at risk, and assessing growth and development trends. Hazards that vary geographically across the planning area are addressed in greater detail.

Hazard Identification

To properly identify mitigation strategies and projects, the hazards that may affect the planning area must be identified and/or updated. The following section lists the potential hazards to the planning area that were identified by the Planning Committee. This section also discusses previous occurrences of the hazards, the areas of the planning geography most at risk from each hazard, and the populations most at risk. By identifying the hazards and quantifying the risks, the planning area can better evaluate current mitigation strategies, develop future mitigation strategies and identify needed mitigation projects.

The hazard analysis identifies potential hazards that could affect the planning area for the purposes of mitigation planning. It is important to note that the focus of mitigation is on reducing long-term risks of damage or threats to public health and safety caused by hazards and their effects. Thus, in some cases the hazards identified for mitigation will not include all of or the same hazards identified for preparedness, response or recovery.

The Committee reviewed the recognized hazards in the 2015 Butler County Multi-Jurisdictional Hazard Mitigation Plan and the 2018 Iowa Hazard Mitigation Strategies.

After review, the committee elected to use the same list of hazards as identified in the 2018 Iowa Hazard Mitigation Plan. Hazards identified for Butler County are listed in Table 15.

The Iowa 2018 Hazards List identifies 20 hazards that pose a measure of risk. Of these 20 hazards, 13 were considered natural hazards as a "*source of harm or difficulty created by a meteorological, environmental, or geological phenomenon or combination of phenomena*" (U.S. Department of Homeland Security Risk Lexicon, 2010).

Table 15: Butler County Hazard List

Natural Hazards
Dam/Levee Failure
Drought
Earthquake
Expansive Soils
Extreme Heat
Flash Flood
Grass/Wildland Fire
Landslide
River Flooding
Severe Winter Storm
Sinkholes
Thunderstorms/Lightning/Hail
Tornado/Windstorm
Other Hazards
Animal/Crop/Plant Disease
Dam/Levee Failure
Hazardous Material Incident
Infrastructure Failure
Radiological Incident
Transportation Incident
Terrorism

The planning committee used the hazards identified in the Iowa plan, as well as evaluating the planning area to see if there were any circumstances that called for additional hazards to be identified. No additional hazards were identified.

Disaster Declaration History

One method used by the planning committee to identify hazards was to examine events that triggered federal and/or state disaster declarations. Federal and/or state declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been exceeded, a state disaster declaration may be issued, allowing for the provision of state assistance. Should the disaster be so severe that both the local and state governments' capacities are exceeded, a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance.

The federal government may issue a disaster declaration through FEMA, the U.S. Department of Agriculture (USDA), and/or the Small Business Administration (SBA). FEMA also issues emergency declarations, which are more limited in scope and without the long-term federal recovery programs of major disaster declarations. The quantity and types of damage are the determining factors.

Table 16: History of Presidential Disaster Declarations for Butler County

Declared Date	Disaster Type	Declaration Number
July 12, 1991	Flooding, Severe Storms	DR-911
April 26, 1993	Flooding, Severe Storms	DR-986
July 9, 1993	Flooding, Severe Storms	DR-996
July 2, 1998	Severe Weather, Tornadoes and Flooding	DR-1230
July 22, 1999	Severe Storms and Flooding	DR-1282
May 25, 2004	Severe Storms, Tornadoes, and Flooding	DR-1518
Sept. 10, 2005	Hurricane Katrina Evacuation	EM-3239
March 14, 2007	Severe Winter Storms	DR-1688
May 27, 2008	Severe Storms, Tornadoes, and Flooding	DR-1763
July 29, 2010	Severe Storms, Flooding, and Tornadoes	DR-1930
July 2, 2013	Severe Storms, Tornadoes, and Flooding	DR-4126
July 31, 2013	Severe Storms, Tornadoes, and Flooding	DR-4135
July 24, 2014	Severe Storms, Tornadoes, Straight-line Winds, and Flooding	DR-4184
Aug. 5, 2014	Severe Storms, Tornadoes, Straight-line Winds, and Flooding	DR-4187
July 31, 2015	Severe Storms, Tornadoes, Straight-line Winds, and Flooding	DR-4234
Oct. 31, 2016	Severe Storms and Flooding	DR-4289
March 23, 2019	Severe Storms and Flooding	DR-4421

Source: FEMA Presidential Disaster Declarations, January 1900 – April 2019

Table 16 lists state and federal disaster declarations received by Butler County. Many of the disaster events were regional or statewide.

Methodology

The risk assessment identifies how people, properties, and structures could be damaged by a particular event. If a hazard can harm people or damage their homes and other structures, they are vulnerable. The Planning Committee aimed to identify weak points in the community, for example, identifying building types that are vulnerable to damage and anticipating the loss in high risk areas. This exercise helped the community to determine which mitigation activities to undertake.

Each hazard identified in this section is profiled individually. The level of information presented in the profiles varies by hazard based on the information available. With each update of this plan, new information will be incorporated to provide for better evaluation and prioritization of the hazards that may impact the planning area. The sources used to collect information for these profiles included previous and current hazard mitigation plans, available data from the National Centers for Environmental Information, the State of Iowa updated HMP and other available data from the county and incorporated communities. Detailed profiles were developed for each of the identified hazards. The Hazard Mitigation Planning Committee used the following updated factors to arrive at a Final Hazard Assessment Score (as used by the State of Iowa in their HMP Update).

The Planning Committee considered the following four factors as it contemplated each hazard:

- Probability
- Magnitude/Severity
- Warning Time
- Duration

A score was assigned to each factor and then weighted according to its overall contributing impact to a particular hazard event. The weighted factors were added together, as shown in the formula below, to arrive at a Final Hazard Assessment Score:

(Probability x 0.45) + (Magnitude/Severity x 0.30) + (Warning Time x 0.15) + (Duration x 0.10) = Final Hazard Assessment Score

Probability

The probability score 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. Many times, the historical occurrence can be extrapolated into the future using best available data; but others, due to the nature of the hazard, are more difficult to estimate the probability of future occurrence. Table 17 shows the probability scoring criteria.

Table 17: Probability

Score	Description	
1	Unlikely	Less than 10% probability in any given year (up to 1 in 10 chances of occurring); history of events is less than 10% likely or the event is unlikely but there is a possibility of its occurrence.
2	Occasional	Between 10% and 20% probability in any given year (up to 1 in 5 chances of occurring); history of events is greater than 10% but less than 20% or the event could possibly occur.
3	Likely	Between 20% and 33% probability in any given year (up to 1 in 3 chances of occurring); history of events is greater than 20% but less than 33% likely or the event is likely to occur.
4	Highly Likely	More than 33% probability in any given year (event has up to a 1 in 1 chance of occurring); history of events is greater than 33% likely or the event is highly likely to occur.

Magnitude/Severity

The magnitude or severity of a hazard event considers multiple relevant factors including: when the event occurs (year-round, seasonal), the location affected, community resilience, and the effectiveness of the emergency response and disaster recovery efforts.

The method for quantifying the impact or severity of the event is illustrated in Table 18.

Table 18: Magnitude/Severity

Score	Description	
1	Negligible	Less than 10% of property severely damaged, shutdown of facilities and services for less than 24 hours, and/or injuries/illnesses treatable with first aid.
2	Occasional	Between 10% to 25% of property severely damaged, shutdown of facilities and services for more than a week, and/or injuries/illnesses that do not result in permanent disability.
3	Critical	Between 25% to 50% of property severely damaged, shutdown of facilities and services for at least two weeks, and/or injuries/illnesses that result in permanent disability.
4	Catastrophic	More than 50% of property severely damaged, shutdown of facilities and services for more than 30 days, and/or multiple deaths.

Warning Time

The speed of onset is the amount of warning time available before the hazard occurs. This should be taken as an average warning time. For many of the atmospheric natural hazards, there is a considerable amount of warning time as opposed to the human caused accidental hazards that occur instantaneously or without any significant warning time.

Table 19 identifies the scoring and description for warning time criteria.

Table 19: Warning Time

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

Duration

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

Table 20 shows the scoring criteria for duration.

Table 20: Duration

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

Hazard Analysis Summary

Table 21 lists the average scores for all jurisdictions in the planning area, including unincorporated Butler County, incorporated cities, and school districts. Individual assessment scores for each jurisdiction can be found in their respective appendix.

The top five hazards identified in the 2015 Plan were also identified in the 2020 Plan. These include: flash flood, river flooding, severe winter storm, tornado/windstorm and thunderstorm/lighting/hail.

Table 21: Butler County Hazard Analysis Scores All Jurisdictions – Averaged						
Hazard Rank	**Composite**	**Hazard Factors**				**Weighted Assessment Score**
		Probability	**Magnitude/Severity**	**Warning Time**	**Duration**	
1	Flash Flood	3.29	2.07	3.64	2.07	**2.85**
2	River Flooding	3.00	2.64	2.21	3.14	**2.79**
3	Severe Winter Storm	3.50	1.86	2.00	2.36	**2.67**
4	Thunderstorm/Lighting/Hail	2.93	2.21	2.50	2.36	**2.59**
5	Tornado/Windstorm	3.07	1.36	2.79	1.50	**2.36**
6	Extreme Heat	2.36	2.07	2.79	2.07	**2.31**
7	Levee/Dam Failure	1.50	2.00	3.43	2.64	**2.05**
8	Transportation Incident	2.07	1.21	3.71	1.93	**2.04**
9	HAZMAT Incident	1.71	1.79	2.93	2.57	**2.00**
10	Animal/Plant/Crop Disease	1.86	1.54	2.14	3.36	**1.96**
11	Drought	1.86	1.43	3.00	2.14	**1.93**
12	Terrorism	1.14	2.21	3.07	2.57	**1.89**
13	Infrastructure Failure	1.36	1.36	3.79	2.21	**1.81**
15	Radiological Incident	1.00	1.50	3.50	2.43	**1.67**
14	Human Disease	1.36	1.29	3.29	2.29	**1.72**
16	Earthquake	1.00	1.57	3.14	1.85	**1.58**
17	Landslide	1.00	1.58	3.25	1.50	**1.56**
18	Expansive Soils	1.29	1.29	2.50	2.07	**1.55**
19	Grass/Wild Fire	1.14	1.14	2.29	1.86	**1.39**
20	Sinkholes	1.07	0.93	2.21	1.57	**1.25**

Table 22 shows the hazard analysis for the unincorporated areas of Butler County. Certain hazard rankings are different depending upon the jurisdiction affected, due to different topography, historical occurrences, vulnerability, severity of impact, and probability to that community.

The identified hazards are discussed at length on the following pages, in alphabetical order. The discussion will include known historical occurrence, probability, magnitude/severity, warning time, and duration.

Table 22: Butler County Hazard Analysis Scores
Unincorporated Area Only

Rank	Hazards	Probability	Magnitude/Severity	Warning Time	Duration	Total
1	Tornado/Windstorm	4	2	4	3	3.3
2	Flash Flood	4	2	4	2	3.2
3	River Flooding	4	3	1	3	3.15
4	Animal/Plant/Crop Disease	3	2.5	4	4	3.1
5	HAZMAT Incident	3	2	4	3	2.85
6	Grass/Wild Fire	4	1	4	1	2.8
6	Thunderstorm/Lighting/Hail	4	1	4	1	2.8
8	Drought	3	3	1	4	2.8
9	Dam / Levee Failure	2	3	4	3	2.7
10	Severe Winter Storm	4	1	2	2	2.6
11	Extreme Heat	4	1	1	3	2.55
12	Human Disease	2	2	4	1	2.2
13	Radiological Incident	1	2	4	3	1.95
14	Terrorism	2	1	4	1	1.9
15	Earthquake	1	2	4	1	1.75
15	Expansive Soils	1	2	4	1	1.75
15	Landslide	1	2	4	1	1.75
15	Sinkholes	1	2	4	1	1.75
19	Infrastructure Failure	1	1	4	2	1.55
11	Transportation Incident	3	1	4	3	2.55

Hazard Profiles

Animal/Crop/Plant Disease

Definition and Description

Disease is any impairment of normal physiological function affecting all or part of an organism, esp. a specific pathological change caused by infection, stress, etc., producing characteristic symptoms; illness or sickness in general (Collins). It is any medical, health, or sanitation threat to plants, wildlife, domestic animals. For purposes of this discussion, the topic will be contained to only communicable diseases and will largely deal with generalities.

Communicable diseases can have devastating effects on the health of a population, the health of wild and domestic animals, and on the wide variety of plant life that is present in and around the community. Some of these diseases are considered to be a greater risk to the community than others. Some diseases that affect livestock may include (but are not limited to) West Nile Virus, Equine Infectious Anemia, Johne's Disease, Foot Rot, Coccidiosis, Pinkeye, Anaplasmosis, Anthrax, Bluetongue, Brucellosis, Trichomoniasis, Tuberculosis, Pseudorabies, Brucellosis, Porcine Reproductive Respiratory Syndrome, Brucella ovis, Ovine Progressive Pneumonia, Scrapie, Micoplasma, Newcastle, Vesicular Stomatitis, Chronic Wasting Disease (CWD), Exotic Newcastle Disease and Rabit calicivirus disease.

Some common plant diseases include cedar-apple and related rusts, anthracnose, oak wilt, Verticillium wilt, ash decline, Sphaeropsis blight of pine, Rhizosphaera of spruce, Cytospora of spruce, black knot of plum, and environmental or abiotic disease, and Dutch Elm disease among others.

Lastly, though not technically a disease, the threat from the Emerald Ash Borer poses an ever-increasing threat to ash trees in Butler County. According to the Iowa Department of Natural Resources, Bremer County and Black Hawk County, which both are close in proximity to Butler County, have confirmed Emerald Ash Borer infestations. The damage caused by this invasive species is comparable to diseases such as Dutch elm disease. The State has implemented a state-wide quarantine as of 2014.

Historical Occurrence

While instances of plant, crop, or animal disease are common across Iowa and Butler County, there have been no widespread recorded occurrences of plant, crop, or animal diseases having a significant impact in the planning area.

Probability

Due to the lack of widespread diseases in the past, it is unlikely that a major animal, plant, or crop disease will develop in the future. However, there is a greater likelihood of complications, such as foodborne illness in humans, resulting from bacteria and viruses originating in livestock and crops. The presence of pests, weeds, and fungi poses another threat because organisms have the potential to develop resistances to chemical sprays (e.g. pesticides, herbicides, fungicides) which, in turn, could result in widespread crop damage. The Iowa Hazard Mitigation Plan determined that though it would have a high impact, the probability of this hazard occurring is low. The composite score (Table 21) determined the probability of this hazard event to be between occasional and likely (up to 1 in 3 chances occurring).

Magnitude/Severity

As discussed earlier in the profile, agriculture, primarily corn, soybeans, and livestock, is a major contributor to Butler County's economy. A USDA 2017 Census of Agriculture study determined that in 2017, the agriculture industry contributed over $291 million in economic output and provided 327 jobs in Butler County.

The severity of a plant, crop, or animal disease depends largely on the disease itself. Effects from a widespread crop disease in Butler County or the state could result in unprecedented crop damage. The same is true for livestock. This damage to plants, crops, and livestock could have devastating effects on the local and state-wide economy.

Warning Time

It is unlikely that there would be any warning before a plant, crop, or animal disease develops. However, it is possible that a small, localized discovery of a new disease could prevent the spread of that disease if properly contained and managed.

Duration

The duration of a plant, crop, or animal disease is likely to last weeks, months, or even years. This is because of the time required to first discover the disease and then develop methods to treat the disease and prevent it from spreading.

Dam/Levee Failure

Definition and Description

A dam is defined as an artificial barrier with the ability to impound water, wastewater, or any liquid-borne material, for the purpose of storage or control of water. Dams are constructed for a variety of uses, including flood control, erosion control, water supply impoundment, hydroelectric power generation, and recreation. A dam failure is a break in, or imposed threat from, any water retention fixture which may endanger population downstream of the containment area.

A levee is a man-made low ridge or embankment built along the edge of a stream or river channel to prevent flooding of the adjacent land. Artificial levees are typically needed to control the flow of rivers meandering through broad, flat floodplains. Levees are embankments of dirt built wide enough so that they will not collapse or be eroded when saturated with moisture from rivers running at unusually high levels. Grass or some other dense vegetation is planted on the top of the levee's bank so erosion is kept to a minimum.

According to the Federal Emergency Management Agency, dams can fail for one or a combination of the following reason: Overtopping caused by floods that exceed the dam capacity; Deliberate acts of sabotage; Structural failure of materials used in dam construction; Movement and/or failure of the foundation supporting the dam; Settlement and cracking of concrete or embankment dams; Piping and internal erosion of soil in embankment dams; and inadequate maintenance and upkeep.

A levee failure is the loss of structural integrity of a wall, berm, or elevated soil by erosion, piping, saturation, or under seepage causing water to inundate normally dry areas.

Levees constructed of compacted clay with a high plasticity tend to crack during cycles of long dry spells. During heavy rainfalls that follow the dry spells, water fills the cracks and fissures. In addition to increasing the hydrostatic forces, the water is slowly absorbed by the clay. The effect of the absorbed water is an increase in the unit weight of the clay as well as a decrease in its shear strength. This results in a simultaneous increase of the slide (driving) forces and a decrease of the resisting (shear strength) forces. Furthermore, the cyclic shrink / swell behavior of the cracked clay zone results in a progressive reduction of the shear strength of the clay, perhaps approaching its residual strength. It also results in deepening of the cracked clay zone, which may eventually reach a depth of 9 ft. or more, especially for clays with a plasticity index greater than 40. The end result may be a sloughing failure following a heavy rainfall. It is believed that fast removal of the runoff water from the interconnected network of cracks could alleviate this surface instability problem.

Table 23: Dam Hazard Potential Classification

Classification	Description
High Hazard Potential	Dams are assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life.
Significant Hazard Potential	Dams assigned the significant hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environment damage, disruption of lifeline facilities, or impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.
Low Hazard Potential	Dams where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

Source: Army Corps of Engineers – National Inventory of Dams

The Iowa Department of Natural Resources tracks all dams in the state of Iowa with a height of at least 25 feet or a total storage of at least 50-acre feet of water.

The inventory excludes all dams less than six feet high regardless of storage capacity and dams less than 15-acre feet of storage regardless of height.

The Army Corps of Engineers classify dams into three categories based on the potential risk to people and property should a failure occur. Table 25 identifies these classifications.

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. Dam hazard potential classifications have nothing to do with the material condition of a dam, only the potential for death or destruction due to the size of the dam, the size of the impoundment, and the characteristics of the area downstream of the dam.

According to the National Inventory of Dams, there are eight dams in the planning area, and they are classified as low-hazard (see definition in Table 23). Table 26 is a chart of the dam's information. See Attachment 6 for a map of the location of the dams. According to information available from the Army Corps of Engineers National Levee Database, there are no levees within the planning area.

Table 24: Dam Inventory in Butler County								
Dam Name	**River/Creek**	**Closest City**	**Owner Name**	**Height (ft.)**	**NID Storage (acre-feet)**	**Type**	**Primary Purpose**	**Hazard Potential**
Greene Mill Dam	Shell Rock River	Greene	Butler County	11	385	Gravity	Hydroelectric	Low
Holm Dam	Beaver Creek	New Hartford	Carl Holm	20	50	Earth	Fire Protection, Stock, or Small Fish Pond	Low
Hunemiller Dam	Beaver Creek	New Hartford	Todd Hunemiller	19	70	Earth	Fire Protection, Stock, or Small Fish Pond	Low
Koop Dam	Beaver Creek	New Hartford	Meinard Koop	28	51	Earth	Fire Protection, Stock, or Small Fish Pond	Low
Shell Rock Mill Dam	Shell Rock River	Shell Rock	Shell Rock River Imp Com	7	229	Rockfill	Recreation	Low
Tim Seim Dam	Tributary of the Iowa River	Allison	Tim Seim	24.7	67	Earth	Grade Stabilization	Low
Wedeking Dam	Shell Rock River	Clarksville	Neal Wedeking	20	54	Earth	Fire Protection, Stock, or Small Fish Pond	Low
Winkowitsch Dam	Slims Creek	Aplington	Francis Winkowitsch	24	84	Earth	Fire Protection, Stock, or Small Fish Pond	Low
Source: Army Corps of Engineers – National Inventory of Dams, 2018								

Historical Occurrence

Butler County has no documented dam or levee failures in the planning area.

According to information available from the Army Corps of Engineers National Levee Database, there are no levees, registered with the agency, within the planning area. However, according to the County Engineer's office, the planning area has numerous rural, agricultural-related man-made levees, dikes, and berms to protect primary agricultural lands and communities.

The only incorporated communities that have a levee are New Hartford, Aplington and Clarksville. New Hartford's berms were built around the entire community to keep Beaver Creek floodwater out of the community; however, it also causes rainwater to remain in the community. New Hartford's levee was overtopped by high floodwaters from the Flood of 2008. The railroad levee (that separates the community and Sportsman's Park, a converted quarry) was built for the railroad company, but it also serves to stop floodwaters. However, this levee was also overtopped by floodwaters during the Flood of 2008. New Hartford has undertaken an elevation of their berms to increase protection to exceed a 100-year flood event. The levee in Aplington is near the nursing home. This levee or berm was built during the construction of the nursing home to create a barrier between the facility, railroad, and backwaters of Beaver Creek. This levee has not been affected by flooding.

Although both New Hartford and Clarksville's levees or berms have been overtopped by floodwaters, there have been no "true" failures as defined and described, registered levee failures in the planning area.

Probability

For dams, with the increased attention to sound design, quality construction, and continued maintenance and inspection, dam failure probability is low across the planning area. The probability of a dam failure due to a breach in the structural integrity of the system is also minimal. For the county overall, the hazard risk for all dams in Butler County is considered unlikely.

There are likely additional levees and berms in the planning area which are not listed in the Army Corps of Engineers database. The likelihood of these levees and berms failing may be higher since there is no official inspection, maintenance, or design on record. These levees and berms are likely built by landowners and farmers.

The probability of a catastrophic levee or dam failure is unlikely.

Magnitude/Severity

Dams are classified into three categories, based on the potential risk to people and property should a failure occur; High, Significant, and Low (see Table 23). As Table 24 indicates, the only dams in the planning area are defined as a low-hazard dams. The planning area's vulnerability and severity of a dam/levee failure is considered low.

All levees, dikes, berms, and floodwalls give a false sense of security. People feel that these structures will protect them and their property against any future flooding. While this is usually true, the hazard is only temporarily contained. Therefore, people, property, and utilities located on the other side of the levee are most at risk. The residents of Aplington's nursing home would be vulnerable if that levee failed; however, this levee is not constructed around the entire facility so it wouldn't keep all floodwaters off the property to begin with. If the New Hartford berm was to fail, the entire community and its structures would be vulnerable. However, without levee failure, the community of New Hartford is vulnerable to future overtopping of floodwaters and flash flooding inside the levee given the topography and history of the community. The result of floodwaters overtopping Clarksville's railroad levee would be the same as it was in 2008, when 25% of Clarksville's residences (157) and 11 businesses experienced significant flood damage.

Floodwaters breaching a levee are usually contained in the historic floodplain. Interestingly enough, levee failure in one area may prevent flooding in another area. A levee breach or overtopping occurring along one segment may drop the level of water along other segments of the stream. As mentioned previously under vulnerability, only a small portion of Aplington and Clarksville would be affected by a levee failure; whereas the entire community of New Hartford would be affected.

Water bursting through a narrow levee breach is moving much faster than the floodwaters in the main channel. The breaking out of this front of water and its fast flow can cause more destruction to structures behind the levee than floodwaters in the main channel would have caused. A failed levee continues to cause damage long after it breaks. The breach allows large volumes of water to enter formerly dry areas, forming temporary lakes. Such lakes do not go away immediately, because the lake is blocked from returning to the main channel by levee segments that were not destroyed. Consequently, the water level drops along the main river days before it drops behind breached levees. Often, pumps behind the levees are needed to remove floodwaters that breach the levees. This alleviates some of the impacts associated with levee failures. Sudden failure in an urban setting could cause a catastrophe. In an urban setting the severity and duration may be important for health reasons, but in an agricultural area for economic reasons. Impacts would be similar to those experienced during a river or flash flood.

Warning Time

A dam failure can be immediate, leaving little or no time to warn those downstream of the imminent hazard. The conditions that may bring about a dam failure,

i.e. heavy rains and river flooding, can be forecasted days in advance. However, there is no real way to predict at which point a dam will fail until just before the event occurs.

The amount of warning time depends on the type of levee failure. Local flood warning systems can help in determining the maximum water surface and the timing of a flood situation. Hours or days of warning may be available for high water that may overtop levees, but this does not provide complete security from a rupture in the levee itself. A sudden failure of a portion of the levee may send floodwaters gushing from this break within seconds. Normally, occupants of the floodplain can be warned about potential levee breaches or breaks when high water encroaches upon the levee.

Duration

The length of time that a dam or levee failure would impact the surrounding area depends largely on the amount of water the specific dam or levee held back. The duration of a failure's impact could feasibly range from hours to months.

Drought

Definition and Description

A drought is defined as a period of prolonged abnormally low precipitation producing severe dry conditions. There are four (4) types of drought conditions relevant to Iowa:

- *Meteorological drought*, which refers to precipitation deficiency;
- *Hydrological drought*, which refers to declining surface and groundwater supplies;
- *Agricultural drought*, which refers to soil moisture deficiencies; and
- *Socioeconomic drought*, which refers to when physical water shortages begin to affect people.

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

Droughts can be spotty or widespread and last from a few weeks to a period of years. A prolonged drought can have a serious impact on a community's water supply and economy. 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.

Historical Occurrence

National Centers for Environmental Information has recorded droughts since 1996. In that time, there have been three years with a recorded drought. These drought events were in August 2001, August 2003, as well as a registered drought July through October 2012. There was also a drought in 1995 affecting the whole state.

Table 25: Drought Events in Butler County (2000-2018)

Month/Year of Declaration	Deaths	Injuries	Property Damage	Crop Damage
August 2001	0	0	$0.00K	$11.350K
August 2003	0	0	$12.650M	0.00K
July – October 2012	0	0	$0.00K	$51.000M

Source: National Centers for Environmental Information January 2019
Note: Damage amount includes areas outside Butler County

Table 25 displays drought events in Butler County from 2000-2018, as recorded by the National Centers for Environmental Information.

Probability

From 2000-2018, there have been three years where droughts have occurred spanning a total of six months. Based on the historical occurrences, the probability of a drought in a given year is occasional.

Magnitude/Severity

While the entire planning area would be affected by a drought, those dependent (persons, animals, crops) on rain would be the most vulnerable. This means that agriculture, agribusinesses, and consumers (if the drought lasted long enough or impacted a large area) would be impacted. A drought limits the ability to produce goods and provide services. Because the jurisdictions and rural residents draw their drinking water from groundwater sources, a prolonged severe drought may impact all 14,867 persons if there were to be a dramatic drop in the stream flow coupled with the drop in the water table. In addition, while a drought may not cause structural damage to properties, a drought could cause damage to the city utilities, especially the water and well system. Fire suppression can also become a problem due to the dryness of the vegetation and possible lack of water.

A drought in Butler County would likely also be affecting most of Iowa if not the Midwest as a whole. Because of the dependence on precipitation and water, the agricultural areas would be most adversely impacted, but the entire state would likely feel at least some impact.

Drought in the U.S. seldom results directly in the loss of life. Deaths associated with drought are usually related to a heat wave. Drought more directly affects agricultural crops, livestock, natural vegetation, wildlife, and stream flows (fish and aquatic vegetation). Impacts are costly economically, environmentally, and socially. Due to Butler County's strong agriculture-based economy, including row crops and livestock, the impact of a drought could be substantial.

Warning Time

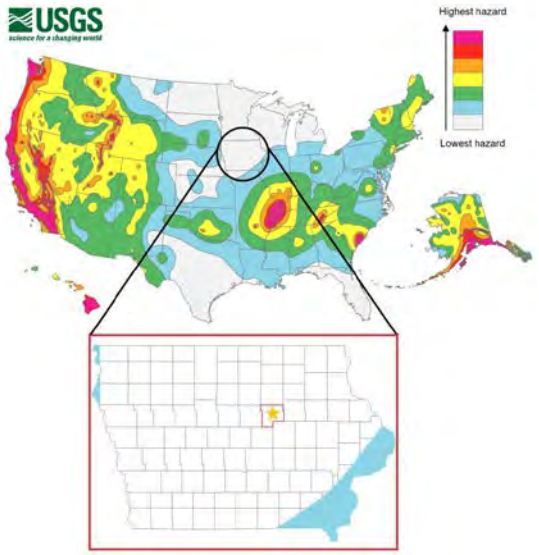
Drought warning is based on a complex interaction of many different variables, water uses, and consumer needs. Drought warning is directly related to the ability to predict the occurrence of atmospheric conditions that produce the physical aspects of drought, primarily precipitation and temperature. There are so many variables that can affect the outcome of climatic interactions, and it is difficult to predict a drought in advance. In fact, an area may already be in a drought before it is even recognized. While the warning of the drought may not come until the drought is already occurring, the secondary effects of a drought may be predicted and warned against weeks in advance. Warning time is not a concern with a drought as the onset of drought can take weeks, months, and sometimes even years to feel the effects.

Duration

The duration of a drought can affect the planning area for days and weeks, months, or longer.

Earthquake

Figure #3: Earthquake Hazard



Definition and Description

An earthquake is any shaking or vibration of the earth caused by the sudden release of energy that may impose a direct threat on life and property. Ground shaking from earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger flash floods and fires. Buildings with foundations resting on unconsolidated landfill and other unstable soil, and trailers and homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake.

Earthquakes are generally associated with plate tectonics or volcanic activity, but a third type includes artificial earthquakes. In other words, a large explosion can cause the earth to quake resulting in substantial damage.

According to the Iowa Geological Survey, Plum Creek River Fault Zone and Structural and Stratigraphic Framework of Eastern Iowa study volume Number 13, printed in 1985, there are several areas with faults in Iowa. The two that appear to be the closest and cold effect the community in this plan are the Plum River Fault Zone and the Fayette Structural Zone. The Fayette Structural Zone runs through the planning area starting north of the City of Waterloo, through the very southeast tip of Butler County and into Fayette County towards Oelwein, at a diagonal

from the southwest to the northeast. The Plum River Fault Zone can be found south of Cedar Rapids and running east towards Rockford, Illinois.

Historical Occurrence

Iowa as a whole has experienced the effects of only a few earthquakes in the past 175 years. The epicenters of 12 earthquakes have been located in the state. The first known 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. None of these events were instrumentally recorded. On January 26, 1925 an earthquake occurred with a reported epicenter near Waterloo, Iowa (adjacent to Butler County). The event registered a magnitude of II (2) on the Mercalli Scale. Modified Mercalli Intensity Scale is commonly used in the United States by semiologists seeking information on the severity of earthquake effects. Intensity ratings are expressed as Roman numerals between l, at the low end, and XII at the high end. According to FEMA, when a Mercalli magnitude II earthquake occurs only a few people might notice movement if they are at rest and/or on the upper floors of tall buildings. While no other earthquakes with epicenters in Iowa have been recorded, earthquakes with far away epicenters can have minor effects on the region. For example, in 2002 an earthquake with an epicenter in Alaska caused temporary “black water” to occur in local wells.

Probability

Historic seismicity in the planning area in relation to the regional structural geology from 1800 to present has been slight. Assuming historic trends remain unchanged, the likelihood of an earthquake causing any substantial damage to Butler County and its jurisdictions is unlikely. Figure 3 illustrates the probability of an earthquake occurring in Iowa and the planning area. The committee determined the probability of an earthquake in Iowa to be unlikely.

Magnitude/Severity

Even though most of Iowa is in Seismic Zone 0, the lowest risk zone in the country, if an earthquake were to occur, the entire planning area, 14,867 persons; 13,699 parcels; and over $1.2 billion in land, building, and dwelling values (See Table 49) would be vulnerable to damage. The structures most at risk for damage would be those structures built on poor soil, such as a floodplain. It is expected that if an earthquake were to occur, the damage would be limited to the shifting of buildings off of their foundations, cracked plaster on walls and ceilings, and perhaps some bowed walls. Underground utilities would be at greater risk of damage during the winter season if the ground were frozen to depths of four feet or greater.

The damages associated with an earthquake would likely be relatively low. However, when considering the highly unlikely worst-case scenario, a larger earthquake would have catastrophic effects on the planning area should it occur.

Warning Time

Earthquake prediction is an inexact science. Even in areas that are well monitored with instruments, such as California's San Andreas Fault Zone, scientists only very rarely predict earthquakes. There would be little warning time if an earthquake were to take place.

Duration

The duration of an earthquake would be minutes; however, if the earthquake was large enough, the planning area would experience aftershocks for hours or even days later.

Expansive Soils

Definition and Description

As defined in the State of Iowa Hazard Mitigation Plan, expansive soils are soils and soft rock that tend to swell or shrink excessively due to changes in moisture content. 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.

Historical Occurrence

Historical records of damage due to expansive soils are not recorded on a county-wide scale. Likewise, there are no historical records for the planning area for major expansive soil events.

Probability

Given the historical occurrences of severe winter storms and the annual spring thaw cycle in the planning area, the probability of minor expansive soil events that affect roads and sidewalks is high. Probability of a large expansive soil event, affecting buildings and major infrastructure, was determined to be unlikely for the planning area. Expansive soils occur slowly over time.

Magnitude/Severity

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

Expansive soils have little if any direct human impacts. Impacts commonly involve swelling clays beneath areas covered by buildings and slabs of concrete and asphalt, such as those used in construction of highways, walkways, and airport runways. Expansive soils can also contribute to or cause damage to roadways, bridges, pipelines, and other infrastructure. Local jurisdictions are burden with the responsibility to repair the damage to roadways.

Houses and one-story commercial buildings are more apt to be damaged by the expansion of swelling than are multi-story buildings, which usually are heavy enough to counter swelling pressures. The most obvious manifestations of damage to buildings are sticking doors, uneven floors, and cracked foundations, floors, walls, ceilings, and windows.

Warning Time

The speed of onset is very slow, and is consistent with other geological hazards that occur over time. However, there are few warning signs of expansive soils until after structural damage becomes apparent, and that structural damage may occur slowly or extremely quickly.

Duration

The duration of an expansive soil event can be over within hours, days, or weeks depending up on the severity and location of the occurrence. Recovery is also depending upon the impact area.

Extreme Heat

Definition and Description

Extreme Heat happens when summertime weather is substantially hotter and/or more humid than average for a given location at that time of the year. This includes temperatures (including heat index) in excess of 100 degrees Fahrenheit or at least three successive days of 90+ degrees Fahrenheit.

A heat advisory is issued when temperatures reach 105 degrees and a warning is issued at 115 degrees. When these extreme heat events occur, and even more so when they are prolonged, people, livestock, pets, wild animals and plant life are all affected to some degree.

In humans, extreme heat events make individuals much more susceptible to such heat related illnesses as heat cramps, heat exhaustion, heat rash, and heat stroke. Several factors affect the body's ability to cool itself during extremely hot weather. When the humidity is high, sweat will not evaporate as quickly, preventing the body from releasing heat quickly. Other conditions related to risk include age (the elderly and young children), obesity, fever, dehydration, heart disease, mental illness, poor circulation, sunburn, and prescription drug use and alcohol use.

Many similar physical reactions occur in animals during extreme heat events, but can go unnoticed by an unobservant caretaker. The susceptibility to heat varies on the type of animal and whether or not they have access to water to avoid dehydration.

Plant life can also suffer substantially during prolonged heat waves, especially if they occur in conjunction with moderately dry conditions or even drought. This is of substantial concern to the community as the area is surrounded by primarily agricultural uses. Any negative effects on the surrounding farm economy would undoubtedly have some impact on the communities' well-being.

Historical Occurrence

Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans succumb to the demands of summer heat. Among the large continental family of natural hazards, only the cold of winter – no lightning, hurricanes, tornadoes, or earthquakes – takes a greater toll. In the 40-year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the disastrous heat wave of 1980, more than 1,250 people died (Source: NOAA).

The State of Iowa was impacted by a significant heat wave that occurred in the summer of 1995. In July of that year, temperatures and dew point soared to new record levels across the state. The heat wave took a dramatic toll on the state; and three human fatalities were attributed to the event. A significant loss

occurred in livestock. Statewide figures indicate that there were property losses of approximately $3.8 million. Losses included 4,000 head of cattle, 370 hogs, 1,250,000 chickens, and 250,000 turkeys. On one farm alone, 250,000 laying hens perished on the second day of the heat. Another egg producer had 1.5 million laying hens on two farms. They reported a loss of at least 500,000 hens. Disposal became a serious problem as rendering plants were overwhelmed. In addition to problems caused to humans and livestock, there were numerous heat buckles reported on streets and highways around the state (Source: NCDC).

The National Centers for Environmental Information Database reports only one recorded extreme heat event in Butler County. Shown in Table 26, one extreme heat event occurred in July 2001. There were no injuries or deaths as a result, but there was an estimated $135,000 worth of property damage across several Iowa counties and considerable distress among livestock.

Table 26: Extreme Heat Events in Butler County (2000-2018)

Month / Year of Declaration	Deaths	Injuries	Property Damage	Crop Damage
July 2011	0	0	$135.00K	0.00K

Source: National Centers for Environmental Information, August 2019
Note: Damage amount includes areas outside Butler County

Probability

Based on historical extreme heat events that were recorded, the probability of another heat wave affecting the planning area is relatively low. However, temperatures and heat index can still have an effect without reaching the threshold to be recognized as an event by NOAA. Extreme heat can affect some members of communities more than others; some jurisdictions considered extreme heat to be likely despite few historical occurrences. However, based on NOAA criteria, the probability is unlikely.

Magnitude/Severity

Everyone (14,867 persons), in the planning area is susceptible to the impacts of a heat wave/extreme heat event. Those who have an elevated risk include the elderly, young children, the chronically disabled, persons on certain medications, persons who are over their recommended weight, persons with alcohol use disorders, and individuals who work outdoors or in confined spaces without air conditioning. Socioeconomic class also figures into one's vulnerability. Individuals or families who cannot afford air conditioning or do not have access to air conditioning are more susceptible to the effects of elevated temperatures. It is unknown how many of Butler County's population would fall into this category.

The extent of vulnerability can be greatly reduced by taking certain precautions. These include drinking plenty of water to stay hydrated, staying in air-conditioned areas, using sun block, reducing the amount of physical exertion normally expended, etc. The impacts of extreme heat events have historically been known to cause death; this possibility remains today. The severity of a heat wave event would likely be multiplied if it occurred in conjunction with other events such as a drought or a power failure. If the air were extremely dry, this would increase the rate of dehydration among plants and animals. If a power failure were to occur, air conditioners, fans, freezers, and refrigerators would cease to operate. As these are items used to alleviate the impacts of heat waves, their loss would contribute to the severity of the hazard.

Within the planning area, it is anticipated that the actual impacts of a heat or excessive heat event would be less severe than what could potentially happen. More likely, a heat wave would result in increased energy consumption as a result of more air conditioning units operating. Increased numbers of people at

public places such as malls, movie theaters, and swimming pools is also anticipated. Companies and organizations that rely on outdoor labor would likely see a reduction in productivity. Plant life would suffer severe stress possibly stunting growth, hurting crop yields, and thereby affecting the local economy.

Costs to the planning area directly may occur if roads, sidewalks, and foundations expanded enough to cause structural damage.

Warning Time

Heat waves are generally well forecasted; therefore, the onset speed is at least 24 hours. When temperatures or heat indices rise to dangerous levels, the National Weather Service will initiate alert procedures.

Duration

Extreme heat conditions have been known to last days and even weeks with little to no relief.

Flash Flood

Definition and Description

A flash flood is an event that occurs with little or no warning where water levels rise at an extremely fast rate. Flash flooding results from intense rainfall over a brief period, sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces. Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area. Even with information on soil saturation and predicted rainfalls, flash floods can still catch people by surprise. 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 move 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 blooding.

Historical Occurrence

According to data from the National Centers for Environmental Information (NCEI), there have been 25 reported flash floods in Butler County from 1950 to 2018. These floods caused an estimated $3.5 million in property damage and $1.3 million in crop damage (Table 27). It should be noted that there can be several flood events that go unrecorded for several reasons. Either they do not cause substantial damage to houses and structures or they may occur around the same time of a larger, more publicized event. Nevertheless, these events do result in flood costs that the county taxpayers and individual property owners must finance.

Probability

Considering the historical occurrences of flash flood events, the probability of future flooding events is highly likely in the next five years. Flooding is an annual problem throughout the planning area. While the planning area can experience some degree of flooding throughout the year, the threat of flash flooding is compounded in the late winter and early spring months, as melting snow can overflow streams, rivers, and tributaries. As part of three watersheds (Middle Cedar, Upper Iowa, and Middle Iowa), areas adjacent to the rivers and creeks, and its main tributaries are at significantly higher risk than those areas located away from these features. However, flash flooding can also happen in developed areas that do not have proper drainage systems to carry the melted snow and rainfall away from homes and businesses. The committee determined the probability of a flash flooding event in the planning area to be likely.

Magnitude/Severity

Flash flooding in the incorporated areas can vary substantially. Homes, businesses, and infrastructure that remain in or near the floodway and 100-year floodplain will be flooded again. In addition, low-lying areas in each jurisdiction can be vulnerable to flooding. All incorporated jurisdictions are vulnerable to flash flooding.

The jurisdictions of Allison, Aplington, Aredale, Bristow, Clarksville, Dumont, Greene, and Parkersburg have a higher risk of flash flooding due to their proximity to rivers and creeks. Based on data from 2018 (see Table 49) the incorporated areas have 1153 parcels of land within the 100- and 500-year floodplain. Total property values (2018) for these parcels are approximately $51,900,886. This figure includes building, dwelling, and land value. There is an estimated 3,425 parcels in the unincorporated areas of Butler County within the 100-year and 500-year floodplains. The land, building, and dwelling value of these areas is estimated to be 450,232,790.

Warning Time

Flash flood warnings are issued from the National Weather Service, IAWAS, and local officials, who then, in turn, distribute warnings to the affected areas using established

Table 27: Historical Occurrences of Flash Flooding in Butler County

LOCATION	DATE	PROPERTY DAMAGE	CROP DAMAGE
PARKERSBURG	6/22/1997	$ 200,000	$ 100,000
NEW HARTFORD	5/16/1999	$ 150,000	
PARKERSBURG	7/2/1999	$ 350,000	$ 200,000
CLARKSVILLE	7/20/1999	$ 500,000	$ 200,000
COUNTYWIDE	7/10/2000	$ 50,000	$ 75,000
COUNTYWIDE	6/19/2002	$ 75,000	$ 50,000
COUNTYWIDE	5/21/2004	$ 100,000	$ 50,000
SOUTHWEST PORTION	8/16/2004	$ 10,000	$ 10,000
BUTLER CENTER	4/25/2008	$ 10,000	$0
DUMONT	6/4/2008	$ 20,000	$0
ALLISON MUNI ARPT	6/5/2008	$ 25,000	$0
DUMONT	6/7/2008	$ 10,000	$0
DUMONT	6/8/2008	$ 10,000	$0
CLARKSVILLE	5/12/2010	$ 5,000	$0
NEW HARTFORD	5/27/2013	$ 250,000	$0
ELEANOR	6/24/2013	$ 500,000	$0
DUMONT	6/24/2013	$ 300,000	$0
AUSTINVILLE	6/24/2013	$ 500,000	$0
GREENE	6/22/2016	$ 20,000	$0
CLARKSVILLE	9/9/2016	$0	$0
GREENE	9/21/2016	$ 200,000	$ 0
GREENE	9/22/2016	$ 200,000	$0
GREENE	9/22/2016	$0	$0
CLARKSVILLE	9/23/2016	$0	$0
PACKARD	9/2/2018	$ 50,000	$ 0
TOTALS		**$ 3,535,000**	**$ 1,285,000**

Source: National Centers for Environmental Information 2019

procedures. People in the path of flash floods may have time to take appropriate actions to limit harm to themselves and their property. Floods may occur in the form of flash flooding which can occur in a matter of minutes.

Duration

The duration of flash flooding is dependent upon the severity of the flooding event. The duration of a flash flooding event would likely be less than one day. However, damage, and cleanup from an event may take several days to recover from.

Grass/Wildland Fire

Definition and Description

A grass or wildland fire is an uncontrolled fire that threatens life and property in a rural or a wooded area. Grass and wildland fires are more likely to occur during periods of drought when natural vegetation is drier and more combustible.

Historical Occurrence

The committee did not relate any information regarding specific fire events that have occurred in the rural areas of the county; however, they did acknowledge that fire departments, located in incorporated communities, have responded to numerous events in rural areas of the county. According to the communities, the National Centers for Environmental Information and 2013 Iowa Hazard Mitigation plan, there have been no events with significant impact that have been reported. According to data from the National Interagency Fire Center, there were 386 wildland fires affecting 8014 acres in Iowa in 2018.

Probability

Although much effort has been directed to fire prevention efforts in the community, based on historical occurrence, it is highly likely that numerous fires will occur in the community in the next year. Despite no major grass or wildland fires being recorded, it is still highly likely the county will face smaller grass and wildfires. Probability for grass or wild land fires increase during the dry seasons or when the area is experiencing a drought. Controlled burns, that have the potential of becoming out of control, pose a threat as well. Given the historical occurrence of grass or wildfires in Butler County and the state, it is likely that the county will face threat of additional fires in the future, from both grass and wildland fires. The committee determined this to be occasional on the basis of historical occurrences.

Magnitude/Severity

Grass and wildfires spread quickly; therefore, they require immediate attention from first responders. Those most vulnerable include residents in housing structures near these fields and grasses, typically lying just outside or on the out rim of the community.

Combustible building materials obviously are more vulnerable than structures constructed of steel or concrete. Structures without early detection devices are more likely to be completely destroyed before containment by response agencies. Structures in areas served by older, smaller, or otherwise inadequate water distribution infrastructure such as water mains and hydrants are also at significant risk. Problems vary from region to region, often as a result of climate, poverty,

education, and demographics. Iowa has about three fire-related deaths and 10.4 fire-related injuries per 1,000 fires. This is slightly above the national average of 2.3 deaths and 9.3 injuries, per 1,000 fires (U.S. Fire Administration).

The severity of impact would largely depend on how quickly the emergency agencies, fire, police, and ambulance, became aware that a fire had occurred. The worst-case scenario would occur if the responsive agencies had a delayed response or were not aware of the fire until it had spread to a larger area. A fire of this magnitude could cause drastic losses to crops and potentially rural homesteads. According to the USDA National Agricultural Statistics Service, Butler County has 359,246 acres in farmland, which totals to over 98% of the area of the county.

Warning Time

Grass and wildland fires provide little warning before their onset. In addition, fire spreads very rapidly especially in dry, hot, and windy conditions. However, all communities in Butler County have mutual aid agreements to assist if the emergency arises.

Duration

The area immediately impacted by a grass or wildland fire will be impacted during the duration of the fire. Based on previous experiences, grass and wildland fires can likely last hours, but could last for a couple days depending on the size of the fire.

Hazardous Material Incident

Definition and Description

A hazardous material (HAZMAT) 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. Fixed hazardous material incidents usually affect a localized area, and the use of planning and zoning can minimize the area of impact.

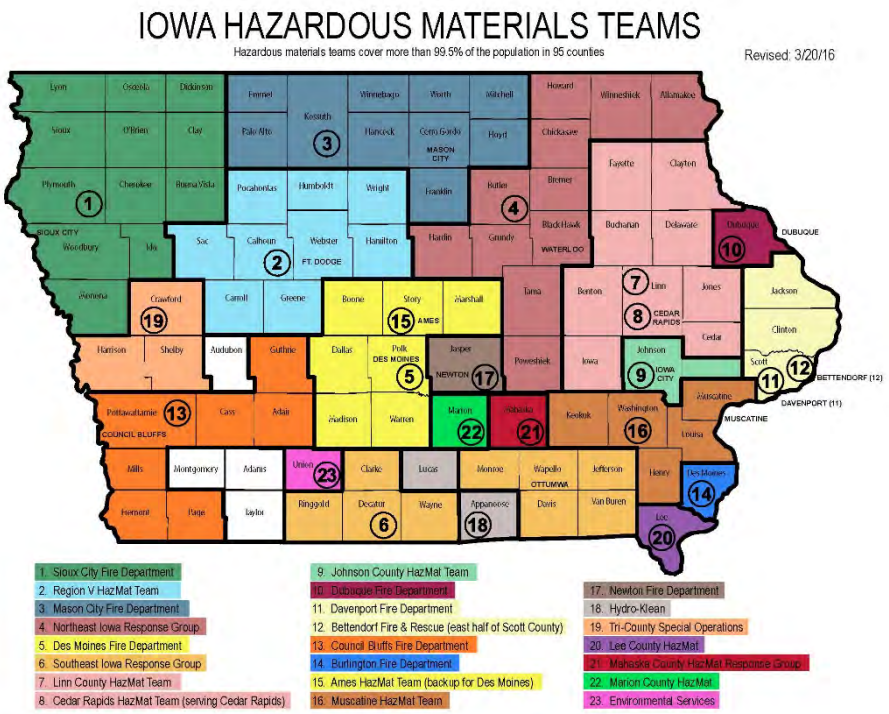
This hazard includes fixed hazardous materials, pipeline transportation, and transportation of hazardous materials. A HAZMAT or Radiological Transportation Incident is the accidental release of chemical substances or mixtures that presents danger to the public health or safety during transportation. 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.

As many as 500,000 products pose physical or health hazards and can be defined as "hazardous chemicals." Each year, over 1,000 new synthetic chemicals are introduced and transported across the county via semi-truck and train. Hazardous substances are categorized as toxic, corrosive, flammable, irritant, or explosive. Hazardous materials incidents generally affect a localized area, and the use of planning and zoning can minimize the area of impact.

A pipeline transportation 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. A 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.

Figure #4 shows the 23 Iowa Hazardous Materials Teams of Iowa, as of 2016.

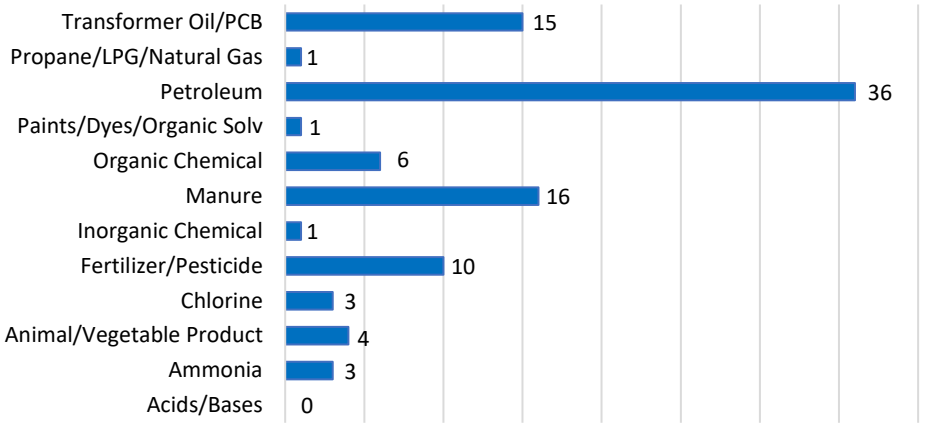
Figure 4: Hazardous Materials Teams



Historical Occurrences

According to data from the Iowa Department of Natural Resources Hazardous Material Release Database, there have been 96 hazardous material spills or incidents in Butler County from January 2000 to December 2018. The most frequent types of spills were petroleum (36), manure (16) and Transformer Oil/PCB (15). Figure 5 identifies how each spill occurred, based on data from the Iowa DNR Hazardous Material Release Database. The two most popular modes of spilling were from Handling and Storage (32) and Transportation (18).

Figure 5: Hazard Spills by Type in Butler County 01/01/00 to 12/31/2018
Source: Iowa DNR Hazarous Materials Release Database



Probability

Butler County averaged five hazardous spill incidents per year from 2000 through 2018.

Hazardous materials are transported by roadways and railways, both common sites for the release of hazardous materials. The Department of Transportation regulates routes and speed limits used by carriers and monitors the types of hazardous materials crossing state lines. Despite increasing safeguards, more potentially hazardous materials are being used in commercial, agriculture, and domestic uses and are being transported on neighboring roads.

The Environmental Protection Agency manages a Toxics Release Inventory (TRI) dataset for communities to learn about toxic chemicals that industrial facilities are using and releasing into the environment. TRI database tracks the management of certain toxic chemicals that may pose a threat to human health and the environment. According to the EPA's 2017 National Analysis dataset, there are 475 TRI facilities in Iowa. Butler County does have 4 TRI facilities, all located in the City of Shell Rock.

Due to the historical data and the planning area's diverse array of industrial and agricultural activities, the probability of a HAZMAT incident occurring is highly likely.

Magnitude/Severity

Most of the 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 the 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 five square miles or more. Many times, additional regions outside the immediately affected area are evacuated for precautionary reasons. More widespread effects occur when the product contaminates the municipal water supply or water system such as a river, lake, or aquifer.

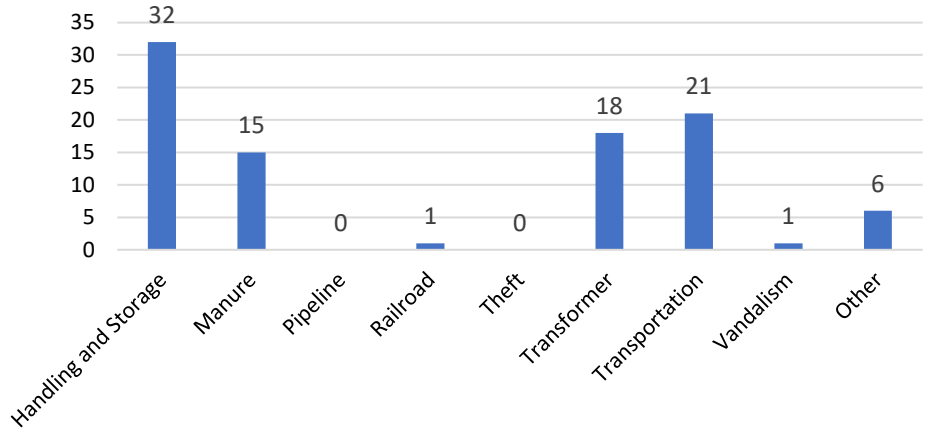
A hazardous materials accident can occur almost anywhere, so any area is considered vulnerable to an accident. People, pets, livestock, and vegetation within approximately 3-4 blocks of facilities producing, storing, or transporting hazardous substances are at higher risk. Populations downstream, downwind, 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.

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.

The close proximity and continued mutual aid agreement with the Northeast Iowa Response Group, located in northern Waterloo, will improve the likelihood of a quick response. The 23 Iowa Hazardous Materials Teams can be located in Figure 4.

Figure 6: Mode of Hazardous Spills
01/01/00 to 12/31/2018
Source: Iowa DNR Hazardous Materials Release Database



Warning Time

When managed properly under current regulations, hazardous materials pose little risk. However, when handled improperly or in the event of an accident, hazardous materials can pose a significant risk to the population. HAZMAT incidents usually occur very rapidly with little or no warning. Even if reported immediately, people in the area of the release have very little time. The AlertIowa system the County has recently implemented would alert affected populations.

Duration

The duration of a HAZMAT incident is dependent upon the amount, type of hazardous material, and location of the release. A small release of gasoline or agricultural chemical on a roadway could close the road for a few hours to clean up. However, a large spill in a populated area or near a body of water would impact that area and possible the area downstream for days or weeks – depending on several factors of the type of release.

Human Disease

Definition and Description

Disease is any impairment of normal physiological function affecting all or part of an organism, esp. a specific pathological change caused by infection, stress, etc., producing characteristic symptoms; illness or sickness in general (Collins). Also, it is any medical, health, or sanitation threat to humans, plants, wildlife, or domestic animals. For purposes of this discussion, the topic will be contained to only communicable diseases and will largely consider generalities.

According to the Iowa Department of Public Health website there are fourteen "Reportable Communicable Disease and Infectious Conditions" that are to be reported by telephone *immediately* should they be detected. These diseases and infectious conditions include Anthrax, Botulism, Cholera, Diphtheria, Haemophilus influenzae type b invasive disease, Measles, Meningococcal invasive disease, Plague, Poliomyelitis, Rabies (human), Severe Acute Respiratory Syndrome (SARS), Smallpox, Viral hemorrhagic fever, and Yellow fever. Other events that should be immediately reported by telephone include outbreaks of any kind, unusual syndromes, uncommon diseases, or agents of bioterrorism including (but not limited to) anthrax, mustard gas, sarin gas, ricin, tularemia, and smallpox.

Other diseases of recent concern include Monkey pox and West Nile Virus. Also, there are a variety of sexually transmitted diseases that are monitored and treated by the medical community. These diseases include chlamydia, syphilis, gonorrhea, and HIV/AIDS. In the most recent years, Ebola and the Zika Virus have both become concerning public health threats. Currently, the Iowa Department of Public Health's Center for Acute Disease Epidemiology monitors over 45 diseases as well as unusual occurrences of disease outbreaks.

Historical Occurrence

The historical occurrence of the outbreak of communicable diseases in the planning area is difficult to determine. There were no known historical occurrences of the outbreak of communicable diseases in Butler County. However, there are the typical seasonal episodes of influenza, also known as the flu, within the county. Influenza is spread or transmitted, when a person who has the flu coughs, sneezes, or speaks and sends flu virus into the air, and other people inhale the virus. The virus enters the nose, throat, or lungs of a person and begins to multiply, causing symptoms of influenza. Influenza may, less often, be spread when a person touches a surface that has flu viruses on it – a door handle, for instance – and then touches his or her nose or mouth.

According to the Center for Disease Control (CDC), West Nile Virus has been found in the state for several years, including confirmed cases in Butler County, along with the neighboring counties of Black Hawk and Buchanan. First reported in the United States in 1999, the virus is most often transmitted to humans via mosquitoes. The CDC recommends taking preventative measures, including insect repellant ant and protective clothing. Less than 1 percent of infected individuals develop serious, potentially fatal, neurologic illness from the virus.

Probability

It is highly likely human disease, as defined, will affect Butler County residents on an annual basis. However, there is a far less likely probability of a human disease event making a severe impact on a county-wide level. Many safeguards from the Department of Public Health and other agencies are in place that mitigate the occurrence of a human disease epidemic. Butler County Memorial Hospital is the main service provider for the area, but there are numerous hospitals and clinics in the surrounding areas that are available to provide care as well. Balancing the array of type of disease and impact, the probability has determined to be unlikely.

Magnitude/Severity

The severity of a human disease outbreak depends entirely on the disease itself. There are numerous safeguards that have been put into place to help deter an event before it begins, respond to an event once it does occur, and recover from an event as quickly as possible. Examples of such precautions include measures by service agencies (i.e. American Red Cross), government agencies (i.e. Butler County EMA, State Veterinarian, USDA, etc.), and private medical facilities (i.e. hospitals and clinics) to detect and respond to an event before it becomes an epidemic.

Warning Time

Warning time for a human disease event ranges from just a few days to no time at all. The onset of a regional or county-wide epidemic could provide minimal or no warning time due to the nature of human diseases in our globalized society. Because of air travel, a disease that spawns in another part of the world could easily reach Butler County in a matter of days.

Duration

The duration of a human disease incident in the planning area would be dependent on the type of disease, notification and containment of said disease, and treatment.

Infrastructure Failure

Definition and Description

This hazard includes communication failure, energy failure, structural failure, and structural fire.

Energy failure or disruption is the loss of power as a result of a natural, man-made, or technological disaster or failure. For example, electricity is lost because a power line was accidentally cut; there was a malfunction at the power plant, etc. Another scenario would include the loss of natural gas, a fuel used by most in the community for purposes of heating and occasionally cooking.

Communication failure is the widespread breakdown or disruption of normal communication capabilities. This could include major telephone outages, loss of local government radio facilities, and long-term interruption of electronic broadcast services, language barriers, and unfamiliarity with common emergency response terminology. AlertIowa, 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. Businesses and industry also rely heavily on various communication media. Mechanical failure, traffic accidents, power failure, line severance, and weather can affect communication systems and disrupt service. Disruptions and failure can range from localized and temporary to widespread and long-term. If switching stations are affected, outage could be more widespread. Communications failure can also be realized when individuals who speak different languages try to communicate, or when people use unfamiliar terminology. These types of communications failure are exacerbated during times of disaster.

Structural failure is the collapse (part or all) of any public or private structure including roads, bridges, towers, and buildings. 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 wash out 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 inspection 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 week, amount of traffic on the road or bridge, and the type and amounts of products stored in the structure.

For this profile, fire refers to an uncontrolled fire in a populated area that threatens life and property and is beyond normal day-to-day response capabilities. 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 firefighting equipment, training, and techniques, lessen the chance and impact of a major urban fire. Most structural fires occur in residential structures, but the occurrence of a fire in a commercial or industrial facility could affect more people and pose a greater threat to those near the fire or fighting the fire because the volume or type of the material involved.

According to the National Fire Protection Association (NFPA), eighty percent (80%) of fire deaths occur in the home (one-or two-family dwellings, apartments or manufactured housing). Most fires occur as a result of natural causes (i.e. lightning), accidents (i.e. gas leaks), carelessness (i.e. smoking in close proximity to combustibles), or criminal (i.e. arson) reasons. The State of Iowa reported 106 fire related deaths between 2002 and 2016. Iowa ranked 13th out of the 50 states in the number of deaths per million in 1999 (NFPA Research Report 2018).

Cooking is the leading cause of home fires in the U.S. It is also the leading cause of home fire injuries. Cooking fires often result from unattended cooking and human error, rather than mechanical failure of stoves or ovens. Careless smoking is the leading cause of fire deaths. Smoke alarms and smolder-resistant bedding and upholstered furniture are significant fire deterrents. Arson is both the second leading cause of residential fires and residential fire deaths. In commercial properties, arson is the major cause of deaths, injuries and dollar loss. Heating is the third leading cause of residential fires. Heating fires are a larger problem in single-family homes than in apartments. Unlike apartments, the heating systems in single-family homes are often not professionally maintained.

Historical Occurrence

On numerous occasions there has been localized loss of telephone service, generally due to some type of weather phenomenon (e.g. high winds, ice). There have also been short-term instances of power failure, most commonly occurring during thunderstorm and high wind events. In addition, winter ice events have caused power failures in communities in the past.

There are not any recorded instances of structural failure in Butler County, nor are there any known instances of energy shortages. However, there have been a number of structural fire events in the county, typically house fires.

Probability

Although much effort has been put into fire prevention in the community, based on historical occurrence, it is highly likely that numerous fires will occur in the county and its jurisdictions in the next year. An overall evaluation of potential infrastructure failures by the Planning Committee determined the probability to be occasional.

Magnitude/Severity

The magnitude and severity of an infrastructure failure ranges from trivial to catastrophic. Regarding events that are most likely to take place, such as a brief power outage caused by a thunderstorm, the effects would be relatively insignificant. However, if a major structural failure event occurred, such as a building or bridge collapse, the magnitude of such an event would be unprecedented considering the scope of the property damage, personal injury, and likely fatalities that would ensue.

Warning Time

The warning time for the conditions that bring about infrastructure failures, such as a severe thunderstorm which could potentially cause a power outage, is relatively long and could be longer than a day. However, the warning time for the event itself, rather than the conditions that could cause an event, is very little to nonexistent. For example, structural engineers might know that a structure is in critical condition for months. However, it's impossible to predict at what time that structure would ultimately fail.

Duration

Just as the magnitude of an infrastructure failure can vary from trivial to catastrophic, the duration of such an event can also vary tremendously depending on the type of event.

Landslides

Definition and Description

A landslide is a downward and outward movement of slope-forming materials reacting under the force of gravity. Landslides occur when masses of rock, earth, or debris move down a slope. Although gravity acting on an over-steepened slope is the primary reason for a landslide, there are other contributing factors:

- Erosion by rivers, glaciers, or ocean waves create over steepened slopes
- Rock and soil slopes are weakened through saturation by snowmelt or heavy rains
- Earthquakes of magnitude 4.0 and greater have been known to trigger landslides
- Volcanic eruptions produce loose ash deposits, heavy rain, and debris flows
- Excess weight from accumulation of rain or snow, stockpiling of rock or ore, from waste piles, or from man-made structures may stress weak slopes to failure and other structures

Slope material that becomes saturated with water may develop a debris flow or mud flow. The resulting slurry of rock and mud may pick up trees, houses, and cars, thus blocking bridges and tributaries causing flooding along its path (USGS). Landslides commonly occur in connection with other major natural disasters such as earthquakes, volcanoes, wildfires, and floods (USGS).

Historical Occurrence

According to the National Centers for Environmental Information, there have been no reported landslide events in Butler County between 1996 and 2018. It is possible that landslides have occurred before 1996 or occurred and were not reported; however, there is no data available to determine this finding.

Probability

Based on the absence of reported landslides, the probability of a landslide occurring in Butler County is unlikely. Steep sloping areas, especially along waterways as well as areas that have been cleared of shrubbery or timber may have an increased probability of landslide. The topography of the planning area, shown in Attachment 2: Topographic Map of the County, provides locations of sloping areas along waterways.

Magnitude/Severity

Maximum threat exists to those property owners located at the top or bottom of steep sloping areas without trees or shrubbery to absorb excessive amounts of moisture. For structures located at the top or bottom of a landslide, the severity of impact could be devastating. Earth giving way from underneath a structure could result in the structure giving way also. All ground that does give way will then topple onto the anything located below.

Landslides can damage structures and disrupted electricity, water service, communications, and transportation routes in some areas along river banks or in areas where impair development has occurred. Injuries and deaths are very unlikely except in the case of undetected slope failure warning signs in structures overlooking steep slopes.

Warning Time

Great amounts of precipitation and moisture over time will greatly increase the warning time of a landslide event; however, there is no official warning system in place, thus the warning time would be short.

Duration

Landslides are typically over within hours of occurring.

Radiological Incident

Definition and Description

A radiological incident is an occurrence resulting in a release of radiological material at a fixed facility or in transit. An incident resulting in a release of radiological material at a fixed facility includes, but is not limited to, power plants, hospitals, and laboratories. Although the term "nuclear accident" has no strict technical definition, it generally refers to events involving the release of significant levels of radiation. Most commercial nuclear facilities in the United States were developed in the mid-1960s and are designed to withstand an aircraft attack. Therefore, they should withstand most hazards even though they may not have been designed for those particular forces.

Radioactive materials are composed of atoms that are unstable. An unstable atom gives off its excess energy until it becomes stable. The energy emitted is radiation. Each of us is exposed to radiation daily from natural sources, including the sun and the earth. Small traces of radiation are present in food and water. Radiation also is released from man-made sources such as X-ray machines, television sets and microwave ovens. Radiation has a cumulative effect. The longer a person is exposed to radiation, the greater the effect. A high exposure to radiation can cause serious illness or death.

The United States Nuclear Regulatory Commission (NRC) identifies four types of emergency classifications for nuclear power plants. Table 28 provides a brief description of these types of emergencies.

Table 28: Nuclear Power Plant Emergency Classifications

Unusual Event	Events are in progress or have occurred which indicate potential degradation of the level of safety of the plant or indicate security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety system occurs.
Alert	Events are in the progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life-threatening risk to site personnel or damage to site equipment because of Hostile Action. Any releases are expected to be limited to small fraction of the EPA protection action guides (PAGs).
Site Area Emergency	Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that resulted in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.
General Emergency	Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile action that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

Source: US Nuclear Regulatory Commission – Emergency Classifications

Historical Occurrence

There is only one nuclear power plant in Iowa, the Duane Arnold Energy Center, which is located 9 miles northwest of Cedar Rapids. The plant began construction in 1970 and became operational in 1974. From 1990 to 2014, the Duane Arnold Energy Center has had 7 Unusual Events, 1 Alert, no Site Area Emergencies, and no General Emergencies. The plant is slated to close in 2020 due to the State's greater reliance on less expensive sources of energy including wind and natural gas.

Transportation of radiological materials is licensed and regulated by the federal government. Since 1990, there have been no rail transportation related to radiological incidents in Iowa.

Probability

Operators of facilities that use radioactive materials and transporters of radioactive waste are circumspect in the packaging, handling, and shipment of the radioactive waste; and are closely regulated by a variety of federal, state, and local organizations. Based on the minimal history of radiological incidents affecting the planning area and the planned closure in 2020 the probability of an incident is unlikely.

Magnitude/Severity

One nuclear facility is located in Iowa, and three are located near the Iowa boarder. The Duane Arnold Energy Center is located in Palo, Iowa northwest of Cedar Rapids. The out of state facilities include the Fort Calhoun Nuclear Power Plant located north of Omaha, NE. The Cooper Nuclear Power Plant south of Nebraska City, NE, and across the Mississippi River at the Quad Cities Nuclear Power Plant.

Time, distance, and shielding minimize radiation exposure to the body. Nuclear radiation above normal levels could be a health and safety consideration because of its ability to damage human cells biologically as well as its long-lasting effect on the environment. Depending on the level of exposure, radiation can cause loss of life, long- and short-term health effects, and property damage from contamination, and disruption of business because of potential evacuations. Therefore, multiple deaths could occur, thereby affecting the operation of essential facilities throughout the community, at least temporarily.

According to Ready.gov there are, "two 'emergency planning zones.' One zone covers an area within a 10-mile radius of the plant, where it is possible that people could be harmed by direct radiation exposures. The second zone covers a broader area, usually up to a 50-mile radius from the plant, where radioactive materials could contaminate water supplies, food crops, and livestock"

Butler County is just shy of the 50-mile radius from the nuclear power plant in Palo by approximately 3 miles at Butler County's nearest point (southeastern corner near New Hartford).

Radiation exposure can happen two different ways, including: exposure from a release of radioactive material from the plant, such as a plume of radioactive gases and particles. However, the greatest risk to people in the area around a plume is the body's radiation exposure from the cloud and particles deposited on the ground, inhalation of radioactive material, and ingestion of radioactive materials.

Although it is determined that the probability of an event was limited, it is recognized that if an event were to occur in, or in close proximity, to the community that the entire area would be vulnerable to the radiation.

Warning Time

Ionizing radiation cannot be seen, smelled, heard, or detected with human senses. Detection instruments are needed to indicate the existence of dangerous radiation. Distance from the incident would dictate the amount of time needed to avoid exposure from damaging radiation. Protective actions directed by state and county officials will depend upon weather conditions and developments at the power plant. In an actual emergency, the public can turn to their local Emergency Alert System Station, NOAA Weather Radios, or through AlertIowa notifications.

Duration

Depending upon the severity of a radiological event, the planning area would be impacted from a few hours to possibly a day or two. In a worst-case scenario event, the duration of the ensuring fallout could last decades.

River Flooding

Definition and Description

River flooding is a rising or overflowing of a tributary or body of water that covers adjacent land not usually covered by water when the volume of water in a stream exceeds the channel's capacity.

River floods are the most common and widespread of all-natural disasters except fire. Most communities in the U.S. can experience some kind of flooding after spring rains, heavy thunderstorms, winter storm thaws, waterway obstructions, or dam/levee failures. Often it is a combination of these elements that causes damaging floods. Floodwaters can be extremely dangerous. The force of six inches of swiftly moving water can knock people off their feet and two feet of water can float a car. Floods can be slow-, or fast-rising but generally develop over a period of days. Flooding is a natural and expected phenomenon that occurs annually, usually restricted to specific streams, rivers or watershed areas.

Historical Occurrence

According to the National Centers for Environmental Information, there have been 76 various recorded flood events involving the planning area from 1999-2018. Table 29 displays the date, general location, and impact of these floods. Since 1999, floods have caused nearly $32.8 million in property and crop damage in the area. Floods resulting in the most property damage occurred in 1999, 3008 and 2018. Floods causing the most in property and crop damage occurred in 2010 when the West fork of the Cedar River swelled out of its banks causing more than $20MM in damages. resulting One death was reported due to flooding in the area; no injuries were reported. The following is not intended to be complete historical records of every flood event to have occurred within the planning area, but rather a summary of the more severe events that have taken place.

Historical occurrences on record occurring prior to 1999 include the floods of 1993. Following a record winter snow accumulation and temperatures above normal, a major flooding event occurred in Iowa. Flood warnings were issued for a large part of the Iowa and Cedar River Basins. On March 30th and 31st, widespread 0.5 to 1-inch rains blanketed the state. Thunderstorms dropped a large area of 1- to 2-inch rainfall over the area that needed it the

Figure 7: Property Damage caused by River Flooding

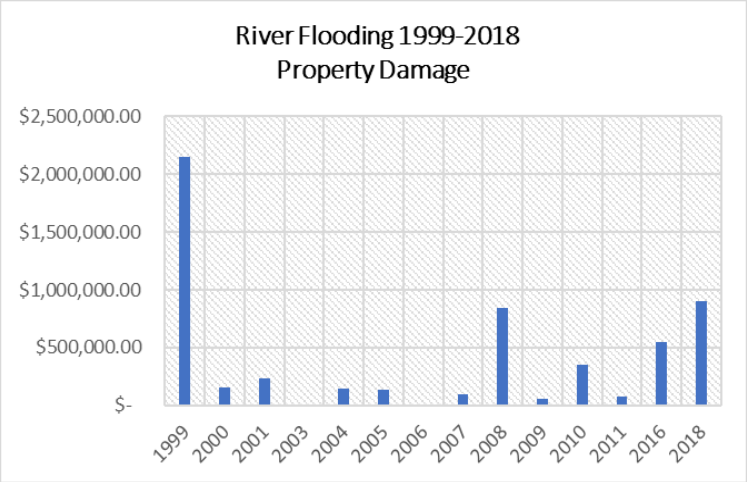
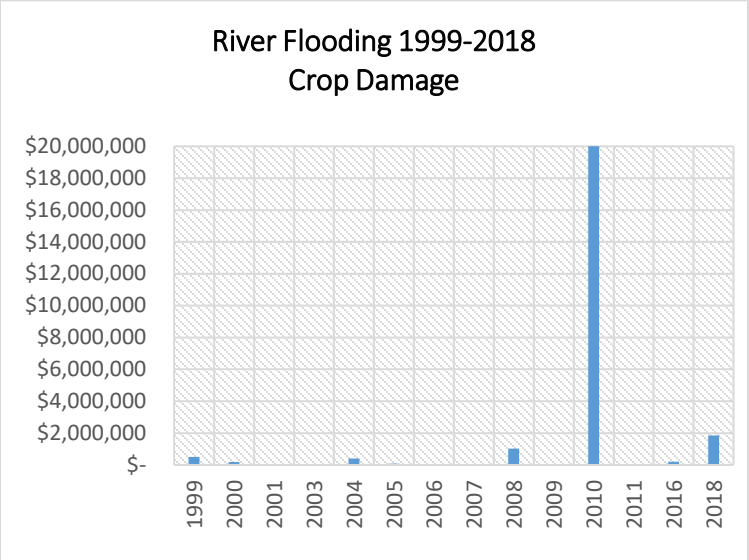


Figure 8: Crop Damage caused by River Flooding



least, in the upper portions of the Iowa and Cedar River Basins. By early May, eight counties had received the federal disaster declaration from the late March and early April flooding. These counties were Black Hawk, Butler, Linn, and Muscatine in the Cedar River basin; Tama and Benton in the Iowa River basin, Buchanan in the Wapsipinicon River basin, and Webster County in the Des Moines River basin. A record crest was observed on the Iowa River at Marshalltown, and initial indications were that Beaver Creek at New Hartford tied the record crest.

Several state highways were closed by high water as well as countless county roads. Many of the rivers in the state crested as much as 4-to-8 feet above flood stage. A few towns became isolated and were only accessible by boat. Water flooded the downtown areas of Algona, Chelsea, and New Hartford. Governor Branstad declared 11 Iowa counties disaster areas and several received federal disaster declaration. Property damages totaled over $50 million, with crop damage totaling over $10 million.

Table 29 shows the recorded flooding events in Butler County from January 1, 1999 through December 31, 2018. Since 1999, the County has experienced a total of $32,877,609 in property and crop damage.

Table 29: River Flooding Events in Butler County 1999-2018

Location	Date	Deaths/ Injuries	Property Damage	Crop Damage	Location	Date	Deaths/ Injuries	Property Damage	Crop Damage
Butler Co.	4/6/1999	0	$7000	$0	Packard	6/8/2008	0	$250,000	$50,0000
Butler Co.	4/22/1999	0	$10,000	$0	New Hartford	6/8/2008	0	$100,000	0
Butler Co.	5/16/1999	0	$50,0000	$50,000	Greene	6/8/2008	0	$50,000	0
Butler Co.	5/21/1999	0	$50,000	$10,000	Parkersburg	2/11/2009	0	$10,000	0
Parkersburg	6/1/1999	0	$5000	$0	Parkersburg	3/8/2009	0	$50,000	0
Butler Co.	6/9/1999	0	$50,000	$75,000	Parkersburg	4/28/2009	0	$1000	0
Butler Co.	6/23/1999	0	$5000	$5000	Parkersburg	5/28/2009	0	0	0
Butler Co.	7/2/1999	0	$500,000	$100,000	Parkersburg	3/11/2010	0	$50,000	0
Butler Co.	7/19/1999	0	$1,000,000	$250,000	Packard	3/12/2010	0	$50,000	0
Butler Co.	7/28/1999	0	$25,000	$10,000	Parkersburg	5/13/2010	0	$5000	0
Butler Co.	6/1/2000	0	$10,000	$5000	Austinville	6/12/2010	0	0	$2,000,0000
Butler Co.	6/9/2000	0	$25,000	$25,000	Kesley	6/23/2010	0	$250,000	0
Butler Co.	6/13/2000	0	$20,000	$50,000	Parkersburg	7/24/2010	0	$20,000	$50,000
Butler Co.	6/24/2000	0	$50,000	$75,000	Parkersburg	8/12/2010	0	$10,000	$5000
Butler Co.	7/10/2000	0	$50,000	$25,000	Parkersburg	2/18/2011	0	$25,000	0
Butler Co.	3/23/2001	0	$7500	0	Packard	3/23/2011	0	$50,000	0

Location	Date	Deaths/ Injuries	Property Damage	Crop Damage	Location	Date	Deaths/ Injuries	Property Damage	Crop Damage
Butler Co.	4/1/2001	0	$5000	0	Parkersburg	5/26/2013	1	$500,000	0
Butler Co.	4/7/2001	0	$150,000	0	Parkersburg	5/27/2013	0	$250,000	0
Butler Co.	5/1/2001	0	$75,000	0	Packard	6/14/2013	0	$250,000	0
Butler Co.	7/5/2003	0	$10,000	$25,000	Aplington	6/25/2013	0	$1,000,000	$4,250,000
Butler Co.	5/22/2004	0	$100,000	$298,039	Parkersburg	6/25/2013	0	$500,000	0
Butler Co.	9/15/2004	0	$50,000	$100,000	Willmar	6/15/2016	0	$50,000	0
Butler Co.	6/26/2005	0	$74,070	$50,000	Greene	9/22/2016	0	$50,000	0
Butler Co.	6/26/2005	0	$50,000	$10,000	Shell Rock	9/22/2016	0	0	0
Butler Co.	7/26/2005	0	$10,000	$30,000	Clarksville	9/22/2016	0	$50,000	0
Butler Co.	4/1/2006	0	$5000	0	Clarksville	9/22/2016	0	$50,000	0
New Hartford	3/13/2007	0	$50,000	0	Clarksville	9/22/2016	0	$300,000	0
New Hartford	4/26/2007	0	0	0	Shell Rock	9/23/2016	0	0	0
Parkersburg	8/21/2007	0	$50,000	$50,000	Shell Rock	9/23/2016	0	$50,000	$200,000
Kesley	3/2/2008	0	$10,000	0	Shell Rock	5/4/2018	0	$200,000	0
Parkersburg	3/14/2008	0	$50,000	0	Shell Rock	6/9/2018	0	$100,000	$500,000
Parkersburg	4/1/2008	0	$20,000	0	Shell Rock	6/9/2018	0	$100,000	$250,000
Parkersburg	4/25/2008	0	$30,000	0	Packard	6/10/2018	0	$100,000	$100,000
Parkersburg	4/25/2008	0	$10,000	0	Eleanor	9/2/2018	0	$50,000	$150,000
Packard	4/25/2008	0	$15,000	0	Dumont	9/5/2018	0	$100,000	$250,000
Parkersburg	5/30/2008	0	0	$15,000	Shell Rock	9/5/2018	0	$100,000	$250,000
Parkersburg	6/1/2008	0	$5000	$10,000	Dumont	9/20/2018	0	$50,000	$100,000
Parkersburg	6/6/2008	0	$300,000	$500,000	Shell Rock	9/20/2018	0	$10,0000	$250,000
								TOTAL PROPERTY DAMAGE	$8,254,570
								TOTAL CROP DAMAGE	$24,623,039
								TOTAL DAMAGE	$32,877,609
Source: National Centers for Environmental Information									

Probability

While the planning area can experience some degree of flooding throughout the year, the threat of river flooding is compounded in the late winter and early spring months, as melting snow can overflow streams, rivers, and tributaries. As part of three watersheds (Middle Cedar, Upper Iowa, and Middle Iowa), areas adjacent to the rivers and creeks, and its main tributaries are at significantly higher risk than those areas located away from these features. There are a number of cities and unincorporated areas along smaller creeks and streams that have the possibility of flooding. The probability of some part of the planning area flooding was determined as highly likely.

Considering the historical occurrence of flooding events and the number of creeks and streams located in planning area, the probability of future river flooding is highly likely. Flooding is an annual problem throughout some of the planning area. However, unlike other hazards, the probability and impact of flooding varies greatly among the member jurisdictions. The probability of flooding in each jurisdiction is discussed below.

Table 30: Probability of Flooding by Jurisdiction

JURISDICTION	PROBABILITY	COMMENTS
Butler County – Unincorporated	Highly Likely	As noted in Table 44, approximately 46.5% of the unincorporated area of Butler County is within a 100-year or 500-year floodplain.
Allison	Unlikely	No river travels through the city limits and there are only two parcels of land in a flood plain.
Aplington	Likely	Beaver Creek travels through the northern portion of the city. Less than 5% of the city's parcels are within the floodplain.
Aredale	Likely	Boylan Creek flows north/south through southwest quadrants of the city limits and drains a 55 square mile upstream watershed area.
Bristow	Unlikely	There are no rivers or streams which could cause flooding; therefore, the probability of river flooding occurring in the future is unlikely.
Clarksville	Occasional	The Shell Rock River flows west of the city limits, with a portion of the river cutting through the southwest quadrant of the city limits.
Dumont	Highly Likely	Two rivers flow through the city limits: the West Fork Cedar River in the northeast and Hartgrave Creek in the southwest quadrant portion of the town. Nearly 30% of the City is within the 100-year flood plain. Hartgrave Creek drains a 179 square mile watershed upstream. The West Fork Cedar River drains 58 square miles upstream.

Table 30: Probability of Flooding by Jurisdiction		
Greene	Likely	The Shell Rock River bisects the community, placing nearly 45% of the city in a floodplain.
New Hartford,	Highly Likely	More than 95% of the city is located in the 100-year floodplain. However, the city is in the process of completing a berm around the northern edge of the city which has reduced the frequency of flooding.
Dike-New Hartford Community School District	Likely	The Dike-New Hartford school district also determined the probability of river flooding to be likely.
Parkersburg	High Likely	The City experiences river flooding both from Beaver Creek, in the northwest quadrant of the city, and Phelps Creek, a tributary to Beaver Creek in the east part of the city. River flooding has been known to force the temporary closure of Highway 57, which crosses both creeks.
Aplington-Parkersburg Community School District	Unlikely	The Aplington-Parkersburg school district determined their probability to experience river flooding to be unlikely. Both school buildings are in the center of the city and far from the rivers and out of the floodplains.
Shell Rock	Highly Likely	The location of the Shell Rock River, bisecting the community, often creates river flooding scenarios. More than 40% of the city's land area is within the 100-year floodplain.
Waverly-Shell Rock Community Schools	Highly Likely	The Shell Rock Elementary school building is located just outside of both the 100 year and 500-year floodplains. However, some of the school property adjacent to the building is within the floodplain. The school district determined the probability of river flooding impacting the school to be highly likely.

Magnitude/Severity

While there are substantial areas of floodplain (See Attachment 3a: Floodplain Map of the County and Attachment 3b--4K, flood scenario maps of each city) in the planning area, as a percentage of the entire county, these areas are considered to be limited. As mentioned previously, areas along rivers, creeks, and other tributaries are vulnerable to flooding, as well as developed jurisdictions that do not have proper drainage systems. Fortunately, the unincorporated area is mainly agricultural land with sporadic residential land use.

Potential flooding impacts range from very low to catastrophic depending on the type and location of flooding. Flooding impacts include 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. Risks of fire, health and transportation accidents, and contamination of water supplies are increased during flooding situations

Table 31 displays the value of land, buildings, and dwellings in the 1.0% (100-year) floodplain for the combined incorporated areas and the unincorporated areas of the county. The parcel information is current as of 09/12/18. The FEMA Digital FIRM data for Butler County was completed on 09/16/11. Individual floodplain land, building, and dwelling values for each jurisdiction can be found in their respective appendices.

Table 31: Floodplain Values of Butler County

	Number of Parcels	Land Value	Building Value	Dwelling Value	Total Value
Incorporated 1.0% Annual Chance Floodplain Values	1079	$11,357,246	$8,536,951	$27,900,599	$47,794,796
Unincorporated 1.0% Annual Chance Floodplain Values	3418	$339,677,250	$30,530,750	$79,128,290	$449,336,290
Total Floodplain Value	4497	$351,034,496	$39,067,701	$107,028,889	$146,096,590

Figures calculated using data from Butler County GIS Department & INRCOG; Parcel data current as of 2015.

Warning Time

People in the path of river floods may have time to take appropriate actions to limit harm to themselves and their property. River flooding can be forecasted to allow for several hours, perhaps even days notification.

Duration

The duration of a river flooding event varies based on the severity and location of the flooding event. Duration can range from a few hours to several days or longer.

Severe Winter Storm

Definition and Description

Severe winter storms are weather conditions that affect day-to-day activities. A brief description of various types of severe winter storms is described in Table 32. Winter storms are common during the winter months of October through April. The various types of extreme winter weather cause considerable damage. Heavy snow can cause immobilized transportation systems, downed trees and power lines, collapsed buildings, and loss of livestock and wildlife. 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. Frigid temperatures and wind chills are dangerous to people, particularly the elderly and the very 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.

Table 32: Severe Winter Storm Terms

Storm Event Type	Description
Blizzard	A winter storm that lasts at least 3 hours which produces sustained winds or frequent gusts of 35 mph or greater and falling and/or blowing snow reducing visibility to less than ¼ mile.
Extreme Cold/Wind Chill	A period of low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined advisory (typically value is -18®F or colder).
Heavy Snow	Snow accumulation meeting or exceeding the locally/regionally defined 12- and/or 24-hour warning criteria.
Ice Storm	Ice accretion meeting or exceeding locally/regionally defined warning criteria (typical value is ¼ or ½ inch or more).
Winter Storm	A weather event which contains more than one significant hazard (i.e. heavy snow and blowing snow; snow and ice; snow and sleet) and meets or exceeds the locally/regionally defined 12- and/or 24-hour warning criteria.

Source: National Weather Service Instruction 10-1605; courtesy of the National Centers for Environmental Information

Historical Occurrence

The planning area has experienced winter storms of some type every winter on record. According to the National Centers for Environmental Information, from 1996 through 2018 there were 77 winter storm events, including: Blizzard (18), Extreme Cold/Wind Chill (6), Heavy Snow (18), Ice Storm (12), and Winter Storm (23). According to this data, there have been no fatalities or injuries resulting in from these hazard events. However, it is estimated that these winter storm events have caused nearly $1.5 million in property and crop damage.

December of 2000 remains one of the snowiest months on record for the accumulation of snowfall. 33.3 inches of snow fell during this month, easily surpassing the previous one-month record for snowfall in the community. The previous record for snowfall in one month was 24.3 inches and occurred in January 1962. What was somewhat unusual about the December 2000 event was that there were no extreme winter storm events, but rather a number of less severe snowfall events combined with ongoing below freezing temperatures and strong winds. This resulted in an increasingly difficult job for snow removal crews, as there was less and less area to push snow with each event.

January of 2019 the Polar Vortex settled across Iowa, with record-breaking temperatures dropping to below 24 degrees and minus 55 degrees with windchills. The deep freeze resulted in many school, business and community event closings for multiple days.

Table 33 identifies the dates and types of severe winter weather from 1996 to 2018, along with the property and crop damage that occurred.

Table 33: History of Severe Winter Storms in Butler County (1996-2018)

Date	Type	Deaths	Injuries	Property Damage	Crop Damage	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
1/18/1996	Cold/Wind Chill	0	0	$0	$0	**12/18/2008**	Winter Storm	0	0	$5,000	$0
1/18/1996	Blizzard	1	0	$0	$0	**12/20/2008**	Blizzard	0	0	$0	$0
1/26/1996	Heavy Snow	0	0	$0	$0	**12/27/2008**	Ice Storm	0	0	$5,000	$0
1/26/1996	Blizzard	0	0	$0	$0	**1/13/2009**	Heavy Snow	0	0	$0	$0
1/28/1996	Blizzard	0	0	$0	$0	**4/5/2009**	Winter Storm	0	0	$10,000	$0
2/1/1996	Cold/Wind Chill	0	0	$0	$0	**12/8/2009**	Heavy Snow	0	0	$10,000	$0
3/24/1996	Blizzard	0	0	$0	$0	**12/9/2009**	Blizzard	0	0	$50,000	$0
5/1/1996	Cold/Wind Chill	0	0	$0	$0	**1/6/2010**	Winter Storm	0	0	$25,000	$0
11/14/1996	Ice Storm	0	0	$0	$0	**1/25/2010**	Blizzard	0	0	$75,000	$0
1/9/1997	Cold/Wind Chill	0	0	$0	$0	**2/8/2010**	Winter Storm	0	0	$10,000	$0
1/15/1997	Cold/Wind Chill	0	0	$0	$0	**12/11/2010**	Blizzard	0	0	$75,000	$0
2/3/1997	Heavy Snow	0	0	$0	$0	**12/23/2010**	Heavy Snow	0	0	$0	$0
11/14/1997	Heavy Snow	0	0	$4,545	$0	**2/1/2011**	Blizzard	0	0	$25,000	$0
12/21/1997	Ice Storm	0	0	$2,050	$0	**1/20/2012**	Heavy Snow	0	0	$0	$0
1/4/1998	Ice Storm	0	0	$20,400	$0	**12/19/2012**	Winter Storm	0	0	$25,000	$0
3/7/1998	Heavy Snow	0	0	$50,000	$0	**12/20/2012**	Blizzard	0	0	$100,000	$0
3/17/1998	Ice Storm	0	0	$5,880	$0	**1/27/2013**	Ice Storm	0	0	$50,000	$0
1/1/1999	Winter Storm	0	0	$10,000	$0	**1/30/2013**	Winter Storm	0	0	$25,000	$0
2/11/1999	Ice Storm	0	0	$5,000	$0	**2/21/2013**	Heavy Snow	0	0	$0	$0
9/21/1999	Cold/Wind Chill	0	0	$0	$294,118	**2/26/2013**	Heavy Snow	0	0	$5,000	$0
1/19/2000	Winter Storm	0	0	$1,000	$0	**5/2/2013**	Heavy Snow	0	0	$75,000	$0

Table 33: History of Severe Winter Storms in Butler County (1996-2018)											
Date	Type	Deaths	Injuries	Property Damage	Crop Damage	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
2/17/2000	Winter Storm	0	0	$10,000	$0	**1/5/2014**	Extr Cold/Wind Chill	0	0	$0	$0
12/10/2000	Winter Storm	0	0	$24,900	$0	**1/26/2014**	Blizzard	0	0	$10,000	$0
12/18/2000	Blizzard	0	0	$25,000	$0	**1/27/2014**	Extr Cold/Wind Chill	0	0	$0	$0
12/21/2000	Blizzard	0	0	$20,000	$0	**2/20/2014**	Blizzard	0	0	$25,000	$0
12/28/2000	Heavy Snow	0	0	$5,000	$0	**1/6/2015**	Extr Cold/Wind Chill	0	0	$0	$0
2/8/2001	Ice Storm	0	0	$75,000	$0	**1/8/2015**	Blizzard	0	0	$0	$0
2/8/2001	Winter Storm	0	0	$50,000	$0	**2/1/2015**	Winter Storm	0	0	$50,000	$0
3/1/2002	Heavy Snow	0	0	$5,000	$0	**2/25/2015**	Heavy Snow	0	0	$0	$0
3/9/2002	Blizzard	0	0	$5,000	$0	**11/20/2015**	Winter Storm	0	0	$0	$0
1/28/2003	Winter Storm	0	0	$0	$0	**12/28/2015**	Winter Storm	0	0	$0	$0
3/4/2003	Heavy Snow	0	0	$1,000	$0	**2/2/2016**	Winter Storm	0	0	$0	$0
4/4/2003	Ice Storm	0	0	$5,000	$0	**2/7/2016**	Blizzard	0	0	$0	$0
4/6/2003	Winter Storm	0	0	$5,000	$0	**12/18/2016**	Extr Cold/Wind Chill	0	0	$0	$0
1/1/2005	Ice Storm	0	0	$5,000	$0	**1/15/2017**	Ice Storm	0	0	$0	$0
1/4/2005	Heavy Snow	0	0	$10,000	$0	**1/24/2017**	Winter Storm	0	0	$0	$0
1/22/2005	Blizzard	0	0	$5,000	$0	**3/12/2017**	Winter Storm	0	0	$0	$0
12/14/2005	Heavy Snow	0	0	$5,000	$0	**12/30/2017**	Extr Cold/Wind Chill	0	0	$0	$0
1/20/2007	Heavy Snow	0	0	$0	$0	**1/1/2018**	Extr Cold/Wind Chill	0	0	$0	$0
2/24/2007	Winter Storm	0	0	$250,000	$0	**2/8/2018**	Winter Storm	0	0	$0	$0
12/1/2007	Ice Storm	0	0	$10,000	$0	**3/23/2018**	Winter Storm	0	0	$0	$0
2/10/2008	Cold/Wind Chill	0	0	$0	$0	**4/18/2018**	Winter Storm	0	0	$0	$0
12/8/2008	Winter Storm	0	0	$10,000	$0						
Source: National Centers for Environmental Information 2019											

Probability

The storm events recorded since 1996 have resulted in $12.8 MM in property and crop damage. The frequency and impact of severe winter storm events varies from year to year. Butler County did not record any events in 2004 and 2006. However, based on historical occurrences, it is highly likely a severe winter storm will affect Butler County on an annual basis, likely multiple times in a year. As can be seen in Table 34, in the past 22 years Butler County has averaged nearly four winter storm events per year.

Table 34: Annual Average of Severe Winter Storms in Butler County (1996-2018)

Type of Winter Storm	Total Number of Events	Average Number of Events Per Year
Blizzard	18	.8
Extreme Cold/Wind Chill	14	.6
Heavy Snow	18	8
Ice Storm	12	.5
Winter Storm	23	1.0
Total	**84**	**3.7**

Source: National Centers for Environmental Information 2019

Magnitude/Severity

Those most vulnerable to the effects of a winter storm are those who cannot fend for themselves in times of severe weather. The planning area's elderly, youth, and disabled populations who rely on outside entities for delivery of food or medicine are highly vulnerable to winter storms. People, such as farmers, who work outdoors, are also at greater risk of being affected by wind chill, extreme low temperature, and wet winter conditions. Unfortunately, based on the large area that these storms can cover and the cascading effects that can accompany them, the entire population and planning area are vulnerable to some type of impact from a winter storm. The committee recognized this as fact and scored it accordingly.

Although the developments in technology have been very beneficial in reducing the long-term negative effects of winter storms, certain dangers still exist. The maximum threat of winter conditions would be realized if it was accompanied by power outages and elimination of travel due to hampered road conditions. This could result in the inability for some of the population to maintain temperatures necessary for the body. In addition, long winter events that eliminate communication could result in the reduction of adequate medical response time.

Warning Time

The National Weather Service has developed effective weather advisories, which are promptly and widely distributed. Radio, TV, and Weather Alert Radios provide the most immediate means broadcast alerts. Accurate information is made available to public officials and the public up to days in advance. Weather prediction capabilities have made significant improvements in the past few years. There are several notifications made by the National Weather Service. These include winter storm watch, winter storm warning, blizzard warning, winter weather advisory, and a frost/freeze advisory. Despite the advancements in technology, there are occasions where the actual winter storm event was much more severe than what was actually forecasted to occur.

Duration

Depending on the type, duration, and the size of the event the entire population could feel the effect of a winter storm. Generally, due to existing snow removal services and other community services the effects of winter storms on incorporated communities in Butler County are short term; however, the more rural,

unincorporated areas tend to be impacted longer due to the rural nature of the county. Although more of an inconvenience, and somewhat more dangerous, travel and communication are usually an option in less than 24 hours of any given event.

Sinkholes

Definition and Description

A sinkhole is the loss of surface elevation due to the removal of subsurface support. Sinkholes range from broad, regional lowering of the land surface to abrupt localized collapse. The primary causes of most subsidence are human activities such as underground mining of coal, groundwater/petroleum withdraw, or drainage of organic soils. Sinkholes can aggravate flooding potential, collapse of an abandoned mine may destroy buildings, roads and utilities.

Areas having karst terrain, which is characterized by easily dissolved bedrock, such as limestone and dolomite, are also likely to have sinkholes. Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground.

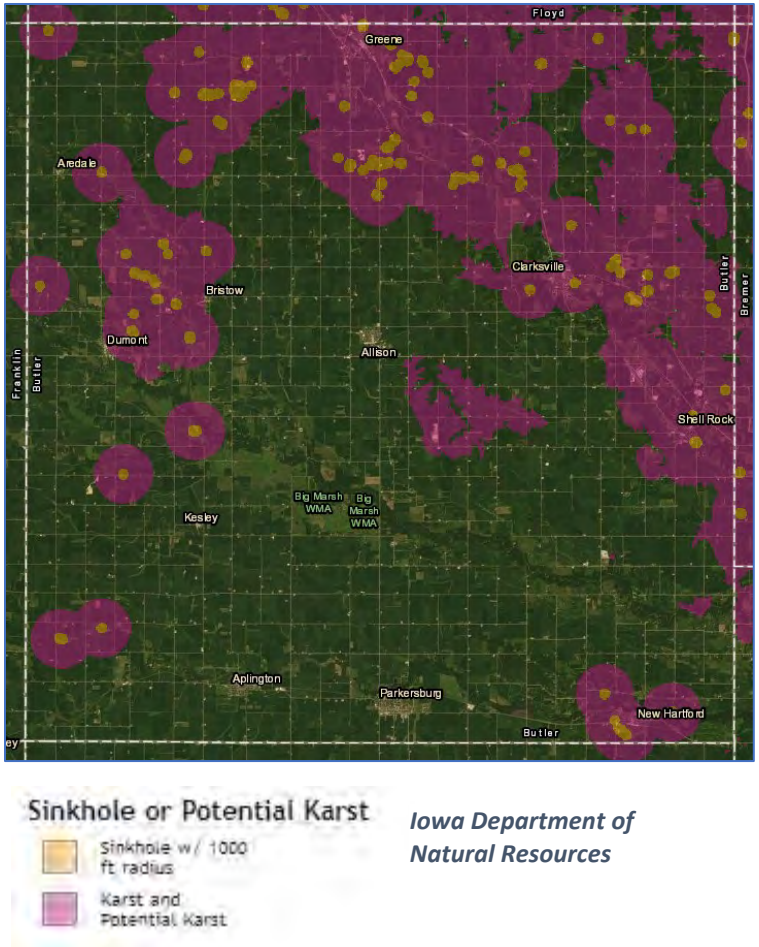
Sinkholes are dramatic because the land usually stays intact for a while until the underground spaces just get too big. If there is not enough support for the land above the spaces then a sudden collapse of the land surface can occur.

New sinkholes have been correlated to land-use practices, especially from ground-water pumping and from construction and development practices. Sinkholes can also form when natural water-drainage patterns are changed and new water-diversion systems are developed. Some sinkholes form when the land surface is changed, such as when industrial and runoff-storage ponds are created. The substantial weight of the new material can trigger an underground collapse of supporting material, thus causing a sinkhole.

Historical Occurrence

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.

Figure 9: Sinkhole and Karst Terrain Map



As sinkholes sometimes allow surface runoff to directly enter bedrock aquifers, their presence has implications for groundwater quality.

Probability

According to the Iowa Department of Natural Resources statewide map of karst terrain, Butler County is found to have several karst terrain and sinkhole areas (Figure #9). While sinkholes are present throughout Butler County, and probability varies by jurisdiction, the committee determined that the probability of a sinkhole event to be unlikely.

Magnitude/Severity

The planning area's vulnerability to property damage, injury and loss of life as a result of a sink hole is minimal. Sinkhole damage is usually contained to a structure. The onset of sink holes is typically slow and can resemble the normal settling of a structure. However, failure to identify a sinkhole could increase the homeowner's vulnerability. Building near and/or around soils that have the potential to attribute to sinkholes is highly discouraged to limit future vulnerability.

Maximum threat exists to those property owners located at the top or bottom of steep sloping areas without trees or shrubbery to absorb excessive amounts of moisture. For structures located at the top or bottom of a landslide the severity of impact could be devastating. Earth giving way from underneath a structure could result in the structure giving away also. All ground that does give way will then topple onto anything located below.

Unknown sinkholes on property located near and around a structure could have a significant impact on the structures in the area if the sink hole were to collapse. Personal property located near the sink hole would also be consumed in the event of a collapse.

Warning Time

Sinkholes growing in mass is a slow yet gradual process. Land use practices in the area, soil type in addition to a number of other factors will impact the speed of onset. By identifying these areas city agencies and property owners will be able to implement the necessary precautions to slow and potentially eliminate the development of a sinkhole. Catastrophic sinkholes can provide little visible warning, setting in in as little as a few minutes.

Duration

A sinkhole can affect the location in which it occurred for weeks.

Terrorism

Definition and Description

Terrorism is the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives (Federal Bureau of Investigation). The Federal Bureau of Investigation (FBI) categorizes terrorism in the

United States as one of two types--domestic terrorism or international terrorism. Domestic terrorism involves groups or individuals whose terrorist activities are directed at elements of our government or population without foreign direction.

International terrorism involves groups or individuals whose terrorist activities are foreign-based and/or directed by countries or groups outside the United States or whose activities transcend national boundaries. A terrorist attack can take several forms, depending on the technological means available to the terrorist, the nature of the political issue motivating the attack, and the points of weakness of the terrorist's target. Bombings have been the most frequently used terrorist method in the United States. Other possibilities include an attack at transportation facilities, an attack against utilities or other public services or an incident involving chemical or biological agents.

Historical Occurrence

To date, there have been no known or reported instances of any terrorist attacks in the planning area.

Probability

The probability of terrorism occurring in the planning area is unlikely.

Magnitude/Severity

Potential vulnerabilities for terrorist attacks may include: danger to the water supply, bio-terrorism, and an attack on a nearby nuclear facility. The severity of impact would largely depend on how quickly the planning area became aware that an event had occurred. The worst-case scenario would occur if the public had no knowledge until all or most of the population had been contaminated or poisoned before a proper response could be made. This could result in widespread sickness and potentially death.

Warning Time

Depending on the type of event to occur the speed of onset could vary from immediate (no time) to days, weeks, even years (poisoned water, poisoned food, financial impacts).

Duration

The duration of an incident on the planning area would be dependent upon the type and size of the event. A small, remote/isolated incident would have a smaller duration than a large, urban-centered incident which could last for days or even weeks.

Thunderstorms/Lightning/Hail

Definition and Description

Thunderstorms are common in Iowa and can occur singly, in clusters, or in lines. Thunderstorms can result in heavy rains, high winds (reaching or exceeding 58 mph), tornados, or hail. Thunderstorms are created from a combination of moisture, rapidly rising warm air, and the lifting mechanism such as that caused when warm and cold air masses collide. These hazards were considered together.

Associated hazards related to thunderstorms are discussed further as individual hazards (tornado/windstorm and various kinds of flooding). Most thunderstorms produce thunder, lightning, and rain. Severe storms can also produce tornadoes, straight-line winds with microburst above 58 mph, hailstorms, and flooding. The National Weather Service (NWS) considers a thunderstorm severe if it produces hail at least 1-inch in diameter, wind 58 mph or higher, or tornadoes.

A *Thunderstorm Wind* event is defined by the National Weather Service as: "Winds, arising from convection (occurring within 30 minutes of lighting being observed or detected), with speeds of at least 50 knots (58 mph) or winds of any speed producing a fatality, injury, or damage…" NOAA reports that between 1980 and 2016 83 historic thunderstorm wind events to occur. Based on these numbers, Butler County should expect Thunderstorm Wind Events an average of just over twice per year.

Hailstorms are a product of a severe thunderstorm in which pellets or lumps of ice (of most concern when greater than 1 inch in diameter) fall with rain. Hail is produced in many strong thunderstorms by strong rising currents of air carrying water droplets to a height where freezing occurs, the ice particles grow in size until they are too heavy to be supported by the updraft and fall back to earth. Hail can be smaller than a pea or as large as a softball and can be very destructive to plants and crops. Pets and livestock are particularly vulnerable to hail.

Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a "bolt" or flash of light that occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches temperatures approaching 50,000 degrees Fahrenheit in a split second. This rapid heating, expansion, and cooling of air near the lightning bolt creates thunder.

Historical Occurrence – Thunderstorms & Wind

Thunderstorms are common events in Butler County. Spring and summer bring many thunderstorms, often accompanied by rain, lightning, high winds, hail, funnel clouds, and tornadoes. This document discusses hazards of Tornadoes / Windstorms, River Flooding, and Flash Flooding in their respective sections.

Table 35 depicts the historical occurrence of Thunderstorm Wind events, as recorded by the National Centers for Environmental Information from 1/1/2005 to 8/26/2018. There were a total of 66 recorded thunderstorm wind events impacting the planning area during this time These events caused a total of $2.5MM in property damage and $226,000 in crop damage. There was one death and one injury recorded during the event which occurred on May 17, 2017.

TABLE 35: Thunderstorm Wind Events Butler County 2005-2018									
Magnitude	Property Damage	Magnitude	Property Damage	Crop Damage	Magnitude	Property Damage	Magnitude	Property Damage	Crop Damage
APLINGTON	6/29/2005	50	$1,000	$0	CLARKSVILLE	7/7/2008	52	$5,000	$0
ALLISON	3/30/2006	61	$15,000	$0	CLARKSVILLE	6/23/2009	61	$10,000	$0
ALLISON	4/19/2017	52	$5,000	$0	CLARKSVILLE	6/16/2014	70	$70,000	$0
ALLISON	5/17/2017	61	$0	$0	CLARKSVILLE	6/16/2014	70	$250,000	$0
ALLISON MUNI ARPT	6/20/2012	65	$75,000	$0	CLARKSVILLE	4/19/2017	53	$5,000	$0
APLINGTON	5/29/2008	61	$40,000	$0	CLARKSVILLE	4/19/2017	56	$10,000	$0
APLINGTON	5/29/2008	57	$5,000	$0	DUMONT	6/22/2015	65	$20,000	$0
APLINGTON	6/20/2011	57	$25,000	$0	GREENE	5/29/2013	70	$600,000	$0
APLINGTON	7/22/2011	75	$500,000	$100,000	GREENE	6/16/2014	65	$0	$0
ALLISON	6/22/2015	63	$20,000	$0	GREENE	9/21/2016	56	$0	$0
GREENE	5/17/2017	65	$100,000	$0	GREENE	9/21/2016	56	$30,000	$0
APLINGTON	5/17/2017	56	$10,000	$0	GREENE	9/21/2016	56	$20,000	$0
APLINGTON	5/17/2017	52	$0	$0	KESLEY	9/6/2010	57	$5,000	$0
APLINGTON	6/2/2018	61	$0	$0	KESLEY	5/17/2017	52	$0	$0
APLINGTON	8/5/2018	52	$5,000	$0	NEW HARTFORD	5/25/2008	61	$15,000	$0
AREDALE	6/25/2010	52	$2,000	$0	NEW HARTFORD	6/6/2008	52	$5,000	$0
AREDALE	5/29/2013	61	$150,000	$0	NEW HARTFORD	7/10/2009	52	$10,000	$0
AREDALE	6/16/2014	70	$80,000	$0	NEW HARTFORD	6/25/2010	52	$3,000	$0
ALLISON MUNI ARPT	6/22/2017	52	$0	$100,000	NEW HARTFORD	5/17/2017	65	$60,000	$0
AUSTINVILLE	6/23/2010	52	$5,000	$0	PACKARD	6/22/2015	65	$25,000	$0
AUSTINVILLE	8/11/2013	52	$2,000	$15,000	PARKERSBURG	5/23/2007	57	$10,000	$0
AUSTINVILLE	8/26/2018	51	$0	$0	PARKERSBURG	7/22/2011	57	$15,000	$0
BRISTOW	8/8/2010	52	$5,000	$0	PARKERSBURG	6/16/2014	55	$50,000	$0
BRISTOW	6/22/2017	56	$5,000	$0	PARKERSBURG	5/17/2017	61	$0	$0
BRISTOW	7/25/2018	56	$5,000	$0	PARKERSBURG	6/2/2018	52	$0	$0
CLARKSVILLE	9/13/2005	67	$5,000	$5,000	SHELL ROCK	9/13/2005	61	$3,000	$5,000
CLARKSVILLE	3/30/2006	61	$10,000	$0	SHELL ROCK	7/7/2008	52	$15,000	$0

Magnitude	Property Damage	Magnitude	Property Damage	Crop Damage	Magnitude	Property Damage	Magnitude	Property Damage	Crop Damage
CLARKSVILLE	7/7/2008	57	$10,000	$0	SHELL ROCK	6/20/2012	52	$2,000	$0
SHELL ROCK	5/19/2013	55	$0	$0	SHELL ROCK	4/19/2017	56	$25,000	$0
SHELL ROCK	6/16/2014	70	$25,000	$0	SWANTON	8/31/2014	52	$0	$1,000
SHELL ROCK	8/15/2007	57	$25,000	$0	WILMAR	5/29/2013	61	$150,000	$0
SHELL ROCK	8/15/2007	61	$15,000	$0	WILMAR	6/16/2014	56	$0	$0
SHELL ROCK	6/22/2015	65	$20,000	$0	WILMAR	6/22/2015	63	$10,000	$0
							TOTAL DAMAGE	**$2,588,000**	**$226,000**
							TOTAL	**$2,814,000**	
Source: National Centers for Environmental Information									

Historical Occurrence – Hail

Table 36 outlines the different sizes of hail and Table 36 describes the categories used to classify hailstorms.

Table 38A and 38B depicts the historical occurrences of hail events, as recorded by the National Centers for Environmental Information, from 2000 – 2019. Over $1.3 million in property and crop damages have been caused by hail storm events in the planning area over the past 19 years. While this is far from a comprehensive list of all hail events in the planning area, the data provides an indication of the frequency and impact that can be associated with these events.

In the previous 19 years, 121 hail events have been recorded, accounting for an average of six events per year. Of these days, there were a reported 91 accounts of property damage and crop damage totaling $597,000 in property damage and $709,000 in crop damage. These 91 events resulted in no deaths or injuries. The largest hail size recorded in the previous 55 years was 3.0 inches in magnitude, which occurred on May 31, 1971.

Table 36: Hailstone Size Codes

Size	Maximum Diameter (mm)	Description
0	5-9	Pea
1	10-15	Mothball
2	16-20	Marble, grape
3	21-30	Walnut
4	31-40	Pigeon's egg, squash ball
5	41-50	Golf ball, pullet's egg
6	51-60	Hen's egg
7	61-75	Tennis ball, cricket ball
8	76-90	Large orange, softball
9	91-100	Grapefruit
10	> 100	Melon

Source: The Tornado and Storm Research Organization

Table 37: TORRO Hailstorm Intensity Scale

Intensity Category	Intensity Category Code	Typical Hail Diameter (mm)	Typical Damage Impacts
Hard Hail	H0	5	No damage
Potentially Damaging	H1	5-15	Slight general damage to plants, crops
Significant	H2	10-20	Significant damage to fruit, crops, vegetation
Severe	H3	20-30	Severe damage to fruit and crops, damage to glass and plastic of structures, paint or wood scored
Severe	H4	25-40	Widespread glass damage, vehicle bodywork damage
Destructive	H5	30-50	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	H6	40-60	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	H7	50-75	Severe roof damage, risk of serious injuries
Destructive	H8	60-90	Severe damage to aircraft bodywork
Super Hailstorms	H9	75-100	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	H10	> 100	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: The Tornado and Storm Research Organization

TABLE 38A: History of Hail Events 2001-2009									
Location	Date	Magnitude	Property Damage	Crop Damage	Location	Date	Magnitude	Property Damage	Crop Damage
ALLISON	6/1/2001	4.5	$20,000	$5,000	DUMONT	7/31/2003	0.88	$2,000	$5,000
ALLISON	6/1/2001	0.88	$2,000	$5,000	DUMONT	7/31/2003	0.88	$2,000	$5,000
ALLISON	9/20/2001	0.75	$0	$2,000	DUMONT	7/31/2003	2.75	$25,000	$200,000
ALLISON	9/20/2001	0.75	$0	$1,000	DUMONT	4/2/2007	0.88	$1,000	$0
ALLISON	6/21/2006	0.88	$1,000	$5,000	FARMER	7/16/2007	2.75	$35,000	$10,000
ALLISON	6/8/2008	1.75	$10,000	$5,000	GREENE	5/8/2003	0.75	$0	$0
ALLISON	6/8/2008	1.75	$10,000	$5,000	GREENE	5/21/2004	0.75	$0	$5,000
ALLISON	4/24/2009	1	$1,000	$0	GREENE	10/29/2004	0.75	$0	$0
ALLISON	9/6/2010	0.75	$0	$5,000	GREENE	10/29/2004	1.25	$5,000	$1,000
ALLISON MUNI ARPT	9/6/2010	0.75	$0	$5,000	GREENE	9/18/2005	1	$2,000	$5,000
APLINGTON	5/10/2001	1	$3,000	$0	GREENE	6/21/2007	1	$5,000	$5,000
APLINGTON	4/13/2006	0.75	$0	$0	KESLEY	5/10/2001	1.75	$10,000	$0
APLINGTON	6/21/2007	1	$5,000	$5,000	NEW HARTFORD	5/12/2000	1	$2,000	$1,000
AREDALE	9/20/2001	0.75	$0	$2,000	NEW HARTFORD	5/10/2001	0.88	$4,000	$0
AREDALE	6/19/2002	0.88	$3,000	$5,000	NEW HARTFORD	5/10/2001	1	$3,000	$0
AREDALE	4/16/2004	0.88	$0	$0	NEW HARTFORD	6/1/2001	0.75	$0	$3,000
AREDALE	4/24/2009	1	$1,000	$0	NEW HARTFORD	5/14/2003	1.75	$10,000	$0
AREDALE	4/24/2009	1.25	$5,000	$0	NEW HARTFORD	5/21/2004	1	$2,000	$5,000
BRISTOW	6/19/2002	1	$5,000	$5,000	NEW HARTFORD	7/16/2007	1.75	$25,000	$10,000
BRISTOW	6/18/2010	0.88	$0	$5,000	PACKARD	7/16/2007	1.75	$25,000	$10,000
CLARKSVILLE	9/20/2001	0.88	$1,000	$2,000	PACKARD	7/16/2007	0.75	$0	$10,000
CLARKSVILLE	5/10/2003	0.75	$0	$0	PARKERSBURG	4/11/2001	1.75	$15,000	$0
CLARKSVILLE	9/18/2005	1	$2,000	$5,000	PARKERSBURG	5/10/2001	1	$3,000	$0
CLARKSVILLE	7/16/2007	1	$10,000	$5,000	PARKERSBURG	6/19/2002	0.75	$0	$5,000
CLARKSVILLE	7/16/2007	1	$10,000	$5,000	PARKERSBURG	6/19/2002	1.75	$10,000	$5,000
CLARKSVILLE	4/24/2008	0.88	$1,000	$0	PARKERSBURG	6/19/2002	2.75	$75,000	$5,000

TABLE 38A: History of Hail Events 2001-2009									
Location	Date	Magnitude	Property Damage	Crop Damage	Location	Date	Magnitude	Property Damage	Crop Damage
CLARKSVILLE	6/8/2008	1.75	$5,000	$5,000	PARKERSBURG	5/25/2008	1	$5,000	$0
CLARKSVILLE	4/24/2009	1.25	$3,000	$0	SHELL ROCK	6/1/2001	1.75	$5,000	$5,000
DUMONT	6/1/2001	0.88	$2,000	$5,000	SHELL ROCK	7/16/2007	1.75	$25,000	$5,000
DUMONT	6/1/2001	0.75	$0	$2,000	WILMAR	4/24/2009	1	$1,000	$0
DUMONT	6/19/2002	0.88	$3,000	$5,000					
DUMONT	7/31/2003	1	$5,000	$10,000					
							Totals 2000-2009	***$405,000***	***$404,000***
Source: National Centers for Environmental Information 2019									

TABLE 38B: History of Hail Events 2010-2018									
Location	Date	Magnitude	Property Damage	Crop Damage	Location	Date	Magnitude	Property Damage	Crop Damage
ALLISON MUNI ARPT	6/29/2014	0.88	$0	$10,000	NEW HARTFORD	8/19/2016	0.88	$0	$0
ALLISON MUNI ARPT	6/29/2014	0.75	$0	$10,000	NEW HARTFORD	6/15/2017	1.25	$0	$0
ALLISON MUNI ARPT	6/22/2017	1	$0	$0	PACKARD	6/29/2014	1.75	$5,000	$10,000
APLINGTON	4/12/2014	1.5	$10,000	$0	PACKARD	6/29/2014	1.75	$10,000	$15,000
APLINGTON	4/12/2014	1.75	$25,000	$0	PACKARD	6/29/2014	0.75	$0	$10,000
APLINGTON	6/15/2017	1	$0	$0	PACKARD	6/29/2014	1.75	$10,000	$15,000
AREDALE	3/22/2011	1	$1,000	$0	PACKARD	6/29/2014	1.75	$10,000	$15,000
AREDALE	6/22/2017	1	$0	$0	PACKARD	6/29/2014	1.75	$10,000	$10,000
BRISTOW	6/29/2014	1.25	$0	$10,000	PACKARD	6/29/2014	2	$20,000	$15,000
BRISTOW	6/29/2014	1.25	$1,000	$10,000	PACKARD	6/29/2014	1.5	$3,000	$10,000
BRISTOW	6/22/2017	1	$0	$0	PACKARD	6/29/2014	1.75	$10,000	$15,000
BUTLER CENTER	6/15/2017	1	$0	$0	PACKARD	6/29/2014	1.75	$10,000	$10,000

TABLE 38B: History of Hail Events 2010-2018									
Location	Date	Magnitude	Property Damage	Crop Damage	Location	Date	Magnitude	Property Damage	Crop Damage
CLARKSVILLE	6/24/2012	1	$0	$5,000	PACKARD	6/29/2014	1.75	$10,000	$15,000
CLARKSVILLE	4/12/2014	1	$5,000	$0	PACKARD	6/29/2014	2	$10,000	$10,000
CLARKSVILLE	4/12/2014	2	$10,000	$0	PACKARD	6/29/2014	1	$0	$15,000
CLARKSVILLE	6/29/2014	1	$5,000	$25,000	PACKARD	6/15/2017	1	$0	$0
CLARKSVILLE	6/15/2017	0.75	$0	$0	PACKARD	6/15/2017	1.25	$0	$0
CLARKSVILLE	6/9/2018	1	$0	$0	PARKERSBURG	5/24/2012	1	$0	$0
DUMONT	5/24/2012	1	$1,000	$0	PARKERSBURG	4/12/2014	1	$0	$0
DUMONT	7/17/2016	1	$0	$0	PARKERSBURG	4/12/2014	1.5	$5,000	$0
DUMONT	7/17/2016	1	$0	$0	PARKERSBURG	6/15/2017	1	$0	$0
DUMONT	7/17/2016	1.25	$0	$0	PARKERSBURG	6/15/2017	1.25	$0	$0
DUMONT	5/15/2017	1	$0	$0	PARKERSBURG	6/15/2017	1.25	$0	$0
DUMONT	6/22/2017	0.88	$0	$0	WILMAR	8/9/2012	1	$0	$5,000
GREENE	8/9/2012	1	$0	$5,000	WILMAR	6/29/2014	1.25	$1,000	$10,000
GREENE	9/21/2016	1	$0	$0	WILMAR	6/29/2014	1	$0	$10,000
GREENE	9/21/2016	1	$0	$0	WILMAR	6/29/2014	1.25	$5,000	$15,000
GREENE	6/9/2018	0.75	$0	$0	WILMAR	6/29/2014	1.75	$5,000	$10,000
					WILMAR	6/29/2014	1.5	$10,000	$15,000
							TOTAL 2010-2018	**$192,000**	**$305,000**
Source: National Centers for Environmental Information									

Historical Occurrence – Lightning

In 2004, lighting struck the Sheriff's Office and destroyed a significant amount of office equipment; the damages reported were approximately $100,000.

Data from NOAA, compiled using National Lighting Detection Network, found that the state of Iowa averaged 645,685 cloud-to-ground lighting flashes between 1997 and 2011; equating to an average of 11.4 flashes per square mile. Therefore, Butler County, which is approximately 502 square miles, should anticipate 5,723 lighting flashes annually.

Probability

The probability of a thunderstorm occurring in the planning area and having an impact on some property in the next five years is high. Based off of data from the last 10 years, it is estimated that the planning area will experience approximately 2.5 thunderstorms per year that result in wind damage. Thunderstorms without measurable impacts are likely to occur as well. This conclusion is based on the historical occurrences of thunderstorms in the area and the fact that the climate in the area is very conducive to the development of thunderstorms. The climate in the area is of humid continental variety and therefore there is generally enough moisture to form clouds and rain, relatively warm and unstable air that can rise quickly, and fluctuating weather fronts that work to cause uplift in air masses.

As previously mentioned, based on Iowa's 1997-2011 average of cloud-to-ground lighting flashes of 645,685 flashes per year, Butler County should anticipate approximately 5,723 lighting flashes annually. However, reported lighting strikes have a low probability.

There is a high probability of hailstorms affecting part or all of the planning area. Based on the historical occurrence of hail events from 2006-2015, the entire planning area can expect to average approximately two to three hail events per year. However, many of these hail events occurred on the same day as a result of the same storm. The 18 hail events in the past 10 years have occurred over the course of twenty-six days. From 1960-2015, 55 years, there were 49 days of hail falling in the county. Therefore, based on historic data, Butler County should anticipate multiple hail events (4-5) occurring one day a year.

Magnitude/Severity

It is anticipated that a severe thunderstorm could impact 100% of the population (currently 14,822 persons) in the planning area. Those individuals most at risk would include (populations based on 2013-2017 American Community Survey):

- People in automobiles (unable to determine);
- People in mobile homes (141 mobile homes);
- People in group quarters (242 persons; *2010 Census*);
- Persons who speak English less than "very well" (unable to determine);
- Elderly persons 65 years or older (3,178 persons) and young persons under 18 years old (3,411 persons)

Other persons at risk include those people outdoors, either working or camping. Pets and livestock are particularly vulnerable to hail. The incorporated jurisdictions are also impacted by a hailstorm since they are burdened with hail damage to trees and branches that have fallen. Critical infrastructure, power lines, is also vulnerable to hail damage.

According to available data from the county, there are approximately 9,878 parcels of land within the planning area. The total value (land, building, and dwelling) of these parcels is approximately $1.46 billion. The dollar amount for just buildings is $107,369,363 and dwellings account for $522,623,328. Because of the elements involved with a thunderstorm (tornados, hail, high wind, lightning, heavy rain) those vulnerable are very similar to what was identified in the tornado event analysis (see Tornado/Windstorm Hazard Profile).

Thunderstorms affect relatively small areas when compared to winter storms. The typical thunderstorm is 15 miles in diameter and lasts an average of 20 to 30 minutes. Of the estimated 100,000 thunderstorms that occur each year in the United States, only about 10% are classified as severe. Despite their relatively small size, thunderstorms are large enough to impact the entire community. The severity of the storm would likely determine the extent of any associated damage.

Thunderstorms may occur singly, in clusters, or in lines. Some of the most severe weather occurs when a single thunderstorm affects one location for an extended time. Lightning is a major threat during a thunderstorm. It is the lightning that produces thunder in a thunderstorm. Lightning is very unpredictable, which increases the risk to individuals and property.

In the United States, 75 to 100 people are killed each year by lightning, although most lightning victims do survive. Persons struck by lightning often report a variety of long-term, debilitating symptoms, including memory loss, attention deficits, sleep disorders, numbness, dizziness, stiffness in joints, irritability, fatigue, weakness, muscle spasms, depression, and an inability to sit for long periods. It is a myth that lightning never strikes the same place twice. In fact, lightning will strike several times in the same place in the course of one discharge.

The most severe impacts with a thunderstorm would be realized when cascading events occurred as a result of the storm. For example, multiple lightning strikes may result in death, fire, destruction of infrastructure, loss of power, communications failure, etc.

The severity of a hailstorm depends on the size and amount of hail. Hail several inches in diameter can cause severe damage to an urbanized area (broken windows, down trees and power lines, and automobile damage). Hail as small as 0.5-inch diameter can cause damage to crops and other plants.

Warning Time

The National Weather Service has developed effective weather advisories, which are promptly and widely distributed. Radio, TV, and Weather Alert Radios provide the most immediate means to do this. Accurate information is made available to public officials and the public in advance of the storm. Again, weather prediction capabilities have made significant improvements in the past few years. There are several notifications made by the National Weather Service. These include severe thunderstorm watch, severe thunderstorm warning, tornado watch, tornado warning, flash flood watch, and flash flood warning.

Despite these advancements in technology, the potential for a storm to form quickly and without warning still exists. Therefore, the committee staggered the score for the speed of onset. This allowed for the possibility if minimal or no warning time, but also acknowledged that there is generally some warning time before an event occurs.

The National Weather Service has developed effective weather advisories, which are promptly and widely distributed. Radio, TV, and Weather Alert Radios provide the most immediate means to do this. Accurate information is made available to public officials and the public in advance of the storm. The count's use of the state-wide Alert Iowa program also provides an additional way to notify the public of warnings.

Duration

Thunderstorms, lightning and hailstorms stay in a given area for a relatively short time, depending on wind speeds. The duration of an event in one location is likely less than 6 hours.

Tornado/Windstorm

Definition and Description

A tornado is a violent whirling wind characteristically accompanied by a funnel shaped cloud extending down from a cumulonimbus cloud that progress in a narrow, erratic path. Rotating wind speeds can exceed 300 mph and travel across the ground at average speeds of 25-30 mph. A tornado can be a few yards to around a mile wide where it touches the ground. An average tornado is a few hundred yards wide. A tornado can move over land for distances ranging from short hops to many miles, causing damage and destruction wherever it descends. The funnel is made visible by the dust sucked up and condensation of water droplets in the center of the funnel.

The tornado funnel is made visible by the dust sucked up and by condensation of water droplets in the center of the funnel. The rating scale used to rate tornado intensity is the Fujita Scale. The Fajita Scale categorizes tornado severity based on observed damage, the six-step scale ranges from F0 (light damage) to F5 (incredible damage). As of February 2007, the National Weather Service uses the Enhanced Fujita Scale (EF Scale). This new scale ranges from EF0-EF5 and is shown in Table 39.

Windstorms are extreme winds associated with severe winter storms, severe thunderstorms, downbursts, and very steep pressure gradients. Windstorms, other than tornados, are experienced in all regions of the United States. It is difficult to separate the various wind components that cause damage from other wind-related natural events that often occur with or generate windstorms. Although Iowa does not experience direct impacts from hurricanes, the state is no stranger to strong damaging winds. Unlike tornadoes, windstorms may have a destructive path that is miles wide and duration of the event could range from hours to days. These events can produce straight line winds in excess of 64 knots (73 mph) causing power outages, property damage, impaired visibility, and crop damage. It is often difficult to separate windstorms and tornado damage when winds get above 64 knots.

Table 39: Enhanced Fujita Tornado Scale					
Fujita Scale		Enhanced Fujita Scale		Type of Tornado	Description of Damage
Scale	Gust Speed (mph)	Scale	Gust Speed (mph)		
F0	45-78	EF0	65-85	Gale	Some damage to chimneys, broken tree branches, push over shallow rooted trees, damage to sign boards.
F1	79-117	EF1	86-109	Moderate	The lower limit is the beginning of hurricane wind speed, peel surface off roofs, mobile homes pushed off foundations or overturned, moving automobiles pushed off roads.
F2	118-161	EF2	110-137	Significant	Considerable damage: roofs torn off frame homes, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted, light object missiles generated.
F3	162-209	EF3	138-167	Severe	Severe damage: roofs and some walls torn off well-constructed houses, trains overturned, most trees in forest uprooted, heavy cars lifted off ground and thrown.
F4	210-261	EF4	168-199	Devastating	Devastating damage: well-constructed houses leveled, structure with weak foundation blown off some distance, cars thrown and large missiles generated.
F5	262-317	EF5	200-234	Incredible	Incredible damage: strong frame houses lifted off foundations and carried considerable distance to disintegrate, automobile sized missiles fly through the air in excess of 100 yards, trees debarked, incredible phenomena will occur.

Historical Occurrence

Since 1950 there have been 28 recorded occurrences of tornado events in the planning area. The estimated total of property damage from these tornadoes is $81.1 million while crop damage totals to $123,000. The recorded tornado events for the entire planning area can be referenced for detail in Table 39. The first column in Table 40 indicates the location where the tornado touched down, it does not include the communities impacted or where it ended. Data used in this table was collected from the National Centers for Environmental Information. The data gathered indicates reported tornados only, and does not account for unreported or misreported information. Accordingly, this information is intended for reference only, and not as a true and accurate historical account. A graphic representation of historic tornado events and the rough path they traveled can be seen in Attachment 5a.

Table 40: History of Tornadoes in Butler County (1950-2018)						
Touch Down Location	**Date**	**Deaths**	**Injuries**	**Property Damage**	**Crop Damage**	**Fujita Scale**
BUTLER CO.	5/23/1952	0	0	$0	0	F2
BUTLER CO.	7/23/1960	0	0	$0	0	F0
BUTLER CO.	9/1/1961	0	7	$2,500,000	0	F4
BUTLER CO.	9/9/1970	0	0	$25,000	0	F2
BUTLER CO.	10/3/1972	0	0	$25,000	0	F0
BUTLER CO.	6/4/1975	0	0	$25,000	0	F2
BUTLER CO.	7/6/1982	0	0	$30	0	F0
BUTLER CO.	6/22/1984	0	0	$2,500,000	0	F1
BUTLER CO.	6/22/1984	0	0	0	0	F0
DUMONT	6/5/1997	0	0	$100,000	$5,000	F1
AUSTINVILLE	6/27/1998	0	0	$10,000	$2,000	F2
APLINGTON	7/2/1999	0	0	$25,000	$1,000	F2
SINCLAIR	6/1/2001	0	0	0	$0	F0
SHELL ROCK	9/6/2001	0	0	$75,000	$10,000	F1
GREENE	6/21/2002	0	0	0	$10,000	F1
GREENE	5/26/2005	0	0	0	$0	F0
KESLEY	6/21/2007	0	0	0	$1,000	EF0
SHELL ROCK	6/21/2007	0	0	0	$2,000	EF0
APLINGTON	5/25/2008	9	50	$75,000,000	$75,000	EF5
ALLISON MUNI ARPT	6/16/2014	0	0	$200,000	$5,000	EF1
ALLISON MUNI ARPT	6/16/2014	0	0	$400,000	$1,000	EF0
CLARKSVILLE	6/16/2014	0	0	$200,000	$2,000	EF1
ELEANOR	7/6/2014	0	0	0	$1,000	EF0
APLINGTON	8/31/2014	0	0	$20,000	$2,000	EF0
PARKERSBURG	8/31/2014	0	0	0	$3,000	EF0
NEW ALBION	8/31/2014	0	0	0	$2,000	EF0
SHELL ROCK	8/31/2014	0	0	0	$1,000	EF0
PARKERSBURG	11/28/2016	0	0	$3000	0	EF0
Totals	**# Tornadoes-28**	**0**	**57**	**$ 81,108,030**	**$123,000**	
Source: National Centers for Environmental Information						

Windstorms occur in the planning area on an annual basis. High winds are often associated with thunderstorms, but can be produced during severe snow storms or tornados. According to the National Centers for Environmental Information, the County has had 87 Thunderstorm Wind events from May 1998 to August 2018 resulting in an estimated $2.9 million in property damage and $240,000 in crop damage.

Table 41 shows the historical occurrences for solely high winds only, while Table 33, in the Thunderstorm / Lighting / Hail hazard section includes a table of historical Thunderstorm Wind events.

Table 41: History of Windstorms in Butler County (1998-2018)

Location	Date	Deaths/ Injuries	Property Damage	Crop Damage
DUMONT	5/15/1998	0	$ 10,000.00	$ -
DUMONT	5/15/1998	0	$ 15,000.00	$ 2,000.00
AREDALE	5/15/1998	0	$ 75,000.00	$ 5,000.00
DUMONT	5/15/1998	0	$ 10,000.00	$ -
BRISTOW	5/15/1998	0	$ 10,000.00	$ 1,000.00
GREENE	5/15/1998	0	$ 3,000.00	$ -
CLARKSVILLE	5/15/1998	0	$ 50,000.00	$ -
DUMONT	7/18/1999	0	$ 7,000.00	$ -
NEW HARTFORD	5/31/2000	0	$ 10,000.00	$ 1,000.00
SHELL ROCK	7/9/2000	0	$ 2,000.00	$ -
APLINGTON	5/10/2001	0	$ 5,000.00	$ -
SHELL ROCK	9/6/2001	0	$ 5,000.00	$ -
ALLISON	12/5/2001	0	$ 75,000.00	$ -
PARKERSBURG	6/19/2002	0	$ 3,000.00	$ -
BRISTOW	6/19/2002	0	$ 5,000.00	$ -
ALLISON	6/19/2002	0	$ 10,000.00	$ 5,000.00
CLARKSVILLE	7/4/2003	0	$ 5,000.00	$ -
DUMONT	7/4/2003	0	$ 2,000.00	$ -
CLARKSVILLE	7/4/2003	0	$ 2,000.00	$ -
PARKERSBURG	7/5/2003	0	$ 20,000.00	$ -
GREENE	10/29/2004	0	$ 5,000.00	$ -

Table 41: History of Windstorms in Butler County (1998-2018)				
Location	Date	Deaths/ Injuries	Property Damage	Crop Damage
APLINGTON	6/29/2005	0	$ 1,000.00	$ -
CLARKSVILLE	9/13/2005	0	$ 5,000.00	$ 5,000.00
SHELL ROCK	9/13/2005	0	$ 3,000.00	$ 5,000.00
ALLISON	3/30/2006	0	$ 15,000.00	$ -
CLARKSVILLE	3/30/2006	0	$ 10,000.00	$ -
PARKERSBURG	5/23/2007	0	$ 10,000.00	$ -
CLARKSVILLE	8/15/2007	0	$ 25,000.00	$ -
CLARKSVILLE	8/15/2007	0	$ 15,000.00	$ -
NEW HARTFORD	5/25/2008	0	$ 15,000.00	$ -
APLINGTON	5/29/2008	0	$ 40,000.00	$ -
APLINGTON	5/29/2008	0	$ 5,000.00	$ -
NEW HARTFORD	6/6/2008	0	$ 5,000.00	$ -
CLARKSVILLE	7/7/2008	0	$ 10,000.00	$ -
SHELL ROCK	7/7/2008	0	$ 15,000.00	$ -
CLARKSVILLE	7/7/2008	0	$ 5,000.00	$ -
CLARKSVILLE	6/23/2009	0	$ 10,000.00	$ -
NEW HARTFORD	7/10/2009	0	$ 10,000.00	$ -
AUSTINVILLE	6/23/2010	0	$ 5,000.00	$ -
AREDALE	6/25/2010	0	$ 2,000.00	$ -
NEW HARTFORD	6/25/2010	0	$ 3,000.00	$ -
BRISTOW	8/8/2010	0	$ 5,000.00	$ -
KESLEY	9/6/2010	0	$ 5,000.00	$ -
APLINGTON	6/20/2011	0	$ 25,000.00	$ -
APLINGTON	7/22/2011	0	$ 500,000.00	$ 100,000.00
PARKERSBURG	7/22/2011	0	$ 15,000.00	$ -
ALLISON MUNI ARPT	6/20/2012	0	$ 75,000.00	$ -
SHELL ROCK	6/20/2012	0	$ 2,000.00	$ -

Table 41: History of Windstorms in Butler County (1998-2018)				
Location	Date	Deaths/ Injuries	Property Damage	Crop Damage
SHELL ROCK	5/19/2013	0	$ -	$ -
AREDALE	5/29/2013	0	$ 150,000.00	$ -
GREENE	5/29/2013	0	$ 600,000.00	$ -
WILMAR	5/29/2013	0	$ 150,000.00	$ -
AUSTINVILLE	8/11/2013	0	$ 2,000.00	$ 15,000.00
AREDALE	6/16/2014	0	$ 80,000.00	$ -
WILMAR	6/16/2014	0	$ -	$ -
GREENE	6/16/2014	0	$ -	$ -
CLARKSVILLE	6/16/2014	0	$ 70,000.00	$ -
CLARKSVILLE	6/16/2014	0	$ 250,000.00	$ -
PARKERSBURG	6/16/2014	0	$ 50,000.00	$ -
SHELL ROCK	6/16/2014	0	$ 25,000.00	$ -
SWANTON	8/31/2014	0	$ -	$ 1,000.00
DUMONT	6/22/2015	0	$ 20,000.00	$ -
WILMAR	6/22/2015	0	$ 10,000.00	$ -
APLINGTON	6/22/2015	0	$ 20,000.00	$ -
PACKARD	6/22/2015	0	$ 25,000.00	$ -
SHELL ROCK	6/22/2015	0	$ 20,000.00	$ -
GREENE	9/21/2016	0	$ -	$ -
GREENE	9/21/2016	0	$ 30,000.00	$ -
GREENE	9/21/2016	0	$ 20,000.00	$ -
ALLISON	4/19/2017	0	$ 5,000.00	$ -
CLARKSVILLE	4/19/2017	0	$ 5,000.00	$ -
CLARKSVILLE	4/19/2017	0	$ 10,000.00	$ -
SHELL ROCK	4/19/2017	0	$ 25,000.00	$ -
APLINGTON	5/17/2017	0	$ 100,000.00	$ -
APLINGTON	5/17/2017	0	$ 10,000.00	$ -
KESLEY	5/17/2017	0	$ -	$ -

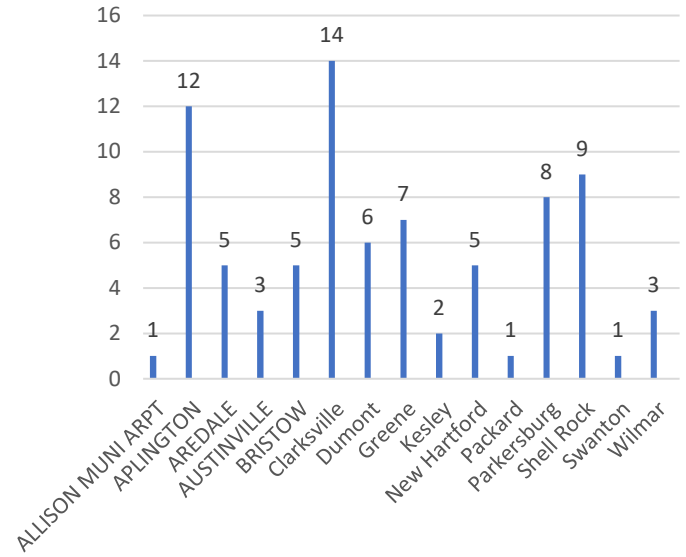
Table 41: History of Windstorms in Butler County (1998-2018)				
Location	Date	Deaths/ Injuries	Property Damage	Crop Damage
APLINGTON	5/17/2017	0	$ -	$ -
PARKERSBURG	5/17/2017	1	$ 60,000.00	$ -
ALLISON	5/17/2017	0	$ -	$ -
PARKERSBURG	5/17/2017	0	$ -	$ -
AREDALE	6/22/2017	0	$ -	$ 100,000.00
BRISTOW	6/22/2017	0	$ 5,000.00	$ -
APLINGTON	6/2/2018	0	$ -	$ -
PARKERSBURG	6/2/2018	0	$ -	$ -
BRISTOW	7/25/2018	0	$ 5,000.00	$ -
APLINGTON	8/5/2018	0	$ 5,000.00	$ -
AUSTINVILLE	8/26/2018	0	0	$ -
			$2,917,000	**$ 240,000.00**

Probability

There have been 28 recorded tornados in the planning area since 1960. That averages, roughly, to a tornado every 2 years. Because tornadoes are sporadic, there cannot be a reliable long-term prediction made as to when or if they may occur. In the last 10 years, 2009-2019, Butler County has experienced 9 tornadoes, affecting a total of 5 incorporated cities in Butler County. By definition, the probability of a Tornado/Windstorm event in the planning area is highly likely.

If this 10-year average holds, it is highly likely the planning area will likely experience two to three tornados within the next five years. Also, given the historical paths of tornadoes (Attachment 5) in the planning area, it is likely that future events could impact the same areas. As discussed previously, the most damaging event was the F4 that was about 5 miles west of Aplington and traveled north towards 2 miles towards Whitten before it dissipated. The tornado that happened near Fern was an EF2, but became part of the EF5 tornado that devastated the City of Parkersburg on May 25, 2008. This storm system did a reported total of approximately $100 million worth of property and crop damage.

Figure 10:



The probability of a windstorm occurring in the planning area and having an impact on said area in the next year is highly likely. This conclusion is based on the historical occurrences of winds associated with thunderstorms in the area and the fact that the climate in the county is very conducive to the development of thunderstorms and high winds. The climate in the area is of humid continental variety and therefore there is generally enough moisture to form clouds and rain, relatively warm and unstable air that can rise quickly, and fluctuating weather fronts that work to cause uplift in air masses.

Magnitude/Severity

Tornadoes consist of strong, often destructive, winds. The winds in the strongest tornadoes are the fastest winds experienced anywhere on Earth, with rotation velocities up to 300 mph. Generally, the damage associated with a tornado is greatest within several hundred feet of the column. The maximum threat of a tornado occurs when a tornado stays on the ground for an extended period of time. The risk becomes even greater when the tornado event is accompanied by hail, heavy rain, and lightning.

The maximum threat of a windstorm is usually several hundred or thousand feet wide, as they are often associated with large thunderstorm cells. Much of the damage incurred during a windstorm event is often due to the accompanying hail, lightning, and wind shear.

The severity of a tornado event would likely be determined by five primary components: 1) the size of the tornado (see Table 18), with an EF5 posing the most severe risk to the community; 2) the time the tornado stayed in or around the community; 3) the time of day would be a major factor; 4) the density of the

population at the point of impact; and 5) the area of the community that was directly impacted (i.e. a mobile home park or an undeveloped portion of the community). The worst-case scenario would be an EF5 through one or more incorporated jurisdictions in the planning area.

In the event of a tornado, the entire planning area has an extensive network of outdoor warning sirens that, given enough time, allow people to search for suitable shelter. All jurisdictions in the planning area have been active in upgrading these sirens, as many of them are old and unreliable. Butler County Emergency Management Agency tests the sirens on a monthly basis.

For windstorms, Impacts can vary from broken tree limbs, broken corn stocks, to the total destruction of buildings and other structures depending upon the built environment and the speed of the winds.

Using available data, a tornado scenario was developed for each city and one complete county summary (see Attachment 5b through Attachment 5w for hypothetical tornado scenario maps). Estimates of potential damage were based on an EF0 through EF5 tornado impacting each city. Table 42A through Table 42J show the estimated damage values of a hypothetical tornado scenario for each city in the planning area. Parcel values are current as of 01/01/2019. The damage estimates show a realistic damage level to buildings and land; these were calculated using the following percentages:

- EF0, EF1: 25% damage to affected buildings and land
- EF2, EF3: 50% damage to affected buildings and land
- EF4, EF5: 100% damage to affected buildings and land

Table 42A: Tornado Scenario for Allison				
Scale	**Tornado Width**	**# of Parcels**	**Damaged Value**	**% of City Damaged**
EF0	50 Meters	82	$818,903	2.11%
EF1	150 Meters	171	$1,937,073	5.00%
EF2	250 Meters	241	$5,407,850	13.95%
EF3	500 Meters	385	$8,520,525	21.99%
EF4	900 Meters	521	$24,817,390	64.04%
EF5	1,100 Meters	567	$27,707,580	71.50%

Table 42B: Tornado Scenario for Aplington, A-P CSD				
Scale	**Tornado Width**	**# of Parcels**	**Damaged Value**	**% of City Damaged**
EF0	50 Meters	101	$1,785,720	4.42%
EF1	150 Meters	203	$3,872,720	9.59%
EF2	250 Meters	281	$11,011,610	27.28%
EF3	500 Meters	436	$15,477,145	38.34%
EF4	900 Meters	564	$39,920,280	98.89%
EF5	1,100 Meters	577	$40,340,860	99.93%

Table 42C: Tornado Scenario for Aredale				
Scale	**Tornado Width**	**# of Parcels**	**Damaged Value**	**% of City Damaged**
EF0	50 Meters	33	$68,520	4.77%
EF1	150 Meters	59	$235,613	16.42%
EF2	250 Meters	75	$551,020	38.40%
EF3	500 Meters	104	$714,960	49.82%
EF4	900 Meters	117	$1,435,090	100.00%
EF5	1,100 Meters	118	$1,435,090	100.00%

Table 42D: Tornado Scenario for Bristow				
Scale	**Tornado Width**	**# of Parcels**	**Damaged Value**	**% of City Damaged**
EF0	50 Meters	31	$112,505	4.16%
EF1	150 Meters	56	$214,913	7.95%
EF2	250 Meters	76	$699,920	25.88%
EF3	500 Meters	127	$1,187,410	43.91%
EF4	900 Meters	155	$2,613,290	96.64%
EF5	1,100 Meters	159	$2,703,500	99.98%

Table 42E: Tornado Scenario for Clarksville				
Scale	**Tornado Width**	**# of Parcels**	**Damaged Value**	**% of City Damaged**
EF0	50 Meters	79	$1,284,055	2.93%
EF1	150 Meters	169	$2,351,460	5.36%
EF2	250 Meters	240	$6,849,170	15.62%
EF3	500 Meters	396	$11,463,365	26.14%
EF4	900 Meters	595	$35,258,110	80.39%
EF5	1,100 Meters	648	$38,059,730	86.78%

Table 42F: Tornado Scenario for Dumont				
Scale	**Tornado Width**	**# of Parcels**	**Damaged Value**	**% of City Damaged**
EF0	50 Meters	79	$641,755	4.30%
EF1	150 Meters	153	$1,150,545	7.70%
EF2	250 Meters	215	$3,195,734	21.39%
EF3	500 Meters	356	$5,304,569	35.50%
EF4	900 Meters	435	$12,983,948	86.90%
EF5	1,100 Meters	461	$14,263,168	95.46%

Table 42G: Tornado Scenario for Greene				
Scale	**Tornado Width**	**# of Parcels**	**Damaged Value**	**% of City Damaged**
EF0	50 Meters	52	$551,510	1.34%
EF1	150 Meters	130	$1,282,625	3.11%
EF2	250 Meters	179	$3,932,220	9.54%
EF3	500 Meters	370	$9,043,585	21.94%
EF4	900 Meters	602	$31,285,480	75.89%
EF5	1,100 Meters	700	$35,359,500	85.78%

Table 42H: Tornado Scenario for New Hartford				
Scale	**Tornado Width**	**# of Parcels**	**Damaged Value**	**% of City Damaged**
EF0	50 Meters	70	$679,460	4.68%
EF1	150 Meters	148	$1,241,023	8.55%
EF2	250 Meters	239	$4,129,220	28.44%
EF3	500 Meters	338	$5,773,685	39.77%
EF4	900 Meters	355	$14,517,450	100.00%
EF5	1,100 Meters	355	$14,517,450	100.00%

Table 42I: Tornado Scenario for Parkersburg				
Scale	**Tornado Width**	**# of Parcels**	**Damaged Value**	**% of City Damaged**
EF0	50 Meters	91	$4,168,653	3.82%
EF1	150 Meters	169	$6,362,710	5.83%
EF2	250 Meters	254	$18,524,410	16.96%
EF3	500 Meters	417	$28,684,225	26.26%
EF4	900 Meters	608	$74,376,830	68.10%
EF5	1,100 Meters	701	$81,525,950	74.64%

Table 42J: Tornado Scenario for Shell Rock				
Scale	**Tornado Width**	**# of Parcels**	**Damaged Value**	**% of City Damaged**
EF0	50 Meters	91	$1,231,163	2.06%
EF1	150 Meters	191	$2,820,918	4.72%
EF2	250 Meters	265	$8,741,375	14.63%
EF3	500 Meters	451	$15,599,480	26.11%
EF4	900 Meters	664	$49,653,340	83.12%
EF5	1,100 Meters	739	$57,128,740	95.63%

Although the advancement in radar and forecasting has improved and continues to improve it cannot predict when and where a tornado may strike. They can however inform a community of when the conditions are right for an event to occur. In fact, it is estimated that approximately 95 percent of all tornadoes occur in areas where a tornado watch has been issued. Nevertheless, the five percent of the time that they do not accurately predict, or someone is simply uninformed can result in an almost immediate onset, with little or no warning time.

Tornado and thunderstorm watches can warn of likely conditions hours in advance of an upcoming storm. Although significant advances in meteorological technology has allowed for more effective forecasting, it is impossible to predict, in advance, when and where a windstorm will strike. A windstorm's rapid change in direction makes it difficult to say with certainty, the path the windstorm will continue on after it has been identified. Therefore, warning time is often very short or occasionally non-existent.

Duration

Duration of the actual event of a tornado or windstorm can range from a few minutes to several hours. However, considering the resulting damage, and the threat this damage poses, some jurisdictions deemed the duration could last up to a week or longer in the case of major infrastructure damage.

Transportation Incident

Definition and Description

This hazard includes all modes of transportation - air, highway, railway, and waterway. Thus, *transportation incidents* include any military, commercial, or private aircraft; single-multi-vehicle incidents which require a response exceeding normal day-to-day capabilities; derailment or train accident which directly threatens life or property, or which adversely impacts a community's capabilities to provide emergency services; and an event involving any vessel that threatens life or impedes a community's capability to provide emergency services.

An *air transportation incident* may involve a military, commercial, or private aircraft. 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 including mechanical failure, pilot error, weather conditions, or an on-board fire. Air transportation incidents can occur in remote unpopulated areas, residential areas, or downtown business districts, incidents involving military, commercial, or private locations. An aircraft incident can also occur while the aircraft is on the ground.

A *highway transportation incident* can be single or multi-vehicle requiring responses exceeding normal day-to-day capabilities. An extensive surface transportation network exists in Iowa; local residents, travelers, business, and industry rely on this network on a daily basis. Thousands of trips a day are made on the streets, roads, highways, and interstates of the county. If the designed 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 and week. Incidents involving buses and other high-occupancy vehicles could trigger a response that exceeds the normal day-to-day capabilities of response agencies.

A *waterway incident* is an accident involving any water vessel that threatens life, property, or adversely affects a community's capability to provide emergency services. Waterway incidents primarily involve pleasure craft on rivers and lakes. In the event of an incident involving a water vessel, the greatest threats include drowning, fuel spillage, and/or property damage. Water rescue events are largely handled by first responder agencies. Waterway incidents may also include events in which a person, persons, or object falls through the ice on partially frozen bodies of water.

Historical Occurrence

Traffic accidents are fairly common occurrences in the county. According to the Iowa Department of Transportation, rural Butler County saw 1,043 various types of vehicular crashes from 2007 to 2011. Of these accidents 330 were related to icy, snowy or slushy surface conditions. Iowa has the highest rate of farm equipment crashes on public roads of any state in the U.S., at 107 per 100,000 people, according to a report from University of Iowa (uiowa.edu/stories/iowa-reasearchers-prepare-rural-roads-future). The planning area has not experienced any reported boating, rail, or air transportation events.

Probability

Based of historic crash data shown in Table 46, the County can expect several crashes each year, though likely fewer than 250. The probability of an air transportation event is unlikely. Due to having no railroads or navigable streams passing through the county, the probability of either of these events occurring is unlikely.

Warning Time

Transportation incidents occur within seconds; therefore, there is no time to warn those in the pathway of the harmful effects.

Duration

The duration of time a transportation incident would impact the planning area is dependent upon the type and severity of the incident.

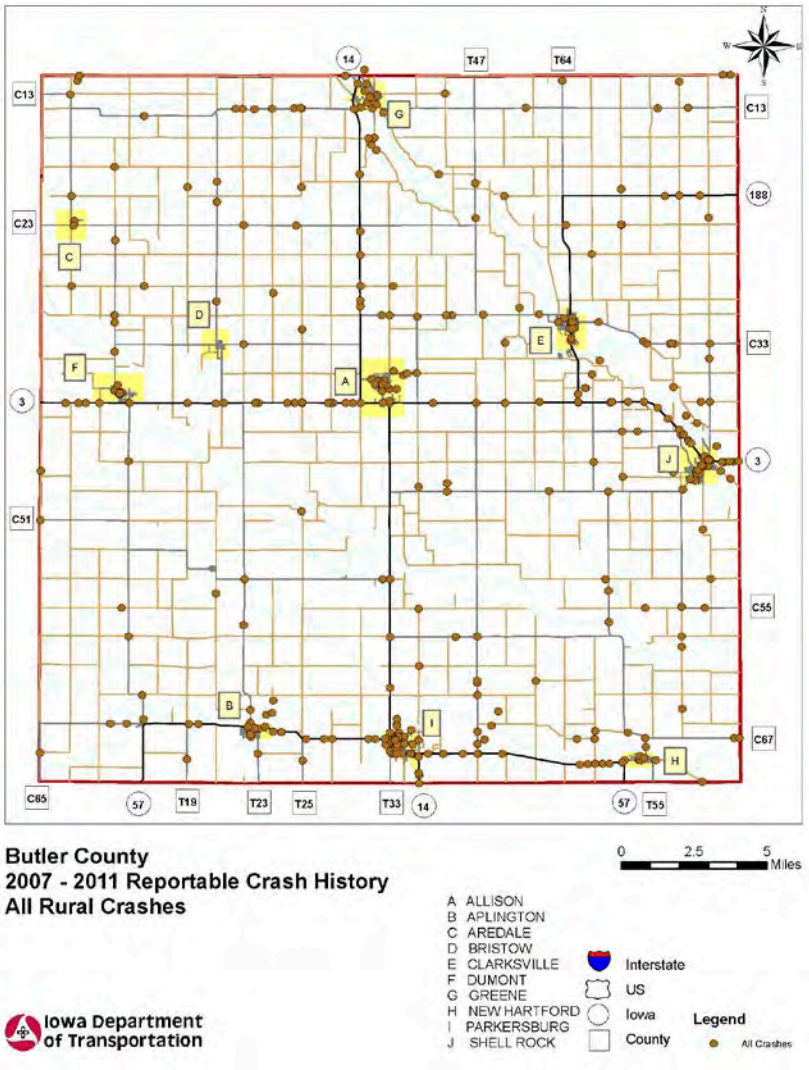
Magnitude/Severity

Due to the large volume of roadway and intersections located in the planning area, there is a chance of a traffic accident, especially with large farm equipment entering and leaving agricultural areas. Persons driving on major thoroughfares are more vulnerable to traffic accidents due to the increased number of drivers on these roads and the corresponding speed limits. Motorists on the county's rural roadways are also vulnerable to traffic incidents with farm equipment and the general rural nature of the roadway. According to the Department of Transportation, crashes on rural roads occur at more than twice the rate of crashes on state roads.

All residents of the planning area have the potential to be vulnerable to an air traffic event. Most at risk to air traffic events are those who live or work in flight paths originating from the Bristow Municipal Airport, Koch Field, or Waterloo Regional Airport or those near farms that use crop duster airplanes. Although this hazard is high, the number of people and amount of property directly affected is relatively low.

The exact areas that will be affected by a traffic event will likely be small, concentrated, and have a minimal impact on the residents as a whole, unless a large or extremely dangerous hazardous material spill should result from the event. An air disaster may impact a larger portion of the county, depending on where the impact occurred and what type of aircraft actually wrecked. But for the most part, due to the planning area's rural environment, impact would be minimal.

Figure #10: Location of Crashes in Butler County



Vulnerability – Critical Facilities

This section describes the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). Due to the county's historical occurrences of tornadoes, this hazard was added to the assessment.

Identifying the location of critical facilities and designated shelters (see Table 43) in the planning is important in order to assess their vulnerability to hazards, in addition to, them being important to the operation of a community and the economic sector. (For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems). It is

Table 43: DESIGNATED SHELTERS AND CRITICAL FACILITIES IN THE PLANNING AREA

ALLISON		**BRISTOW**		**PARKERSBURG**	
EMS Building	CF	City Hall	CF / S	Veteran's Memorial Bldg	S
Rehabilitation Center	CF			Civic Center	CF / S
Mercy One Clinic	CF	**CLARKSVILLE**		1st Congregational Church	S
Butler County Courthouse	CF / S	City Hall	CF / S	St. Patrick's Church	S
St. James Lutheran Church	CF	Nursing Home	CF / S	Bethel Lutheran Church	S
Trinity Reform Church	CF	Fire Station	CF / S	United Methodist Church	S
AMVET Post 88	CF	Public Library	CF / S	AP High School	CF / S
City Hall	CF	Clarksville Comm. Schools	CF / S	Elementary School	CF / S
Rehabilitation Center	CF / S			Police Station	CF / S
UCC Church	CF	**DUMONT**		Fire Station	CF / S
Public Library	CF	Emergency Building	CF / S	Emergency Services Building	CF / S
Emergency Services Building	CF / S	New Hope Methodist Church	S	Christian Reformed Church	S
Elementary School	S	Dumont Emergency Housing	CF		
		Harken Lumber	CF	**Shell Rock**	S
APLINGTON		First Security Bank & Trust	CF	City Hall	CF / S
Recreation Complex	CF	Community Housing	CF	W-S Elem School	CF / S
AP Elementary & Middle School	CF /S			Jehovah's Witness Church	S
Maple Manor Village	CF	**GREENE**		Community Center	CF / S
Water Treatment Plant	CF	Community Center/ City Hall	CF/ S	1st United Methodist Church	S
First Reformed Church	S	St. Peter's Church	S	Faith Lutheran Church	S
City Hall	CF	St. Mary's Church	S	Former Hobson Bros. Bldg	S
Evangelical Presb Church	S	North Butler Comm. School	CF / S	Fire Department	CF / S
Baptist Church	S				
First Reformed Church	S	**NEW HARTFORD**			
		United Methodist Church	S		
AREDALE		Fire Station	CF / S		
First Security Bank & Trust	**S**	School Building	CF / S		
City Hall	**S**	Co-Cop Elevator	S		
Farmers Coop Elevator	CF				
Duck's Bar & Grill	CF	Community Building	CF / S		
Post Office	CF	First Baptist Church	S		
City Hall	CF	Gospel Hall	S		
United Methodist Church	CF				
Tiling Businesses (2)	CF				
Fire Station	CF				

Source: Communities

CF = Critical Facility
S = Shelter

important to know the threats each hazard poses to these facilities. Attachments 6A – 6K illustrate the location of identified critical facilities throughout the county and within the municipalities. As shown on the attached maps, the rural county area has few critical facilities other than roadways and bridges. As identified in Table 43, many of the county's critical facilities (minus bridges and roadways) and designated shelters are located within municipalities.

According to Section 2, Butler County's population is predicted to remain stagnant in the next thirty years. The need for more critical facilities should be closely monitored these next 5-years and readdressed when this HMP is updated.

River and Flash Flooding

A facility vulnerable to flooding is normally low, since these structures are not often constructed within the 100-year floodplain. According to the information provided, bridges and roadways would be most impacted by flooding. This disruption in the transportation infrastructure would create a longer time period to receive and provide services and supplies to an area if a bridge was washed away due to flooding.

Table 44 identifies the number properties located within the 100-year floodplain by planning area, incorporated areas, and unincorporated area. According to the data provided by INRCOG and Butler County Assessor, there are a total of 4,497 parcels of land with a total value of $497,131,086 located within the 100-year floodplain. See Attachment 3a for a map of the county's floodplain and Attachment 4a for a map of parcels impacted by the floodplain.

Table 44 identifies the 100 Year floodplain building, dwelling, and land values.

The flood plain properties and values for individual cities can be found in the individual community profile appendices. Floodplain maps and floodplain scenario maps for each city are included in Attachment 3b through Attachment 4k.

TABLE 44: FLOOD PLAIN PROPERTY VALUES

	ENTIRE PLANNING AREA 100-YEAR FLOODPLAIN PROPERTIES	BUTLER COUNTY INCORPORATED AREAS 100-YEAR FLOODPLAIN PROPERTIES	BUTLER COUNTY UNINCORPORATED AREAS 100-YEAR FLOODPLAIN PROPERTIES
Number of Parcels	4497	1079	3418
Land Value	$ 351,034,496	$ 11,357,246	$ 339,677,250
Building Value	$ 39,067,701	$ 8,536,951	$ 30,530,750
Dwelling Value	$ 107,028,889	$ 27,900,599	$ 79,128,290
Total Value	$ 497,131,086	$ 47,794,796	$ 449,336,290
Source: INRCOG & Butler County Assessor 2018 Dollar values			

Tornado / Wind Storms

As stated on the FEMA website[1], mobile homes are highly vulnerable to tornadoes. Even mobile homes that are tied down, offer little protection from tornadoes.

While the nation has seen an overall increase in the number of mobile homes, the planning area has seen a slight reduction over the past five years. According to data from the 2013-2017 ACS, there are 141 mobile homes in the county. This is a small reduction of 10 units from the prior ACS 5-year estimate. Currently, no FEMA certified tornado safe shelters are known to exist in the rural area. Of the county's mobile homes, 68 are in the unincorporated area. The remaining mobile homes are located in the cities of Allison (9), Clarksville (57), Parkersburg (5), New Hartford (22), Greene (8) and Shell Rock (2) (ACS 2013-2017). See Table 8.

Although HUD regulations and local building codes have increased building and safety standards among these housing types, mobile home structures remain more susceptible to hazards. Based on national data on circumstance of tornado fatalities between 1985 and 1997, it was found that 38% of fatalities were occupants of mobile or manufactured homes, 27% were in permanent homes, 11% in vehicles, 9% outdoors (open), 4% in businesses, 4% in structures with long-span roofs, and 2% in schools. These data highlight the high exposure of occupants of mobile and manufactured homes (*AR State Hazard Mitigation Plan, 1999*). According to available data, the 1226 parcels within the unincorporated area are vulnerable to tornadoes – land, structures and dwelling total $888,960,160 (2019 dollar values). The total 4,133 parcels in the incorporated areas of the county have an estimated land, building, and dwelling value of $457,045,252 (2019 dollar values) vulnerable to tornado or windstorms.

Nursing homes or skilled living centers are also highly vulnerable to tornadoes. These facilities are designed for caring for the elderly population, a majority of whom use wheelchairs or other assistance devices, limiting mobility. Also, the majority of nursing homes in the planning area are constructed as a single-level building with or without basements. Therefore, additional attention needs to be taken to ensure the safety of the residents and employees before, during, and after a tornado event. Table 45 shows there is an estimated 242 persons living in group quarters throughout the county.

TABLE 45: "AT-RISK" POPULATION FOR PLANNING AREA

Total Population, 2013-2017 ACS	14,822
Elderly (65 yrs. and older), 2013-2017 ACS	3,178
Youth (17 yrs. and under), 2013-2017 ACS	3,411
Householder Living Alone, 2010	1,580
Population Living in Poverty, 2017 ACS	1393
Speak a Language Other than English, 2017 ACS	235
Population in Multi-Family Structures* 2013-2017 ACS (548 units)	1,310
Population in Mobile Homes, 2013-2017* (141 units)	337
Group Quarters Population, 2010	242
Persons with Disabilities, 2013-2017 ACS	1532

Source: 2010 U.S. Census, 2013-2017 American Community Survey
**Based on total number of units multiplied by the 2010 U.S. Census Butler County average household size of 2.39 persons*

Vulnerability – Social Assets

The social vulnerability assessment identified how the hazards affect the population of Butler County and it is assumed that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population.

[1] Federal Emergency Management Agency (FEMA), http://www.fema.gov/areyouready/tornadoes.shtm

The "at-risk" population must be identified and targeted in successful mitigation efforts. Table 45 presents an overview of the at-risk population in Butler County according to information retrieved from the 2013-2017 American Community Survey (ACS) 5-year estimates. Elderly populations can be more susceptible to some hazard events. An estimated 19.8% of residents are 65 years or older. Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young people may not be aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, 23.5% of the county's total population under the age of 18.

According to the2013-2017 ACS 5-year estimate there are 1532 persons residing in the county with a disability. Of these persons, 131 are under the age of 18; 647 are between the ages of 18 and 64; and 754 are 65 years of age or older.

In addition, persons living in mobile homes, also known as manufactured housing may also be at risk from tornadoes or high winds. The 2013-2017 ACS reported that there were 141 mobile homes in the county. At the time of the 2010 Census, there were 188 mobile homes in the county. Based on the county wide average persons per household (2.39), there is an estimated 336 persons living in these housing units.

Attachment 6o identifies the nursing homes within the planning area. Cities with nursing homes include: Dumont, Greene, Allison, Clarksville, Shell Rock, Aplington, and Parkersburg. As shown in Table 45, approximately 242 county residents live in group quarters.

River and Flash Flooding

Portions of Butler County are highly vulnerable to floods, especially along Shell Rock River, Beaver Creek, and East Fork of Cedar River. Flooding places the entire population at some level of risk, whether through the flooding of their homes, businesses, places of employment, or through the road, sewer, and water infrastructure that serves them daily. High floodwaters can devastate homeowners with property damage, property loss, and extensive, time-consuming cleanup. Secondary effects caused by flooding can add to the property damage. Power loss can leave citizens without heat or air conditioning for extended periods of time. The transportation infrastructure of the community can also be impacted by flooding events. Such events poste hazards and endanger citizens who attempt to travel or evacuate the area, as well as leave those remaining without goods and services.

Butler County's flood rate insurance maps (FIRM) were updated September 16, 2011. The maps have approximately 3,418 parcels of land located within the 100-year floodplain in the rural, unincorporated area of the county. There are approximately 1,079 parcels of land in the 100-year floodplain throughout the ten incorporated cities. Tables displaying the number of parcels, acres, value of land, buildings, dwellings, and total value can be found in Table 49.

Using the Census's household size for Butler County (2.39) and assuming all those parcels have one residential structure on it, approximately 11,060 persons would be vulnerable to a flooding event.

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas…

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a catastrophic disaster. The valuations for Butler County are available from the County Assessors and Auditors offices. It should be noted, however. that these dollar amounts do not include gas and electric utility valuations or infrastructure. Table 46 lists the values of structures in Butler County for the unincorporated area, the combined totals of the incorporated areas, and the total unincorporated and incorporated areas combined. This data, and data for each city, was considered in the vulnerability discussion in each of the Hazard Profiles

Table A46: Asset Inventory – Value By Structure Type in Butler County

INCORPORATED				UNINCORPORATED			TOTAL FOR COUNTY			
Type of Structure	**Number of Structures**	**Lot/Land Value**	**Value of Structures**	**Number of Structures**	**Lot/Land Value**	**Value of Structures**	**Number of Structures**	**Value of Structures**	**Land Value**	**TOTAL VALUE**
Residential	3740	$ 56,578,270	$ 337,312,857	1151	$ 47,026,480	$ 296,186,650	4891	$633,499,507	$ 103,604,750	$ 737,104,257
Commercial	378	$ 7,380,543	$ 42,426,732	61	$ 2,691,500	$ 14,062,120	439	$ 56,488,852	$ 10,072,043	$ 66,560,895
Industrial	15	$ 788,160	$ 6,764,200	14	$ 2,876,430	$ 46,299,520	29	$ 53,063,720	$ 3,664,590	$ 56,728,310
Agriculture	NA	$ 5,577,850	$ 216,640	NA	$462,648,300	$ 17,169,160	NA	$ 17,385,800	$ 468,226,150	$ 485,611,950
Total	4,133	$ 70,324,823	$ 386,720,429	1,226	$515,242,710	$ 373,717,450	5,359	$760,437,879	$ 585,567,533	$ 1,346,005,412

Source: Butler County Assessor; Values as of 2019; does not include exempt properties, utilities, or infrastructure values. Results should be considered preliminary as an entire assessment of the planning area has not been completed. Residential include residential dwellings on agricultural realty but does not include the land value of the residential agricultural realty.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and

local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development.

Repetitive Loss Properties

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. There are four repetitive loss properties in the unincorporated portions of Butler County.

Butler County HMP attempts to reduce loss by identifying potential natural hazards. As a result of many natural and manmade hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs.

TABLE 47: NFIP STATISTICS IN BUTLER COUNTY

Community	Participate in NFIP?	CID #	# of NFIP Policies	NFIP Insurance in Force ($)	Total Paid Losses #	Total Payments Made ($)
Aplington	Yes	190335	2	842,000	0	0
Aredale	Yes	190035	1	42,000	1	2,363
Clarksville	Yes	190336	23	5,367,000	14	612,031
Dumont	Yes	190036	2	111,000	9	62,566
Greene	Yes	190037	46	4,322,000	49	1,244,855
New Hartford	Yes	190038	96	7,892,000	173	3,659,937
Parkersburg	Yes	190337	2	364,000	0	0
Shell Rock	Yes	190338	9	1,619,000	23	682,000
Butler County (Unincorp)	Yes	190850	65	12,284,000	41	1,163,719
TOTAL	**-**	**-**	**246**	**$32,843,000**	**310**	**$5,215,954.66**

Source: Federal Emergency Management Agency (FEMA); Policy and Loss Data by Geography. Data as of 10/30/2019

TABLE 48: BUTLER COUNTY REPETITIVE LOSS PROPERTIES

Community	Total Losses	Properties	Total Building Payments	Total Contents Payments	Total Payments
Dumont	4	2	$36,187	$0	$36,187
Greene	6	3	$253,228	$0	$253,228
New Hartford	29	12	$303,743	$4,937	$308,680
Shell Rock	3	1	$83,563	$22,100	$105,663
Butler County (Unincorp)	21	9	$549,318	$129,140	$678,457
TOTAL	**22**	**7**	**51**	**14**	**$852,509.38**

Source: Iowa Department of Natural Resources; Data does not include properties that have been mitigated (properties that are no longer repetitive); RL = Repetitive Loss; Data as of 09/30/2019

Butler County and eight cities participate in the National Flood Insurance Program (NFIP). Table 47 shows which communities participate in NFIP and details to the extent of their participation. The cities of Allison and Bristow do not participate. As of 10/30/2019 there were 246 NFIP policies in place in the county.

River flooding is the most common cause of flooding and repetitive loss properties in Butler County. Table 48 illustrates which jurisdictions in Butler County have repetitive loss properties. These numbers do not include previous repetitive loss properties that have been mitigated.

Requirement §201.6(c)(2)(ii)(B): The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerability structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

According to FEMA's data, Butler County has a total of 22 repetitive loss properties, an increase of one from the previous MJ-HMP. As 09/30/19 only Dumont, Greene, New Hartford, Shell Rock and unincorporated Butler County have active repetitive loss properties. New Hartford has 12 of the 22 properties.

Table 49 displays the values of properties in the 100-Year and 500-Year floodplains.

TABLE 49: ASSET INVENTORY – ESTIMATED POTENTIAL PROPERTY LOSSES RESULTING FROM FLOODING IN BUTLER COUNTY

AREA	# OF PARCELS	LAND VALUE	BUILDING VALUE	DWELLING VALUE	TOTAL VALUE	PERCENT OF PARCELS IN RESPECTIVE AREA
Incorporated Area 100-Year Floodplain	1079	$11,357,246	$8,536,951	$27,900,599	$47,794,796	7.97%
Incorporated Area 500-Year Floodplain	74	$772,280	$475,750	$2,858,060	$4,106,090	.54%
Incorporated Floodplain Total	1153	$12,129,526	$9,012,701	$30,758,659	$39,771,360	8.52%
Incorporated Area Total	5956	$73,814,216	$45,708,264	$323,541,756	$443,064,236	44.00%
Unincorporated Area 100-Year Floodplain	3418	$339,677,250	$30,530,750	$79,128,290	$449,336,290	25.25%
Unincorporated Area 500-Year Floodplain	7	$220,050	$0	$676,450	$896,500	.05%
Unincorporated Floodplain Total	3425	$339,897,300	$30,530,750	$79,804,740	$450,232,790	25.30%
Unincorporated Area Total	7580	$697,440,370	$63,060,670	$269,305,030	$1,029,806,070	55.99%
Total Area in 100-Year Floodplain	4497	$351,034,496	$39,067,701	$107,028,889	$497,131,086	33.22%
Total Area in 500-Year Floodplain	81	$992,330	$475,750	$3,534,510	$5,002,590	0.6%
Total Floodplain Area	4578	$352,026,826	$39,543,451	$110,563,399	$502,133,676	33.82%
County Area Total	13536	$771,254,586	$108,768,934	$592,846,786	$1,472,870,306	**100%**

Parcel value information current as of 9/12/18. The source is the Butler County Assessor's Office; This is FEMA's Digital DFIRM data for Butler County, Iowa. It was completed on 9/16/2011; The incorporated boundaries were current as of 4/01/19; For actual determination if a location is within the floodplain contact your local floodplain administrator.

Chapter 4: Mitigation Strategy

Hazard Mitigation Plan Goals for Planning Area

The Committee reviewed the County's Hazard Mitigation Plan Goals from the 2015 plan. The Committee elected to continue forward with the same set of goals in the plan update. These broad- based goals were developed to address a multitude of hazards and encompass a variety of mitigation activities. The updated multi-jurisdictional hazard mitigation plan goals for Butler County are:

1. Minimize to the greatest possible extent the number of injuries and/or loss of life associated with all identified hazards.
2. Reduce or eliminate property damage due to the occurrence of disasters.
3. Improve response operations in the event of a disaster.
4. Return the community to either pre-disaster or improved conditions in a timely manner in the wake of a disaster.
5. Develop strategies that can be used to reduce the community's overall risk to the negative effects of natural, technological, and man-made disasters.
6. Reconvene the planning committee annually to review the plan document, check for compliance with the plan goals, and track progress in achieving the mitigation strategies.
7. Maintain the Countywide Multi-Jurisdictional format for future plan updates.

Mitigation actions can be grouped into six broad categories:

1. **Prevention.** Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.
2. **Property Protection.** Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
3. **Public Education and Awareness.** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
4. **Natural Resource Protection.** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
5. **Emergency Services.** Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.
6. **Structural Projects.** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

Current Hazard Mitigation Actions

Mitigation actions are grouped into six broad categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. The text box to the right provides clarification on these categories. Detailed information for each incorporated community can be found in their respective appendix.

Prevention Mitigation Actions

Butler County currently has a Floodplain Management Ordinance which is administered by the County Zoning Administrator. All inquiries pertaining to construction areas in a floodplain are directed to the Administrator's Office and follow NFIP guidelines. The Federal Government completed new FIRM maps, as

of September 16, 2011, for Butler County due to the flooding of 2008. Butler County has and enforces Zoning Ordinances. The County does not issue building permits and does not perform building inspections. However, Butler County does issue Zoning Certificates for land areas under 35 acres. The Zoning and Subdivision Ordinance was adopted by the Butler County Board of Supervisors in May 2004 and is administrated by the County Zoning Administrator. Butler County also has a snow ordinance which is Title IV #7 in Butler County Ordinances. It was amended to its current status in October 1995.

The cities in Butler County also use a number of zoning and ordinance tools. Table 50 provides a compilation of the current planning regulatory documents in place for each city in Butler County.

Table 50: Current Planning and Regulatory Documents for Selected Communities

Community	Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Allison	Yes	Yes	No	Yes	No	No	Yes	No	Yes
Aplington	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Aredale	Yes	No	No	No	No	No	No	No	No
Bristow	Yes	No	No	Yes; RR	No	No	No	No	No
Clarksville	Yes	No	No	Yes; RR	No	Yes	Yes	Yes	Yes
Dumont	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes
Greene	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
New Hartford	Yes	Yes	Yes	Yes; RR	No	Yes	No	No	Yes
Parkersburg	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Shell Rock	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Butler County	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes

*Source: Communities - *Note: RR = Restricted Residential*

Property Protection Mitigation Actions

Numerous flood studies have been conducted within the planning area. The majority of the cities (8/10) and the county participate in the National Flood Insurance Program. The county's FIRM was updated in September 2011. A handful of communities, including Clarksville, Greene, New Hartford and Shell Rock have participated in the FEMA flood buy-out program designed to reduce future flood damage costs by removing flood prone structures from the floodplain.

It is important to note that there are a number of structures throughout the county that have experienced, and likely will again, damaging water levels. According to information provided by the Iowa Department of Natural Resources, there are 22 repetitive loss properties in the county as of 09/30/2019 (See Table 48). Removing floodplain properties is a high priority of the county and requires the willingness on the part of the property owner.

Public Education and Awareness Mitigation Actions

Information regarding how to protect one's self in the event of a tornado is largely publicized in the form of flyers, radio, newspaper, and television announcements. The County provides basic safety information for various hazard events (i.e., tornados) and what to do before, during, and after an event. Butler County Emergency Management hosts a severe weather spotter training annually in the spring and uses the AlertIowa notification system to notify users in case of an emergency.

Natural Resources Protection Mitigation Actions

Butler County has numerous wetland/conservation areas throughout the county which were made possible with assistance from Pheasants Forever, Ducks Unlimited and other conservation efforts. The county also has a weed control program during summer months. The Big Marsh wetlands area is also located just south of Allison.

Emergency Services Mitigation Actions

Butler County's Emergency Management Coordinator is based out of Allison, the county seat. The Emergency Management Coordinator works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community. The current Emergency Management Coordinator is Chris Showalter. The contact information for Showalter is as follows: Butler County Emergency Management, 428 6th St., PO Box 325, (319) 267-9968, email: butlercoEMA@butlercoiowa.org.

Law Enforcement: The Butler County's Sheriff's Office, located in Allison, provides law enforcement for all unincorporated areas in the county along with providing assistance to the cities that have their own police force. The Butler County Sheriff's Office has service contracts to provide law enforcement patrols with the communities of Allison, Aredale, Bristow, Dumont and New Hartford. Cities with their own law enforcement agencies include Aplington, Clarksville, Dumont, Greene, Parkersburg and Shell Rock. See attachment 6I for a map of city police and county sheriff locations.

Fire Protection: Butler County is divided into fire districts with 14 fire departments, having coverage for every square mile of the county. Each city has their own fire department. Fire departments serving Butler County are: Ackley, Allison, Aplington, Aredale, Bristow, Clarksville, Dougherty, Dumont, Greene, Nashua, New Hartford, Parkersburg, Plainfield, and Shell Rock. See attachment 6I for a map of fire department locations.

Ambulance: Much like the fire departments, the county is divided into ambulance districts providing coverage to the entire county. Ambulance providers for Butler County are: Allison, Aplington, Clarksville, Dumont, Greene, New Hartford, Parkersburg and Shell Rock. See attachment 6B for a map of ambulance locations and service districts within Butler County.

The county also receives mutual aid from paramedic/ambulance services from: Franklin General Hospital Ambulance Service, Covenant Medical Center Ambulance Service, Sartori Ambulance Service, Waverly Hospital Ambulance Service, AMR Ambulance Service (Charles City), and the Mason City Fire Department.

Medical Facilities: Butler County has no hospital within its boundaries; therefore, residents go to neighboring counties for hospital care. Area hospitals include: Waverly Municipal Hospital (Waverly); Franklin General Hospital (Hampton); Floyd County Memorial Hospital (Charles City); Covenant Medical Center (Waterloo); and Mercy Medical Center North Iowa (Mason City).

Medical clinics are located in Allison (MercyOne Family Medicine), Clarksville (People's Clinic), Dumont (Franklin Medical Center), Greene (MercyOne), Shell Rock Clinic (Shell Rock), and Parkersburg (Unity Point).

HAZMAT: All Butler County jurisdictions contract with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The Training Center provides training to fire departments and companies from around the state and country. Not only is this a training center, it also serves as a hazardous material quick response unit to Butler County, surrounding counties, and many municipalities in a ten-county region. The Unit provides local fire departments with hazard materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the activities with the local department. Contact information for the facility is as follows: Hazardous Materials Regional Training Center, 1925 Newell St., Waterloo, Iowa 50707, Phone: (319) 291-4275, Toll Free: (800) 291-4682, Fax: (319) 291-4285.

The jurisdictions also partner with the Northeast Iowa Response Group for assistance in responding to any methamphetamine labs located in the city limits. The Response Group assists the Police Departments in containment of the site and disposal of the hazardous chemicals.

County Engineer and Secondary Roads Department: The Butler County Engineer's Office is tasked with the maintenance of all roads within Butler County. The Engineering/Secondary Roads Department is staffed by management, planning/engineering, equipment operators, truck drivers, and mechanics. The department is equipped with a variety of equipment such as motorgraders, dump trucks, semi tractors, rubber-tired loaders, excavators, crawler loaders, dozers, side dump trailers, belly dump trailers, Lo-Boy trailers, and equipment trailers.

Warning Systems: Butler County uses the AlertIowa notification system that is to be utilized statewide. The program is funded by the State of Iowa and administered through Iowa Homeland Security and Emergency Management Office. This system replaces the CodeRed program the county previously had in place. AlertIowa will be administered through Butler County Emergency Management Agency and will be available to all cities and school districts. AlertIowa will allow for emergency notifications at all times via landline telephones, cell phones, text message, and social media. The county has used their emergency notification network a number of times in the past years for evens including flood evacuations, boil orders, water main breaks, missing persons, school closings or delays, and other hazards.

Structural Projects Mitigation Actions

The county completed the restoration of the Greene Mill Dam in Greene. The dam is the responsibility of Butler County Conservation and received severe damage during the flooding of 2008.

Future Hazard Mitigation Activities

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed an updated list (Action Plan – Table 52) of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The action plan may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public. Below is the action plan for Butler County Unincorporated area. Action Plans for each participating jurisdiction can be found in their respective appendix.

Action Plan

Priority

The Committee analyzed the identified mitigation activities that are either new or carried over from previous/current plans. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria.

The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental. See Table 51 for definitions.

The Committee was asked to discuss the STAPLEE elements and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each mitigation activity

Table 51: STAPLEE Elements

S – Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the populations; actions do not cause relocation of lower income people; actions are compatible with the community's social and cultural values.
T – Technical	Mitigation actions are technically most effective if they provide long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a costs-benefit review, and possible to fund.
E – Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment and comply with federal, state and local environmental regulations; actions consistent with the community's environmental goals and have mitigation benefits while being environmentally sound.

was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period of each proposed mitigation activity. For instance, if the activity happens regularly (either daily, weekly, monthly, or annually) it was identified as Ongoing or Active; if it will occur within the next 1-5 years it was identified as Short-Term; if the activity would take 5-10 years to occur it was labeled as Mid-Term; and all activities that would take 10 or more years to occur were identified as Long-Term.

Estimated Cost

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The local community will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities. In addition, private property owner expenses will be necessary to implement some activities.

Requirement §201.6(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(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 benefit review of the proposed projects and their associated costs.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

- **Minimal**: Cost estimate is $10,000 or less based on using current staff, time commitment, continuous of current duties, proposed action/program/project and funding sources.
- **Low**: Cost estimate for project ranges from $10,001 – $99,999 based on existing proposed treatment, time commitment, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.).
- **Moderate**: Cost estimate for project ranges from $100,000 – $299,999 based on existing conditions, time commitment, proposed action/program/project, any further study that is needed, level of engineering, and project components (permits, acquisition, coordination, etc.).
- **High**: Cost estimate for project range is $300,000 or higher based on existing conditions, time commitment, proposed action/program/project, any further study that is needed, level of engineering, project components (permits, acquisition, coordination, etc.), and funding sources.

Funding Source

While some mitigation actions, projects or programs may be at no cost, others will require a funding source. Additionally, some actions will be a lower cost that the community can pay for with their own funds; however, some of the bigger projects that are more expensive will require outside funding sources such as loans and grants. Common outside funding sources are SRF loans, USDA loans, CDBG and HMGP programs.

Implementation Strategy

One of the first steps the Committee took was to review the existing hazard mitigation activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity and drop it from the plan update. Once the Committee identified and ranked future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, identified the responsible party or parties for each activity, and finally related each activity to at least one of the hazard mitigation plan goals listed earlier. Table 52 below is the county's implementation strategy.

TABLE 52: FUTURE HAZARD MITIGATION ACTIVITIES- BUTLER COUNTY						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation * - Denotes primary agency**	**Timeline**	**Est. Cost**	**Goal(s)**
High	Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Drought, Extreme heat, Flash Flood, Grass/Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/Lighting/Hail, Tornado/Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/Dam Failure	County EMA* and Public Health	Active	Minimal	1, 2, 6, 7
High	Establish an Emergency Notification System and Conduct Drills	All	County EMA*	Active	Minimal	1,2,3, 5, 7
Low	Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	All	County EMA*	Active	Low	4
Medium	Complete and Maintain Secondary Off-Site Dispatch Center	All	Butler County Sheriff*	Active	Low	1, 4, 5
Medium	Develop and Maintain an Emergency Response Plan	All	County EMA*	Active; updated annually	Minimal	1, 2, 4, 5, 6
High	Develop and Maintain Continuity of Operations Plan (COOP)	Human Disease, Thunderstorm / Lightning / Hail, Tornado/Windstorm, HAZMAT Incident, Terrorism	Board of Supervisors*	Active	High	4, 6
High	Develop and Maintain Command Procedures & Center	All	County EMA*	Active	Minimal	1, 5
High	Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	Extreme Heat, Flash Flood, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Levee/Dam Failure	County EMA* and Public Health	Active	Minimal	1, 5
High	Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	Flash Flood, River Flooding, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incidnet, Terrorism	Individual Departments*; County EMA, Ambulance Service, Police Departments, Sheriff	Active; updated annually	Minimal	1, 2, 3, 4, 5, 7
High	Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Flash Flood, River Flooding, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Terrorism	County EMA*	Active	Minimal	1, 2
High	Provide Off-Site Backup of Essential Data	All	Board of Supervisors*	Active	High	4, 5

TABLE 52: FUTURE HAZARD MITIGATION ACTIVITIES- BUTLER COUNTY						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation * - Denotes primary agency**	**Timeline**	**Est. Cost**	**Goal(s)**
Low	NOAA Weather Radio Awareness Program	All	County EMA*	Active, repetitive	Minimal	1, 2, 5, 6, 7
Medium	Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	HAZMAT Incident, Radiological Incident, Transportation Incident	County EMA*	Active, annually	Minimal	1, 2, 5
Medium	Continue Agreement with NE Iowa Response Group	HAZMAT Incident, Radiological Incident, Transportation Incident	Board of Supervisors*	Active, annually	Minimal	3, 5
Medium	Ensure Tier II Reports are Completed and Reported per Applicable Laws	HAZMAT Incident, Radiological Incident, Transportation Incident	County EMA*	Active, annually	Minimal	3, 5
High	Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, Terrorism	Board of Supervisors*	Mid-Term	Minimal	1
High	Maintain Membership of National Flood Insurance Program	Flash Flood, River Flooding	Board of Supervisors*	Active, repetitive	Minimal	5
High	Maintain Wellness Clinics and Public Health Department	Human Disease	County Public Health*	Active, repetitive	Minimal	1
High	Develop a Clean Up/Recovery Procedure / Plan	Flash Flood, River Flooding, Sever Winter Storm, Thunderstom/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Levee/Dam Failure, Terrorism	County EMA*	Active, updated annually	Minimal	4
High	Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	Flash Flood, Grass/ Wild Fire, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incidient, Levee/ Dam Failure, Transportation Incident	County Engineer*	Active	Minimal	1, 5
High	Maintain a Community-Wide Household Hazardous Waste Disposal Site or Event	HAZMAT Incident, Human Disease	Board of Supervisors*	Active	Moderate	4
High	Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Drought, Flash Flood, Human Disease, River Flooding, HAZMAT Incident, Transportation Incident, Terrorism,	County Environmental Health*	Active	Minimal	1, 5
Low	Maintain and Update Bioterrorism Response Plan	Human Disease, Terrorism	County EMA*	Active	Minimal	1, 2, 4, 5
High	Identify and Improve Security at Critical Facilities	Terrorism	Board of Supervisors*	Active	Low	1, 5
Low	Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both	Flash Flood, River Flooding, Levee/ Dam Failure	County EMA, Board of Supervisors	Active	Moderate	1, 2, 5

TABLE 52: FUTURE HAZARD MITIGATION ACTIVITIES- BUTLER COUNTY						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation * - Denotes primary agency**	**Timeline**	**Est. Cost**	**Goal(s)**
Low	Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Earthquake, Extreme Heat, Flash Flood, River Flooding, Tornado/ Windstorm, Levee/ Dam Failure	County Engineer	Active	Medium	1, 2, 5
Low	Maintain Roadside Vegetation Management Program	Landslide	County Engineer	Active	Low	5
Low	Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	Earthquake, Extreme Heat, Flash Flood, River Flooding, Tornado/ Windstorm, Levee/Dam Failure	County Engineer and EMA	Short-Term	Medium	1, 2, 5

Chapter 5: Plan Maintenance

Requirement §201.6(c)(4)(i): [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.

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 plans or capital improvement plans, when appropriate.

Requirement §201.6(c)(4)(ii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

Monitoring, Evaluating, and Updating the Plan

Amendment

This is an updated five-year hazard mitigation plan, commencing upon FEMA Certification, and any future amendments to the plan shall occur only after an official Public Notice has been posted in a local publication announcing a Public Hearing on the matter.

After the public has had the opportunity to review the proposed amendments the City Council, School Board, and/or Board of Supervisors may, by resolution, choose to accept any amendment to the plan. Once the City Council and/or Board of Supervisors has adopted the amendment, the remaining elected board of each participating municipality shall hold a public hearing to receive public input on the amendment prior to local adoption.

Any and all amendments made to this plan should be shared with each participating jurisdiction, the Butler County Emergency Management Agency and the Iowa Department of Homeland Security and Emergency Management Division. At a minimum, this Plan will be evaluated for consistency with FEMA and IHSEMD requirements and formally updated every five (5) years. However, it is strongly encouraged the mitigation strategies for each community be reviewed and revised (if necessary) following disasters to determine if the recommended actions are still appropriate given the impacts of an event.

Phasing and Funding

Phasing is a process by which the completion of a project occurs over several budget cycles. It is recommended that this updated hazard mitigation plan be incorporated into the City's or County's annual Capital Improvements Program update procedure. For projects that require a local match commitment, the Council or Board of Supervisors should begin setting aside appropriate resources to meet their match liability. In addition, the projects defined herein may be prioritized for funding through the jurisdictions' budgeting process. Finally, the information presented in the Plan may be used as documentation for grant and/or loan programs, including the Hazard Mitigation Grant Program (HMGP).

Evaluation and Review Process

Ultimately, the Butler County Emergency Management Coordinator and governing boards from all jurisdictions are responsible for the Hazard Mitigation Plan and implementation of the goals and actions contained herein, and they may seek assistance from other city or county staff, Council of Governments, and consultants in order to accomplish mitigation projects. To assist in the review process, the Hazard Mitigation Committee (as mentioned in Section 1) may

reconvene annually upon the request of the Butler County Emergency Management Coordinator. As mentioned in Section 1, said Committee will be comprised of representatives from each participating jurisdiction as well as from neighboring communities, schools, businesses, nonprofits, agencies, academia, and other interested parties and together they will be charged with reviewing and evaluating implementation progress of the mitigation plan. In addition, a public notice will be posted at all city and county government buildings and in the local newspapers inviting the general public to participate as members of the Committee and/or to review the Plan and provide comments. Copies of the Plan and the Committee's review will be available at all government offices (city halls and courthouse). Following the Committee's completion of the annual review process, the findings of the review and recommended changes (as applicable) will be presented during a public City Council and Board of Supervisors meeting. Evaluation forms to assist in the review, evaluation, and updating process can be found in Attachment 11.

Attachment 9 summarizes the progress of participating jurisdiction's efforts toward implementing the mitigation actions identified in the prior plan. Since many activities fall under the normal duties of most city governments (e.g. funding and maintaining emergency services), not many activities were deleted. A number of communities in Butler County are limited both in size and capacity to implement mitigation programs. Under the confines of these limited resources, some jurisdictions chose to drop a variety of previously defined mitigation actions, as they were determined to longer be a priority or were not feasible.

Continued Public Participation

In order to ensure that the public remains involved in the future implementation of this Plan, it shall remain available at all participating city halls, school districts, and the county courthouse. An electronic copy will be posted on the Iowa Northland Regional Council of Government's website as well, at www.inrcog.org/pub. This Plan shall be made available to any party who requests to see it. In the event the Hazard Mitigation Committee is reconvened by the County Emergency management Coordinator, the public will be notified and provided an opportunity to participate in planning meetings and submit comments. The public will be notified in accordance with Iowa's Open Meeting and Records Laws (Iowa Code Chapters 21 and 22), said meetings will be open to the public and all records shall be available for inspection. The coordinator will continue to work with each participating jurisdiction in ensuring the plan goals are followed and that these jurisdictions are properly prepared for any disaster.

Integrating Plan into Other Planning Documents

Each jurisdiction should consider the findings from this document when updating or writing new planning documents. Each jurisdiction should integrate and consider their goals as well as their current and future mitigation action steps with existing and future jurisdictional plans. Examples of planning documents that would benefit from information provided in this Plan include, but are not limited to: Comprehensive Land-Use Plans and Urban Renewal Plans, existing and future Zoning and Subdivision Ordinances as well as Building Codes should consider the goals, guidelines, and actions presented in this Plan.

Appendix A: City of Allison

Community Profile

Location

The City of Allison is located in north central Butler County in the northeast quadrant of Iowa. The City occupies 2.93 square miles and is approximately 1,050 ft. above sea level. Major roadways include State Highway 3 running east/west and State Highway 14 running north/south.

History/Development Trends

Five Dubuque capitalists, John R. Willer, General C.H. Booth, R.E. Graves, along with H.L. Stout and his son Frank Stout formed the Allison Town-Site Company around the early 1879s or late 1878s, in order to promote the building of the town of Allison along the Dubuque and Dakota Railroad which was the process of being laid. H.L. Stout, a lumberman from Dubuque, and his son, Frank, were interested in the development of Allison because they had bought the Iowa Central Stock Farm from Mr. R. Babbage in 1875. John R. Waller was the business manager for the company. The layer and local agent for the company was George M. Craig of Butler County.

With the building of the railroad through Butler County in 1879, they platted, named, and deeded the land for the town of Allison. The town was named Allison in honor of William Boyd Allison, a lawyer who lived in Dubuque and served in the Iowa Legislature. The National Republican Party groomed Allison from the presidency in 1888. At the Chicago Convention, Allison was nominated but withdrew his name on the 7th ballot in deference to Benjamin Harrison.

The first settler upon the town sight was George E. Martin, who had lived on a farm a short distance from town. On September, 1879, he moved his family into his home in town and went into the livery business. The second settler was Charley Waters, who came in the latter part of September 1879, and at once opened lumber yard. He built a number of first buildings in town. The next settler was Frank Elliot, a Canadian, who had been living for some time at Butler Center.

Soon afterwards, J.J. Cleaver, a painter, moved to Allison. Both of these families lived in houses built by Waters. L.E. Lincoln, a farmer who lived a short distance south of Allison, built a house and moved his family into town in December 1879. Mr. Lincoln was one of Allison's carpenters and built several houses and the first 'engine' house to house he fire wagon. Early in the fall of 1879, the railroad company erected a depot. Harry Daggett was the first depot agent. George Woodward, of Minnesota, was manager of an elevator built by the Allison Town Company and brought the first grain marketed to Allison starting in 1880. Also, in 1880, the county seat was changed by vote from Butler Center to Allison and the county records moved to Allison in January 1881. On June 14, 1881, the first edition of the Allison Tribune was printed.

The first to enter the mercantile business was a firm of Fletcher Moore and Charles Grassley, who rented a small building just south of the Allison Hotel, and on January 20, 1880, opened for business with small stock of general merchandise, mostly groceries. Dr. Burbank and Son started their drug store in the fall of 1882,

erecting one of the best business houses in town known as “Burbanks” Corner Block. One half of this was used as a drug store and the other half was rented out. This family is the same family that donated land to California, which was later named Burbank, California.

Having the Butler County Courthouse and other County operations housed within the City limits brings with it a level of activity in addition to what would be typically expected. The Allison Industrial Park is located east of the City with 21 acres available for development. Current park tenants include the Iowa Department of Transportation regional facility and two powder coating/painting facilities.

Natural Environment

Allison’s climate is not unlike those of most cities in the Midwest with a continental character. Far from the moderating influence of a large body of water, a wide variation is experienced in both temperature and precipitation during the four distinct seasons.

Transportation

Positioned in the center of Butler County, Allison is served by intersecting Iowa Highways 3 and 14. Iowa Highway 14 is a north/south route that travels along the western and southern edges of the City. Highway 3 is an east/west route cutting through the southern half the City.

According to the Iowa Department of Transportation’s 2017 traffic study, State Highway 14 that runs north/south along Allison’s western city limit sees an average of 2,240 vehicles traveling each day. In addition, State Highway 3 that runs east/west in southern Allison sees an average of 3,680 vehicles per day.

Butler County’s only airport is located in Allison. The Allison Municipal Airport, FAA Identifier K98, is a public airport located on the northwest edge of the City and is accessible via Iowa Highway 14 and 7th St. The facility is classified as a local service airport offering a 1,790 ft. long, 175 ft. wide turf runway, six hangar parking spaces, and two aircraft tie-down locations. In 2010, there were five aircraft based at the airport generating approximately 1,250 annual operations. These figures are projected to increase to six aircraft and 1,500 annual operations by 2030.

The closest major airport is the Waterloo Regional Airport (ALO), located 24 miles southeast of the City. This public airport is owned and operated by the City of Waterloo and overseen by an Airport Commission appointed by the Mayor. The primary runway is 8,400 ft. long, 150 ft. wide, and has a grooved asphalt surface. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service.

Another transportation asset to the city is the Rolling Prairie Bike Trail, owned by the County and is located on a converted Iowa Pacific Railroad bed. The portion of this multiuse trail in Allison has been paved. The current trail extends east of Allison to Shell Rock. There are plans and a concerted effort to extend the trail to other communities in the area. Allison is not served by a railway.

Community Services

The city’s water is supplied by two wells, with a multi legged elevated storage tank, constructed in 1979, with a capacity of 400,000. The average consumption is 100,000 gallons per day (gpd). The peak consumption is 225,000 gallons. A primary sewer treatment plant serves Allison. Average load is 110,000 (gpd) with a

peak load of 900,000 (gpd). Approximately 98% of Allison residents are served by the sewer treatment plant. The primary providers of utilities in Allison are listed in Table A1 below.

Table A1: Allison Utility Providers							
Electric	**Natural Gas**	**Water**	**Sewer**	**Sanitation**	**Telephone**	**Internet**	**Cable**
MidAmerican Energy	MidAmerican Energy	City of Allison	City of Allison	City of Allison	Dumont Telephone	Dumont Telephone	Dumont Telephone

Demographics

Table A2 displays Allison's demographics. The City's population has remained relatively constant over the past several decades. According to the US Census, Allison had a population of 1,071 in 1970. In 2010, the population of Allison was 1,029. The population was estimated to be 988, according to the 2018 Annual Population Estimates Program.

Table A2: Allison Demographics			
General Population, 2010 Census		***Economic Characteristics, 2013-2017 ACS***	
Total Population	1,029	Total Population 16 yrs. and over)	950
Males	480	Population in Labor Force (16 yrs. and over)	624
Females	549	Persons in Civilian Labor Force	624
Median Age	46.4	Persons Employed	602
At-Risk Population (under 18)	225	Persons Unemployed	22
At-Risk Population (65 years and older)	270	Persons in Armed Forces	0
One Race – White	1,023	Avg. Commute to Work in Minutes	21.7
Asian	1	Management, business, science, and arts occupations	153
Native Hawaiian or Other Pacific Islander	0	Service occupations	101
Two or More Races	5	Sales and office occupations	174
Hispanic or Latino (of any race)	2	Natural resources, construction, and maintenance occupations	44
Not Hispanic or Latino	1,027	Production, transportation, and material moving occupations	130
Household Population	977	Median Household Income	$53,350
Group Quarters Population	52	Median Family Income	$66,944
Group Quarters – Institutionalized	52	Per Capita Income	$25,813
Group Quarters – Noninstitutionalized	0		
Housing Characteristics, 2010 Census		***Social Characteristics, 2013-2017 ACS***	
Total Housing Units	470	School Enrollment (3 yrs. and over)	270
Owner-Occupied Housing Units	350	Nursery school/preschool	8
Renter-Occupied Housing Units	90	K – 12th Grade	245
Vacant Housing Units	30	K – 8th Grade	155
		9th Grade – 12th Grade	90
		College or Graduate School	17
Annual Population Estimate, 2018	988	Educational Attainment – Population 25+ yrs.	841
		Less than 9th Grade	21
		9th Grade – 12th Grade, No Diploma	36
		High School Degree or Equivalency	298
		Some college, no degree	223
		Associate's Degree	115
		Bachelor's Degree	52
		Graduate or Higher Degree	96
Source: 2010 Census; 2013-2017 American Community Survey; 2018 Population Estimates Program			

Hazards and Risk Assessment

Hazard Analysis

Chapter 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Chapter 3 (Vulnerability Assessment), Allison evaluated the risk associated with a specific hazard and defined by probability and frequency of occurrence, magnitude, severity, exposures and consequences. Allison's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards that can affect the city and the associated risks and impacts each hazard presents.

As mentioned previously in Chapter 3, the vulnerability assessment requires a 5-year review with periodic updates as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns as well as demographic and socioeconomic chances that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predicable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdiction: historical occurrence, probability, magnitude/severity, warning time, and duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined, the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x 0.45) + (Magnitude/Severity x 0.30) + (Warning Time x 0.15) + (Duration x 0.10) = Final Hazard Assessment Score

As seen in Table A3, the four hazards identified with the highest risk are: Thunderstorm/Lightning/Hail; Tornado/Windstorm, Severe Winter Storm; and HAZMAT Incident.

TABLE A3: HAZARD RISK ASSESSMENT - Allison						
Hazard Rank	City of Allison	Hazard Factors				Final Assessment Score
		Probability	Magnitude/ Severity	Warning Time	Duration	
1	Thunderstorm/Lighting/Hail	4	3	4	2	**3.5**
2	Tornado/Windstorm	4	3	4	1	**3.4**
3	Severe Winter Storm	4	3	2	2	**3.2**
4	HAZMAT Incident	3	2	4	2	**2.75**
5	Extreme Heat	3	2	1	3	**2.4**
6	Transportation Incident	3	1	4	1	**2.35**
7	Flash Flood	2	2	4	2	**2.3**
8	Drought	2	2	1	4	**2.05**
8	Human Disease	2	2	1	4	**2.05**
10	Infrastructure Failure	2	1	4	2	**2**
11	Dam / Levee Failure	1	1	4	4	**1.75**
12	River Flooding	1	1	4	3	**1.65**
13	Radiological Incident	1	1	4	2	**1.55**
14	Grass/Wild Fire	1	1	4	1	**1.45**
14	Earthquake	1	1	4	1	**1.45**
14	Landslide	1	1	4	1	**1.45**
14	Terrorism	1	1	4	1	**1.45**
14	Sinkholes	1	1	4	1	**1.45**
19	Animal/Plant/Crop Disease	1	1	1	4	**1.3**
20	Expansive Soils	1	1	1	1	**1**

Vulnerability – Identifying Assets (Critical Facilities)

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or a larger area), the following vulnerability assessment will only address those hazards that affect a specified area – flooding (flash flooding and river flooding). However, due to the community's historical occurrences of tornadoes and the ability of them to result from the community's top natural hazards (thunderstorms and lightning), this hazard was added to the assessment. The following discussion only considers the assets in Allison.

Critical Facilities

Identifying the location of critical facilities (see Table A4) in Allison is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. Critical facilities include high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. Attachment 6B illustrates the location of identified critical facilities throughout Allison.

According to the available data sources, Allison is projected to see a decrease in population over the next 30 years. This population decrease will most likely result in a lesser need for additional critical facilities; however, the existing critical facilities should be protected so they can continue to serve Allison's population. The need for more or less critical facilities should be monitored closely over the next 5 years and readdressed when this HMP is updated.

TABLE A4: Critical Facilities and Designated Shelters in Allison

Site	Shelter or Critical Facility
EMS Building	CF
Rehabilitation Center	CF
Mercy One Clinic	CF
Butler County Courthouse	CF / S
St. James Lutheran Church	CF
Trinity Reform Church	CF
AMVET Post 88	CF
City Hall	CF
Rehabilitation Center	CF / S
UCC Church	CF
Public Library	CF
Emergency Services Building	CF / S
Elementary School	S

Homes in Hazardous Areas

Allison experiences minimum impacts from flooding. Only two parcels of land, accounting for less than 1% of the land area, are within the 100-year floodplain. Both of these properties are located in the northern part of the city and occupy approximately 8.75 acres and have not been developed with standing structures. See Table A5 for floodplain value data. See attachment 3B and attachment 4B for maps of the floodplains and affected parcels of land.

Flooding puts the entire population at some level of risk, whether it's through the flooding of their homes, businesses, places of employment, or the road, sewer, and water infrastructure that serves them daily. High floodwaters can devastate homeowners with property damage, property loss, and extensive, time-consuming cleanup. Secondary effects caused by flooding can add to the property damage. Power loss can leave citizens without heat or air conditioning for extended periods of time. The transportation infrastructure of the community can be impacted by flooding events, which can endanger citizens attempting to

travel or evacuate the area, as well as leave those remaining without goods and services. There are no public infrastructure, roads or buildings within the 100-year floodplain.

TABLE A5: FLOODPLAIN DATA FOR ALLISON						
	# of Parcels	Area in Acres	Land Value	Building Value	Dwelling Value	Total Value
1.0% Annual Chance Floodplain Values	2	8.75	$324,390	$0	$0	$324,390
0.2% Annual Chance Floodplain Values	0	0.00	$0	$0	$0	$0
Total Floodplain Values	2	8.75	$324,390	$0	$0	$324,390
Total City Values	669	1,871.68	$9,233,460	$6,480,574	$32,272,626	$47,986,660
Source: Parcel value information current as of 9/12/18, Butler County Assessor Office. FEMA Digital Firm 9/16/2011. Incorporated boundaries as of 04/01/2019. For actual determination if a location is within the floodplain, contact your local floodplain administrator.						

All structures are vulnerable in the event of a tornado/windstorm hazard. As part of a vulnerability assessment, a hypothetical tornado scenario was created for the community. Attachment 5B and 5C illustrate the impact of a hypothetical tornado event in Allison. Table A6 displays the degree of impact that hypothetical tornado scenarios of various strengths would have on Allison.

Persons living in mobile homes (also known as manufactured homes) may also be at risk from tornadoes or high winds. According to the 2013-2017 American Community Survey 5-Year Estimates, there are an estimated 9 mobile homes in Allison. Using the average persons per household at the time of the 2010 Census (2.22 persons), there are approximately 20 persons living in mobile homes in Allison.

In addition, persons living in some multi-family units may also be at risk due to the lack of a proper tornado shelter. According to the 2013-2017 American Community Survey, there were an estimated 18 housing units in buildings with at least 3 units. Therefore, there are approximately 40 persons living in multi-family housing units at risk during a tornado event.

Table A6: Tornado Scenario for Allison				
Scale	Tornado Width	Number of Parcels	Damaged Value	Percentage of City Damaged
EF0	50 Meters	82	$1,148,869	12.26%
EF1	150 Meters	171	$2,448,848	25.56%
EF2	250 Meters	241	$6,750,780	36.02%
EF3	500 Meters	385	$10,785,880	57.55%
EF4	900 Meters	521	$29,192,157	77.88%
EF5	1100 Meters	567	$31,767,274	84.75%
Parcel values current: 01/01/2019				

Vulnerability – Identifying Social Assets (Populations)

The social vulnerability assessment also identified how the hazards affect the population of Allison and it is assumed that the identified populations are more likely to require assistance during times of disaster and are therefore, generally speaking, more at-risk than the remaining population. The at-risk population

must be identified and targeted in successful mitigation efforts. Table A7 identifies the population of various segments of the population that may consider "at-risk" in the event of a hazard.

According to the 2010 Census, approximately 270 persons in Allison are 65 years or older. Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young people often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic due to their age. In 2010, approximately 225 persons in Allison were under 18.

Table A7: City "At-Risk" Population	
Total Community Population	1,224
Elderly (65 years and over)	240
Youth (Under 18 years)	317
Householder Living Alone*	142
Non-English Speaking Population (speaks English less than "very well")	0
Estimated Population in Mobile Homes	20
Living in Group Quarters*	52
Persons with Disabilities – 18 years and under	13
Persons with Disabilities – 18-64 years	42
Persons with Disabilities – 65 years and older	67
Source: 2013-2017 American Community Survey; **2010 Census* *Note: Number of mobile home units multiplied by average household size*	

As mentioned previously, persons living in mobile homes and persons living in multi-family housing units are also considered at risk. There is an estimated 52 persons living in group quarters in Allison. There is both a nursing home and assisted living facility in the city. The population in nursing homes and assisted living facilities are especially vulnerable as they are designed for caring for the elderly population, the majority of which use wheelchairs or other assistance devices that limit mobility.

The North Butler Elementary School is located 513 Birch St. There are approximately 350-400 student ranging from pre-kindergarten to eighth grade and approximately 40-50 staff members. When school is in session, hundreds of people are in the school building. This includes people from other communities attending various events throughout the year.

Wilder Park is a city-owned 78-acre park with 60 campsites located on the eastern edge of town along Highway 3. This is another location where populations often congregate. In the event of a disaster, visitors are informed by the camp host and can take shelter in one of the three storm shelters which have a capacity to shelter 150 persons.

Vulnerability – Estimating Potential Property Losses

Valuations ae an important component of hazard mitigation planning as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. Table A8 lists assets that could be affected in the event of a disaster.

This information was made available from the Butler County Assessor's office. It should be noted, however, that these dollar amounts do not include gas and electric utility valuations or do the evaluations include exempt properties, including government buildings, infrastructure, and religious/nonprofit properties. These results should be considered preliminary, as a full accounting of assets has not been completed.

Table A8: Asset Inventory – Value of Structures in Allison				
Type of Structure	**Lot/Land Value**	**Value of Structures**	**Total Value**	**Number of Structures**
Residential	$ 5,269,350.00	$ 32,214,160.00	$ 37,483,510.00	415
Commercial	$ 863,832.00	$ 4,610,424.00	$ 5,474,256.00	54
Industrial	$ 204,750.00	$ 2,073,050.00	$ 2,277,800.00	4
Agriculture	NA	NA	NA	NA
Total	**$ 6,337,932.00**	**$ 38,897,634.00**	**$ 45,235,566.00**	**473**
Source: Butler County Assessor, 2019 Values				

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigate future hazards as risks increase. However, continued conformity with the state building codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development. Fortunately, the planning area has not experienced a significant change in development since the area is rural and the amount of development (residential, commercial and industrial) has not changed in the past 5 years.

Repetitive Loss Properties

The City of Allison does not participate in the National Flood Insurance Program, nor does it have any recorded repetitive loss properties. Butler County's Flood Insurance Rate Maps were last updated on September 16, 2011.

Mitigation Strategy

Hazard Mitigation Plan Goals

Allison's 2020 hazard mitigation plan goals were received by the Hazard Mitigation Planning Committee during the 2nd meeting. After reviewing the goals, the Committee decided to renew these broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The City's hazard mitigation plan goals are:

1. Minimize to the greatest possible extent the number of injuries and/or loss of life associated with all identified hazards.
2. Reduce or eliminate property damage due to the occurrence of disasters.

3. Improve response operations in the event of a disaster.
4. Return the community to either pre-disaster or improved conditions in a timely manner in the wake of a disaster.
5. Develop strategies that can be used to reduce the community's overall risk to the negative effects of natural, technological, and man-made disasters.
6. Reconvene the planning committee annually to review the plan document, check for compliance with the plan goals, and track progress in achieving the mitigation strategies.
7. Maintain the Countywide Multi-Jurisdictional format for future plan updates.

Current Mitigation Actions

Prevention Mitigation Actions

Allison was included in the Butler County Flood Study conducted by Emergency Management and Homeland Security. A map and information regarding insurance rating was provided from this study.

The City has a restricted residential zoning ordinance. The ordinance zones all property within the city as residential, excluding two areas on either side of Main Street and Highway 3, which are un-zoned. The property within the Industrial Park is zoned as industrial. Table A9 shows Allison's current planning and regulatory documents.

Table A9: Current Planning and Regulatory Documents for Allison

Participation in Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes; 2015	Yes; 2011	No	Yes	No	No	Yes	No	Yes

Property Protection Mitigation Actions

Allision has not participated in any buyout or similar program. No actions or plans of property mitigation are planned under the city's jurisdiction.

Public Education and Awareness Mitigation Actions

The City publishes seasonal information such as instructions on what to do in the event of a tornado; storm shelters are provided at Wilder Park and the camp host notifies each camper of any impending storm. The public is informed about any hazard or program for cleaning up after storms and other hazardous events in the local newspaper. The City conducts monthly and seasonal siren testing.

Natural Resources Protection Mitigation Actions

Allison does not have any natural resource protection actions.

Emergency Services Mitigation Actions

Aplington works with the Butler County Emergency Management Coordinator (EMC), based out of Allison, on various safety and emergency events. The EMC works in conjunction with local fire, rescue, police and government officials to draft and implement workable emergency action plans in the community. The current EMC is Chris Showalter; contact information can be found in Chapter 4.

Law Enforcement: The City of Allison contracts for police protection and coverage from the Butler County Sheriff's Department.

Fire Protection: Allison has an all-volunteer fire department that services the city and surrounding areas. These volunteer firefighters are up-to-date on the required training classes and is equipped with hydraulic power units, a speaker, the jaws of life, hydraulic pumps, airbags, fire trucks, a rescue pumper and a top kick.

Ambulance Services: Allison does not have an ambulance service.

Medical Services: Allison has a medical clinic located at 502 Locust St. that is open 5 days a week. The Waverly Health Center in Waverly is located approximately 18 miles east and the Franklin General Hospital in Hampton is located approximately 21 miles west.

HAZMAT: Allison contracts with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The training center provides training to fire departments and companies from around the state and country. Not only is this a training center, it also serves as a hazardous materials quick response unit to Black Hawk County, surrounding counties, and many municipalities in a 10-county region. The unit provides local fire departments with hazard materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the activities with the local department.

Public Works: Allison's public works department has two full-time employees with seasonal help is utilized, as needed. The public works department is responsible for operation and maintenance of the water, sewer and electric systems, as well as all streets within city limits. The department is equipped with dump trucks with plows, snow blowers, a backhoe, and a variety of minor equipment needed for snow removal. The department is also responsible for tree trimming which occurs once every autumn.

Warning Systems: Allison upgraded to a revolving siren in the middle of town approximately 13-15 years ago. The location of the siren is identified on the critical facilities map in Attachment 7A.

Structural Projects Mitigation Actions

In recent years, the City has removed buildings that have been determined to be dangerous to the public. A dangerous building ordinance has been adopted as part of the nuisance ordinances. There are no additional structural projects in Allison.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee views vital to the continued well-being of the public.

Action Plan

Priority

The Committee analyzed the identified mitigation activities that are either new or carried over from previous/current plans. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria.

The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental. See Table 51 for definitions.

The Committee was asked to discuss the STAPLEE elements and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activity will occur. For instance, if the activity happens regularly (either daily, weekly, monthly, or annually) it was identified as Ongoing; if it will occur within the next 1-5 years it was identified as Short-Term; if the activity would take 5-10 years to occur it was labeled as Mid-Term; and all activities that would take 10 or more years to occur were identified as Long-Term.

Estimated Cost

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The local community will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities. In addition, private property owner expenses will be necessary to implement some activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon the following factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Funding Source

While some mitigation actions, projects or programs may be at no cost, others will require a funding source. Additionally, some actions will be a lower cost that the community can pay for with their own funds; however, some of the bigger projects that are more expensive will require outside funding sources such as loans and grants. Common outside funding sources are SRF loans, USDA loans, CDBG and HMGP programs.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing hazard mitigation activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity and drop it from the plan update. Once the Committee identified and ranked future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, identified the responsible party or parties for each activity, and finally related each activity to at least one of the hazard mitigation plan goals listed earlier. Table A10 below is Allison's implementation strategy.

TABLE A10 : FUTURE HAZARD MITIGATION ACTIVITIES- ALLISON						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	All	Low	Active	High	2, 3, 4, 5	Mayor, City Council, Public Works, City Engineer, EMA*
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Earthquake, Flash Flood, Grass/ Wild Fire, Human Disease, Landslide, River Flooding, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Levee/ Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Low	Active	High	2, 3, 4, 6	Fire, Ambulance, EMA*, Police
Develop and Maintain an Emergency Response Plan	All	Moderate	Active	High	1, 2, 3, 4	City Fire / Ambulance*, Mayor, EMA
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc)	All	High	Active	High	4, 5, 7	City Council*
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	All	Moderate	Active	High	2, 3, 4	City Fire / Ambulance*
Maintain Well-Trained Personnel (Fire, First responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards	All	Moderate	Active	High	2, 3, 4, 5	Fire/Ambulance, EMA, Public Works
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Earthquake, Flash Flood, Grass/ Wild Fire, Human Disease, Landslide, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Low	Active	High	2, 3, 6, 7	Fire/Ambulance, City Council*, Mayor, EMA
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	All	Low	Active	Medium	2. 3. 4. 6	City Council*, Mayor, City Engineer, Public Works
Develop a Clean Up/Recovery Procedure / Plan	All	Low	Active	Medium	2. 3. 4. 6. 7	City Council, Mayor, Public Works, Fire/Ambulance*

TABLE A10 : FUTURE HAZARD MITIGATION ACTIVITIES- ALLISON						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	All	Low	Active	Medium	2. 3. 7	Public Works, Fire/Ambulance, EMA*
Purchase Natural Gas Generators for Critical Facilities & Shelters	Animal/ Plant/ Crop Disease, Drought, Earthquake, Expansive Soils, Extreme Heat, Flash Flood, Grass/ Wild Fire, Landslide, River Flooding, Severe Winter Storm, Sinkholes, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Low	Active	Medium	3. 4. 5. 7	City Council*, Mayor, Public Works
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	All	Low	Active	Medium	2. 4. 6. 7	EMA, Fire/Ambulance*
Purchase Additional Warning Sirens for Underserved Areas of Community	Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Terrorism	Low	Active	Medium	2. 3. 4. 7	City Council*, Mayor, EMA
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size	Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Terrorism	Low	Short-term	Medium	2. 3. 4. 7	City Council*, Mayor
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	Human Disease, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	Low	Active	Medium	2. 3. 4. 7	Fire/Ambulance*, EMA
Continue Agreement with NE Iowa Response Group	HAZMAT Incident, Radiological Incident, Terrorism	Low	Active	Medium	6. 7	Fire/Ambulance, EMA*
Ensure Tier II Reports are Completed and Reported per Applicable Laws	All	Low	Active	Medium	2, 6, 7	Fire/Ambulance, EMA*
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Earthquake, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Low	Active	Medium	2, 4, 6, 7	City Council*, Mayor, EMA, Board of Supervisors
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Drought, Extreme Heat, Human Disease	Low	Active	High	2, 4	City Council*, Mayor, Public Works
Conduct Annual Fire Inspections of Industries and Businesses	HAZMAT Incident, Infrastructure Failure, Radiological Incident	Low	Active	Medium	2, 4, 7	Fire/Ambulance*
Maintain Wellness Clinics and Public Health Department	All	Medium	Active	High	2, 4	City Council, Mayor, Public Health*, Boards and Commissions
Maintain Mosquito Spraying Program	Animal/ Plant/ Crop Disease, Human Disease	Low	Active, as needed	Low	2, 7	City Council*, Mayor

TABLE A10 : FUTURE HAZARD MITIGATION ACTIVITIES- ALLISON						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Establish an Emergency Notification System and Conduct Drills	All	Low	Active	High	4, 5, 6, 7	Fire/Ambulance*, EMA, Public Works
Complete and Maintain Secondary Off-Site Dispatch Center	All	Low	Active	Medium	2, 3, 4, 6, 7	Fire/Ambulance, EMA*, Police
Develop and Maintain Continuity of Operations Plan (COOP)	All	Low	Active	Medium	2, 3,4,6, 7	City Council, Mayor, Fire/Ambulance*, EMA
Develop and Maintain Command Procedures & Center	All	Low	Active	Medium	2,3,4,6,7	Fire/Ambulance*, EMA, Police, Public Health
Develop and Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, Etc.	All	Low	Active	Medium	2, 3, 4, 6, 7	Fire/Ambulance, Police, EMA*, Public Works
Provide Off-Site Backup of Essential Data	All	Low	Active	Medium	2, 3, 4	City Council*, Mayor
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Animal/ Plant/ Crop Disease, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Low	Active	Medium	2, 3, 6, 7	City Council*, Mayor, Public Work
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	All	Low	Active	Low	2, 3, 6	City Council*, Mayor, Police, Board of Supervisors
Establish, Adopt, & Enforce Building Codes	Earthquake, Expansive Soils, Landslide, River Flooding, Sinkholes, Tornado/Windstorm, Infrastructure Failure	Low	Active	Low	1, 6, 7	City Council*, Mayor, Public Works, Board of Supervisors
NOAA Weather Radio Awareness Program	All	Low	Active	Medium	2, 3, 6, 7	EMA*, City Council, Mayor
Encourage Installation of Surge Protector on Electrical Lines	All	Low	Active	Medium	2, 3	City Council*, Mayor
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	All	Low	Active	Low	2, 3, 7	Board of Supervisors, City Council*, Mayor
Install Dry Hydrants in Rural Areas and in Underserved Ares	Drought, Extreme Heat, Grass/ Wild Fire, Thunderstorm/ Lighting/ Hail, HAZMAT Incident, Infrastructure Failure	Low	Active	Medium	2, 3, 5	Fire, EMA*
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	All	Medium	Active	High	2, 3, 4, 7	City Council*, Mayor, Public Works
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	All	Low	Active	Medium	2, 3, 6, 7	City Council*, Mayor, Board of Supervisors

TABLE A10 : FUTURE HAZARD MITIGATION ACTIVITIES- ALLISON						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.)	All	Medium	Active	Medium	1, 2, 3, 4, 6, 7	City Council*, Mayor, Public Works
Maintain and Update Bioterrorism Response Plan	Terrorism	Low	Active	Low	2, 4, 6, 7	City Council, Mayor, Fire/Ambulance*, EMA, Public Health
Identify and Improve Security at Critical Facilities	All	Low	Active	Low	2, 3, 4, 6, 7	City Council*, Mayor, Police
Develop a Water Rationing Plan	Drought, Extreme Heat, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, Infrastructure Failure	Low	Active	Low	2, 3, 4, 7	City Council*, Mayor, Public Works
Bury Overhead Power Lines	Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	High	Long-term	Low	7	City Council, Mayor, Utility Company*
Upgrade sanitary sewer collection lines, including the removal of inflow and infiltration, and upgrade wastewater plant and treatment process	Infrastructure Failure, HAZMAT Incident, River Flooding, Flash Flood	High	Medium-Term	High	1, 3	City Council*

Appendix B: City of Aplington

Community Profile

Location

The City of Aplington is located in southwest Butler County in the northeast quadrant of Iowa. The City occupies 531 acres and has an elevation of 974 ft. Situated west of Parkersburg, State Highway 57 travels east/west through the northern half of the City. Beaver Creek also runs just north of town.

History/Development Trends

The first settlement in Monroe Township was a log house built in 1854--named Halfway House because of its location midway between Cedar Falls and Iowa Falls. The log structure served as an overnight guest house for travelers. This was the first establishment of what was to become the city of Aplington.

The village of Aplington was laid out and platted in 1857. The town was named in honor of Zenas Aplington, a resident of Illinois, who never visited the area, but owned much of the land. The town's first hotel was built in 1858 by Rachel Quinn. The Illinois Central Railroad established a track through Aplington in 1865. A train depot was built two years later.

By 1882, Aplington had established a school system with two schoolhouses, employing two teachers and a principal. The community continued to prosper, and by 1887, the population in Aplington had reached 427.

Many of the streets in town were named for prominent men in the area. Main Street (Highway 57) was named for R.R. Parriot, but by a misspelling, it is now called Parriott Street.

A fire in March of 1901 burned down most of the buildings along Parriott Street--Aplington's downtown section. The only brick building in town, the Exchange Bank, was not destroyed. Fortunately, no homes were destroyed. After the fire, rebuilding began and steady progresses in town improvements were made. The school district was consolidated in 1917 when a brick building was erected. By 1955, the Aplington Community School system employed 24 teachers and ten bus drivers. Total enrollment for the year was 540.

In 1981, the population had grown to 1014. Services of the local government included electric utilities, updated sewer and water, ambulance, volunteer fire department, American Legion Memorial Library, a city park, police department and post office. Farming continues to be an important part of the economy.

Similar to other communities in the area and state, the City has experienced slow population growth over the past two decades. According to U.S. Census data, the 1990 city population was 1,034. This grew to 1,054 residents in 2000 and 1,128 in 2010.

In recent years the city has constructed a skate park and made sidewalk improvements in the business district. In 2014, the City completed the construction of a new water treatment plant to serve the community.

The community of Aplington is intensely linked to the broader economies of Butler County and the Waterloo/Cedar Falls areas. The local economy would suffer is any of the major local employers were disrupted for an extended period of time. They include the Heartland Windows factory, the Aplington-Parkersburg Middle School facility, the Maple Manor retirement/assisted living facility, the AgVantage Farm Services, a branch of Lincoln Savings Bank, and Harken Lumber Co. These six businesses make up the largest employers in the community, and any disruption of normal business would create a detrimental impact on the local economy. Retention of these businesses is also critical to continued growth in the community.

Natural Environment

Aplington is located in a relatively flat portion of Butler County, without a major stream or river to create significant topography. The soils are predominantly of rich agricultural types that are conducive to development as well.

Transportation

State Highway 57 is a major highway traveling east/west through the northern portion of Aplington. The highway provides access to State Highway 65, approximately 18 miles west, and US Highway 218, approximately 26 miles east, tying it directly to the Cedar Falls-Waterloo Metropolitan Area.

According to the Iowa Department of Transportation's 2017 traffic study, State Highway 57 that runs east/west in north Aplington sees an average of 2,790 vehicles traveling each day. In addition, T25 that runs north/south through Aplington sees an average of 870 vehicles per day.

Butler County's only airport is located in Allison, approximately 13 miles northeast of Aplington.

The closest major airport is the Waterloo Regional Airport (ALO), located 24 miles east of the Aplington. This public airport is owned and operated by the City of Waterloo and overseen by an Airport Commission appointed by the Mayor. The primary runway is 8,400 ft. long, 150 ft. wide, and has a grooved asphalt surface. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service.

The Canadian National railroad runs east/west through the northern part of town, adjacent to State Highway 57. Though the railroad is owned by Canadian National, the Chicago, Central and Pacific Railroad Company service the line. This railroad typically sees 8 train movements per day with a maximum speed of 50 miles per hour.

Community Services

Aplington utilizes two local wells with an elevated water tower storage capacity of 150,000 gallons. There are approximately 30,000 ft. of water mains in the community. Water treatment equipment includes one softener, one aerator, and two sand filters. The utility providers for Aplington are shown in Table B1.

Table B1: Aplington Utility Providers							
Electric	**Natural Gas**	**Water**	**Sewer**	**Sanitation**	**Telephone**	**Internet**	**Cable TV**
City of Aplington	MidAmerican Energy	City of Aplington	City of Aplington	City of Aplington	Windstream Mediacom	Windstream Mediacom	Mediacom

Demographics

Table B2 displays Aplington's demographics. The City's population has remained relatively constant over the past several decades. According to the US Census, Aplington had a population of 936 in 1970. In 2010, the population of Aplington was 1,128. The population was estimated to be 1064, according to 2013-2017 ACS. The population was estimated to be 1061 as of the 2018 Annual Population Estimates Program.

Table B2: Aplington Demographics			
General Population, 2010 Census		***Economic Characteristics, 2013-2017 ACS***	
Total Population	1,128	Total Population (16 yrs. and over)	862
Males	519	Population in Labor Force (16 yrs. and over)	585
Females	609	Persons in Civilian Labor Force	581
Median Age	43.3	Persons Employed	576
At-Risk Population (under 18 years)	286	Persons Unemployed	5
At-Risk Population (65 years and over)	295	Persons in Armed Forces	4
One Race – White	1,119	Avg. Commute to Work in Minutes	27.5
Asian	2	Management, business, science, and arts occupations	137
Native Hawaiian or Other Pacific Islander	0	Service occupations	98
Two or More Races	5	Sales and office occupations	141
Hispanic or Latino (of any race)	3	Natural resources, construction, and maintenance occupations	90
Not Hispanic or Latino	1,125	Production, transportation, and material moving occupations	110
Household Population	1,086	Median Household Income	$53,995
Group Quarters Population	42	Median Family Income	$69,063
Group Quarters – Institutionalized	42	Per Capita Income	$28,776
Group Quarters – Noninstitutionalized	0		
Housing Characteristics, 2010 Census		***Social Characteristics, 2013-2017 ACS***	
Total Housing Units	505	School Enrollment (3 yrs. and over)	232
Owner-Occupied Housing Units	372	Nursery school/preschool	19
Renter-Occupied Housing Units	89	K – 12th Grade	162
Vacant Housing Units	44	K – 8th Grade	119
		9th Grade – 12th Grade	43
Annual Population Estimate, 2018	1061	College or Graduate School	51
		Educational Attainment – Population 25+ yrs.	688
		Less than 9th Grade	18
		9th Grade – 12th Grade, No Diploma	25
		High School Degree or Equivalency	236
		Some college, no degree	140
		Associate's Degree	108
		Bachelor's Degree	122
		Graduate or Higher Degree	39
Source: 2010 Census; 2013-2017 American Community Survey; 2018 Population Estimates Program			

Hazards and Risk Assessment

Hazard Analysis

Chapter 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Chapter 3 (Vulnerability Assessment), Aplington evaluated the risk associated with a specific hazard and defined by probability and frequency of occurrence, magnitude, severity, exposures and consequences. Aplington's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards that can affect the city and the associated risks and impacts each hazard presents.

As mentioned previously in Chapter 3, the vulnerability assessment requires a 5-year review with periodic updates as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns as well as demographic and socioeconomic chances that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predicable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdiction: historical occurrence, probability, magnitude/severity, warning time, and duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined, the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x 0.45) + (Magnitude/Severity x 0.30) + (Warning Time x 0.15) + (Duration x 0.10) = Final Hazard Assessment Score

Table B3 shows the analysis scores for Aplington. As seen in the table, the top hazards were identified as Tornado / Windstorm, Thunderstorm/Lighting/Hail, Terrorism, and HAZMAT Incident.

Table B3: Aplington Hazard Risk Assessment						
Hazard Rank	**Hazard**	**Probability**	**Magnitude / Severity**	**Warning Time**	**Duration**	**Final Score**
1	Tornado/Windstorm	4	3	4	1	**3.4**
2	Thunderstorm/Lighting/Hail	3	3	3	3	**3**
3	Terrorism	3	2	4	3	**2.85**
4	HAZMAT Incident	3	2	4	2	**2.75**
5	Drought	3	2	1	4	**2.5**
6	Transportation Incident	3	1	4	2	**2.45**
7	Dam / Levee Failure	2	2	4	3	**2.4**
7	Extreme Heat	3	2	1	3	**2.4**
7	Infrastructure Failure	2	2	4	3	**2.4**
10	Severe Winter Storm	4	1	1	1	**2.35**
11	Expansive Soils	2	2	1	4	**2.05**
12	Flash Flood	2	1	4	1	**1.9**
12	Grass/Wild Fire	2	1	4	1	**1.9**
14	Animal/Plant/Crop Disease	2	1	1	4	**1.75**
15	Radiological Incident	1	1	4	2	**1.55**
16	River Flooding	2	1	1	2	**1.55**
17	Earthquake	1	1	4	1	**1.45**
17	Landslide	1	1	4	1	**1.45**
17	Sinkholes	1	1	4	1	**1.45**
20	Human Disease	1	1	1	3	**1.2**

Vulnerability – Identifying Assets (Critical Facilities)

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or a larger area), the following vulnerability assessment will only address those hazards that affect a specified area – flooding (flash flooding and river flooding). However, due to the community's historical occurrences of tornadoes and the ability of them to result from the community's top natural hazards (thunderstorms and lightning), this hazard was added to the assessment. The following discussion only considers the assets in Aplington.

Critical Facilities

Identifying the location of critical facilities (see Table B4) in Aplington is important in order to assess their vulnerability to hazards since these facilities are important to the community's operations, quality of life, and are key components of the economic sector. Critical facilities include high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. Attachment 6B illustrates the location of identified critical facilities throughout Aplington.

Table B4: Designated Shelters in Aplington
City Hall
Aplington-Parkersburg Elementary/Middle School
Evangelical Presbyterian Church
Aplington Baptist Church
First Reformed Church
Source: Community

According to the available data sources, Aplington is projected to see a decrease in population over the next 30 years. This population decrease will most likely result in a lesser need for additional critical facilities; however, the existing critical facilities should be protected so they can continue to serve Aplington's population. Critical facility needs should be monitored closely over the next 5 years and readdressed when this HMP is updated.

Homes in Hazardous Areas

A facility vulnerable to flooding is normally low since these structures are not often constructed within the 100-year floodplain. According to the information provided, bridges and roadways are impacted by flooding. This disruption of the transportation infrastructure would create a longer time period to receive and provide services and supplies to an area if a bridge was washed away due to flooding.

Approximately 3.63 percent of parcels are within the 100-year floodplain. As shown on Attachment 3C, the northern portion of the city along Beaver Creek is most likely to flood. No portion of Aplington is within a 500-year floodplain.

As shown in Table B5, Aplington has approximately 21 parcels of land in the 100-year floodplain. The total land value is estimated to be $155,630. The total structural value is estimated to be $390,920. See Attachment 4C for a map of parcels affected by the 100-year flood scenario.

TABLE B5: FLOODPLAIN DATA FOR APLINGTON						
	# of Parcels	Area in Acres	Land Value	Building Value	Dwelling Value	Total Value
1.0% Annual Chance Floodplain Values	21	22.72	$155,630	$127,710	$263,210	$546,550
0.2% Annual Chance Floodplain Values	0	0.0000	$0	$0	$0	$0
Total Floodplain Values	21	22.72	$155,630	$127,710	$263,210	$546,550
Total City Values	578	444.02	$7,183,320	$3,197,090	$37,170,810	$47,551,220
Source: INRCOG & Butler County Assessor Parcel value information current as of 9/12/18, Butler County Assessor Office. FEMA Digital Firm 9/16/2011. Incorporated boundaries as of 04/01/2019. For actual determination if a location is within the floodplain, contact your local floodplain administrator.						

All structures are vulnerable in the event of a tornado/windstorm hazard. As part of a vulnerability assessment, a hypothetical tornado scenario was created for the community. Attachment 5B and 5C illustrate the impact of a hypothetical tornado event in Aplington. Table B6 displays the degree of impact that hypothetical tornado scenarios of various strengths would have on Aplington.

Persons living in mobile homes (also known as manufactured homes) may also be at risk from tornadoes or high winds. According to the 2013-2017 American Community Survey 5-Year Estimates, there are an estimated 5 mobile homes in Aplington. Using the average persons per household at the time of the 2010 Census (2.36 persons), there are approximately 12 persons living in mobile homes in Aplington.

Table B6: Tornado Scenario for Aplington				
Scale	**Tornado Width**	**Number of Parcels**	**Damaged Value**	**Percentage of City Damaged**
EF0	50 Meters	101	$1,895,485	17.47%
EF1	150 Meters	203	$3,915,849	35.12%
EF2	250 Meters	281	$10,842,174	48.62%
EF3	500 Meters	436	$16,820,758	75.43%
EF4	900 Meters	564	$43,520,338	97.58%
EF5	1100 Meters	577	$44,581.181	99.83%
Parcel values as of: 01/01/2019				

In addition, persons living in some multi-family units may also be at risk due to the lack of a proper tornado shelter. According to the 2013-2017 American Community Survey, there were an estimated 18 housing units in buildings with at least 3 units. Therefore, there are approximately 40 persons living in multi-family housing units at risk during a tornado event.

Vulnerability – Identifying Social Assets (Populations)

The social vulnerability assessment also identified how the hazards affect the population of Aplington and it is assumed that the identified populations are more likely to require assistance during times of disaster and are therefore, generally speaking, more at-risk than the remaining population. The at-risk population must be identified and targeted in successful mitigation efforts. Table B6 identifies the population of various segments of the population that may consider "at-risk" in the event of a hazard.

According to the 2013-2017 American Community Survey, approximately 198 persons in Aplington are 65 years or older. Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young people often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster such as a disease epidemic due to their age. In 2017, approximately 234 persons in Aplington were under 18.

As mentioned previously, persons living in mobile homes and persons living in multi-family housing units are also considered at risk. There is an estimated 42 persons living in group quarters in Aplington; there is one assisted living facility, Maple Manor Village, located in Aplington. The population in nursing homes and assisted living facilities are especially vulnerable as they are designed for caring for the elderly population, the majority of which use wheelchairs or other assistance devices that limit mobility.

The Aplington-Parkersburg Community School District has an elementary and middle school located in Aplington at 2015 10th St. The school provides education from kindergarten through 8th grade. There are approximately 350 students and 50 staff that occupy the school building daily.

Table B7: City "At-Risk" Population	
Total Community Population	1,064
Elderly (65 years and over)	198
Youth (Under 18 years)	234
Householder Living Alone*	137
Non-English Speaking Population (speaks English less than "very well")	0
Estimated Population in Mobile Homes	12
Living in Group Quarters*	42
Persons with Disabilities – 18 years and under	0
Persons with Disabilities – 18-64 years	35
Persons with Disabilities – 65 years and older	35
Source: 2013-2017 American Community Survey; **2010 Census* *Note: Number of mobile home units multiplied by average household size*	

As mentioned earlier, approximately 22 acres of Aplington are highly vulnerable to flooding (within the 100-year floodplain) along Beaver Creek. Flooding puts the entire population at some level of risk, whether through the flooding of their homes, businesses, places of employment, roads, sewer or water infrastructure that serve them daily. High floodwaters can devastate homeowners with property damage, property loss, and extensive, time-consuming cleanup. Secondary effects caused by flooding can add to the property damage; power loss can leave citizens without heat or air conditioning for extended periods of time. Transportation infrastructure can be impacted by flooding events also, which can endanger citizens attempting to travel or evacuate the area as well as leave those remaining without goods and services.

Persons living in the 100-year floodplain are also at risk of sustaining personal injury or property damage. There are 21 parcels in the city within the 100-year floodplain. In a worst-case scenario, if all identified parcels were houses and using the average persons per household (2.36), approximately 50 persons could be living in the 100-year floodplain.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. Table B8 lists assets that could be affected in the event of a disaster.

This information was made available from the Butler County Assessor's office. It should be noted, however, that these dollar amounts do not include gas and electric utility valuations or do the evaluations include exempt properties, including government buildings, infrastructure, and religious/nonprofit properties. These results should be considered preliminary, as a full accounting of assets has not been completed.

Table B8: Asset Inventory – Value of Structures in Aplington

Type of Structure	Lot/Land Value	Value of Structures	Total Value	Number of Structures
Residential	$ 6,037,840.00	$ 38,561,810.00	$ 44,599,650.00	430
Commercial	$ 709,090.00	$ 3,391,290.00	$ 4,100,380.00	34
Industrial	$ 89,250.00	$ 18,010.00	$ 107,260.00	1
Agriculture	NA	NA	NA	NA
Total	$ 6,836,180.00	$ 41,971,110.00	$ 48,807,290.00	465

Source: Butler County Assessor, 2019 Values

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigate future hazards as risks increase. However, continued conformity with the state building codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development. Fortunately, the planning area has not experienced a significant change in development since the area is rural and the amount of development (residential, commercial and industrial) has not changed in the past 5 years.

Repetitive Loss Properties

The City of Aplington does not participate in the National Flood Insurance Program, nor does it have any recorded repetitive loss properties. Butler County's Flood Insurance Rate Maps were last updated on September 16, 2011.

Mitigation Strategy

Hazard Mitigation Plan Goals

Aplington's 2020 hazard mitigation plan goals were received by the Hazard Mitigation Planning Committee at the second committee meeting. After reviewing the goals, the Committee decided to renew these broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The City's hazard mitigation plan goals are:

1. Minimize to the greatest possible extent the number of injuries and/or loss of life associated with all identified hazards.
2. Reduce or eliminate property damage due to the occurrence of disasters.
3. Improve response operations in the event of a disaster.
4. Return the community to either pre-disaster or improved conditions in a timely manner in the wake of a disaster.
5. Develop strategies that can be used to reduce the community's overall risk to the negative effects of natural, technological, and man-made disasters.
6. Reconvene the planning committee annually to review the plan document, check for compliance with the plan goals, and track progress in achieving the mitigation strategies.
7. Maintain the Countywide Multi-Jurisdictional format for future plan updates.

Current Mitigation Actions

Prevention Mitigation Actions

Aplington has several planning and regulatory ordinances to assist with prevention mitigation. Table B9 summarizes these prevention items.

Table B9: Current Planning and Regulatory Documents for Aplington

Participation in Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes; 2015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Aplington passed their floodplain ordinance on 2009. The most current flood map for the community is dated September 16, 2011. The City does not maintain a complete zoning ordinance, but it has adopted a limited version of zoning for new and future subdivisions.

The City has a snow ordinance that aides in snow removal which states that when snow and/or ice accumulates between November 1st to April 1st, no motor vehicle, with the exception of emergency vehicles, may be parked or left standing for more than 15 minutes between the hours of 12:00 A.M. to 6:00 A.M.

Property Protection Mitigation Actions

Aplington has not participated in any buyout or similar program. No actions or plans of property mitigation are planned under the city's jurisdiction.

Public Education and Awareness Mitigation Actions

Information regarding how to protect citizens in the event of a tornado or other weather event is largely publicized in the form of flyers, radio, newspaper and television announcements. The City of Aplington provides basic safety information for various hazards (i.e., tornadoes) and what to do before, during and after.

Along with Butler County, the City of Aplington converted from a CodeRED emergency alert program to AlertIowa. As described on the Iowa Homeland Security and Emergency Management website, "AlertIowa allows citizens to sign up for the types of alerts they would like to receive. Messages can be issued via landline or wireless phone, text message, email, FAX, TDD/TYY, and social media. Messages can contain photo, video and audio attachments to help subscribers better understand the situation at hand, or where to find additional information."

Natural Resources Protection Mitigation Actions

Aplington does not have any natural resource protection mitigation activities.

Emergency Services Mitigation Actions

Aplington works with the Butler County Emergency Management Coordinator (EMC), based out of Allison, on various safety and emergency events. The EMC works in conjunction with local fire, rescue, police and government officials to draft and implement workable emergency action plans in the community. The current EMC is Chris Showalter; contact information can be found in Chapter 4.

> *Law Enforcement:* The Aplington Police Department employs two full-time and four part-time/reserve officers. The police department covers the entirety of Aplington's city limits and is located in City Hall. The department has access to two fully equipped squad cars; equipment utilized includes tint meters, PBTs, radars, in-car cameras, night vision scope, laptop computers, mobile radios, pagers and cell phones. The Aplington Police Chief is Matt Lind.
>
> *Fire Protection:* Aplington utilizes an all-volunteer fire department of 21 volunteers who all carry pagers. The fire department covers an area north to the West Fork River, west to Cedar Avenue, and south to Grundy County ½ mile south of D17. The department has access to vehicles such as a pumper truck, a tanker/pumper, a tanker, a grass rig with pump capable of suction, and a rescue rig. All vehicles have mobile radios and pagers. Other equipment includes Scott air packs, air bottles, pressure fans, foam applicators, rescue jaws, 1500-gallon collapsible tanks, hoses, nozzles, turnout gear, gas meters, and thermal imaging capabilities. The fire department averages 20-30 calls per year. Mutual aid agreements are in place with Ackley, Allison, Bristow, Dumont, Parkersburg and Wellsburg. The Aplington Fire Chief is Scott Poppen.

Ambulance Services: Aplington utilizes an all-volunteer ambulance crew which includes 20 volunteer EMTs and 7 volunteer drivers. The ambulance service covers roughly the same area as the fire department and is an EMT-B with provisional paramedic services. Two members are paramedics; when they are on board, the ambulance service is an EMT-P. One ambulance rig utilizes equipment such as a defibrillator, full body vacuum splint and extremities splints, glucometer, stair chair, backboards, and mast pants. When paramedics are on board, they can start IVs and administer medications. Mutual aid agreements are in place with Ackley and Parkersburg. The Aplington Ambulance Director is Frances Krull.

Medical Services: The closest hospital facility is the Grundy County Memorial Hospital, located approximately 22 miles south of Aplington. The Allen Memorial Hospital in Waterloo is the next nearest facility, located approximately 31 miles east of Aplington. There are also two medical clinics (Covenant Clinic and Unity Point Clinic Family Medicine).

HAZMAT: Aplington contracts with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The training center provides training to fire departments and companies from around the state and country. Not only is this a training center, it also serves as a hazardous materials quick response unit to Black Hawk County, surrounding counties, and many municipalities in a 10-county region. The unit provides local fire departments with hazard materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the activities with the local department.

Public Works: Aplington's public works department has two full-time employees with seasonal help utilized as needed. The public works department is responsible for operation and maintenance of the water, sewer and electric systems as well as all streets in city limits. The department is equipped with dump trucks, a case loader/tractor, top kick with bucket used for overhead repairs, and a pickup truck.

Warning Systems: Aplington uses one warning siren to notify the public of potentially dangerous weather conditions. Volunteer fire and local law enforcement personnel serve as weather spotters. The warning siren can be triggered from City Hall or remotely from either fire vehicles or the Butler County Sheriff's Office. Aplington also utilizes early warning communication methods via pagers, hand-held radios, cellular/landline phones, and local radio and television media.

Structural Projects Mitigation Actions

A levee was constructed at the assisted living facility, Maple Manor Village, to guard against the floodwaters of Beaver Creek.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community.

The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee views vital to the continued well-being of the public.

Action Plan

Priority

The Committee analyzed the identified mitigation activities that are either new or carried over from previous/current plans. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria.

The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental. See Table 51 for definitions.

The Committee was asked to discuss the STAPLEE elements and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each of the proposed mitigation activity will occur. For instance, if the activity happens regularly (either daily, weekly, monthly, or annually) it was identified as Ongoing; if it will occur within the next 1-5 years it was identified as Short-Term; if the activity would take 5-10 years to occur it was labeled as Mid-Term; and all activities that would take 10 or more years to occur were identified as Long-Term.

Estimated Cost

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The local community will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities. In addition, private property owner expenses will be necessary to implement some activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon the following factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Funding Source

While some mitigation actions, projects or programs may be at no cost, others will require a funding source. Additionally, some actions will be a lower cost that the community can pay for with their own funds; however, some of the bigger projects that are more expensive will require outside funding sources such as loans and grants. Common outside funding sources are SRF loans, USDA loans, CDBG and HMGP programs.

Implementation Strategy

One of the first steps the Committee took was to review the City's existing hazard mitigation activities and provide an update on their status. Based on each activity's progress, the City chose to continue the activity and drop it from the plan update. Once the Committee identified and ranked future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, identified the responsible party or parties for each activity, and finally related each activity to at least one of the hazard mitigation plan goals listed earlier. Table B10 below is Aplington's implementation strategy.

TABLE B10 : FUTURE HAZARD MITIGATION ACTIVITIES- APLINGTON						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	Transportation Incident	Low	Active	Low	2	Butler County, Police and PWD
Establish, Adopt, & Enforce Building Codes	Infrastructure Failure	Low	Active	High	2	Butler County, City Council and Mayor, City Engineer
Purchase Additional Warning Sirens for Underserved Areas of Community	Tornado/Windstorm	Low	Active, as needed	Low	2,3	City Council and Mayor
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size	Tornado/Windstorm	Low	Active, as needed	High	2,3,4	City Council and Mayor
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	HAZMAT Incident	Low	Active	High	2,3,4	Fire Dept., City Council
Continue Agreement with NE Iowa Response Group	HAZMAT Incident, Levee/Dam Failure, Radiological Incident	Low	Active	High	2,3,4	Fire Dept., City Council
Ensure Tier II Reports are Completed and Reported per Applicable Laws	HAZMAT Incident, Levee/Dam Failure, Radiological Incident	Low	Active	High	2,3,4	EMA
Conduct Annual Fire Inspections of Industries and Businesses	Extreme Heat, Grass/Wild Fire	Low	Active	High	2,3	Fire Dept.
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	River Flooding, Flash Flood, Tornado/Windstorm, HAZMAT Incident, Radiological Incident, Transportation Incident	Low	Active	High	2,3,4,5	City Council, Fire Dept., Public Works, EMA
Flood Proof Critical Facilities	Animal/Plant/Crop Disease, Flash Flood, River Flooding	Moderate	Active	High	2,3,4,5	City Council, Fire Dept., Public Works, EMA
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Infrastructure Failure	Moderate	Active	High	1,2,3,4,5	City Council, Public Works
Identify and Improve Security at Critical Facilities	Human Disease, Terrorism	Low	Active	High	2,3,4,5	City Council, Public Works, Police Dept.
Maintain Wellness Clinics and Public Health Department	Human Disease	Low	Active	High	2,4,5	Butler County Public Health, Ambulance Service
Maintain Mosquito Spraying Program	Human Disease	Low	Active	High	2,3	City Council, Public Works
Establish an Emergency Notification System and Conduct Drills	All	Moderate	Active	Medium	All	City Council, Police Dept., Fire Dept., EMA

TABLE B10 : FUTURE HAZARD MITIGATION ACTIVITIES- APLINGTON						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	All	Low	Active	Medium	All	Schools, EMA, Fire Dept., Police Dept.
Purchase Natural Gas Generators for Critical Facilities & Shelters	Flash Flood, River Flooding, Terrorism, Thunderstorm/ Lighting/ Hail, Tornado/Windstorm, Severe Winter Storm	High	Active	High	All	City Council and Mayor, Fire Dept., Police Dept.,
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Severe Winter Storm, Sinkholes, Thunderstorm/Lighting/Hail, Tornado/Windstorm	Low	Active	Medium	2,3,4	Public Works, City Council
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism, River Flooding, Flash Flood	Low	Active	Medium	2,3,5	City Council and Mayor, Fire Dept., Police Dept., EMA
NOAA Weather Radio Awareness Program	Extreme Heat, Severe Winter Storm, Thunderstorm/Lighting/Hail, Tornado/Windstorm, Flash Flood, River Flooding	Low	Active	Medium	2,3,5	City Council, EMA, Public Works
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	Human Disease, Animal/ Plant/ Crop Disease, HAZMAT Incident	Low	Active	Medium	2,3,5	City Council, EMA, Public Works
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Animal/ Plant/ Crop Disease, Drought, Human Disease, Terrorism	Low	Active	Medium	3,5,7	City Council and Mayor, Public Works
Install Dry Hydrants in Rural Areas and in Underserved Ares	Grass/Wild Fire, Infrastructure Failure	Low	Active	Active	2,3,4	City Council, Fire Dept.
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Grass/Wild Fire, HAZMAT Incident, Infrastructure Failure, Transportation Incident	High	Active	Medium	2,3,4,5	Public Works, City Council and Mayor
Maintain and Update Bioterrorism Response Plan	Terrorism	Low	Active	Medium	2,3,4,5	City Council and Mayor, EMA, Fire Dept., Police Dept.
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	Flash Flooding, River Flooding, Infrastructure Failure, Transportation Incident	High	Active	High	1	EMA, Board of Supervisors
Complete and Maintain Secondary Off-Site Dispatch Center	All	Low	Active	Medium	1,2,3,4,5	Fire Dept., Police Dept., City, EMA
Develop a Clean Up/Recovery Procedure / Plan	All	Low	Active	Low	1,2,3,4,5	City Council and Mayor, Public Works

TABLE B10 : FUTURE HAZARD MITIGATION ACTIVITIES- APLINGTON						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	All	Low	Active	Low	1,2,3,4,5	City Council and Mayor, EMA
Place GPS Units in all Critical Service Vehicles	All	Moderate	Active	Low	1,2,3,4,5	City Council and Mayor, Public Works
Provide Off-Site Backup of Essential Data	All	Low	Active	Low	7	City Council and Mayor
Bury Overhead Power Lines	Severe Winter Storm, Thunderstorm/Lighting/Hail, Tornado/Windstorm	High	Active	Low	5,7	Public Works, City Council
Encourage Installation of Surge Protector on Electrical Lines	Severe Winter Storm, Thunderstorm/Lighting/Hail, Tornado/Windstorm	Low	Active	Low	5,7	Public Works, City Council
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Severe Winter Storm, Thunderstorm/Lighting/Hail, Tornado/Windstorm	Low	Active	Low	2	City Council, Police Dept., Fire Dept., EMA
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both	Flash Flood, River Flooding	High	Active	Low	2	City Council and Mayor
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.)	Flash Flood, River Flooding	High	Active	Low	2	City Council and Mayor
Develop a Water Rationing Plan	Drought, Extreme Heat, Grass/ Wild fire, Severe Winter Storm	Low to High	Active	Low	2	City Council and Mayor, EMA
Maintain Roadside Vegetation Management Program	Landslide, Flash Flood	Low	Active	Low	1	Board of Supervisors, City Council
Establish a Drainage District	Flash Flood, River Flooding	High	Long-Term	Low	1,2,3	City Council, Surrounding jurisdictions
Acquire and/or Annex Land for Relocation of Community	Flash Flood, River Flooding	High	Long-Term	Low	1,6,7	City Council

Appendix C: City of Aredale

Community Profile

Location

Aredale is located in the northwest corner of Butler County, approximately 10 miles east of Highway 65.

History/Development Trends

The community of Aredale was development due to the increased dairy farming between 1860 and 1890, and it 1890, the local farmers pooled their resources to create a cheese making factory. The factory made the town large enough at the time to warrant its own post office and township rights. The town name, Aredale, was derived from a variation on Airville, Pennsylvania, from which several Aredale residents had emigrated. The town plat was recorded on June 28, 1900, that led to the community observing that day as *Field Day* featuring a town celebration and baseball games.

Over time the town featured a number of competing lumberyards and stockyards, and the Aredale Savings and Loan was constructed in 1901. That same year, the First Methodist Church was organized, and purchased the Coldwater Methodist Church building, which was then moved in town. It was destroyed by fire in 1923 and replaced by a new building. In 1953, a train wreck destroyed the town depot, which was not replaced.

Aredale currently covers one square mile. The majority of the residents travel to other communities for employment. Aredale is home to one bank, three commercial establishments, and one church.

Natural Environment

Aredale's climate is like those of most cities in the Midwest. Aredale's has a climate of continental character. Far from the moderating influence of a large body of water, a wide variation is experienced in both temperature and precipitation during the four distinct seasons. Boylan Creek travels though the southwest corner of the City limits.

Transportation

The City is situated next to the intersection east/west bound County Road C23 and north/south bound T16. According to data from the 2017 Iowa Department of Transportation's traffic studies, an average 500 cars and trucks travel on C23 east of Aredale each day, while 250 vehicles per day travel the same route west of town. T16, traveling north/south on the west side of the City has an average daily vehicle use of 260.

Butler County's only airport is located in Allison, approximately 12 miles southeast of Aredale. The Allison Municipal Airport, FAA Identifier K98, is a public airport located on the northwest edge of the City and is accessible via Iowa Highway 14 and 7th St. The facility is classified as a local service airport offering a 1,790 foot long, 175 foot wide turf runway, six hangar parking spaces, and two aircraft tie-down locations. In 2010, there were five aircraft based at the airport generating approximately 1,250 annual operations. These figures are projected to increase to six aircraft and 1,500 annual operations by 2030.

The closest major airport is the Waterloo Regional Airport (ALO), located 36 miles southeast of the City. This public airport is owned and operated by the City of Waterloo and overseen by an Airport Commission appointed by the Mayor. The primary runway is 8,400 foot long, 150 foot wide, and has a grooved asphalt surface. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service.

Community Services

The city does not have a water utility; each resident has their own well for water. The fire department accesses water either from a private well connected to fire equipment or by a pumper truck carried to the site through mutual aid, which hold approximately 3,000 gallons. The City does not have natural gas services; each household has their own septic tank and fields. Table C1 displays the city's primary utility providers.

TABLE C1: AREDALE UTILITY PROVIDERS

Electric	Natural Gas	Water	Sewer	Sanitation	Telephone	Internet	Cable
MidAmerican Energy	N/A	N/A	N/A	Jendro Sanitation Services	Rockwell Telephone	Rockwell Telephone	Rockwell Telephone

Demographics

Tables C2 provides an overview of the city's demographics. Between the 2000 and 2010 Census the total population dropped from 89 to 74, representing a city experienced a 16.8% population decrease. The population was estimated to be 69 in 2018, according to the US Census 2018 Population Estimates Program. The tables below identify the population, economic and social characteristics of Aredale.

Table C2: Aredale Demographics			
General Population, 2010 Census		***Economic Characteristics, 2013-2017 ACS***	
Total Population	74	Total Population (16 yrs. and over)	41
Males		Population in Labor Force (16 yrs. and over)	22
Females		Persons in Civilian Labor Force	22
Median Age	41.5	Persons Employed	20
At-Risk Population (under 18 years)	10	Persons Unemployed	2
At-Risk Population (65 years and over)	9	Persons in Armed Forces	0
One Race – White	74	Avg. Commute to Work in Minutes	25
Asian	0	Management, business, science, and arts occupations	3
Native Hawaiian or Other Pacific Islander	0	Service occupations	3
Two or More Races	0	Sales and office occupations	5
Hispanic or Latino (of any race)	0	Natural resources, construction, and maintenance occupations	0
Not Hispanic or Latino	0	Production, transportation, and material moving occupations	9
Household Population	35	Median Household Income	34,167
Group Quarters Population	0	Median Family Income	38,750
Group Quarters – Institutionalized	0	Per Capita Income	20,080
Group Quarters – Noninstitutionalized	0		
Housing Characteristics, 2010 Census		***Social Characteristics, 2013-2017 ACS***	
Total Housing Units	40	School Enrollment (3 yrs. and over)	6
Owner-Occupied Housing Units	35	Nursery school/preschool	0
Renter-Occupied Housing Units	5	K – 12th Grade	4
Vacant Housing Units	5	K – 8th Grade	0
		9th Grade – 12th Grade	0
		College or Graduate School	2
		Educational Attainment – Population 25+ yrs.	0
2018 Population Estimate	69	Less than 9th Grade	0
		9th Grade – 12th Grade, No Diploma	4
		High School Degree or Equivalency	23
		Some college, no degree	6
		Associate's Degree	4
		Bachelor's Degree	4
		Graduate or Higher Degree	0
Source: 2010 Census; 2013-2017 American Community Survey; 2018 Population Estimates			

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Aredale evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Aredale's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions included: Historical Occurrence, Probability, Magnitude/Severity, Warning Time, and Duration. Due to recent disasters and events that have impacted the planning area, Aredale determined that even though the historical occurrences were low for certain hazards, the probability ranking for future occurrences should be higher.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Table C3 is the analysis scores for the City of Aredale, ranked in ascending order from highest to lowest risk. The top hazards identified for Aredale are: Tornado/Windstorm, Thunderstorm/Lighting/Hail, Severe Winter Storm, and Grass/Wild Fire.

Table C3 – HAZARD ANALYSIS SCORES CITY OF AREDALE						
Hazard Rank	Hazards	Hazard Factors				Final Assessment Score
		Probability	Magnitude/ Severity	Warning Time	Duration	
1	Tornado/Windstorm	4	4	4	4	**4**
2	Thunderstorm/Lighting/Hail	4	1	4	1	**2.8**
3	Severe Winter Storm	4	1	2	3	**2.7**
4	Grass/Wild Fire	3	1	4	1	**2.35**
5	HAZMAT Incident	2	2	4	2	**2.3**
6	River Flooding	2	2	3	3	**2.25**
7	Flash Flood	2	1	4	3	**2.1**
8	Transportation Incident	2	1	4	2	**2**
9	Drought	2	1	1	4	**1.75**
9	Earthquake	1	1	4	4	**1.75**
9	Infrastructure Failure	1	1	4	4	**1.75**
12	Extreme Heat	2	1	2	2	**1.7**
13	Sinkholes	1	1	4	3	**1.65**
13	Terrorism	1	1	4	3	**1.65**
15	Animal/Plant/Crop Disease	1	1	3	4	**1.6**
16	Radiological Incident	1	1	3	3	**1.5**
17	Expansive Soils	1	1	2	4	**1.45**
18	Human Disease	1	1	3	2	**1.4**
19	Landslide	1	1	1	3	**1.2**
20	Dam / Levee Failure					**0**

Vulnerability – Identifying Assets (Critical Facilities and Social Populations)

This section describes the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Aredale.

Table C4: Designated Shelters in Aredale
First Security Bank & Trust
City Hall
Source: Community

Critical Facilities

Table C4 lists the designated shelters for Aredale. It should be noted that there are other structures that could serve as suitable shelters in certain events. While the mentioned shelter locations have been identified for use if deemed necessary, there may also be occasions, such as during a radiological or HAZMAT incident, where the situation dictates sheltering "in place". Therefore, any location could potentially become a makeshift shelter for purposes of disaster response.

Identifying the location of critical facilities and designated shelters in the planning process is important in order to assess their vulnerability to hazards, and their importance to the operation of a community and the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. Attachment 7c illustrates the location of identified critical facilities throughout the planning area. A list of the Critical Facilities is shown in Table C5.

Homes in Hazardous Areas

Attachment 3d and Attachment 4d show the areas of Aredale within the 100-year and 500-year floodplains. According to 2011 data, made available by the Butler County Assessor's office, there are 36 parcels of land with a total value of $2,382,771 in the 100-year floodplain. There are not parcels in the 500-year floodplain. See Table C5.

TABLE C5: FLOODPLAIN DATA FOR AREDALE

	# of Parcels	Area (In acres)	Land Value	Building Value	Dwelling Value	Total Value
1.0% Annual Chance Floodplain Values	36	227.31	$966,853	$1,258,510	$157,408	$2,382,771
0.2% Annual Chance Floodplain Values	0	0	$0	$0	$0	$0
Total Floodplain Values	36	227.31	$966,853	$1,258,510	$157,408	$2,382,771
Total City Values	**122**	**640.16**	**$1,279,962**	**$1,454,384**	**$647,614**	**$3,381,960**

Source: Butler County Assessor 2011 Values & INRCOG

All structures are vulnerable in the event of a Tornado / Windstorm hazard. As part of a vulnerability assessment, a hypothetical tornado scenario was created for the community. Attachment5f and Attachment 5g 4c illustrate the impact of a hypothetical tornado event in Aredale. Table C6 displays the degree of impact of a hypothetical tornado scenario of various strengths would have on Aredale.

TABLE C6: TORNADO SCENARIO FOR AREDALE

Scale	Tornado Width	# of Parcels	Damaged Value	% of City Damaged
EF0	50 Meters	33	$63,670	22.27%
EF1	150 Meters	59	$113,846	48.76%
EF2	250 Meters	75	$289,424	61.98%
EF3	500 Meters	104	$401,356	85.95%
EF4	900 Meters	117	$903,017	96.69%
EF5	1100 Meters	118	$910,769	97.52%
Parcel values as of 01/01/2019				

Persons living in mobile homes, in multi-family housing units, or group quarters may be a greater risk to tornado or wind damage. According to data from the 2013-2017 ACS 5-year average none of the city's population lives in these types of structures.

Social Asset Populations

The social vulnerability assessment also identified how the hazards affect the population of Cedar Falls, and it is assumed that the identified populations are more likely to require assistance during times of disaster and are therefore, generally speaking, more at-risk than the remaining population. The at-risk population must be identified and targeted in successful mitigation efforts. Table C7 identifies the population of various segments of the population that may consider "at-risk" in the event of a hazard.

TABLE C7: CITY "AT-RISK" POPULATION

Total Community Population (2017 ACS)	51
Youth (Under 18)	10
Elderly (65 Yrs. and older)	13
Living in Group Quarters	0
Householder Living Alone	11
Estimated Population in Mobile Homes*	0
Non-English Speaking Population (speaks English less than 'very well')	0
Persons with Disabilities - Under 18 Yrs. Old	1
Persons with Disabilities - 18-64 Yrs. Old	8
Persons with Disabilities - 65 Yrs. and Older	7
*Source: 2013-2017 ACS Data *Number of mobile home units multiplied by average household size*	

The elderly are often listed as an "at risk" population., Aredale had 13 persons, 25% of the population, 65 years or older. 7 residents (8%), were age 80 or over. 11 of the town's households have individuals over the age of 64 that live alone.

Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young people often are not aware of the proper actions to take in the event of a disaster. Very young children can also be more susceptible to a disaster such as a disease epidemic simply by virtue of their age. There were 10 persons, 13.5% of the population, under the age of 18.

The city does not have any multi-unit housing structures or mobile homes. The City does not have any residents that live in group quarters.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning because such information provides measurable data that can be used to form an estimate of potential losses a community could face in the event of a disaster. Aredale has 35 parcels located in the 100-year floodplain, representing approximately 28.9% of all parcels in the area. The total value of structures within the floodplain is $1,435,090. Table C8 identifies the assets in the floodplain. The following table (C8) lists assets that could be affected in the event of a disaster. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Butler County Assessor's office. It should be noted however that these dollar amounts do not include gas and electric utility valuations nor do the evaluations include exempt properties, including government buildings, infrastructure, and religious/nonprofit properties. These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE C8: FLOODPLAIN DATA FOR AREDALE

	# of Parcels	% of Parcels	Land Value	Building Value	Dwelling Value	Total Value
1.0% Annual Chance Floodplain Values	35	28.9256	$997,320	$472,270	$158,520	$1,628,110
0.2% Annual Chance Floodplain Values	0	0.0000	$0	$0	$0	$0
Total Floodplain Values	35	28.9256	$997,320	$472,270	$158,520	$1,628,110
Total City Values	121	100.0000	$1,265,740	$685,650	$749,440	$2,700,830

Source: INRCOG & Butler County Assessor Parcel value information current as of 9/12/18, Butler County Assessor Office. FEMA Digital Firm 9/16/2011. Incorporated boundaries as of 04/01/2019. For actual determination if a location is within the floodplain, contact your local floodplain administrator.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development. Fortunately, the planning area has not experienced a significant change in development since the area is rural. The amount of development – residential, commercial, and industrial – has not changed in the past five years.

Repetitive Loss Properties

FEMA defines a repetitive loss property as an insurable building that has experienced losses in a 10-year period in which each loss is $1,000 or more. According to available FEMA data, Aredale participates in NFIP with one policy in place. As of 09/30/2019 Aredale had no repetitive loss properties. Aredale's flood insurance rate maps (FIRM) were updated September 16, 2011. Table C9 shows the city's NFIP information as of 7/31/2019.

TABLE C9: REPETITIVE LOSS PROPERTIES

CID #	# of NFIP Policies	NFIP Insurance in Force $	Total # Paid Losses	Total Payments Made ($)
190035	1	$42,000	1	$2,363.00

Source: Federal Emergency Management Agency (FEMA); As of 7/31/2019

Mitigation Strategy

This hazard mitigation plan attempts to reduce loss by identifying potential natural, technological, and human caused hazards. As a result of many natural and human caused hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs when necessary.

Hazard Mitigation Plan Goals

The City's existing hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at the second committee meeting. After reviewing the goals, the Committee decided to renew these broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The City's hazard mitigation plan goals are:

1. Minimize to the greatest possible extent the number of injuries and/or loss of life associated with all identified hazards.
2. Reduce or eliminate property damage due to the occurrence of disasters.
3. Improve response operations in the event of a disaster.
4. Return the community to either pre-disaster or improved conditions in a timely manner in the wake of a disaster.
5. Develop strategies that can be used to reduce the community's overall risk to the negative effects of natural, technological, and man-made disasters.
6. Reconvene the planning committee annually to review the plan document, check for compliance with the plan goals, and track progress in achieving the mitigation strategies.
7. Maintain the Countywide Multi-Jurisdictional format for future plan updates.

Current Mitigation Actions

Prevention Mitigation Actions

On August 20, 1990, the City became a member of the Flood Insurance Program. The Mayor currently holds all the responsibility regarding the Floodplain Management Ordinance. Permits are required prior to any floodplain development – any man-made changes to developed and undeveloped real estate. The flood insurance rate maps (FIRM) affecting the City were updated on September 16, 2011.

The City currently does not maintain a complete zoning ordinance. However, on August 6, 1997 Aredale created a general provision that regulates all areas designated in the R-1 Restricted Residence District. The City does not have an official snow removal ordinance; however, it does require removal from driveways and to not interfere with public streets. The City removes snow from public streets and alleys. The city also has a nuisance ordinance in place that regulates tree trimming.

Property Protection Mitigation Actions

Aredale has not participated in any buyout programs. However, the city participates in the National Flood Insurance Program and remains in good standing.

Public Education and Awareness Mitigation Actions

The City installed a fire siren / warning system in 2007. Information regarding protecting oneself is highly publicized in flyers, billboards, and on the radio. Along with Butler County, the City of Aredale converted from a CodeRed emergency alert program to AlertIowa. As described on the Iowa Homeland Security & Emergency Management website, "AlertIowa will allow citizens to sign up for the types of alerts they would like to receive." Messages can be issued via landline or wireless phone, text message, email, FAX, TDD/TYY, and social media. Messages can contain photo, video and audio attachments to help subscribers better understand the situation at hand, or where to find additional information.

Emergency Services Mitigation Actions

Butler County Emergency Management Agency: Aredale works with the Butler County Emergency Management Coordinator (EMC), based out of Allison, on various safety and emergency events. The EMC works in conjunction with local fire, rescue, police and government officials to draft and implement workable emergency action plans in the community. The current EMC is Chris Showalter; contact information can be found in Chapter 4.

Fire Department: Aredale has a 17-member local volunteer fire department. The fire department covers Bennezette and Westfork Township (partial). The coverage area spans from Butler County to parts of Franklin County for a total of 30 square miles. The department has one pumper truck, one grass fire truck, one tanker, and one Kawasaki mule with water tank. In 2003, the department received funding through the FEMA Fire Grant to purchase a replacement tanker truck. All volunteer firemen carry pagers connecting them to Butler County Sheriff's office. The community also has trained weather spotters.

Medical Services: Aredale does not have any medical facilities. The community utilizes either Franklin General Hospital, approximately 19 miles west in Hampton, or Mercy Medical Center, 32 miles northwest in Mason City.

Ambulance Service: The City of Aredale has agreements with Dumont EMS and Franklin General Hospital in Hampton.
Law Enforcement: The City contracts through a 28E agreement with the Butler County Sheriff's Department for law enforcement services. The City pays a monthly fee for this service.

Hazardous Materials: Aredale contracts with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The Training Center provides training to fire departments and companies from around the state and country. Not only is this a training center it also serves as a hazardous materials quick response unit to Black Hawk County, surrounding counties, and many municipalities in a ten county region. The Unit provides local fire departments with hazard materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the activities with the local department. Contact information for the facility is as follows: Hazardous Materials Regional Training Center, 1925 Newell Street, Waterloo, Iowa 50707, Phone: (319) 291-4275, Toll Free: (800) 291-4682, Fax: (319) 291-4285

The jurisdictions also partners with the Northeast Iowa Response Group for assistance in responding to any methamphetamine labs located in the city limits. The Response Group assists the Police Departments in containment of the site and disposal of the hazardous chemicals.

Snow Removal: The City provides snow service for public streets and alleys. The City requires residents to remove storm from driveways.

Warning Systems: The City in installed a fire/warning siren in 2007 that serves the entire community.

Natural Resource Protection Mitigation Actions

Aredale has no natural resource protection mitigation actions.

Structural Projects Mitigation Actions

Aredale has no structural mitigation action projects underway.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Action Plan

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental. See Table 51.

The Committee was asked to discuss the STAPLEE elements and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each period each of the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as *Active*. If the action is to occur within the next 1-5 years it was identified as *Short-Term*, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon the following factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, City's chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a time line for each activity, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table C10 is the City of Aredale's Implementation Strategy.

TABLE C10 : FUTURE HAZARD MITIGATION ACTIVITIES - AREDALE						
Mitigation Action/Program/Project	**Associated Hazard(s)**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc)	All	Minimal	Active	Medium	4	County EMA, City Council*
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC.	All	Minimal	Active	Medium	5	Fire Department*
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	All	Minimal	Active	Medium	3	Fire Department*
Maintain Membership of National Flood Insurance Program	Flash Flood, River Flooding	Minimal	Active	High	1,2,3	City Council*
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Severe Winter Storm	Low	Short-term	Medium	1	Mayor*
Establish an Emergency Notification System and Conduct Drills	Severe Winter Storm, Tornado/ Windstorm	Minimal	Mid-term	Medium	4	Fire Department*
Develop and Maintain an Emergency Response Plan	All	Minimal	Mid-term	Medium	4	Fire Department*
Maintain Mosquito Spraying Program	Animal/ Crop/ Crop Disease, Human Disease	Minimal	Active	Low	3	City Council and Mayor*
Purchase Additional Warning Sirens for Underserved Areas of Community as needed	Thunderstorm / Lighting / Hail, Tornado/ Windstorm	Minimal	Active	Medium	3,4	City Council*, Butler County EMA
Continue Agreement with NE Iowa Response Group	HAZMAT Incident, Radiological Incident, Terrorism	Low	Active	Low	4	County EMA*
Complete and Maintain Secondary Off-Site Dispatch Center	All	Low	Active	Low	2,3,4	Butler County Sherriff's Department*, City Council
Maintain Command Procedures & Center	All	Low	Active	Medium	4,5	City Council*, City Departments
Develop and Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, Etc.	All	Low	Active	Low	2,3,4	City Council*, City Departments

TABLE C10 : FUTURE HAZARD MITIGATION ACTIVITIES - AREDALE						
Mitigation Action/Program/Project	**Associated Hazard(s)**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, etc.)	Severe Winter Storm	Minimal	Active	Medium	5, 7	City Council and Mayor*
Maintain Clean Up/Recovery Procedure / Plan	All	Low	Active	Low	4,5	City Council*, City Departments
Purchase Natural Gas Generators for Critical Facilities & Shelters	Tornado/ Windstorm, Infrastructure Failure	Medium	Active	Medium	3	Fire Dept.*, City Council
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	HAZMAT Incident, Radiological Incident, Terrorism, Human Disease	Low	Short-term	Medium	3	Fire Dept.*
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	HAZMAT Incident, Radiological Incident	Low	Short-term	Low	6	City Council*
Conduct Annual Fire Inspections of Industries and Businesses	Infrastructure Failure, Grass / Wild Land Fires	Minimal	Active	Low	2,3,4	Fire Dept.*
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Infrastructure Failure, Sinkholes, Expansive Soils, Dam/Levee Failure, Terrorism, Transportation Incident	Minimal to Moderate	As Needed	Low	2,3,4	City Council*, City Departments
Maintain and Update Bioterrorism Response Plan	Terrorism	Minimal	Active	Low	2,3,4	City Departments, Butler County EMA*
Maintain Wellness Clinics and Public Health Department	Human Disease	Minimal to Low	Active	Low	2,3,4	Butler County Public Health*
Develop a Water Rationing Plan	Infrastructure Failure, Extreme Heat	High	As needed	Low	5	Mayor*
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	Infrastructure Failures, Flash Flood, River Flooding, Transportation Incident, Dam/Levee Failure	Moderate to High	As needed	Low	3	City Council*, City Departments, County Engineer

APPENDIX D: City of Bristow

COMMUNITY PROFILE

Location

The City of Bristow is located in northwest Butler County. The town is located at latitude of 42.77 N x longitudes 92.90 W.

History/Development Trends

The community of Bristow is approximately 0.9 square miles and is the hometown of Ed Yost. Ed Yost, born on June 30, 1919, is referred to as the "Father of the Modern Day Hot-Air Balloon."

Natural Environment

Bristow's climate is not unlike those of most cities in the Midwest. Bristow has a climate of continental character. Far from the moderating influence of a large body of water, a wide variation is experienced in both temperature and precipitation during the four distinct seasons. There are no waterways within the City, however two tributaries to the West Fork River travel on both the east and west sides of the City.

Transportation

The most significant transportation route in the City of Bristow County Highway T24, a north/south route that connects to Highway 3 approximately 1.5 miles south of town. The other most traveled road through Bristow is the east/west County Road C33.

According to an Iowa Department of Transportation 2017 traffic study, an average of 120 cars and trucks travel on Highway T24 north of Bristow each day, while 280 vehicles travel the same route south of the City. Also, 260 cars and tracks travel on County Road C33 west of the City while 280 vehicles travel the same route east of Bristow each day.

The Allison Municipal Airport is located approximately five miles east of Bristow. The closest major airport is the Waterloo Regional Airport (ALO), located 30 miles southeast of the City. This public airport is owned and operated by the City of Waterloo and overseen by an Airport Commission appointed by the Mayor. The primary runway is 8,400 foot long, 150 foot wide, and has a grooved asphalt surface. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service.

The Rolling Prairie Bike Trail, located on a converted Iowa Pacific Railroad bed, travels through the southern portion of town. The current trail extends from Shell Rock, through Allison, to Bristow and west to Dumont. However, there are plans and a concerted effort to extend the trail to other communities in the area. The trail is owned by Butler County.

Community Services

The city water system has two wells, a 45,000-gallons elevated tower, a daily capacity of 140,000 gallons for the wells and an average daily usage of 15,000 gallons. The city does not have a community wide sanitary sewer system. Buildings are served by individual septic tanks that go into four drainage tile lines and discharges at several different outlets around the town.

TABLE D1: BRISTOW UTILITY PROVIDERS

Electric	**Natural Gas**	**Water**	**Sewer**	**Sanitation**	**Telephone**	**Internet**	**Cable**
MidAmerican Energy	MidAmerican Energy	Well	Private Owners	City Sanitation Services of Parkersburg	Rockwell Telephone	Rockwell Telephone	Rockwell Telephone

Demographics

Table D2 provides an overview of Bristow's demographics. From 2000 to 2010, the City experienced a 20.8% decrease in population, from 202 to 160 persons. The 2019-2017 ACS population estimate is 161 persons, showing the population at a stable rate.

Table D2: Bristow Demographics			
General Population, 2010 Census		***Economic Characteristics, 2013-2017 ACS***	
Total Population	160	Total Population (16 yrs. and over)	111
Males	82	Population in Labor Force (16 yrs. and over)	72
Females	78	Persons in Civilian Labor Force	72
Median Age	40.3	Persons Employed	67
At-Risk Population (under 18 years)	50	Persons Unemployed	5
At-Risk Population (65 years and over)	28	Persons in Armed Forces	0
One Race	157	Avg. Commute to Work in Minutes	25
White	156	Management, business, science, and arts occupations	5
Asian	1	Service occupations	8
Native Hawaiian or Other Pacific Islander	0	Sales and office occupations	19
Two or More Races	3	Natural resources, construction, and maintenance occupations	12
Hispanic or Latino (of any race)	0	Production, transportation, and material moving occupations	23
Not Hispanic or Latino	160	Median Household Income	24,000
Household Population	160	Median Family Income	53,333
Group Quarters Population	0	Per Capita Income	15,758
Group Quarters – Institutionalized	0		
Group Quarters – Noninstitutionalized	0	***Social Characteristics, 2013-2017 ACS***	
		School Enrollment (3 yrs. and over)	40
Housing Characteristics, 2010 Census		Nursery school/preschool	4
Total Housing Units	65	K – 12th Grade	34
Owner-Occupied Housing Units	44	K – 8th Grade	31
Renter-Occupied Housing Units	20	9th Grade – 12th Grade	3
Vacant Housing Units	1	College or Graduate School	2
		Educational Attainment – Population 25+ yrs.	122
		Less than 9th Grade	13
2018 Population Estimate	152	9th Grade – 12th Grade, No Diploma	10
		High School Degree or Equivalency	69
		Some college, no degree	16
		Associate's Degree	6
		Bachelor's Degree	0
		Graduate or Higher Degree	0
Source: 2010 Census; 2013-2017 American Community Survey; 2018 Population Estimates.			

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Bristow evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Bristow's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

The vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions included: Historical Occurrence, Probability, Magnitude/Severity, Warning Time, and Duration. Due to recent disasters and events that have impacted the planning area, Bristow determined that even though the historical occurrences were low for certain hazards, the probability ranking for future occurrences should be higher.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Table D3 is the analysis scores for the City of Bristow. The top three hazards for Bristow are: Tornado/Windstorm, Flash Flooding / Animal/ Plant/Crop Disease.

TABLE D3: HAZARD ANALYSIS CITY OF BRISTOW						
Hazard Rank	**Hazard**	**Hazard Factors**				Final Assessment Score
		Probability	**Magnitude/ Severity**	**Warning Time**	**Duration**	
1	Tornado/Windstorm	4	2	4	3	**3.3**
2	Flash Flood	4	2	4	2	**3.2**
3	Animal/Plant/Crop Disease	3	2.5	4	4	**3.1**
4	HAZMAT Incident	3	2	4	3	**2.85**
5	Grass/Wild Fire	4	1	4	1	**2.8**
5	Thunderstorm/Lighting/Hail	4	1	4	1	**2.8**
7	Drought	3	3	1	4	**2.8**
8	Dam / Levee Failure	2	3	4	3	**2.7**
9	Severe Winter Storm	4	1	2	2	**2.6**
10	Extreme Heat	4	1	1	3	**2.55**
11	Transportation Incident	3	1	4	3	**2.55**
12	Human Disease	2	2	4	1	**2.2**
13	Radiological Incident	1	2	4	3	**1.95**
14	River Flooding	1	3	1	3	**1.8**
15	Expansive Soils	1	2	4	1	**1.75**
15	Landslide	1	2	4	1	**1.75**
15	Sinkholes	1	2	4	1	**1.75**
18	Earthquake	1	2	1	4	**1.6**
19	Infrastructure Failure	1	1	4	2	**1.55**
20	Terrorism	1	1	4	1	**1.45**

Vulnerability – Identifying Critical Facilities

Table D4: Critical Facilities and Designated Shelters in Bristow	
Critical Facilities	**Shelters**
City Hall	City Hall
Fire Station	Fire Station

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Bristow.

Critical Facilities

Identifying the location of critical facilities is important in order to assess their vulnerability to hazards, since these facilities are important to the community's operations, quality of life, and economic sector. These include but are not limited to schools, health care facilities, libraries, police and fire stations, water towers, city and county buildings, sirens, and lift stations. Attachment 7d shows the locations of these critical facilities throughout Bristow.

Table D4 shows the locations identified as shelters in Bristow. While these locations have been identified for use if deemed necessary, there may also be hazard events which require residents to shelter themselves "in place." Therefore, any location could potentially become a makeshift shelter for purposes of disaster response.

Homes in Hazardous Areas

As Attachment 3e shows, small portions in the northwest, southeast, and southwest areas of the city are within the 100-year floodplain. The 100-year floodplain affects an estimated three parcels in the city. None of these parcels have dwellings or structures built upon them. The total land value of these parcels is estimated to be $402,280. No portion of Bristow is within the 500-year floodplain. See Table D5 and Attachment 4e for further detail on the impact of flooding.

TABLE D5: FLOODPLAIN DATA FOR BRISTOW						
	# of Parcels	**Area in Acres**	**Land Value**	**Building Value**	**Dwelling Value**	**Total Value**
1.0% Annual Chance Floodplain Values	3	22.14	$402,280	$0	$0	$402,280
0.2% Annual Chance Floodplain Values	0	0.0000	$0	$0	$0	$0
Total Floodplain Values	35	22.14	$997,320	$472,270	$158,520	$1,628,110
Total City Values	3	600.14	$402,280	$0	$0	$402,280
Source: INRCOG & Butler County Assessor Parcel value information current as of 9/12/18, Butler County Assessor Office. FEMA Digital Firm 9/16/2011. Incorporated boundaries as of 04/01/2019. For actual determination if a location is within the floodplain, contact your local floodplain administrator.						

All structures are vulnerable in the event of a Tornado / Windstorm hazard. As part of a vulnerability assessment, a hypothetical tornado scenario was created for the community. Attachment 5h and Attachment 5j illustrate the impact of a hypothetical tornado event in Bristow. Table D6 displays the degrees of impact that a hypothetical tornado scenario of various strengths would have on Bristow. As can be seen from the table, a direct hit from an EF4 or EF5 tornado would damage nearly the entire city.

TABLE D6: TORNADO SCENARIO FOR BRISTOW

Scale	Tornado Width	# of Parcels	Damaged Value	% of City Damaged
EF0	50 Meters	31	$106,171	19.02%
EF1	150 Meters	56	$191,800	34.36%
EF2	250 Meters	76	$520,584	46.63%
EF3	500 Meters	127	$869,798	77.91%
EF4	900 Meters	155	$2,123,198	95.09%
EF5	1100 Meters	169	$2,178,158	97.55%

Parcel Information Current: 01/01/2019

Persons residing in mobile homes and multi-unit apartments are considered at a higher risk of tornados. There are no mobile homes in Bristow. However, there are seven housing units in multi-unit buildings consisting of three or more units. Using the average household size for Bristow of 2.49 according to the 2010 U.S Census, there are approximately 17 persons residing in multi-unit buildings consisting of 3 or more units.

Vulnerability – Social Asset Populations

The social vulnerability assessment also identified how the hazards affect the population of Gilbertville, and it is assumed that the identified populations are more likely to require assistance during times of disaster and are therefore, generally speaking, more at-risk than the remaining population. The at-risk

population must be identified and targeted in successful mitigation efforts. Table D7 identifies the various population segments that may consider "at-risk" in the event of a hazard.

According to 2013-2017 ACS Census data, approximately 28 persons are 65 years or older. Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young people often are not aware of the proper actions to take in the event of a disaster. In addition, very young children would be more susceptible to a disaster simply due to their age. 50 persons were under the age of 18.

TABLE D7: CITY "AT-RISK" POPULATION

Total Community Population	161
Youth (18 Yrs. and younger)	50
Elderly (65 Yrs. and older)	28
Living in Group Quarters	0
Householder Living Alone	28
Estimated Population in Mobile Homes*	0
Non-English-Speaking Population (speaks English less than 'very well')	0
Persons with Disabilities - Under 18 Yrs. Old	0
Persons with Disabilities - 18-64 Yrs. Old	9
Persons with Disabilities - 65 Yrs. and Older	12

*Source: 2013-2017 American Community Survey 5-Year Estimates & US Census Data. 2010; *Number of mobile home units multiplied by average household size*

As mentioned, there are no mobile homes in Bristow. There are approximately 7 people living in multi-family housing units.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (D8) lists assets that could be affected in the event of a disaster. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Butler County Assessor's office. It should be noted however that these dollar amounts do not include gas and electric utility valuations nor do the evaluations include exempt properties, including government buildings, infrastructure, and religious/nonprofit properties. These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE D8: ASSET INVENTORY – VALUE OF STRUCTURES IN BRISTOW

Type of Structure	Lot / Land Value	Value of Structures	Total Value	Number of Structures
Residential	$ 370,140.00	$ 1,862,690.00	$ 2,232,830.00	69
Commercial	$ 138,430.00	$ 772,600.00	$ 911,030.00	10
Industrial	$ -	$ -	$ -	0
Agriculture	NA	NA	NA	NA
Total	$ 508,570.00	$ 2,635,290.00	$ 3,143,860.00	79

Source: Butler County Assessor; Values as of 2019

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development. Fortunately, the planning area has not experienced a significant change in development since the area is rural and the amount of development – residential, commercial, and industrial – has not changed in the past five years.

Repetitive Loss Properties

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. There are no repetitive loss properties in Bristow. The City does not participate in the National Flood Insurance Program; thus does not have any repetitive loss properties. Butler County's Flood Insurance Rate Maps were updated September 16, 2011

Mitigation Strategy

Hazard Mitigation Plan Goals

The City's existing hazard mitigation plan goals from the 2010 Butler County Multi-Jurisdictional Hazard Mitigation Plan were reviewed by the Planning Committee. After reviewing the goals, the Committee decided to confirm and renew these broad-based goals that address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for Bristow are:

1. Reduce the chance of and impact of flooding in the community.
2. Minimize the occurrence of injuries and loss of life due to hazards.
3. Minimize or eliminate damages that may occur as a result of hazards.
4. Increase the city's ability to respond to natural disasters and man made hazards.
5. Return to the community to similar or improved pre-event conditions as quickly as possible following a disaster event.
6. Incorporate the City Plan into the proposed Multi-Jurisdictional Plan.
7. Continually re-assess and re-evaluate the plan and mitigation activities.

Current Mitigation Actions

Prevention Mitigation Actions

Table D9 summarizes Bristow's preventive mitigation actions, which include local plans and ordinances.

TABLE D9: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR BRISTOW

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes - 2015	No	No	Yes - RR	No	No	No	No	No

Source: Local Communities, Note: RR=Restricted Residential

Property Protection Mitigation Actions

Bristow has not done or been involved with any property protection mitigation actions.

Public Education and Awareness Mitigation Actions

Bristow does not provide any public education or awareness mitigation actions. The county offers educational and awareness programs. Along with Butler County, the City of Bristow converted from a CodeRed emergency alert program to AlertIowa. As described on the Iowa Homeland Security & Emergency Management website, "AlertIowa will allow citizens to sign up for the types of alerts they would like to receive. Messages can be issued via landline or wireless phone, text message, email, FAX, TDD/TYY, and social media. Messages can contain photo, video and audio attachments to help subscribers better understand the situation at hand, or where to find additional information"[2]

Emergency Services Mitigation Actions

The following mitigation actions, related to the provision of emergency services, are available in Bristow.

Butler County Emergency Management Agency: Bristow works with the Butler County Emergency Management Coordinator, based out of the City of Allison, on various safety and emergency events. The Emergency Management Coordinator works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community. The current Emergency Management Coordinator is Chris Showalter and current contact information is as follows: 428 6th Street, Allison, Iowa 50602, (319) 267-9968, email: butlercoema@butlercoiowa.org

Fire Department: Bristow has and maintains a 17-member local volunteer fire department.

Ambulance Service: Bristow does not have an ambulance service. The neighboring towns of Allison and Dumont both have ambulance services. Bristow is within the Dumont's emergency medical service district. See Attachment 6b: Critical Sites Map of the County – Ambulances.

Medical Facilities: Bristow does not have any medical facilities.

Law Enforcement: The city contracts with the Butler County Sheriff's Department for law enforcement services.

Hazardous Materials: Bristow contracts with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The Training Center provides training to fire departments and companies from around the state and country. Not only is this a training center it also serves as a hazardous materials quick response unit to Black Hawk County, surrounding counties, and many municipalities in a ten county region. The Unit provides local fire departments with hazard

[2] http://homelandsecurity.iowa.gov/about_HSEMD/alert_iowa.html

materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the activities with the local department. Contact information for the facility is as follows: Hazardous Materials Regional Training Center, 1925 Newell Street, Waterloo, Iowa 50707, Phone: (319) 291-4275, Toll Free: (800) 291-4682, Fax: (319) 291-4285

The jurisdiction also partners the Northeast Iowa Response Group for assistance in responding to any methamphetamine labs located in the city limits. The Response Group assists the Police Departments in containment of the site and disposal of the hazardous chemicals.

Warning Systems: The city relies on Butler County and the AlertIowa warning systems previously discussed.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table 51) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each period each of the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, City's chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then reviewed. In addition, the Committee identified a timeline for each activity, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table D10 is the city's Implementation Strategy.

TABLE D10 : FUTURE HAZARD MITIGATION ACTIVITIES- BRISTOW						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc)	All	Low to moderate	Active; repetitive	High	All	City Council*
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	All	Minimal	Active; repetitive	High	All	Butler County EMA*
Develop and Maintain an Emergency Response Plan	All	Minimal	Active; annually	Medium	All	Fire Dept.*
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	All	Minimal to Low	Active; annually	High	All	Fire Dept.*
Continue Agreement with NE Iowa Response Group	HAZMAT Incident, Radiological Incident, Terrorism		Active; repetitive	High	3,4,5	City Council*
Purchase Additional Warning Sirens for Underserved Areas of Community	Tornado / Windstorm, Thunderstorms / Lighting / Hail	Low	Short-Term	Medium	2,3	City Council*
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Infrastructure Failure, Transportation Incident	Low to Moderate	Active	Medium	2,3,4	City Council*
Maintain Mosquito Spraying Program	Animal / Plant / Crop Disease	Low	Active; multiple times per year	Medium	2,3,4	City Council*
Establish an Emergency Notification System and Conduct Drills	All	Moderate	Active; AlertIowa	Low	2,3,4,7	Butler County EMA*
Develop and Maintain Continuity of Operations Plan (COOP)	All	Minimal	Active	Low	1-5	City Council*
Develop and Maintain Command Procedures & Center	All	Minimal	Active; review annually	Low	2,3,4	City Council*
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	All		Active; completed annually	Low	6, 7	City Council*
Purchase Natural Gas Generators for Critical Facilities & Shelters	All	Moderate	Medium-Term; as replacements are needed	Medium	2,3,4	City Council*

TABLE D10 : FUTURE HAZARD MITIGATION ACTIVITIES- BRISTOW						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Severe Winter Storm, Thunderstorm / Lighting / Hail, Tornado / Windstorm	Minimal to Low	Active; completed seasonally	Medium	2,3,4,5	City Council*
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Severe Winter Storms, Drought, Extreme Heat, Grass / Wild Fire, Thunderstorm / Lighting / Hail, Tornado / Windstorm, Infrastructure Failure	Minimal	Active; repetitive	High	2,3	City Council*
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	HAZMAT Incident, Infrastructure Failure	Minimal	Active; completed annually	High	2,4	Fire Department*
Conduct Annual Fire Inspections of Industries and Businesses	Infrastructure Failure	Minimal	Active; completed annually	Medium	2,4	Fire Department*
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Infrastructure Failure	Low	Active; completed annually	Medium	2,4	City Council*
Identify and Improve Security at Critical Facilities	Terrorism	Minimal	Active; security is maintained	Low	2	City Council*

APPENDIX E: City of Clarksville

Community Profile

Location

The City of Clarksville is located in the northeast quadrant of Butler County. Unincorporated areas surround the city on all sides. The Shell Rock River flows along the western and southern edges of the city.

History / Development Trends

John Heery of Milton, Wisconsin walked from Dubuque to the Shell Rock Valley on November 22, 1850. He filed a claim, part of which is now Heery Wood State Park, and returned to Dubuque. While he became the first landowner, he was not among the first settlers, because he did not return with his family until the spring of 1852.

The first settler in the Clarksville area was Joseph Hicks, who came from Rock County, Wisconsin in December 1850 and built a cabin on the north side of what is now Sportsman's Park. Robert T. Crowell helped the Hicks family move, but returned to Wisconsin. He came back to Clarksville in 1852 and settled on a farm northeast of town. Mr. Hicks' father Henry, who was a blacksmith, arrived the following spring and filed a claim for 120 acres near his son. That area at the time was called "Coon's Grove".

On July 6, 1852, the 32 family members of the Clark-Poisal wagon train arrived, following a 28 day stretch traveling from Indiana. They established camp near what is now "The Old Cemetery", built one large log cabin for the whole group to live in, and prepared for the winter. Thomas Clark soon traveled to Dubuque, the nearest land office, and took out claims on a strip of land four blocks wide and running south almost to the river, from what is now Superior Street and east of what is now Main Street.

By May of 1853, it was decided that enough people had settled in Butler County to organize a county government. Three commissioners were sent to locate a spot for the County Seat. They drove "the stake" for the site of the Butler County Court House in the block where the old school stood. It was agreed that this new village, which didn't even exist yet, would be named Clarksville. An election was held, but no one ran for office, stating that "there was no money in it." The town was surveyed and platted in August 1853, but with no place to record it, they waited over a year for the County government to finally be put in place. On October 27, 1854 the Town of Clarksville was finally recorded, just after the offices were opened.

The construction of the Courthouse was finished in 1856 at a cost of $18,000. In 1860, after considerable conflict, the County Seat was moved to Butler Center. Ten years later in 1870, the local school district bought the vacant building for $2,800 and turned it into a schoolhouse.

The town and surrounding area began to grow as farmers, businessmen, and their families began their life on the new frontier.[3] There are approximately 50 various businesses located in Clarksville, as well as numerous churches and Clarksville Community Schools.

Natural Environment

The major water system affecting the City of Clarksville is the Shell Rock River. The Shell Rock is at the lower end of a watershed that is responsible for the drainage of over one million acres of land. The Shell Rock watershed extends from near Janesville up to Minnesota.

Clarksville's climate is like those of most cities in the Midwest. Clarksville has a climate of continental character. Far from the moderating influence of a large body of water, a wide variation is experienced in both temperature and precipitation during the four distinct seasons.

Transportation

One major highway passes through the City of Clarksville, Iowa Highway 188. This north/south traveling transportation route bisects the community and serves as the City's Main Street. This road connects the City with Highway 218, just 11 miles northeast of Clarksville. To the south of the City, Highway 188 connects to the east/west traveling Highway 3, which links with Allison to the west along with Shell Rock and Highway 218 to the east. In addition, County Road C33 also passes through the City on an east/west route. County Road C33 connects Clarksville to Iowa Highway 14, 7 miles to the west, and U.S. Highway 218 7 miles to the east.

According to an Iowa Department of Transportation 2017 traffic study an average of 1,130 cars and trucks travel on Highway 188 north of the City each day. An average 1,930 vehicles travel on the portion of the highway south of Clarksville. Per day, 1,010 vehicles travel on C33 just east of Clarksville and 780 travel on the western section.

Butler County's only airport is located in Allison, 9 miles west. The Allison Municipal Airport (K98) is a public airport on the northwest edge of Allison and is accessible via Iowa Highway 14 and 7th St. The facility is classified as a local service airport offering a 1,790-foot-long, 175-foot-wide turf runway, six hangar parking spaces, and two aircraft tie-down locations. In 2010, there were five aircraft based at the airport generating approximately 1,250 annual operations. These figures are projected to increase to six aircraft and 1,500 annual operations by 2030.

The closest major airport is the Waterloo Regional Airport (ALO), is a 27-mile drive southeast of the City. This public airport is owned and operated by the City of Waterloo and overseen by an Airport Commission appointed by the Mayor. The primary runway is 8,400-foot-long, 150-foot-wide, and has a grooved asphalt surface. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service.

[3] City of Clarksville, Iowa; http://www.clarksvilleiowa.com/index.html

The Iowa Northern Railway Company (IANR) operates a rail line that travels through the southwest edge of the City. This 169-mile track connects Manly and Cedar Rapids. As a Class III carrier, IANR's largest commodities are farm products such as grain, and chemicals including ethanol and petroleum products.

Clarksville is part of the regional Rolling Prairie Bike Trail, owned by the County and is located on a converted Iowa Pacific Railroad bed. The current trail travels east from Allison, through Clarksville and ends in Shell Rock. There are plans and a concerted effort to extend the trail to other communities in the area. There are no major commercial watercraft routes in Clarksville. The Shell Rock River does offer locations for recreational watercraft to the public.

Community Services

Table E1 shows the primary utility providers for the City of Clarksville.

TABLE E1: CLARKSVILLE UTILITY PROVIDERS

Electric	Gas	Water	Sewer	Sanitation	Telephone	Internet	Cable
MidAmerican Energy	MidAmerican Energy	City of Clarksville	City of Clarksville	City of Clarksville	Butler-Bremer Communications	Butler-Bremer Communications	Butler-Bremer Communications

Demographics

Tables E2 provides an overview of the city's demographics. Clarksville's population has slightly declined over the past several years, decreasing by 2 persons between the 2000 to 2010 U.S. Census. The 2013-2017 ACS survey estimates the population to be 1413.

Table E2: Clarksville Demographics			
General Population, 2010 Census		***Economic Characteristics, 2013-2017 ACS***	
Total Population	1439	Total Population (16 yrs. and over)	1080
Males	690	Population in Labor Force (16 yrs. and over)	671
Females	749	Persons in Civilian Labor Force	671
Median Age	40.2	Persons Employed	626
At-Risk Population (under 18 years)	356	Persons Unemployed	45
At-Risk Population (65 years and over)	282	Persons in Armed Forces	0
One Race	1423	Avg. Commute to Work in Minutes	22.1
White	1410	Management, business, science, and arts occupations	162
Black or African American	2	Service occupations	116
American Indiana and Alaska Native	3	Sales and office occupations	125
Asian	6	Natural resources, construction, and maintenance occupations	75
Native Hawaiian or Other Pacific Islander	1	Production, transportation, and material moving occupations	148
Two or More Races	16	Median Household Income	44,271
Hispanic or Latino (of any race)	17	Median Family Income	64,375
Not Hispanic or Latino	1422	Per Capita Income	22,349
Household Population	160		
Group Quarters Population	44	***Social Characteristics, 2013-2017 ACS***	
Group Quarters – Institutionalized	44	School Enrollment (3 yrs. and over)	284
Group Quarters – Noninstitutionalized	0	Nursery school/preschool	31
		K – 12th Grade	206
Housing Characteristics, 2010 Census		K – 8th Grade	167
Total Housing Units	619	9th Grade – 12th Grade	39
Owner-Occupied Housing Units	437	College or Graduate School	27
Renter-Occupied Housing Units	136	Educational Attainment – Population 25+ yrs.	
Vacant Housing Units	46	Less than 9th Grade	38
		9th Grade – 12th Grade, No Diploma	83
		High School Degree or Equivalency	431
2018 Population Estimate	1352	Some college, no degree	168
		Associate's Degree	88
		Bachelor's Degree	100
		Graduate or Higher Degree	48
Source: 2010 Census; 2013-2017 American Community Survey; 2018 Population Estimate Program.			

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Clarksville evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. Clarksville's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas human caused or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions included: Historical Occurrence, Probability, Magnitude/Severity, Warning Time, and Duration. Due to recent disasters and events that have impacted the planning area, Clarksville determined that even though the historical occurrences were low for certain hazards, the probability ranking for future occurrences should be higher.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Table E3 is the analysis scores for the City of Clarksville. The top three hazards for Clarksville are: Tornado/Windstorm, Thunderstorm/Lighting/Hail, and Severe Winter Storm.

TABLE E3: HAZARD RISK ASSESSMENT FOR CLARKSVILLE						
Hazard Rank	**Hazard**	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**Final Score**
1	Tornado/Windstorm	4	3	4	1	**3.4**
2	Thunderstorm/Lighting/Hail	4	2	4	1	**3.1**
3	Severe Winter Storm	4	2	2	2	**2.9**
4	Terrorism	1	4	4	4	**2.65**
5	Flash Flood	3	2	3	2	**2.6**
6	Infrastructure Failure	2	3	4	2	**2.6**
7	Extreme Heat	4	1	1	3	**2.55**
8	River Flooding	2	2	3	3	**2.25**
8	HAZMAT Incident	1	3	4	3	**2.25**
10	Human Disease	1	4	1	4	**2.2**
11	Drought	2	2	1	4	**2.05**
12	Grass/Wild Fire	1	1	4	2	**1.55**
13	Sinkholes	1	1	4	1	**1.45**
13	Levee/Dam Failure	1	1	4	1	**1.45**
13	Radiological Incident	1	1	4	1	**1.45**
13	Transportation Incident	1	1	4	1	**1.45**
17	Animal/Plant/Crop Disease	1	1	1	4	**1.3**
18	Earthquake	1	1	1	1	**1**
18	Expansive Soils	1	1	1	1	**1**

Vulnerability – Identifying Critical Facilities

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Clarksville.

Critical Facilities

Identifying the location of critical facilities is important in order to assess their vulnerability to hazards, since these facilities are important to the community's operations, quality of life, and economic sector. These include but are not limited to schools, health care facilities, libraries, police and fire stations, water towers, city and county buildings, sirens, and lift stations. Attachment 7e is a map of the locations of these critical facilities throughout Clarksville. Table E4 shows the locations identified as shelters in Clarksville. While these locations have been identified for use if deemed necessary, there may also be hazard events which require residents to shelter themselves "in place". Therefore, any location could potentially become a makeshift shelter for purposes of disaster response.

Table E4: Designated Shelters in Clarksville
City Hall
Clarksville Nursing Home
Clarksville Fire Station
Public Library
Clarksville Community Schools
Source: Community

Homes in Hazardous Areas

The Shell Rock River places a number of properties within Clarksville within the 100-year and 500-year floodplains. Fortunately, a number of these properties are in the southern portion of the city limits and have not experienced a high rate of development; much remaining as agricultural land.

Attachment 3f and Attachment 4f shows the areas in Clarksville within the 100-year and 500-year floodplains. According to data from 2018, Clarksville has 52 parcels of land within the 100-year floodplain. There is approximately $684,240 value in structures on these lands, equating to a $1,223,470 total value of property within the 100-year floodplain. See Table E5.

TABLE E5: FLOODPLAIN DATA FOR CLARKSVILLE

	# of Parcels	Area in Acres	Land Value	Building Value	Dwelling Value	Total Value
1.0% Annual Chance Floodplain Values	52	281.76	$539,230	$167,580	$516,660	$1,223,470
0.2% Annual Chance Floodplain Values	9	1.1494	$87,630	$194,440	$340,570	$622,640
Total Floodplain Values	35	301.07	$997,320	$472,270	$158,520	$1,628,110
Total City Values	783	866.60	$8,392,540	$4,154,030	$40,171,320	$52,717,890

Source: INRCOG & Butler County Assessor Parcel value information current as of 9/12/18, Butler County Assessor Office. FEMA Digital Firm 9/16/2011. Incorporated boundaries as of 04/01/2019. For actual determination if a location is within the floodplain, contact your local floodplain administrator.

All structures are vulnerable in the event of a Tornado / Windstorm hazard. As part of a vulnerability assessment, a hypothetical tornado scenario was created for the community. Attachment 5j and Attachment 5k illustrate the impact of a hypothetical tornado event in Clarksville. Table E6 displays the degree of impact of a hypothetical tornado based on various levels of strength.

Persons living in mobile homes (also known as manufactured housing) may also be at risk from tornadoes or high winds. According to the 2013-2017 ACS 5-year estimates there are 57 mobile homes in Clarksville. Assuming all mobile homes are occupied and using city's average household size, 2.43 persons, there are an estimated 139 persons living in mobile homes.

In addition, persons living in some multi-family units may also be at risk due to the lack of a proper tornado shelter. According to the 2013-2015 ACS 5-Year Estimates, there were an estimated 49 housing units in buildings with at least three units. Based on the city' average persons per household, there are an estimated 119 persons living in multi-family housing units at that could be at risk during a tornado event.

Nursing homes or skilled living centers are also highly vulnerable to tornadoes. These facilities are designed for caring for the elderly population, majority of which use wheelchairs or other assistance devices, limiting mobility. Also, the majority of nursing homes are constructed as a single-level building with or without basements. Therefore, additional attention needs to be taken to ensure the safety of the residents and employees before, during, and after a tornado event. There are an estimated 44 persons living in group quarters in Clarksville, according to 2010 Census data.

Vulnerability – Identifying Social Asset Populations

The social vulnerability assessment also identified how the hazards affect the population of Clarksville and it assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table E7 identifies the various population segments that may consider "at-risk" in the event of a hazard.

The elderly are often considered as an "at risk" population. According to 2013-2017 ACS data, Clarksville has an aging population of 282 persons; 20% of the population are 65 years or older. 109, 7.8%, of residents were age 80 or over. 11.8% of the 573 total households have individuals 65 years or older that live alone.

Persons under the age of 18 are also at higher risk during some disasters, due to the fact that young people often are not aware of the proper actions to take in the event of a disaster. In

TABLE E7: CITY "AT-RISK" POPULATION

Total Community Population	1413
Youth (18 Yrs. and younger)	356
Elderly (65 Yrs. and older)	282
Living in Group Quarters	44
Householder Living Alone	184
Estimated Population in Mobile Homes*	139
Non-English Speaking Population (speaks English less than 'very well')	0
Persons with Disabilities - Under 18 Yrs. Old	26
Persons with Disabilities - 18-64 Yrs. Old	112
Persons with Disabilities - 65 Yrs. and Older	89

Source: 2013-2017 American Community Survey 5-Year Estimates & US Census Data. 2010; *Number of mobile home units multiplied by average household size

addition, very young children can be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, there were 356 persons, 25% of the population, under the age of 18.

As mentioned in the previous section, persons living in mobile homes, mutli-family housing units, and nursing homes can be at a higher risk in the event of a disaster. There are 44 persons living in group quarters in Clarksville and 139 are estimated to be living in mobile homes. The population in nursing homes and assisted living facilities are especially vulnerable as they are designed for caring for the elderly population, the majority of which use wheelchairs or other assistance devices that limit mobility

The Clarksville Community School District has an elementary, middle school, and high school located in the City of Clarksville at 318 N Mather St. There are approximately 330 students, grades pre-kindergarten through twelfth grade. When school is in session, hundreds of people are in the school buildings daily. This includes people from other communities attending various events throughout the year.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (E8) lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Butler County Assessor's office. It should be noted however that these dollar amounts do not include gas and electric utility valuations nor do the evaluations include exempt properties, including government buildings, infrastructure, and religious/nonprofit properties. These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE E8: ASSET INVENTORY – VALUE OF STRUCTURES IN CLARKSVILLE

Type of Structure	Lot / Land Value	Value of Structures	Total Value	Number of Structures
Residential	7,028,980	4,061,030	11,090,010	514
Commercial	659,399	2,875,580	3,534,979	39
Industrial	39,790	1,169,730	1,209,520	2
Agriculture	NA	NA	NA	NA
Total	$ 7,728,169	8,106,340	15,834,509	555

Source: Butler County Assessor; Values as 2019

TABLE E9: NFIP STATISTICS IN CLARKSVILLE

CID #	# of NFIP Policies	NFIP Insurance in Force ($)	Total Paid Losses #	Total Payments Made ($)
190336	23	5,367	14	612,031

Source: Federal Emergency Management Agency (FEMA); As of 06/30/2019

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development. Fortunately, the planning area has not experienced a significant change in development since the area is rural and the amount of development – residential, commercial, and industrial – has not changed in the past five years.

Repetitive Loss Properties

FEMA defines a repetitive loss property as an insurable building that has experienced losses in a 10-year period in which each loss is $1,000 or more. According to available FEMA data, Clarksville participates in NFIP with 23 policies in place.

As of 09/30/2019 Clarksville had no repetitive loss properties. Clarksville's flood insurance rate maps (FIRM) were updated September 16, 2011. Table E9 shows the city's NFIP information as of 7/31/2019.

Mitigation Strategy

This hazard mitigation plan attempts to reduce loss by identifying potential natural, technological, and human caused hazards. As a result of many natural and human caused hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs when necessary.

Hazard Mitigation Plan Goals

The City's existing hazard mitigation plan goals from the 2015 Butler County Multi-Jurisdictional Hazard Mitigation Plan were reviewed by the Planning Committee. After reviewing the goals, the Committee decided to confirm and renew these broad-based goals that address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for Clarksville are:

1. Reduce the chance of and impact of river and flash flooding in the community.
2. Minimize the occurrence of injuries and loss of life due to hazards.
3. Minimize or eliminate damages that may occur as a result of hazards.

4. Increase the city's ability to respond to natural disasters and man made hazards.
5. Return to the community to similar or improved pre-event conditions as quickly as possible following a disaster event.
6. Incorporate the City Plan into the proposed Multi-Jurisdictional Plan.
7. Re-assess and re-evaluate the plan and mitigation activities.

Current Mitigation Actions

Prevention Mitigation Actions

The City's previous 1989 flood insurance rate map (FIRM) was updated on September 16, 2011. The city participates in NFIP.

Table E10 displays the regulatory tools the city can utilize to regulate and mitigate hazards.

TABLE E10 CURRENT PLANNING AND REGULATORY DOCUMENTS FOR CLARKSVILLE

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2015	No	No	Yes- RRO	No	Yes	Yes	Yes	Yes

Source: Community, Note: RR=Restricted Residential

Property Protection Mitigation Actions

Clarksville has participated in 2017 and 2018 flood buyout programs. The City has also applied for and received a Disaster Infrastructure Community Development Block Grant in 2010 to install stormwater. Prior to this improvement, previously less than one-fourth of the city was serviced by storm sewer, and most was undersized. The new improvements to the storm sewer system involved providing new storm sewer to the northeast, west and southeast areas of the city, as well as intercepting some of the existing storm sewer system in order to increase the overall capacity of the system.

Benefits provided by these improvements included reduction of ice on the streets, reduction of flash flooding impacts, reduction of standing water following rainfall events, and substantially decreasing the time for storm water to be removed from the community after flood events, which also reduced the amount of groundwater infiltrating into basements and the sanitary sewer system.

Public Education and Awareness Mitigation Actions

Information regarding how to protect oneself in the event of a tornado is largely publicized in the form of flyers, radio, newspaper, and television announcements. The city provides basic safety information for various hazard events (i.e., tornados) and what to do before, during, and after an event.

Along with Butler County, the City of Clarksville converted from a CodeRed emergency alert program to AlertIowa. As described on the Iowa Homeland Security & Emergency Management website, "AlertIowa will allow citizens to sign up for the types of alerts they would like to receive. Messages can be issued via landline or wireless phone, text message, email, FAX, TDD/TYY, and social media. Messages can contain photo, video and audio attachments to help subscribers better understand the situation at hand, or where to find additional information"[4]

Emergency Services Mitigation Actions

Butler County Emergency Management Agency: Clarksville works with the Butler County Emergency Management Coordinator, based out of the City of Allison, on various safety and emergency events. The Emergency Management Coordinator works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community. The Emergency Management Coordinator is Chris Showalter and current contact information is as follows: 428 6th Street, Allison, Iowa 50602, (319) 267-9968, email: ButlercoEMA@butlercoiowa.org

Fire Department: The city has and maintains a volunteer fire department. The department has two pumpers, a tanker, grass unit, and a rescue truck.

Medical Services: People Clinic Butler County (PCBC) is located in Clarksville at 118 S Main St. PCBC is a satellite office of People's Community Health Clinic in Waterloo. The office opened in 2008 and offers both medical and dental services. The Clarksville Skilled Nursing & Rehabilitation Center provides nursing home and assisted living facilities to the surrounding area. The 24-hour Waverly Health Center is an approximately 14 mile drive southeast of Clarksville. Allen Memorial Hospital in Waterloo is approximately 32 miles southeast of the city.

Ambulance Service: The city has and maintains an ambulance service. It is staffed with volunteer certified EMTs and paramedics.

Law Enforcement: Clarksville has two full-time police officers providing 24-hour protection.

Hazardous Materials : Clarksville contracts with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The Training Center provides training to fire departments and companies from around the state and country. Not only is this a training center it also serves as a hazardous materials quick response unit to Black Hawk County, surrounding counties, and many municipalities in a ten county region. The Unit provides local fire departments with hazard materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the

[4] http://homelandsecurity.iowa.gov/about_HSEMD/alert_iowa.html

activities with the local department. Contact information for the facility is as follows: Hazardous Materials Regional Training Center, 1925 Newell Street, Waterloo, Iowa 50707, Phone: (319) 291-4275, Toll Free: (800) 291-4682, Fax: (319) 291-4285

The jurisdiction also partners the Northeast Iowa Response Group for assistance in responding to any methamphetamine labs located in the city limits. The Response Group assists the Police Departments in containment of the site and disposal of the hazardous chemicals.

Warning Systems: Clarksville has one outdoor warning siren that is used to warn the public of imminent danger.

Natural Resource Protection Mitigation Actions:

Over the past five years the city has made substantial improvements to their wastewater treatment facility. The facility was built up in order to protect against floodwaters. Also, security at the facility was substantially increased by installing chain link fencing with barbed wire overhead in order to thwart would be trespassers.

Structural Projects Mitigation Actions

Clarksville built a higher than necessary communication tower for local use so it could be used by the city as a backup communications tower that is capable of serving the entire county. This tower acts as a redundant communication location, complete with base station, in case the Butler County Communication Center would be rendered inoperable. The Clarksville Volunteer Fire Department Station was built to act as a shelter with thick concrete walls and ceiling.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility

criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table 51) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each period each of the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, each jurisdiction chose to continue the activity or drop it from the plan update. Once the committee identified and ranked the future hazard

mitigation activities, the activities were then analyzed. In addition, the Committee identified a timeline for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table E10 is the City of Clarksville's Implementation Strategy.

TABLE E10: FUTURE HAZARD MITIGATION ACTIVITIES- CLARKSVILLE						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Extreme Heat, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Incident	Low	Active	Medium	1,2,3,4	City Council*
Establish an Emergency Notification System and Conduct Drills	Flash Flooding, Severe Winter Storm,, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident	Low	Active	Medium	2	Butler County EMA*
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Extreme heat, Flash Flood, Human Disease, River Flooding, HAZMAT Incident	Minimal	Active	Medium	2,4	City Council*
Develop and Maintain an Emergency Response Plan	Flash Flood, Human Disease, River Flooding, Severe Winter Storm, Tornado/ Windstorm, HAZMAT Incident	Minimal	Active	Medium	2,4,7	City Council, Butler County EMA*
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc)	All	Minimal	Active	Medium	1,2,3,4,5	City Council*
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	Flash Flood, Human Disease, River Flooding, Severe Winter Storm, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Incident, Terrorism	Minimal	Active	Medium	2,3,4	Individual Departments*; Fire Dept., EMS, Police Dept., Butler County EMA
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	Infrastructure Failure	Low	Active	Low	1,2,3,4,6	City Council
Purchase Natural Gas Generators for Critical Facilities & Shelters – need backup generators	Infrastructure Failure	Low	Active	Medium	1,2,3,4	City Council*
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	Transportation Incident, HAZMAT Incident	Minimal to Low	Active; As needed	High	2,3,4	City Public Works* (city streets) IDOT and County Secondary Roads
Establish, Adopt, & Enforce Building Codes	Infrastructure Failure	Low	Active	Low	1,2,3,4,6	City Council*

TABLE E10: FUTURE HAZARD MITIGATION ACTIVITIES- CLARKSVILLE						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	HAZMAT Incident	Low	Active	Low	1,2,3,4	Fire Dept.*
Continue Agreement with NE Iowa Response Group	HAZMAT Incident	Low	Active	Low	2,3,4	Fire Dept.*
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Infrastructure Failure	Low	Active	Low	2,3,4	City Council*
Conduct Annual Fire Inspections of Industries and Businesses	Infrastructure Failure	Low	Active; annual	Low	2,3,4	Fire Dept.*
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Infrastructure Failure	Low	Active	Low	2,3	Public Works*
Maintain Mosquito Spraying Program	Human Disease	Minimal	Active	Low	2	Public Works*
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Terrorism	Minimal	Active	Low	2	Butler County EMA*
Purchase Additional Warning Sirens for Underserved Areas of Community as needed	Thunderstorms / Lighting / Hail, Tornado / Windstorm	Low	As needed	High	2,3	City Council*, Butler EMA
Maintain an Internal Procedural/Communications Plan with Contact Information (local, state, regional)	All	Minimal	Actively maintained	Medium	2,3	City Council*
Develop a Clean Up/Recovery Procedure / Plan	Flash Flood, River Flooding, Severe Winter Storm, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Incident	Minimal	Active	Low	5	City Council*
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	Severe Winter Storm, Tornado, Terrorism	Low	Short Term	Medium	4	City Council*
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Infrastructure Failure, Transportation Incident	Minimal	Active	Low	2	Public Works*, City Council
Provide Off-Site Backup for Essential Data	All	Low to Moderate	Active	Medium	1, 5	City Council*
Maintain Facilities to Use as Shelters & Cooling/Heating Sites as needed	Extreme Heat, Severe Winter Storm, Thunderstorm / Lighting / Hail, Tornado /Windstorm	Minimal	Active	Medium	2	Fire Dept.*
Identify and Improve Security at Critical Facilities	All	Minimal	Active	Medium	2,3	Public Works*
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	All	Minimal to low	Active	Medium	1,2,3	Fire and EMS Dept.

TABLE E10: FUTURE HAZARD MITIGATION ACTIVITIES- CLARKSVILLE						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Maintain Membership of National Flood Insurance Program	River Flooding, Flash Flooding	Minimal	Active	Medium	1	City Council*
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Tornado/Windstorm	Moderate	Mid-term	Medium	2	City Council*
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Infrastructure Failure	Minimal	Active	Low	2,4	Public Works*
Maintain Continuity of Operations Plan (COOP)	All	Minimal	Active	Low	2,3,4,5,7	City Council*
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	Infrastructure Failure	Low	Active	Low	1,2,2	City Council*, City Departments
Ensure Tier II Reports are Completed and Reported per Applicable Laws	All	NA	NA	NA	NA	NA
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	River Flooding, Tornado/ Windstorm, HAZMAT Incident	NA	NA	NA	NA	NA
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or both as needed	River Flooding, Flash Flooding	High	Active	High	1	City Council*
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.)	River Flooding, Flash Flooding	NA	NA	NA	NA	NA
Review Completed Flood Dike Improvements and Continue to Improve as Needed to Ensure Dike Adequately Protects the Community as Conditions Change.	River Flooding, Flash Flooding	High	Active	High	1	City Council*

Appendix F: City of Dumont

COMMUNITY PROFILE

Location

The City of Dumont is located in western Butler County. The city is situated between Hartgrave Creek to the West and the West Fork Cedar River to the east.

History/Development Trends

Dumont is located in Butler County in a knoll between Boylan's Creek on the east and northeast, the West Fork of the Cedar River running from the northwest to the southeast and the South Fork running from west to east. In 1864, when Samuel Dumont and his family came to Butler County, the land had already been homesteaded. Mr. Dumont purchased 480 acres for .75 cents to $1.25 an acre and immediately began farming the land. Later, Mr. Dumont and his family moved from the farm and established a town, which contained 80 acres. On January 14, 1896 the City of Dumont was incorporated.

Dumont originally consisted of a group of thirteen buildings, the founder having furnished a major portion of the means and material for their construction. Mr. Dumont gave the land for the three churches, the Evangelical, Methodist and Catholic, the parsonages for the Evangelical and Methodist Churches, the lots for the school, an acre for the cemetery and the block of land for the city park. In 1883, Mr. Dumont built a beautiful Victorian styled mansion.

Dumont has experienced its share of flooding and fire-related disasters over the course of its history. In 1901, a fire swept through the business district and wiped out almost every business establishment. It was replaced with the block of brick buildings currently standing. The Methodist Church suffered some loss in a fire in 1938 and the Dumont Reformed Church also suffered some loss due to fire in 1940. Disaster struck on April 5, 1943, and Dumont lost its beautiful home built by Samuel Dumont. There have also been several floods that have affected the City, most recently in 2008.

Natural Environment

Dumont's climate is like those of most cities in the Midwest, with a continental character. Far from the moderating influence of a large body of water, a wide variation is experienced in both temperature and precipitation during the four distinct seasons.

Transportation

The most significant transportation route in the City of Dumont is State Highway 3, which is an east/west route that connects Dumont with several key destinations. Highway 3 with Highway 65 and the City of Hampton to the west, and the County Seat, Allison, to the east. The other major road for the community is the north/south County Road T16.

According to an Iowa Department of Transportation 2017 traffic study, an average of 2,090 cars and trucks travel on State Highway 3 east of Dumont each day, while an average of 1,930 vehicles travel the same route west of the City each day. In addition, 630 cars and tracks travel on County Road T16 north of the City each day, while 500 vehicles travel the same route south of Dumont, each day.

Butler County's only airport is located in Allison, approximately a 12 mile east. The Allison Municipal Airport (K98) is a public airport on the northwest edge of Allison and is accessible via Iowa Highway 14 and 7th St. The facility is classified as a local service airport offering a 1,790-foot-long, 175-foot-wide turf runway, six hangar parking spaces, and two aircraft tie-down locations. In 2010, there were five aircraft based at the airport generating approximately 1,250 annual operations. These figures are projected to increase to six aircraft and 1,500 annual operations by 2030.

The closest major airport is the Waterloo Regional Airport (ALO), located approximately a 44 miles drive southeast of Dumont. This public airport is owned and operated by the City of Waterloo and overseen by an Airport Commission appointed by the Mayor. The primary runway is 8,400-foot-long, 150-foot-wide, and has a grooved asphalt surface. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service.

Community Services

The City of Dumont's water is supplied by two wells. The first well was drilled in 1922 and the other in 1985. Their depths are 185' and 285' respectively. The system has an elevated storage capacity of 150,000 gallons. There are two submersible pumps, one 10 hp and one 15 hp. They can pump 275 gallons/minute. Our average daily usage is 60,000 gallons/day. The system currently treats with chlorine and holi-phosphates.

The City of Dumont discharges from a three-cell aerated lagoon wastewater treatment facility. The treatment plant is designed to treat an average dry weather (ADW) flow of 0.130 million gallons per day (MGD), an average wet weather (AWW) flow of 0.423 (MGD) and a maximum wet weather (MWW) flow of 0.895 MGD. The design 5-day biochemical oxygen demand (BOD) load is 120 lbs. /day.

Table F1 shows the primary utility providers for the City of Dumont.

TABLE F1: DUMONT UTILITY PROVIDERS

Electric	Natural Gas	Water	Sewer	Sanitation	Telephone	Internet	Cable
MidAmerican Energy	MidAmerican Energy	City of Dumont	City of Dumont	Jendro Sanitation	Dumont Telephone Company	Dumont Telephone Company	Dumont Telephone Company

Demographics

Tables F2 provides an overview of the city's demographics. The city's population was 637 as of the 2010 Census. The 2013-2017 ACS reported the population to be 596.

Table F2: Dumont Demographics			
General Population, 2010 Census		***Economic Characteristics, 2013-2017 ACS***	
Total Population	637	Total Population (16 yrs. and over)	464
Males	279	Population in Labor Force (16 yrs. and over)	257
Females	358	Persons in Civilian Labor Force	257
Median Age	49.5	Persons Employed	225
At-Risk Population (under 18 years)	149	Persons Unemployed	32
At-Risk Population (65 years and over)	181	Persons in Armed Forces	0
One Race	635	Avg. Commute to Work in Minutes	21.6
White	629	Management, business, science, and arts occupations	37
Black or African American	1	Service occupations	44
American Indiana and Alaska Native	0	Sales and office occupations	34
Asian	0	Natural resources, construction, and maintenance occupations	27
Native Hawaiian or Other Pacific Islander	0	Production, transportation, and material moving occupations	83
Other Race	5	Median Household Income	47,208
Hispanic or Latino (of any race)	21	Median Family Income	51,607
Not Hispanic or Latino	616	Per Capita Income	21,653
Household Population	605		
Group Quarters Population	32	***Social Characteristics, 2013-2017 ACS***	
Group Quarters – Institutionalized	32	School Enrollment (3 yrs. and over)	119
Group Quarters – Noninstitutionalized	0	Nursery school/preschool	15
		K – 12th Grade	103
Housing Characteristics, 2010 Census		K – 8th Grade	65
Total Housing Units	312	9th Grade – 12th Grade	37
Owner-Occupied Housing Units	281	College or Graduate School	2
Renter-Occupied Housing Units	62	Educational Attainment – Population 25+ yrs.	424
Vacant Housing Units	31	Less than 9th Grade	19
		9th Grade – 12th Grade, No Diploma	39
		High School Degree or Equivalency	227
2018 Population Estimate	609	Some college, no degree	77
		Associate's Degree	27
		Bachelor's Degree	24
		Graduate or Higher Degree	11
Source: 2010 Census; 2013-2017 American Community Survey; 2018 Population Estimate Program.			

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Dumont evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The City's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas human caused or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions included: Historical Occurrence, Probability, Magnitude/Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

As seen in Table F3, the top four hazards for Dumont are: Tornado/Windstorm, Flash Flood, Thunderstorm/ Lighting/ Hail, and River Flooding.

TABLE F3: HAZARD RISK ASSESSMENT FOR DUMONT						
Hazard Rank	**Hazard**	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**Final Score**
1	Tornado/Windstorm	4	4	4	1	3.7
2	Flash Flood	4	3	4	1	3.4
2	Thunderstorm/Lighting/Hail	4	3	4	1	3.4
3	River Flooding	4	3	3	2	3.35
4	Extreme Heat	4	3	2	1	3.1
4	Severe Winter Storm	4	3	2	1	3.1
5	Grass/Wild Fire	3	3	4	1	2.95
6	HAZMAT Incident	3	2	4	1	2.65
7	Infrastructure Failure	2	2	4	1	2.2
7	Terrorism	1	4	1	4	2.2
8	Sinkholes	1	1	4	1	1.45
8	Transportation Incident	1	1	4	1	1.45
9	Animal/Plant/Crop Disease	1	1	1	4	1.3
9	Drought	1	1	1	4	1.3
10	Human Disease	1	1	1	3	1.2
10	Landslide	1	1	1	2	1.1
12	Earthquake	1	1	1	1	1
12	Expansive Soils	1	1	1	1	1
12	Levee/Dam Failure	1	1	1	1	1
12	Radiological Incident	1	1	1	1	1

Vulnerability – Identifying Critical Facilities

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Dumont.

TABLE F4: SHELTERS IN DUMONT

New Hope Methodist Church
Emergency Building
Dumont Reformed Church
Dumont Community Library
Source: Community

Critical Facilities

Identifying the location of critical facilities is important in order to assess their vulnerability to hazards, since these facilities are important to the community's operations, quality of life, and economic sector. These include but are not limited to schools, health care facilities, libraries, police and fire stations, water towers, city and county buildings, sirens, and lift stations. Attachment 7f shows the locations of these critical facilities throughout Dumont. Table F5 displays critical facilities that would be important gathering points during and recovering from a disaster.

Table F4 shows the locations identified as shelters in Dumont. While these locations have been identified for use if deemed necessary, there may also be hazard events which require residents to shelter themselves "in place". Therefore, any location could potentially become a makeshift shelter for purposes of disaster response.

TABLE F5: CRITICAL FACILITIES IN DUMONT

Dumont Community Housing	Dumont City Hall Public Works Dept
Dumont Harken Lumber	Kwik Star
First Security Bank and Trust	Nursing Home
J & C Grocery	Lift Station & Lagoons
Source: Community	

With the closing of the city's school, the Council identified the Dumont City Hall and the Dumont EMS Building as Emergency Command Centers. Although not officially designated, the City believes that the Dumont Reformed Church and the New Hope Methodist Church and the emergency building could also be considered for use as shelters if necessary.

Homes in Hazardous Areas

The City of Dumont has 18.12% of its parcels in the 100-year floodplain within the city limits. No portions of the city are within the 500-year floodplain. According to 2018 data, the estimated value of land in the floodplain is $1,197,770. Estimated building values are at $598,860 and dwelling values are $1,335,930. The total estimated value of property in the 100-year floodplain is $3,132,260. Table F6 details this information.

TABLE F6: FLOODPLAIN DATA FOR DUMONT						
	# of Parcels	Area in Acres	Land Value	Building Value	Dwelling Value	Total Value
1.0% Annual Chance Floodplain Values	87	335.94	$1,197,770	$598,560	$1,335,930	$3,132,260
0.2% Annual Chance Floodplain Values	0	0.0000	$0	$0	$0	$0
Total Floodplain Values	87	335.94	$1,197,770	$598,560	$1,335,930	$3,132,260
Total City Values	480	1,119.09	$3,777,280	$1,636,801	$13,304,897	$18,718,978
Source: INRCOG & Butler County Assessor Parcel value information current as of 9/12/18, Butler County Assessor Office. FEMA Digital Firm 9/16/2011. Incorporated boundaries as of 04/01/2019. For actual determination if a location is within the floodplain, contact your local floodplain administrator.						

All structures are vulnerable in the event of a Tornado / Windstorm hazard. As part of a vulnerability assessment, a hypothetical tornado scenario was created for the community. People living in mobile homes are at greater risk of a variety of hazard events. According to the 2013-2017 ACS 5-year estimates, there are 5 mobile homes in Dumont, with an estimated occupancy of 14.

Persons living in multi-family buildings may also be at greater risk during a tornado event. According to the 2013-2017 ACS 5-year estimates there are 12 housing units in multi-family buildings with three or more units. Using the average renter household size of 1.95, it is estimated that there are approximately 23 people living in multi-family buildings with three or more units in Dumont. Table F7 identifies the projected damage based on the scale of a tornado.

According to available data, Dumont is projected to see a decrease in population over the next thirty years. This population decrease most likely result in a lesser need for additional critical facilities such as schools, daycare centers, or healthcare centers. However, the need for more critical facilities should be closely monitored these next 5-years and readdressed when this HMP is updated.

F7: TORNADO SCENARIO FOR DUMONT				
Scale	Tornado Width	# of Parcels	Damaged Value	% of City Damaged
EF0	50 Meters	79	$632,208	16.46%
EF1	150 Meters	153	$1,224,087	31.87%
EF2	250 Meters	215	$3,440,657	44.79%
EF3	500 Meters	356	$5,697,556	74.17%
EF4	900 Meters	435	$13,922,410	90.62%
EF5	1100 Meters	461	$14,755,112	96.04%
Parcel information current as of 01/01/2019; Source: Butler County Assessor and INRCOG				

Vulnerability – Identifying Social Asset Populations

The social vulnerability assessment also identified how the hazards affect the population of Dumont and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk"

population must be identified and targeted in successful mitigation efforts. Table F7identifies the various population segments that may consider "at-risk" in the event of a hazard.

The elderly are often listed as an "at risk" population. According to 2013-2017 ACS data, Dumont has 181 persons, 30% of the population, 65 years or older. 78 residents, 13%, were age 80 or over. 46, of the 253 households, are occupied by an individual living alone age 65 or older.

Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young people often are not aware of the proper actions to take in the event of a disaster. In addition, very young children can be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2017, there were 149 persons, 25% of the population, under the age of 18. Of the city's total 253 households, 57, 23%, of households had a child under the age of 18

TABLE F8: City "At-Risk" Population	
Total Community Population	596
Youth (18 Yrs and younger)	149
Elderly (65 Yrs and younger)	181
Living in Group Quarters	32
Householder Living Alone	84
Estimated Population in Mobile Homes *	11
Non-English Speaking Population (speaks English less than 'very well')	0
Persons with Disabilities – Under 18 Yrs. Old	12
Persons with Disabilities – 18 to 64 Yrs. Old	50
Persons with Disabilities – 65 Yrs. And Older	42
*Source: 2013-2017 American Community Survey, 5-Year Estimates & US Census Data 2010. * Number of mobile home units multipled by average household size.*	

As mentioned, there are no mobile housing units in Dumont. Findings from the ACS indicate there are 12 multi-unit housing units in the city. Based on the average household size from Census data, there is likely close to 26 persons living in multi-family units.

One nursing home is located in Dumont. Nursing homes or skilled living centers are also highly vulnerable to tornadoes. These facilities are designed for caring for the elderly population, majority of which use wheelchairs or other assistance devices, limiting mobility. Also, the majority of nursing homes are constructed as a single-level building with or without basements. According to ACS data, there are 32 persons living in group quarters.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could

TABLE F9: ASSET INVENTORY – VALUE OF STRUCTURES IN DUMONT				
Type of Structure	**Lot / Land Value**	**Value of Structures**	**Total Value**	**Number of Structures**
Residential	$ 1,921,210.00	$ 13,442,297.00	$ 15,363,507.00	268
Commercial	$ 443,867.00	$ 1,484,181.00	$ 1,928,048.00	30
Industrial	$ -	$ -	$ -	0
Agriculture	NA	NA	NA	NA
Total	$ 2,365,077.00	$ 14,926,478.00	$ 17,291,555.00	298
Source: Butler County Assessor; Values as of 2019.				

face in the event of a disaster. The above table (F9) lists assets that would be affected in the event affected the city.

This information was made available from the Butler County Assessor's office. It should be noted however that these dollar amounts do not include gas and electric utility valuations nor do the evaluations include exempt properties, including government buildings, infrastructure, and religious/nonprofit properties. These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE F10: DUMONT REPETITIVE LOSS PROPERTIES

Total Losses	Properties	Total Payments
2	4	$36,187.47

Source: Iowa Department of Natural Resources; Repetitive Loss; Data as of 09/30/2019

TABLE F11: NFIP STATISTICS FOR DUMONT

CID #	# of NFIP Policies	NFIP Insurance in Force	Total Paid Losses #	Total Payments Made
1900036	2	$111,000	9	$23,440

Source: Federal Emergency Management Agency (FEMA). Data as of 6/30/2019

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development. The planning area has not experienced a significant change in development in the past several years.

Repetitive Loss Properties

According to available FEMA's data (06/30/2019) Dumont participates in NFIP with 6 policies ($381,300 in force). Dumont had two repetitive loss properties. See Table F11 for NFIP information and Table F10 for repetitive loss data. The City's flood insurance rate maps (FIRM) were updated September 16, 2011.

FEMA defines a repetitive loss property as an insurable building that has experienced losses in a 10-year period in which each loss is $1,000 or more. As of 09/30/2019 (See Table F10) Dumont has two repetitive loss buildings that have not been mitigated.

This hazard mitigation plan attempts to reduce loss by identifying potential natural, technological, and human caused hazards. As a result of many natural and human caused hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs when necessary.

Mitigation Strategy

Hazard Mitigation Plan Goals

The City's existing hazard mitigation plan goals from the 2015 Butler County Multi-Jurisdictional Hazard Mitigation Plan were reviewed by the Planning Committee at the third planning meeting. After reviewing the goals, the Committee decided to confirm and renew these broad-based goals that address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for Dumont are:

1. Reduce the chance of and impact of flooding in the community.
2. Minimize the occurrence of injuries and loss of life due to hazards.
3. Minimize or eliminate damages that may occur as a result of hazards.
4. Increase the city's ability to respond to natural disasters and manmade hazards.
5. Return to the community to similar or improved pre-event conditions as quickly as possible following a disaster event.
6. Incorporate the City Plan into the proposed Multi-Jurisdictional Plan.
7. Re-assess and re-evaluate the plan and mitigation activities.

Current Mitigation Actions

Prevention Mitigation Actions

The City of Dumont adopted, on April 13, 2006, the National Incident Management System (NIMS) concept of emergency planning and unified command for use in the City of Dumont as its system of preparing for and responding to emergencies. Training was immediately started on May 4, 2006, when the City of Dumont hosted an ICS-100 class for city officers, employees and emergency staff. IS-700 training for NIMS was given on August 8, 2006.

On May 18, 2006 the Council passed Resolution 2006-18 that states that in order to maximize the prompt, full and effective use of resources of all participating governments in the event of an emergency or disaster, the City adopted the statewide mutual aid compact.

On August 10, 2006 the Council adopted Resolution 2006-21 adopting a security information policy regarding the confidentiality of certain information regarding emergency preparedness.

The City of Dumont has adopted and enforces a Flood Plain Regulations ordinance, which is included in the City Code of Ordinances. The new floodplain maps became effective in September 2011. The City was required to notify people they believed were affected by the new revised map and their possible requirement to carry flood insurance.

The City of Dumont has two snow removal ordinances. The first addresses cars parked on city streets after a significant snowfall; the second pertains to snow removal on city sidewalks. Additional prevention planning and regulatory documents are listed in Table F12.

TABLE F12: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR DUMONT

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes, 2015	No	No	No	Yes	Yes	Yes	Yes	Yes
Source: Community								

Property Protection Mitigation Actions

The City of Dumont has contained in their Code of Ordinances a Flood Plain Regulations chapter. The City has never participated in a Housing Buy Out program.

Public Education and Awareness Mitigation Actions

Information regarding how to protect oneself in the event of a tornado is largely publicized in the form of flyers, radio, newspaper and television announcements. The City provides basic safety information for various hazard events and what to do before, during and after an event. With Butler County, the City of Dumont converted from a CodeRed emergency alert program to AlertIowa. As described on the Iowa Homeland Security & Emergency Management website, "AlertIowa will allow citizens to sign up for the types of alerts they would like to receive. Messages can be issued via landline or wireless phone, text message, email, FAX, TDD/TYY, and social media. Messages can contain photo, video and audio attachments to help subscribers better understand the situation at hand, or where to find additional information"[5]

Emergency Services Mitigation Actions

Butler County Emergency Management Agency: Dumont relies on the Butler County's Emergency Management Coordinator, based in Allison, for emergency management assistance. The Emergency Management Coordinator works with the local fire, police, and city officials to draft and implement workable emergency action plans in the community. The current Emergency Management Coordinator is Chris Showalter and current contact information is as follows: 428 6th Street, Allison, Iowa 50602, (319) 267-9968, email: ButlercoEMA@butlercoiowa.org

Fire Department: The City of Dumont currently has 16 volunteer firefighters who cover 64 miles. Equipment owned and operated by the local Fire Department includes two pumpers, one tanker and two grass rigs. The Fire Department has in place mutual aid agreements with surrounding

[5] http://homelandsecurity.iowa.gov/about_HSEMD/alert_iowa.html

communities to provide and receive assistance as needed. The communities that the Dumont Fire Department maintains mutual aid agreements with include Aplington, Aredale and Bristow. The Fire Department ensures communication with pagers, hand-held radios, 911 service, and cellular phones. Current contact information for the Dumont Fire Department is as follows: Dumont Volunteer Fire Department, 630 First Street, Dumont, Iowa 50625, (641)857-3222.

Medical Services: The City of Dumont has a clinic open currently one full day a week and two mornings by a Physician's Assistant. This is a satellite clinic of Franklin Medical Center, Hampton, Iowa.

Ambulance Service: The ambulance service is provided by the eight members of the Dumont Volunteer Ambulance and by a mutual aid agreement with Franklin County. The hospital nearest to Dumont is located in Hampton, Iowa approximately 12 miles away. We believe some individuals use Mercy Hospital in Mason City and Waverly Memorial Hospital in Waverly.

Law Enforcement: The City of Dumont contracts with the Butler County Sheriff's Department for law enforcement.

Hazardous Materials: Dumont contracts with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The Training Center provides training to fire departments and companies from around the state and country. Not only is this a training center, it also serves as a hazardous materials quick response unit to Black Hawk County, surrounding counties, and many municipalities in a ten county region. The Unit provides local fire departments with hazard materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the activities with the local department. Contact information for the facility is as follows: Hazardous Materials Regional Training Center, 1925 Newell Street, Waterloo, Iowa 50707, Phone: (319) 291-4275, Toll Free: (800) 291-4682, Fax: (319) 291-4285

The jurisdictions also partner with the Northeast Iowa Response Group for assistance in responding to any methamphetamine labs located in the city limits. The Response Group assists the Police Departments in containment of the site and disposal of the hazardous chemicals.

Snow Removal/ Public Works: The City of Dumont also views proper snow and ice removal from roadways to be essential in mitigating negative effects of severe winter storms. Snow removal and ice prevention techniques are practiced by City, County and State employees on the corresponding roadways within the city limits. The City of Dumont employs two full time drivers for snow removal. Equipment used includes two dump trucks with snow blades, an industrial tractor, sand spreader and a small snow blower.

Warning Systems: The City of Dumont currently has one siren, located on a utility pole north of their emergency building, which is responsible for alerting the entire city. It can be manually tripped in the Fire Station, Butler County can radio trip it, three of our hand-held radios can trip it and two truck radios can trip it. The members of the volunteer fire department and local law enforcement act as tornado spotters if storm conditions occur. They also watch flood waters.

In addition, there are early warning messages provided through local radio and television stations. Many of these are shared on the Dumont social media page. Dumont is in place with E-911 Emergency Assistance. Radio, television, cellular telephones, landline phones, warning sirens, internet access and NOAA Weather Radio Service are available to the public.

Natural Resource Protection Mitigation Actions

The City of Dumont's Code of Ordinances states that no person shall discharge or cause to be discharged any storm water, surface water, groundwater, roof run-off, sub-surface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer. Storm water and all other unpolluted drainage shall be discharged to such sewers as are specifically designated as combined sewers or storm sewers, or to a natural outlet approved by the Superintendent. Industrial cooling water or unpolluted process waters may be discharged on approval of the Superintendent, to a storm sewer, combined sewer, or natural outlet. The Code also has a list of location restrictions within the distances set forth in the ordinance from a public well within the City. The Code also provides inspection and approval for water service pipes and building sewers from the property line to the building served. The City completes all required testing.

Structural Projects Mitigation Actions

Dumont has installed a five-foot cement wall around their waste water plant to guard against being inundated during high water events. The city has recently added a roof as well.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognized that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table 51) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

One of the first actions the Committee took was to review the City's existing Hazard Mitigation Activities from the 2015 Plan, and provide an update on their status (see Appendix 9). Based on each activity's progress, jurisdictions chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a time line for each activity,

associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and indicated at least which of the city's goals the action addresses. Table F13 identifies the City of Dumont's Implementation Strategy.

TABLE F13 : FUTURE HAZARD MITIGATION ACTIVITIES- DUMONT						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** - Denotes primary agency
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Earthquake, Expansive Soils, Extreme Heat, Extreme Heat, Grass/ Wild Fire, River Flooding, Severe Winter Storm, Sinkholes, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	Minimal	Active	High	2,3,4	Fire Dept., City Council*, Butler County EMA, AD
Develop and Maintain an Emergency Response Plan	All	Minimal	Active	High	All	Fire Dept., City Council*, Police Dept., Butler County EMA, AD
Develop and Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, Etc.	All	Minimal	Active	High	2,3,4,5,6	City Council*, Fire Dept., Butler County EMA, AD
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc)	All	Minimal	Active	High	All	Fire Dept./AD, City Council*, Police Dept., Butler County EMA
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	Earthquake, Extreme Heat, Flash Flood, Grass/ Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lightening/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	Minimal	Active	High	1,2,3,4,5	Fire Dept./AD*, City Council, Police Dept., Butler County EMA
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	All	Minimal	Active	High	All	Fire Dept./AD, City Council, Police Dept., Butler County EMA*
Ensure Structures with Large Populations have Evacuation Plans	Earthquake, Extreme Heat, Flash Flood, Grass/ Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, Radiological Incident, Transportation Incident, terrorism	Minimal	Active	High	2,3,4	Fire Dept., City Council, Butler County EMA*, AD, Police Dept.
Develop, Enforce, and Update, as needed, Local Ordinances and Regulations (Snow Removal, Zoning,	Thunderstorm/ Lighting/ Hail	Minimal	Active	High	1,2,3,4	City Council*, Public Works

TABLE F13 : FUTURE HAZARD MITIGATION ACTIVITIES- DUMONT						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** - **Denotes primary agency**
Repair berm / flood dike. Purchase ground or build up Cedar Avenue.	Flooding	High	Mid Term	High	1,2,3	Public Works, City Council
Develop a Clean Up/Recovery Procedure / Plan	All	Minimal	Active	High	5,6,7	Public Works, Fire Dept., Butler County EMA, CD, AD, City Council*
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	All	Minimal	Active	High	4,5,6,7	Fire Dept., City Council, Police Dept., Butler County EMA, AD
Place GPS Units in all Critical Service Vehicles	All	Low	Active	High	4	Fire Dept.*, City Council, Police Dept., Butler County EMA, AD
Provide Off-Site Backup of Essential Data	All	Minimal	Active	High	6,7	Fire Dept., City Council*, Police Dept., Butler County EMA, AD
Purchase Natural Gas Generators for Critical Facilities & Shelters	All	Low	Active	High	4	City Council*
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Earthquake, Flash Flood, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Minimal	Active	High	2,3	City Council*, Public Works
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Flash Flooding, Grass/ Wild Fire, River Flooding, Tornado/ Windstorm	Minimal	Active	High	1,2,3	Fire Dept./AD*, City Council, Butler County EMA
Establish, Adopt, & Enforce Building Codes	Earthquake, Flash Flood, Grass/ Wild Fire, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Minimal	Active	High	2,4	City Council*, Board of Supervisors
NOAA Weather Radio Awareness Program	Earthquake, Flash Flood, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident	Minimal	Active	High	2,4	Butler County EMA*, Fire Dept., Police Dept.
Bury Overhead Power Lines	All	High	Mid-Term	High	1,2,3,4,5	City Council, Utility Company*
Purchase Additional Warning Sirens for Underserved Areas of Community	Tornado/Windstorm	Low	Long-Term	High	6,7	City Council*, Fire Dept., AS
Encourage Installation of Surge Protector on Electrical Lines	Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Minimal	Active	High	6,7	City Council, Butler County EMA*, Board of Supervisors

TABLE F13 : FUTURE HAZARD MITIGATION ACTIVITIES- DUMONT						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** - **Denotes primary agency**
Continue Agreement with NE Iowa Response Group	All	Minimal	Active	High	6,7	City Council, Board of Supervisors, Fire Dept.
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	Earthquake, Extreme Heat, Flash Flood, Grass/ Wild Fire, Human Disease, River Flooding, Thunderstorm/ Lighting/ Hail Tornado/ Windstorm, HAZMAT Incident, Radiological Incident	Low	Active	High	2,3	B/C, City Council*, Public Health, Environmental Health
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Low	Mid-Term	High	2	City Council*, Fire Dept., Butler County EMA
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Grass/ Wild Fire	High	Active	High	2,4	City Council*, Public Works
Conduct Annual Fire Inspections of Industries and Businesses	Grass/ Wild Fire, Infrastructure Failure	Minimal	Active	High	2,3	Fire Dept.*
Join or Maintain Membership of National Flood Insurance Program	Flash Flooding, River Flooding	Minimal	Active	High	1,4	City Council*
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	Flash Flooding, River Flooding, HAZMAT Incident, Radiological Incident, Transportation Incident, Terrorism	Minimal	Short-Term	High	1,2,3	Fire Dept., City Council*, Butler County EMA, Police Dept., AS
Maintain Mosquito Spraying Program	Animal/ Plant/ Crop Disease Human Disease	Low	Active	High	2,3	City Council*, Public Works
Either Purchase & Remove Structures In 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-Yr floodplain, or Both	Flash Flooding, River Flooding, Infrastructure Failure	High	Long-Term	High	1,2,3	City Council
Establish an Emergency Notification System and Conduct Drills	All	Moderate	Active	Medium	3,4	Fire Dept., AD, City Council, Butler County EMA*
Develop and Maintain Command Procedures & Center	All	Minimal	Active	Medium	1,2,3,4,5	Fire Dept., Police Dept., Butler County EMA, AD, City Council*
Ensure Tier II Reports are Completed and Reported per Applicable Laws	HAZMAT Incident	Minimal	Short-Term	Medium	6	Butler County EMA*, City Council
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Human Disease, Flash Flood, Terrorism	Minimal	Active	Medium	3	Fire Dept., City Council*, Public Works, Butler County EMA, AD

TABLE F13 : FUTURE HAZARD MITIGATION ACTIVITIES- DUMONT						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** - **Denotes primary agency**
Maintain Wellness Clinics and Public Health Department	Human Disease	Minimal	Active	Medium	3	Board of Supervisors, Butler County Public Health*
Develop a Water Rationing Plan	Drought, Extreme Heat, Grass/ Wild Fire	Minimal	Active	Medium	3	City Council*, Fire Dept., AD
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	All	Minimal	Active	Low	3,4,5	City Council*, Fire Dept., AD, Butler County EMA
Flood Proof Critical Facilities	Flash Flood, River Flooding	Moderate	Active	Low	1,5	City council*
Complete and Maintain Secondary Off-Site Dispatch Center	All	Low	Mid-Term	Low	1,2,3,4	City Council, Fire Dept.*, AD, Butler County EMA, Police Dept.
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	HAZMAT Incident, Transportation Incident	Low	Short-Term	Low	1,2,3,4	Fire Dept., Butler County EMA*, Police Dept., Public Works
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size	Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Minimal	Short-Term	Low	2,3,4	City Council*
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	HAZMAT Incident, Terrorism	Minimal	Active	Low	2,3	Fire Dept.*, Butler County EMA
Identify and Improve Security at Critical Facilities	Terrorism	Low	Active	Low	2,3,4,5	Public Works*, Police Dept.

Appendix G: City of Greene

Community Profile

Location

Greene is located in north-central Butler County, in the northeastern quadrant of Iowa, at latitude 42.5 N x longitude 92.5 W and elevations ranging from 950 to 1,020. The City is bordered on all sides by farmland and is bisected by the Shell Rock River.

History/Development Trends

The actual town site of Greene was purchased in the summer of 1854 by John W. Miller, who built a small log cabin near a group of springs. The town was named after Judge George Greene, of Dubuque, after he gave $1,200 towards the library. Although it has been a cause of debate among historians, the original town of Greene was located on the east bank of the Shell Rock River. The first woman resident of Greene was Mrs. A.H. Bell who, with her husband, purchased the Eikenberry residence from the railroad and converted it into a boarding house. The first carload of flour shipped from Greene was on April 15, 1875, which was the first lot manufactured by the Wanatah Mills. Mrs. Fowler was the pioneer milliner of Greene, and is credited with being the first woman to go into business in Greene, in 1872.

The Butler County Press was established in 1873. At that time, Greene had a population of 500 people. Businesses and professionals at the time included: physicians, drayman, barber, shoe salesman, druggist, architect, blacksmith, millinery, lawyer, real estate, hardware, cashier, lumber salesmen, furniture salesmen, painter, machinist, land office, machine and carriage works, postmaster, and general merchandiser.

In 1879, an election was held to determine if the town of Greene should be incorporated. There were a total of 162 votes cast in the election with 85 voting in favor of incorporation and 77 voting against incorporation.

The City of Greene has experienced its share of disasters throughout history. The local school building has twice been the victim of fire. A brick building built in 1877 was destroyed by fire in 1896, and the new building built that same year was also destroyed by fire in 1919.

In the early 1900's when trains were the primary source of travel, two major accidents occurred. The first, which occurred in 1909, resulted in one death and five injuries. The second accident occurred in 1916, which killed 16 persons.

More recent and severe disasters occurred in 1961. It was in this year that a large portion of the City was damaged by flooding and a tornado damaged most of rural Greene.

In 2012 the City completed construction of a new 12,000 square foot community center. With the assistance of FEMA funding, the center includes a 3,300 square foot Tornado Safe Room with backup generator. The previous community center was severely damaged and subsequently destroyed as a result of the 2008 flooding. City Hall and the Mayor's office were relocated to the new community center.

Natural Environment

The major water system affecting the City of Greene is the Shell Rock River. The Shell Rock River, at the Greene location, is at the lower end of a watershed that is responsible for the drainage of over one million acres of land. The Shell Rock Watershed extends from near Janesville up to Minnesota.

Greene's climate is like those of most cities in the Midwest. Greene has a climate of continental character. Far from the moderating influence of a large body of water, a wide variation is experienced in both temperature and precipitation during the four distinct seasons.

The original land cover of the Greene area was prairie grass. Today, much of the original land cover has been eliminated for agricultural use and the construction of homes and businesses. Much of the remaining land cover can be found in the low-lying areas of the community along the river and the areas of overflow.

According to the Butler County Soil Survey conducted in 1982 by the US Department of Agriculture Soil conservation Service, the soil in Greene is primarily of the Saude or Bolan series which are very similar. The Saude series "consists of well drained soils on stream benches and, in a few places, on uplands. Permeability is moderate in the upper part of the profile and very rapid in the lower part. Slogs range from 0 to 18 percent." The Bolan series "consists of well drained soils on uplands and stream benches. Permeability is moderate in the upper part of the profile and rapid in the lower part. Native vegetation was prairie grass. Slope ranges from 0 to 9 percent."

Transportation

The most significant transportation route in the City of Greene is State Highway 14, which is a north/south route that connects Greene with several key destinations. Highway 14 connects the City with Highway 218 and Charles in the north and to Highway 3 in Allison to the south. Another significant transportation route is the east/west County Road C13. This route allows access to highway 218 east of the community.

According to an Iowa Department of Transportation 2017 traffic study, an average of 1,880 cars and trucks travel on State Highway 14 north of Greene each day, while an additional 1,750 vehicles travel the same route south of the City each day. Also, 550 cars and tracks travel on County Road C13 west of the City each day, while an additional 700 vehicles travel the same route east of Greene each day.

Greene is also served by a railroad that runs the heart of the City on the east side of the Shell Rock River. The line is operated by Iowa Northern Railway. The 162 miles of track travel from Manly, in northcentral Iowa, to Cedar Rapids. The railway handles approximately 16,161 carloads of product each year. Most of the trains running through Greene carry farm products, however, occasionally the trains do carry chemicals that could cause a hazard if spilled or leaked in to the environment.

There are three public use airports located within 25 miles of Greene. The Allison Municipal Airport is located 11 miles south, Charles City Municipal Airport is 19 miles north-northeast of Greene and the Waverly Municipal Airport is 24 miles southeast of Greene.

The closest major airport is the Waterloo Regional Airport (ALO), located 37 miles southeast of the City. This public airport is owned and operated by the City of Waterloo and overseen by an Airport Commission appointed by the Mayor. The primary runway is 8,400-foot-long, 150-foot-wide, and has a grooved asphalt surface. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service.

There are no major commercial watercraft routes in Greene. The Shell Rock River does offer a location for recreational watercraft to the public.

Community Services

The City of Greene's water is supplied by local wells. The system has an elevated storage capacity of 300,000 gallons. The daily capacity of the municipal water system is 604,800 gallons. Average consumption is around 100,000 gallons per day (gpd***),*** while the peak consumption is approximately 360,000 gpd.
A primary sewage treatment plant serves Greene. The average load for the system is approximately 70,000 gpd. The system has experienced a peak load of around 800,000 gpd during flood events. In other words, during flood events the system has operated at over ten times its average load. Table G1 shows the primary utility provides for Greene.

TABLE G1: GREENE UTILITY PROVIDERS

Electric	**Gas**	**Water**	**Sewer**	**Sanitation**	**Telephone**	**Internet**	**Cable**
Alliant Energy	Black Hills Energy	City of Greene	City of Greene	Jendro Sanitation	Omnitel and Windstream	Omnitel and Windstream	Omnitel

Demographics

Tables G2 provides an overview of the city's demographics. The city experienced a three percent population growth between the 2000 and 2010 Census.

Table G2: Greene Demographics			
General Population, 2010 Census		***Economic Characteristics, 2013-2017 ACS***	
Total Population	1130	Total Population (16 yrs. and over)	848
Males	536	Population in Labor Force (16 yrs. and over)	523
Females	594	Persons in Civilian Labor Force	523
Median Age	49.8	Persons Employed	506
At-Risk Population (under 18 years)	219	Persons Unemployed	17
At-Risk Population (65 years and over)	324	Persons in Armed Forces	0
One Race	1130	Avg. Commute to Work in Minutes	29.8
White	1121	Management, business, science, and arts occupations	157
Black or African American	2	Service occupations	86
American Indiana and Alaska Native	2	Sales and office occupations	116
Asian	3	Natural resources, construction, and maintenance occupations	57
Native Hawaiian or Other Pacific Islander	0	Production, transportation, and material moving occupations	90
Two or More Races	9	Median Household Income	$82,290
Hispanic or Latino (of any race)	5	Median Family Income	$65,750
Not Hispanic or Latino	1125	Per Capita Income	$30,675
Household Population	510		
Group Quarters Population	30	***Social Characteristics, 2013-2017 ACS***	
Group Quarters – Institutionalized	30	School Enrollment (3 yrs. and over)	189
Group Quarters – Noninstitutionalized	0	Nursery school/preschool	21
		K – 12th Grade	21
Housing Characteristics, 2010 Census		K – 8th Grade	72
Total Housing Units	575	9th Grade – 12th Grade	43
Owner-Occupied Housing Units	426	College or Graduate School	32
Renter-Occupied Housing Units	84	Educational Attainment – Population 25+ yrs.	770
Vacant Housing Units	65	Less than 9th Grade	41
		9th Grade – 12th Grade, No Diploma	45
2018 Population Estimate	1068	High School Degree or Equivalency	294
		Some college, no degree	133
		Associate's Degree	110
		Bachelor's Degree	121
		Graduate or Higher Degree	26
Source: 2010 Census; 2013-2017 American Community Survey; 2018 Population Estimates Program			

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Greene evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The City's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas human caused or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions included: Historical Occurrence, Probability, Magnitude/Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Table G3 is the analysis scores for the City of Greene. The top four hazards for Greene are: River Flooding, Tornado/Windstorm, Flash Flood and HAZMAT Incident.

TABLE G3: HAZARD RISK ASSESSMENT FOR GREENE						
Hazard Rank	Hazard	Hazard Factors				Final Assessment Score
		Probability	Magnitude/ Severity	Warning Time	Duration	
1	River Flooding	3	2	4	3	2.85
2	Tornado/Windstorm	2	3	4	3	2.7
3	Flash Flood	3	1	4	1	2.35
4	HAZMAT Incident	2	2	4	2	2.3
5	Thunderstorm/Lighting/Hail	3	1	3	1	2.2
6	Severe Winter Storm	3	1	2	2	2.15
7	Animal/Plant/Crop Disease	2	2	1	4	2.05
7	Drought	2	2	1	4	2.05
7	Earthquake	1	2	4	4	2.05
7	Expansive Soils	1	2	4	4	2.05
7	Radiological Incident	1	2	4	4	2.05
12	Transportation Incident	2	1	4	2	2
13	Extreme Heat	2	2	1	3	1.95
13	Terrorism	1	2	4	3	1.95
15	Infrastructure Failure	1	1	4	3	1.65
15	Landslide	1	1	4	3	1.65
15	Sinkholes	1	1	4	3	1.65
18	Dam / Levee Failure	1	1	4	2	1.55
19	Grass/Wild Fire	1	1	4	1	1.45
19	Human Disease	1	1	2	4	1.45

Vulnerability – Identifying Critical Facilities

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Greene.

TABLE G4: SHELTERS IN THE CITY

Community Center/City Hall
St. Peter's Church
St. Mary's Church
North Butler Community School
Source: Community

Critical Facilities

Identifying the location of critical facilities is important in order to assess their vulnerability to hazards, since these facilities are important to the community's operations, quality of life, and economic sector. These include but are not limited to schools, health care facilities, libraries, police and fire stations, water towers, city and county buildings, sirens, and lift stations. Attachment 7g shows the locations of these critical facilities throughout Greene.

Table G4 shows the locations identified as shelters in Greene. While these locations have been identified for use if deemed necessary, there may also be hazard events which require residents to shelter themselves "in place". Therefore, any location could potentially become a makeshift shelter for purposes of disaster response. Flooding in 2008 destroyed the City's community center. In 2012 Greene completed construction of a new community center which includes City Hall. With help from FEMA funding, the community center features a 3,300 square foot Tornado Safe Room with a backup generator.

The North Butler High School and Elementary School are facilities critical to the local social activities, economy, and are vulnerable to hazards because of their student population. The Liebe Care Center is another critical facility.

Homes in Hazardous Areas

A large portion of the city is within a floodplain. Of the approximate 842 parcels the city occupies, 356 parcels are in the 100-year floodplain and another 39 parcels are in the 500-year floodplain. The estimated total value of land, buildings, and dwellings in the 100-year floodplain is $14,988,496. The total estimated value in the 500-year floodplain is $1,923,250. See Table G5. See Attachment 3h and Attachment 4h for the city's floodplain and flood scenario maps.

TABLE G5: FLOODPLAIN DATA FOR GREENE						
	# of Parcels	Area in Acres	Land Value	Building Value	Dwelling Value	Total Value
1.0% Annual Chance Floodplain Values	356	310.27	$3,251,706	$2,907,493	$8,829,297	$14,988,496
0.2% Annual Chance Floodplain Values	39	35.94	$382,050	$280,610	$1,260,590	$1,923,250
Total Floodplain Values	395	346.21	$3,633,756	$3,188,103	$10,089,887	$16,911,746
Total City Values	842	759.99	$9,097,166	$5,750,513	$35,590,747	$50,438,426
Source: INRCOG & Butler County Assessor Parcel value information current as of 9/12/18, Butler County Assessor Office. FEMA Digital Firm 9/16/2011. Incorporated boundaries as of 04/01/2019. For actual determination if a location is within the floodplain, contact your local floodplain administrator.						

All structures are vulnerable in a Tornado / Windstorm hazard event. As part of the vulnerability assessment, a hypothetical tornado scenario was created for the community. Attachment 5n and Attachment 5o illustrate the impact of a hypothetical tornado event in Greene. Table G6 displays the degree of impact that hypothetical tornado scenarios of various strengths would have on the city.

Persons living in mobile homes (also known as manufactured homes) may also be at risk from tornadoes or high winds. According to 2017 ACS data, there are an estimated 8 mobile homes in Greene. Using the average persons per household of 2.16, there are approximately 17 persons living in mobile homes in Greene.

In addition, persons living in some multi-family units may also be at risk due to the lack of a proper tornado shelter. According to the 2013-2017 American Community Survey 5-Year Estimates, there were an estimated 48 housing units in buildings with at least three units. Therefore, it can be assumed there are approximately 103 persons living in multi-family housing units and at risk during a tornado event.

TABLE G6: TORNADO SCENARIO FOR GREENE				
Scale	Tornado Width	# of Parcels	Damaged Value	% of City Damaged
EF0	50 Meters	52	$691,255	6.18%
EF1	150 Meters	150	$1,727,020	15.44%
EF2	250 Meters	250	$4,756,018	21.26%
EF3	500 Meters	500	$9,829,700	43.94%
EF4	900 Meters	602	$31,995,075	71.50%
EF5	1100 Meters	700	$39,430,657	83.13%
Source: *Parcel information current as of 01/01/2019; Source: Butler County Assessor and INRCOG*				

Vulnerability – Identifying Social Asset Populations

The social vulnerability assessment also identified how the hazards affect the population of Greene and it is assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. Table G7 identifies the various population segments that may consider "at-risk" in the event of a hazard.

The elderly are often identified as an "at risk" population. According to 2017 ACS Census data, Greene has an aging population of 303 persons, 27% of the population, 65 years or older. 91 residents, eight percent, were age 80 or over.

Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young people often are not aware of the proper actions to take in the event of a disaster. In addition, very young children can be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2017, there were 194 persons, 17 percent of the population, under the age of 18 living in households.

There are an estimated 54 persons living in mobile homes and 56 persons living in multi-unit housing units. Both types of these of housing units have the potential to be more susceptible to hazard damage.

Nursing homes or skilled living centers are also highly vulnerable to tornadoes. These facilities are designed for caring for the elderly population, majority of which use wheelchairs or other assistance devices, limiting mobility. Also, the majority of nursing homes are constructed as a single-level building with or without basements. Census data indicates 30 residents live in group quarters.

The North Butler Community Schools district includes the communities of Greene and Allison. The School District's high school and one elementary school are located in Greene. The high school is located in the northeast part of the town at 201 N 5th St. There are approximately 179 students, grades 9-12, and 31 staff members. The elementary school is located on the opposite side of the Shell Rock River in the southwest part of Greene. There are approximately 169 students, amongst the Preschool, and grades Pre K-4th with 23 staff members.

When school is in session, hundreds of people are in the school buildings daily. This includes people from other communities attending various events throughout the year. The Fire Department conducts yearly drills with both the elementary and high school. The Ambulance Service visits the elementary school each spring during EMS week.

TABLE G7: GREENE "AT-RISK" POPULATION

Total Community Population	1130
Youth (18 Yrs. and younger)	194
Elderly (65 Yrs. and older)	303
Living in Group Quarters	30
Householder Living Alone	169
Estimated Population in Mobile Homes*	17
Non-English Speaking Population (speak English less than 'very well')	0
Persons with Disabilities - Under 18 Yrs. Old	18
Persons with Disabilities - 18-64 Yrs. Old	47
Persons with Disabilities - 65 Yrs. and Older	97

*Source: 2013-2017 American Community Survey 5-Year Estimates & US Census Data. 2010; *Number of mobile home units multiplied by average household size*

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. Table G8 lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Butler County Assessor's office. It should be noted however that these dollar amounts do not include gas and electric utility valuations nor do the evaluations include exempt properties, including government buildings, infrastructure, and religious/nonprofit properties. These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE G8: ASSET INVENTORY – VALUE OF STRUCTURES IN GREENE

Type of Structure	Lot / Land Value	Value of Structures	Total Value	Number of Structures
Residential	$ 7,421,500.00	$ 37,319,970.00	$ 44,741,470.00	509
Commercial	$ 1,001,780.00	$ 4,786,813.00	$ 5,788,593.00	59
Industrial	$ 131,090.00	$ 913,430.00	$ 1,044,520.00	4
Agriculture	NA	NA	NA	NA
Total	$ 8,554,370.00	$ 43,020,213.00	$ 51,574,583.00	572

Source: Butler County Assessor; Values as of 2019

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development. Fortunately, the planning area has not experienced a significant change in development since the area is rural and the amount of development – residential, commercial, and industrial – has not changed in the past five years.

Repetitive Loss Properties

According to available FEMA's data, as of 6/30/2019, Greene participates in NFIP with 45 policies and $3,422,000 of policy in force. Since the last MJ-HMP Greene has seen a significant decrease in NFIP participants. The City had 83 NFIP policies in place as of 06/30/2019.

TABLE G9: NFIP STATISTICS FOR GREENE

CID #	# of NFIP Policies	NFIP Insurance in Force	Total Paid Losses #	Total Payments Made
190869	45	3,422,000	9	62,566

Source: Federal Emergency Management Agency (FEMA) Data as of 6/30/19.

FEMA defines a repetitive loss property as an insurable building that has experienced losses in a 10-year period in which each loss is $1,000 or more. River flooding is the most common cause of repetitive loss in Butler County. Table G10 identifies the number of repetitive loss properties for Greene. According to FEMA's data, Greene has only one active repetitive loss property. According to FEMA loss statistics, the City had three properties with six total losses claimed.

TABLE G10:GREENE REPETITIVE LOSS PROPERTIES

Total Losses	Properties	Total Payments
6	3	$253,228

Source: Iowa Department of Natural Resources; Data as of 09/30/2019

MITIGATION STRATEGY

This hazard mitigation plan attempts to reduce loss by identifying potential natural, technological, and human caused hazards. As a result of many natural and human caused hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs when necessary.

Hazard Mitigation Plan Goals

The City's existing hazard mitigation plan goals from the 2015 Butler County Multi-Jurisdictional Hazard Mitigation Plan were reviewed by the Planning Committee at the third planning meeting. After reviewing the goals, the Committee decided to confirm and renew these broad-based goals that address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for Greene are:

1. Reduce the chance of and impact of flooding in the community.
2. Minimize the occurrence of injuries and loss of life due to hazards.
3. Minimize or eliminate damages that may occur as a result of hazards.
4. Increase the city's ability to respond to natural disasters and manmade hazards.
5. Return to the community to similar or improved pre-event conditions as quickly as possible following a disaster event.
6. Incorporate the City Plan into the proposed Multi-Jurisdictional Plan.
7. Continually re-assess and re-evaluate the plan and mitigation activities.

Current Mitigation Actions

Prevention Mitigation Actions

A new Flood Insurance Study (FIS) was completed for Butler County and the incorporated areas within on September 16, 2011. The FIS includes flood hazard data for floodplain management and flood insurance purposes.

Table G11 displays the planning and regulatory powers to implement mitigation activities.

TABLE G11: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR GREENE

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source: Community								

Greene adopted their first Hazard Mitigation Plan on December 13, 2004 which was updated in 2015. Greene currently has and enforces a zoning ordinance. The Greene City Council is unofficially charged with enforcing the zoning ordinance.

The City does have of a floodplain ordinance, which is included in the City's Code of Ordinances. The Mayor is charged with enforcing the floodplain ordinance in addition to his or her other duties. In accordance with NFIP guidelines, the ordinance does not allow for new construction within the floodplain. In addition, it requires those structures within the floodway fringe to: a) "be adequately anchored to prevent flotation, collapse or lateral movement of the structure; b) "use construction methods and practices that will minimize flood damage"; and c) "use construction materials and utility equipment that are resistant to flood damage.

As discussed previously, in 2012 the City completed constructed a new 12,000 square foot community center. With the assistance of FEMA funding, the center includes a 3,300 square foot tornado safe room with backup generator. The previous community center was severely damaged then destroyed as a result of the 2008 flooding.

Property Protection Mitigation Actions

As a result of the 2008 Floods, Greene has removed 20 homes from the flood plain between 2009 and 2019. This program was funded through FEMA, Iowa Emergency Management Division (IEMD), and Community Development Block Grant funds. Total cost for all 13 buy-outs was approximately $700,000. Through the program, structures are purchased and then demolished or otherwise removed from the floodplain. 12 properties remain vacant lots. One lot, near the Traer Street Bridge has been converted into a small park.

Public Education and Awareness Mitigation Actions

Information regarding how to protect oneself in the event of a tornado is largely publicized in the form of flyers, radio, newspaper, and television announcements. The City provides basic safety information for various hazard events (i.e., tornados) and what to do before, during, and after an event.

Along with Butler County, the City of Greene recently converted from a CodeRed emergency alert program to Alert Iowa. As described on the Iowa Homeland Security & Emergency Management website, "Alert Iowa will allow citizens to sign up for the types of alerts they would like to receive. Messages can be issued via landline or wireless phone, text message, email, FAX, TDD/TYY, and social media. Messages can contain photo, video and audio attachments to help subscribers better understand the situation at hand, or where to find additional information"[6]

Emergency Services Mitigation Actions

Butler County Emergency Management Agency: Greene relies on the Butler County's Emergency Management Coordinator, based in Allison, for emergency management assistance. The Emergency Management Coordinator works the local fire, police, and city officials to draft and implement workable emergency action plans in the community. The current Emergency Management Coordinator is Chris Showalter and current contact information is as follows: 428 6th Street, Allison, Iowa 50602, (319) 267-9968, email: ButlercoEMA@butlercoiowa.org

Fire Department: The City of Greene currently has 22 volunteer firefighters. The Fire Department considers itself fully staffed at this number. The department's coverage area is approximately 107 miles. Equipment owned and operated by the local fire department includes the following: 2005 International Pumper, 1995 Chevy Tanker, 1986 Chevy Pumper, 1981 Chevy Pumper, 2006 Ford F350 Pickup- Rescue Unit, 2002 Ford Grass Attack Unit, and 12 SCBAs. The fire department has in place mutual aid agreements with surrounding communities to provide and receive assistance as needed. The communities that the Greene Volunteer Fire Department maintains mutual aid agreements with include all communities in both Butler and Floyd Counties. The volunteer fire department also acts as tornado spotters if storm conditions occur. The fire department ensures communication through several methods. Those methods include 911 Service, Radio Communication, Pagers, Alarm Systems, Sirens, and Cellular Phones. To date the fire department is not GPS equipped.

Ambulance Service: The Greene Volunteer Ambulance Service provides emergency rescue and ambulance service to the community. The ambulance service is staffed by 26 volunteers, with equipment including two ambulances.

Medical Services: The hospital (Floyd County Memorial Hospital) nearest to Greene is located in Charles City, approximately 16 miles from town. According to the hazard mitigation planning committee, there are two other hospitals that are occasionally used by residents of Greene. The committee stated that some individuals use Mercy Hospital in Mason City for less severe treatment needs. Also, residents occasionally visit Waverly Memorial Hospital in Waverly.

Law Enforcement: Butler County Law Enforcement and the Iowa State Patrol provide police protection in the City. The members of the local law enforcement act as tornado spotters if storm conditions occur. The City contracts service with the Butler County Sheriff's Department.

[6] http://homelandsecurity.iowa.gov/about_HSEMD/alert_iowa.html

Hazardous Materials: Greene contracts with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The Training Center provides training to fire departments and companies from around the state and country. Not only is this a training center it also serves as a hazardous materials quick response unit to Black Hawk County, surrounding counties, and many municipalities in a ten county region. The Unit provides local fire departments with hazard materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the activities with the local department. Contact information for the facility is as follows: Hazardous Materials Regional Training Center, 1925 Newell Street, Waterloo, Iowa 50707, Phone: (319) 291-4275, Toll Free: (800) 291-4682, Fax: (319) 291-4285

The jurisdiction also partners the Northeast Iowa Response Group for assistance in responding to any methamphetamine labs located in the city limits. The Response Group assists the Police Departments in containment of the site and disposal of the hazardous chemicals.

Snow Removal/Public Works: Greene views proper snow and ice removal from roadways to be essential in mitigating negative effects of these events. Snow removal and ice prevention techniques are practiced by City, County, and State employees on the corresponding roadways within the city limits. The City currently employs two full time drivers for snow removal efforts. Equipment used for snow and ice removal includes two Dump Trucks w/ blades, Grader, and a Tractor w/ loader. Finally, the City also has a snow ordinance that is in effect during snow season. This ordinance serves to assist the City in its efforts to clear the city streets after a snow event.

Warning Systems: Greene has two warning sirens throughout the community at the high school and elementary school. These sirens are used to warn the public of imminent danger. Both sirens are equipped with battery backup so they will operate during a power failure. Other communications used by City personnel include pagers, radios, and cellular phones. Radio, television, cellular telephones, landline telephones, newspapers, warning sirens, Internet access, and NOAA Radio Service are available to the public at large. As noted earlier, Greene participates in the Alert Iowa program to notify residents of hazards and threats.

Natural Resource Protection Mitigation Actions

Greene has not completed any natural resource protection mitigation actions.

Structural Projects Mitigation Actions

The city constructed a small levy in the local park to protect from floodwaters that may arise from the Shell Rock River.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognized that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table 51) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each period each of the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, City's chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a time line for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table G12 is the City of Greene's Implementation Strategy.

TABLE G12 : FUTURE HAZARD MITIGATION ACTIVITIES- GREENE						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Grass/Wild Fire, Human Disease, River Flooding, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Incident, Levee/ Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Minimal	Long-term	Medium	4,6,7	City Council*, Fire Dept., Ambulance Service
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Tornado/Windstorm	High	Active	Low	2,4,5,7	City Council*
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both	River Flooding, Flash Flooding, Levee/ Dam Failure	High	Long-Term	Medium	1,2,3,5,6	Mayor and City Council*
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc)	All	Moderate	Active	Moderate	1,2,3,4,5,6	Mayor and City Council*, Butler County EMA
Join or Maintain Membership of National Flood Insurance Program	Flash Flood, River Flooding	Minimal	Active	Medium	1,2,5,7	Mayor* and City Council
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	All	Moderate	Long-Term	Medium	2,3,5	City Council*, Fire Dept., Ambulance Dept., Public Health
Complete and Maintain Secondary Off-Site Dispatch Center	All	Minimal	Active	Medium	1,2,3,4,5	Fire Dept.*
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	River Flooding, Infrastructure Incident, Levee/ Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Moderate	Active	Medium	1,2,3,5	City Engineer*
Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, Etc.	All	Minimal	Active	Medium	1,2,3,4,6,7	Butler County EMA*, Butler County Public Health, City Council, Fire Dept.
Maintain an Emergency Response Plan	All	Low	Active	Low	1,2,3,4,5	City Council*, Fire Dept., Police Dept., Ambulance, Mayor
Provide Off-Site Backup of Essential Data	Tornado/ Windstorm, Infrastructure Incident, Radiological Incident, Transportation Incident, Terrorism	Low	Active	High	3,5,7	Mayor*, City Clerk, Public Works

TABLE G12 : FUTURE HAZARD MITIGATION ACTIVITIES- GREENE						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	All	Minimal	Active	Low	1,2,3	City Engineer, Public Works*
Maintain Mosquito Spraying Program	Animal/ Plant/ Crop Disease, Extreme Heat, River Flooding, Human Disease	Minimal	Active	Medium	1,5	City Council and Mayor*
Establish, Adopt, & Enforce Building Codes	Flash Flood, River Flooding, Tornado/ Windstorm, Radiological Incident	Minimal	Active	Medium	1,2,3,4	City Council and Mayor*, Board of Supervisors
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	Animal/ Plant/ Crop Disease, Flash Flood, Grass/ Wild Fire, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Minimal	Active	Medium	2,3,4,7	Fire Dept., Ambulance Service, Police Dept., City Council and Mayor, Butler County EMA*
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	Flash Flood, River Flooding, Tornado/ Windstorm, Levee/Dam Failure	Low	Active	Medium	1,2,3	Public Works*, City Council, Fire Dept., Police Dept., Ambulance
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	River Flooding, Tornado/ Windstorm, Infrastructure Failure	Moderate	Active	Medium	1,2,4,5	City Council, Mayor*, Butler County Public Health
Continue Agreement with NE Iowa Response Group	Extreme Heat, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Minimal	Active	Medium	6,7	Fire Dept.*, Ambulance Service
Develop and Maintain Continuity of Operations Plan (COOP)	Radiological Incident, Terrorism	Minimal	Active	Medium	6,7	City Council and Mayor*
Develop and Maintain Command Procedures & Center	All	Minimal	Active	High	3,4,5	City Council and Mayor, Fire Dept.*, Ambulance Service
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	All	Minimal	Active	Low	6,7	Fire Dept.*, Ambulance Service, Butler County Public Health
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and	Grass/ Wild Fire, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure	Moderate	Active	Medium	2,4,5	City Council and Mayor*, Fire Dept., Ambulance Service

TABLE G12 : FUTURE HAZARD MITIGATION ACTIVITIES- GREENE						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	Failure, Radiological Incident, Transportation Incident, Terrorism					
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Flash Flood, Grass/ Wild Fire, Landslide, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Minimal	Active	Low	2,3,4	Fire Dept.*, Ambulance Service, Police Dept.
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	River Flooding, Severe Winter Storm, Grass/ Wild Fire, Levee/ Dam Failure	Minimal	Active	Medium	2,3,4,5	City Council*, Boards and Commissions
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Radiological Incident	Low	Active	Low	2,3,4,5	City Council*, Butler County EMA
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Animal/ Plan/ Crop Disease	Minimal	Active	Low	2,3,4,5	City Council*, Boards and Commissions
Purchase Additional Warning Sirens for Underserved Areas of Community	Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Low	Short-term	Low	3,4,5	City Council*
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size. Consider addition of 3rd unit.	Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Low	Short-Term	Medium	2,3,4	City Council*
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Animal/ Plant/ Crop Disease, Drought, Extreme Heat, Human Disease, HAZMAT Incident, Radiological Incident, Terrorism	Minimal	Active	Low	2,3	Public Health, Butler County EMA*
Establish an Emergency Notification System and Conduct Drills	Grass/ Wild Fire, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Radiological Incident, Terrorism	Minimal	Active	Low	2,3,4,5	Fire Dept.*, Schools
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	River Flooding, Tornado/ Windstorm, HAZMAT Incident	Minimal	Active	Low	2	Public Health, Environmental Health*

TABLE G12 : FUTURE HAZARD MITIGATION ACTIVITIES- GREENE						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Ensure Tier II Reports are Completed and Reported per Applicable Laws	River Flooding, Tornado/ Windstorm, HAZMAT Incident	Minimal	Active	Medium	6,7	Public Works*, City Clerk
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Animal/ Plant/ Crop Disease, Drought, Extreme Heat, Human Disease, River Flooding, Severe Winter Storm, Tornado/ Windstorm HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Radiological Incident, Terrorism	Minimal	Active	Medium	1	City Engineer*, Public Works
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Drought, Infrastructure Failure	Moderate	Active	Medium	4	Public Works*, City Engineer
Conduct Annual Fire Inspections of Industries and Businesses	HAZMAT Incident, Infrastructure Failure, Radiological Incident, Terrorism	Minimal	Active	Medium	3	Fire Dept.*
Establish a Drainage District	Flash Flooding, River Flooding	Minimal	Active	Low	1	City Engineer*
Acquire and/or Annex Land for Relocation of Community	River Flooding, Tornado/Windstorm, Infrastructure Failure	Moderate	Active	Low	5	City Council* and Mayor
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.)	Flash Flooding, River Flooding, Levee/Dam Failure	Minimal	Active	Low	1	City Engineer*, Public Works
Maintain and Update Bioterrorism Response Plan	HAZMAT Incident, Radiological Incident, Terrorism	Minimal	Active	Low	3	Police Dept., Fire Dept., Ambulance Service, Public Health*
Identify and Improve Security at Critical Facilities	Terrorism	Minimal	Active	Low	3	Police Dept., County Sheriff*
Develop a Water Rationing Plan	Drought, Extreme Heat	Minimal	Active	Low	2,4	City Council* and Mayor
Maintain Roadside Vegetation Management Program	Landslide	Minimal	Active	Low	4	Boards and Commissions*, Environmental Health

Appendix H: City of New Hartford

Community Profile

Location

The City of New Hartford is located in the southeast corner of Butler County, along Iowa State Highway 57. New Hartford is situated approximately 10 miles northwest of the Waterloo-Cedar Falls metropolitan area and approximately 19 miles southeast from the City of Allison, the Butler County seat.

History/Development Trends

A man by the name of Titus Ensign is believed to originally founded the City of New Hartford, during the mid-nineteenth century. The name "New Hartford" was given to the community as a tribute to the former home of the Ensign family; New Hartford, Connecticut. The City of New Hartford, Iowa was officially incorporated in the year 1884. The Honorable John Paulger is recorded as the first mayor of the City.

In 1896 a large fire occurred, which resulted in several local businesses being destroyed. This fire prompted the City to take the first recorded act of "hazard mitigation" in the history of the community. In March 1897 the first local fire department was established in the City of New Hartford.

Around 1889 the first private banking company was founded in the community and named the New Hartford Bank. Shortly thereafter, the five organizers of the bank, Eugene Bourquin, F.W. Paulger, E.C. Bellows, J.A. Cousins, and A.E Bourquin constructed a brick building on the corner of Packwuakee and Main Street.

While there are numerous small businesses that operate within the city limits, new development has been slow to occur. New Hartford serves as a bedroom community to the larger Waterloo/Cedar Falls metropolitan area. As with most bedroom communities, the largest demand in the community is for additional housing. Located next to Beaver Creek, a large portion of the community has been located within the 100-year floodplain, limiting most new construction. In 2010, New Hartford began construction of a berm around the City. The berm in elevation stands at 902 feet above sea level. Elevations in the city limits range from approximately 890 to 900 feet above the mean sea level.

Despite flooding hindrances, the City of New Hartford possesses many amenities. For example, the local school acts as a drawing point to the community. It should also be noted that despite a slow development trend within the city limits, areas to the north of the community, outside of the floodplain, have continued to develop. A proposed development in the northern edge of town is in the preliminary stages to add up to 50 new homes.

Natural Environment

The topography of the city can best be described as flat, with little or no natural relief present in the community. There are, however, some areas that have been elevated in order to provide flood protection. Along the south side of the community, the railroad has elevated the track location in order to maintain a level transportation route. The community is located on the right descending (south) bank of Beaver Creek. The city constructed a berm to protect a majority of the city from river flooding.

The soils in the community, as excerpted from the Butler county Soil Survey, are generally comprised of sandy, poorly drained soils. However, most of the soil in New Hartford is capable of supporting development without the need to make design and engineering modifications. Such modifications might be necessary on soil types found elsewhere in and around the city.

The original land cover vegetation of the New Hartford area was likely deciduous timber. Some of this original land cover can still be found, primarily along the banks of Beaver Creek. Over the years, much of the original tree cover has been eliminated for row crop farming and the constructions of homes and businesses. Trees can still be found throughout the community in residential areas and parks. These remaining trees contribute to the aesthetics of the community and are viewed as an asset.

Because New Hartford lies in the heart of agricultural area, the surrounding land use is primarily row crop oriented. Corn and soybeans are the primary staples of production. This surrounding land use drives sectors of the local economy.

Transportation

The city currently maintains 5.2 miles of paved streets. In addition, there are 0.2 miles of rock surfaced gravel roads and 0.7 miles of rock surfaced gravel alleys within the community. Iowa Highway 57 is the only major highway connected to the City. The east/west path of Highway 57 meets the western border of the City, and then turns into a north/south route along the City's southwestern edge. According to the Iowa Department of Transportation's 2013 traffic study, the east/west route of Highway 57, west of the City, averages 2,110 vehicles a day. The north/south route of the highway averages 2,640 vehicles per day.

The city is served by the Canadian National Railroad (freight only), which runs east-west through southern New Hartford. The rail line travels west through Aplington and Parkersburg and east through the Waterloo-Cedar Falls metropolitan area. The primary operator is the Chicago Central and Pacific Railroad.

Butler County's only airport is the Allison Municipal Airport, FAA Identifier K98, located in northwest Allison. This public airport is approximately 16 miles northwest of New Hartford. The facility is classified as a local service airport offering a 1,790-foot-long, 175-foot-wide turf runway, six hangar parking spaces, and two aircraft tie-down locations. In 2010, there were five aircraft based at the airport generating approximately 1,250 annual operations. These figures are projected to increase to six aircraft and 1,500 annual operations by 2030.

The closest major airport is the Waterloo Regional Airport (ALO), located approximately 12 miles southeast of the City. This public airport is owned and operated by the City of Waterloo and overseen by an Airport Commission appointed by the Mayor. The primary runway is 8,400-foot-long, 150-foot-wide, and has a grooved asphalt surface. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service.

Community Services

The City's water is supplied by wells, with an elevated storage capacity of 250,000 gallons. The capacity of the water plant is 144,000 gallons. The average daily usage was 79,500 gallons per day *(gpd),* while the peak consumption is 170,100 gpd.

A secondary sewage treatment plant serves New Hartford. The average load is 67,000 gpd, with a peak load of 80,000 gpd. The design capacity of the facility is 330,000 gpd. Most of the households in the City of New Hartford are served by the public sewer system.

Table H1 shows the primary utility providers for the City of New Hartford.

TABLE H1: NEW HARTFORD UTILITY PROVIDERS

Electric	Gas	Water	Sewer	Sanitation	Telephone	Internet	Cable
Mid-American Energy	Mid-American Energy	City of New Hartford	City of New Hartford	City Sanitary Service	Mediacom or Qwest	Mediacom or Qwest	Mediacom

Demographics

Tables H2 provides an overview of the city's demographics. From 2000 to 2010 the city experienced 21.7 percent decrease in population, from 659 to 516 persons. However, the 2017 ACS reported the total population to be 661, indicating overall stable population for the City.

Table H2: City of New Hartford Demographics			
General Population, 2010 Census		***Economic Characteristics, 2013-2017 ACS***	
Total Population	516	Total Population (16 yrs. and over)	412
Males	263	Population in Labor Force (16 yrs. and over)	260
Females	253	Persons in Civilian Labor Force	270
Median Age	37.1	Persons Employed	270
At-Risk Population (under 18 years)		Persons Unemployed	265
At-Risk Population (65 years and over)		Persons in Armed Forces	0
One Race	511	Avg. Commute to Work in Minutes	23.3
White	506	Management, business, science, and arts occupations	77
Black or African American	0	Service occupations	42
American Indiana and Alaska Native	2	Sales and office occupations	70
Asian	1	Natural resources, construction, and maintenance occupations	30
Native Hawaiian or Other Pacific Islander	0	Production, transportation, and material moving occupations	46
Two or More Races	5	Median Household Income	50,875
Hispanic or Latino (of any race)	8	Median Family Income	56,111
Not Hispanic or Latino	508	Per Capita Income	18,056
Household Population	215		
Group Quarters Population	0	***Social Characteristics, 2013-2017 ACS***	
Group Quarters – Institutionalized	0	School Enrollment (3 yrs. and over)	226
Group Quarters – Noninstitutionalized	0	Nursery school/preschool	35
		K – 12th Grade	17
Housing Characteristics, 2010 Census		K – 8th Grade	128
Total Housing Units	234	9th Grade – 12th Grade	37
Owner-Occupied Housing Units	215	College or Graduate School	9
Renter-Occupied Housing Units	61	Educational Attainment – Population 25+ yrs.	385
Vacant Housing Units	19	Less than 9th Grade	4
		9th Grade – 12th Grade, No Diploma	5
		High School Degree or Equivalency	162
2018 Population Estimates	492	Some college, no degree	91
		Associate's Degree	71
		Bachelor's Degree	43
		Graduate or Higher Degree	9
Source: 2010 Census; 2013-2017 ACS; 2018 Population Estimates			

Hazards & Risk Assessment

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to the hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of New Hartford evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. New Hartford's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions included: Historical Occurrence, Probability, Magnitude/Severity, Warning Time, and Duration. Due to recent disasters and events that have impacted the planning area, New Hartford determined that even though the historical occurrences were low for certain hazards, the probability ranking for future occurrences should be higher.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Table H3 is the analysis scores for the City of New Hartford. As seen in table below, the four hazards identified with the highest risk are: Tornado /Windstorm, Flash Flood, River Flooding, Animal/Plant/Crop Disease.

TABLE H3: HAZARD RISK ASSESSMENT FOR NEW HARTFORD						
Hazard Rank	Hazard	Hazard Factors				Weighted Assessment Score
		Probability	Magnitude /Severity	Warning Time	Duration	
1	Tornado/Windstorm	4	2	4	3	**3.3**
2	Flash Flood	4	2	4	2	**3.2**
3	River Flooding	4	3	1	3	**3.15**
4	Animal/Plant/Crop Disease	3	2.5	4	4	**3.1**
5	HAZMAT Incident	3	2	4	3	**2.85**
6	Grass/Wild Fire	4	1	4	1	**2.8**
6	Thunderstorm/Lighting/Hail	4	1	4	1	**2.8**
8	Drought	3	3	1	4	**2.8**
9	Dam / Levee Failure	2	3	4	3	**2.7**
10	Severe Winter Storm	4	1	2	2	**2.6**
11	Extreme Heat	4	1	1	3	**2.55**
11	Transportation Incident	3	1	4	3	**2.55**
13	Human Disease	2	2	4	1	**2.2**
14	Radiological Incident	1	2	4	3	**1.95**
14	Terrorism	1	2	4	3	**1.95**
16	Earthquake	1	2	4	1	**1.75**
16	Expansive Soils	1	2	4	1	**1.75**
16	Landslide	1	2	4	1	**1.75**
16	Sinkholes	1	2	4	1	**1.75**
20	Infrastructure Failure	1	1	4	2	**1.55**

Vulnerability – Identifying Critical Facilities

This section describes the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of New Hartford

Table H4: Shelters in the City of New Hartford	
United Methodist Church	Community Building
Fire Station	First Baptist Church
School Building	Gospel Hall
Co-Cop Elevator	
Source: Community	

Critical Facilities

Identifying the location of critical facilities and designated shelters in the planning process is important in order to assess their vulnerability to hazards, and their importance to the operation of a community and the economic sector. For instance, high-density residential or commercial development, schools, police stations, government buildings, hospitals and care facilities, airports, gas stations, hardware stores, grocery stores, and water supply systems. It is important to know the threats each hazard poses to these facilities. Attachment 7h illustrates the location of identified critical facilities throughout the planning area. The planning committee noted that the Dike-New Hartford school building, Community Building, and Fire Station would all be critical locations for facilitating a recovery from a hazard.

Table H4 lists the designated shelters for New Hartford. It should be noted that there are other structures that could serve as suitable shelters in certain events. While the mentioned shelter locations have been identified for use if deemed necessary, there may also be occasions, such as during a radiological or HAZMAT incident, where the situation dictates sheltering "in place". Therefore, any location could potentially become a makeshift shelter for purposes of disaster response.

Homes in Hazardous Areas

Nearly the entire city is within a 100-year or 500-year floodplain, with 99% of parcels identified. Flooding puts the entire population at some level of risk, whether through the flooding of their homes, businesses, or places of employment, or the road, sewer, and water infrastructure that serve them daily.

Attachment 3j and Attachment 4j show the areas of the city and parcels of land that would be impacted in the event of a 100-year or 500-year flood. Approximately 304 acres of the city's 309-acre area is in a floodplain. The estimated land value in the 100-year floodplain is $2,351,660; the building and dwelling value is $14,197,120 . The total land and structure value in the 500-year floodplain is estimated to be $341,080. See Table H5.

TABLE H5: FLOODPLAIN DATA FOR NEW HARTFORD						
	# of Parcels	Area in Acres	Land Value	Building Value	Dwelling Value	Total Value
1.0% Annual Chance Floodplain Values	346	299.87	$2,351,660	$3,682,318	$10,514,802	$16,548,780
0.2% Annual Chance Floodplain Values	5	4.48	$48,180	$0	$292,900	$341,080
Total Floodplain Values	351	304.35	$2,399,840	$3,682,318	$10,807,702	$16,889,860
Total City Values	353	309.22	$2,408,160	$3,682,318	$10,835,132	$16,925,610
Source: INRCOG & Butler County Assessor Parcel value information current as of 9/12/18, Butler County Assessor Office. FEMA Digital Firm 9/16/2011. Incorporated boundaries as of 04/01/2019. For actual determination if a location is within the floodplain, contact your local floodplain administrator.						

All structures are vulnerable in the event of a Tornado / Windstorm hazard. As part of a vulnerability assessment, a hypothetical tornado scenario was created for the community. Attachment 5p and Attachment 5q illustrate the impact of a hypothetical tornado event in New Hartford. Table H5 shows the degree of impact that hypothetical tornado scenarios of various strengths would have on the city.

Persons living in manufactured home (mobile home) buildings may be at greater risk during a tornado event. According to the 2017 ACS 5-year estimates there are 20 mobile homes in New Hartford. Using the average household size of 2.4 persons, it can be assumed that approximately 48 persons live in mobile homes.

Persons living in multi-family buildings may also be at greater risk during a tornado event. According to the 2013 ACS 5-year estimates there are 29 housing units in multi-family buildings with three or more units. Using the average household size, it can be assumed that approximately 70 persons live in multi-family buildings with three or more units in the city.

TABLE H6: TORNADO SCENARIO FOR NEW HARTFORD				
Scale	Tornado Width	# of Parcels	Damaged Value	% of City Damaged
EF0	50 Meters	70	$658,808	19.5%
EF1	150 Meters	148	$1,395,322	41.23%
EF2	250 Meters	239	$4,498,141	66.57%
EF3	500 Meters	338	$6,361,724	94.15%
EF4	900 Meters	355	$13,514,020	100.00%
EF5	1100 Meters	355	$13,514,020	100.00%
Parcel information current as of 01/01/2019; Source: Butler County Assessor and INRCOG				

Vulnerability – Identifying Social Asset Populations

The social vulnerability assessment identified how the hazards affect the population of New Hartford. The assessment reasons that the identified populations are more likely to require assistance during times of disaster are considered more "at-risk" than the remaining population. The "at-risk" population must be identified and targeted in successful mitigation efforts. For purposes of this plan this population shall include seniors age 65 and over, children age 18 and under, those individuals with disabilities, those residents in multi-family dwellings, in poverty, and non-speaking households. These persons may not be able to reach safety in the event of a hazard event or a multi-hazard event that can result from a tornado or high wind event.

The elderly are often listed as an "at risk" population. 2017 U.S. Census data reported 90 residents, or 13.6 percent of the population, were over the age of 64, 49 of which lived alone.

Persons under the age of 18 are also at higher risk during some disasters, as young residents often are not aware of the proper actions to take in the event of a disaster. In addition, very young children can be more susceptible to a disaster such as a disease epidemic simply due to their age. ACS 2017 Census data reports, there were 269 residents in the city under the age of 18.

The Dike-New Hartford Community School District has an elementary and junior high school in New Hartford at 508 Beaver St. The building houses approximately 170 elementary students in grades levels PK, K, 1, 2, and 5; 210 junior high students in grades 6, 7, and 8. There are also approximately 50 staff members who include teachers, associates, cooks, custodians and administrative personnel. When school is in session, hundreds of people are in the school buildings daily. This includes people from other communities attending various events throughout the year. The Dike-New Hartford School District is a member of this hazard mitigation plan (see Appendix L).

TABLE H7: NEW HARTFORD "AT-RISK" POPULATION

Total Community Population	661
Youth (18 Yrs. and younger)	269
Elderly (65 Yrs. and older)	90
Living in Group Quarters	0
Householder Living Alone	49
Estimated Population in Mobile Homes*	48
Non-English-Speaking Population (speak English less than 'very well')	0
Persons with Disabilities - Under 18 Yrs. Old	6
Persons with Disabilities - 18-64 Yrs. Old	28
Persons with Disabilities - 65 Yrs. and Older	22

*Source: 2013-2017 American Community Survey 5-Year Estimates & US Census Data. 2010; *Number of mobile home units multiplied by average household size*

As discussed, persons living in mobile homes, multi-family units, and in group quarters may be placed at greater risk during a tornado event. There are no group living facilities in New Hartford. An estimated 40 persons live in mobiles homes and 70 persons in multi-family housing units.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (H8) lists assets that would be affected in the event affected the city. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Butler County Assessor's office. It should be noted however that these dollar amounts do not include gas and electric utility valuations nor do the evaluations include exempt properties,

TABLE H8: ASSET INVENTORY – VALUE OF STRUCTURES IN NEW HARTFORD

Type of Structure	Lot / Land Value (2015)	Value of Structures (2015)	Total Value (2015)	Number of Structures (2015)
Residential	$ 1,932,850.00	$ 11,581,170.00	$ 13,514,020.00	202
Commercial	$ 303,164.00	$ 3,817,958.00	$ 4,121,122.00	16
Industrial	$ -	$ -	$ -	0
Agriculture	NA	NA	NA	NA
Total	$ 2,236,014.00	$ 15,399,128.00	$ 17,635,142.00	218

Source: Butler County Assessor; Values as of 2019

including government buildings, infrastructure, and religious/nonprofit properties. These results should be considered preliminary, as a full accounting of assets has not been completed.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development. The planning area has not experienced a significant change in development since the area is rural and the amount of development – residential, commercial, and industrial. However, a new housing development is being planned.

Repetitive Loss Properties

FEMA defines a repetitive loss property as an insurable building that has experienced two losses in a 10-year period in which each loss is $1,000 or more. There are 12 repetitive loss properties in New Hartford that have not been mitigated.

TABLE H9: NFIP STATISTICS FOR HARTFORD

CID #	# of NFIP Policies	NFIP Insurance in Force	Total # Paid Losses	Total Payments Made ($)
190038	97	$8,043,000	173	$3,659,937

Source: Federal Emergency Management Agency (FEMA) Data as of 10/31/2014

Due to New Hartford's topography and location next to the Beaver Creek, the town has experienced numerous flooding events. These flooding events are the most common cause of repetitive loss in Butler County. Table H8 shows the NFIP information for New Hartford. Since the 2010 MJ-HMP plan, New Hartford has **seen** the number of NFIP policies in place decrease from 149 (as of 5/31/2009) to 97 (as of 6/30/2019). From 5/31/2009 to 09/31/2019 the number of Total Paid Losses increased slightly from 171 to 173. According to FEMA data, New Hartford still has the most NFIP policies in the planning area.

Table H9 shows the NFIP repetitive loss property data for New Hartford as of 09/30/2019. New Hartford has had more repetitive loss properties than any other city in the planning area. The City's flood insurance rate maps (FIRM) were updated September 16, 2011.

TABLE H10: NEW HARTFORD REPETITIVE LOSS PROPERTIES

Total number of RL Instances	RL Instances Insured	Total RL Losses
29	**12**	**$308,680**

Source: Iowa Department of Natural Resources; Data as of 9/30/2019. Data does not include properties that have been mitigated; RL = Repetitive Loss

This HMP attempts to reduce loss by identifying potential natural and manmade hazards. As a result of many natural and manmade hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to

ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs.

Mitigation Strategy

Hazard Mitigation Plan Goals

The City's existing hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at the third committee meeting. After reviewing the goals, the Committee decided to renew these broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The City's hazard mitigation plan goals for the City are:

1. Reduce the chance of and impact of flooding in the community.
2. Minimize the occurrence of injuries and loss of life due to hazards.
3. Minimize or eliminate damages that may occur as a result of hazards.
4. Increase the city's ability to respond to natural disasters and manmade hazards.
5. Return to the community to similar or improved pre-event conditions as quickly as possible following a disaster event.
6. Incorporate the City Plan into the proposed Multi-Jurisdictional Plan.
7. Continually re-assess and re-evaluate the plan and mitigation activities.

Current Mitigation Actions

Prevention Mitigation Actions

Table H11 displays the planning documents and regulatory powers the city has in place that can be used to mitigate hazards.

TABLE H11: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR NEW HARTFORD

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2015	Yes - 2009	Yes	Yes - RR	Yes	Yes	Yes	Yes	Yes

Source: Community

This is the fourth hazard mitigation plan prepared for the City of New Hartford. The New Hartford City Council adopted their original single-jurisdictional plan on February 5th, 2002 and conducted an update to incorporate new Disaster Mitigation Act 2000 requirements in 2003, and was part of the 2015 Butler County Multi-Jurisdictional Hazard Mitigation Plan.

While the City does not maintain a complete zoning ordinance, it has adopted a limited version of zoning, referred to as a Restricted Residence Ordinance. This ordinance establishes one district, a residential district. A property lies either within or outside of this district. The ordinance was reviewed and renewed in 2015.

On September 27, 1982 the City adopted a Floodplain Ordinance and became a member of the National Flood Insurance Program (NFIP), which is included in the City's Code of Ordinance. According to the ordinance the Mayor shall administer and enforce the provisions of the floodplain ordinance. In accordance with NFIP guidelines, the ordinance does not allow for new construction within the floodplain.

Since the early 1990's the government, through disaster assistance funds and NFIP payments to impacted policyholders, has helped property owners recover from historic flood events. Twelve properties within the City of New Hartford have been designated as repetitive loss structures. These twelve properties have received in excess of $308,630 dollars from the NFIP and the Federal Emergency Management Agency (FEMA).

There have been a number of studies conducted and reports prepared concerning potential flood reduction strategies for the City of New Hartford. Documents known to exist and referenced in this document include the following:

1. United States Army Corps of Engineers, Rock Island District, Reconnaissance Report: Section 205 Flood Damage Reduction Study, Beaver Creek, New Hartford, Iowa, September 1991.
2. Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Rate Map, Community Panel Number 190038 0001 B, New Hartford, Iowa, September 29, 1986.
3. Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Study, New Hartford Iowa, Community Number 190038, September 29, 1986.
4. United States Army Corps of Engineers, Rock Island District, Detailed Project Report for Flood Control at New Hartford, Iowa, 1983.
5. Federal Emergency Management Agency, A Flood Insurance Study, November of 1976. This Study was then updated became effective September 29, 1986. The study reflects 100 and 500-year flood levels for Beaver Creek. Flood protection measures are not known to exist within the study area.
6. United States Army Corps of Engineers, Rock Island District, Detailed Project Report for Flood Control at New Hartford, Iowa, December 31, 1963.

Property Protection Mitigation Actions

Following the flood events that occurred in 1993, a strong effort to secure flood mitigation money was made, by way of application. During the preparation of this application a number of properties were identified in a potential Hazard Mitigation Project. A total of 47 properties were identified in the initial application. This project visualized two primary action steps: buyout and/or elevation of the structure. According to information from that application there were still nine properties for which the owners expressed some interest in being bought out for purposes of mitigation. There were also an additional 30 properties whose owners have expressed interest in pursuing funding for elevation projects.

As a result of the 1999 Flood and a Federal Disaster Declaration, the city participated in a Housing Buy Out program funded through FEMA, IDED, and the Iowa Emergency Management Division (IEMD). There were three owners who initially expressed interest in having their property purchased through this program. Of the three identified properties only one, 519 Mill Street, was eventually purchased and removed through this program. Another house was purchased and removed from the flood plain using an alternative program, and the third owner declined buyout.

After the floods of 2008, New Hartford completed buy-outs on 23 (22 residential and 1 commercial) properties that were overcome with flood waters. The City has since replaced many of these buyout properties with community gardens.

In 2010 New Hartford began a 4-phase construction project of a berm to protect the entire city. The berm will surround the City on the west, north, and east side, protecting the community from flooding of Beaver Creek. The berm was constructed in three phases and is believed to protect the City beyond a 100- year flood event.

The entire city's flood protection from Beaver Creek should be improved with this new flood barrier. The City maintains its interest in the potential buyout of more structures should the owners express interest in participating in the program

Public Education and Awareness Mitigation Actions

Information regarding how to protect oneself in the event of a tornado is largely publicized in the form of flyers, radio, newspaper, and television announcements.

Emergency Services Mitigation Actions

Butler County Emergency Management Agency: New Hartford relies on the Butler County's Emergency Management Coordinator, based in Allison, for emergency management assistance. The Emergency Management Coordinator works with the community and their departments to draft and

implement workable emergency action plans in the community. The current Emergency Management Coordinator is Chris Showalter and current contact information is as follows: 428 6th Street, Allison, Iowa 50602, (319) 267-9968, email: butlercoEMA@butlercoiowa.org

Fire Department: The City of New Hartford currently has 34 volunteer firefighters. The department considers itself fully staffed with the 34 volunteers. Equipment owned and operated by the City of New Hartford includes two in-service pumpers, two reserve pumpers, one rescue van, one tanker, one grass unit, 28 sets of complete bunker gear, a cascade system, and a Jaws of Life unit.

The fire department has in place mutual aid agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis. The communities that the New Hartford Volunteer Fire Department maintains mutual aid agreements with include: Cedar Falls, Janesville, and all the departments in Butler and Grundy Counties. The primary coverage area of the fire department is 42 square miles. It is estimated that there are approximately 1,200 people who live in the department's primary coverage area.

The fire department ensures communication through several methods. Those methods include Enhanced 911Service, Radio Communication, Pagers, Sirens, and Cellular Phones. To date the fire department is not GPS equipped. When high water events are eminent the members of the fire department use the fire trucks to travel around town and inform the public of the potential danger. Ideally, this allows citizens to take proper precautionary steps in the wake of a flood.

Ambulance: The City of New Hartford owns and maintains two ambulances. The ambulance units provide basic service to the community and are equipped with a defibrillation unit. There are approximately 15 individuals who help maintain the service and are notified with pagers. When a response is needed, the first responders are contacted by page, telephone, or two-way radio. The department maintains mutual aid agreements with all of the communities in Butler County and the City of Dike. The department has a primary coverage area of approximately 42 square miles. In the recent years, the City has increased their ambulance crew size and added another ambulance.

All emergency services can be activated by contacting the Enhanced 911 System, the Sheriff's Department, or the City Clerk's office (who will then notify the proper first responder agency).

Medical Services: New Hartford is served primarily by four area hospitals. Sartori Memorial Hospital is the closest of these hospitals and is located in Cedar Falls, approximately nine miles east/southeast of New Hartford. There are three other hospitals available in a 20-mile radius of the City of New Hartford: Waverly Municipal Hospital in Waverly; Allen Memorial Hospital and Covenant Medical Center in Waterloo, and Grundy County Memorial Hospital in Grundy Center.

Law Enforcement: The City contracts law enforcement services from the Butler County Sheriff's Department, which is responsible for police protection and enforcement throughout the community. This effort is aided by the fact that one of the deputies of the Sheriff's Department currently lives in the community.

Hazardous Materials: New Hartford contracts with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The Training Center provides training to fire departments and companies from around the state and country. Not only is this a training center it also serves as a hazardous materials quick response unit to Black Hawk County, surrounding counties, and many municipalities in a ten county region. The Unit provides local fire departments with hazard materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the activities with the local department. Contact information for the facility is as follows: Hazardous Materials Regional Training Center, 1925 Newell Street, Waterloo, Iowa 50707, Phone: (319) 291-4275, Toll Free: (800) 291-4682, Fax: (319) 291-4285

Snow Removal: Snow removal and ice prevention techniques are practiced by city and county employees on the corresponding local and county roadways within the city limits. The city currently employs one full time driver for snow removal efforts. Equipment used for snow and ice removal includes: Two One Way Snow Plows, One V-Plow, One End Loader, Sand Spreader, and a Small Snow Blower. In the event that a driver cannot perform his or her duties, the city relies on county assistance and community volunteerism. Other equipment maintained by the Public Works Department include three dump trucks, one back hoe, one portable pump, one portable generator, and another 2 ½ pump.

Warning Systems: In 2010 the City installed a second warning siren. Location is identified on *Attachment 7h: New Hartford Critical Sits* map. Another The newest siren is located north of the city, outside of the city limits, which provides warning to several residents that live in the unincorporated area outside of the city.

Natural Resource Protection Mitigation Actions

Efforts continue to be made to cooperate with Butler County, Grundy County, the City of New Hartford, and affected parties in the development of a water district. This water district would require collaboration of all the aforementioned parties in order to develop and implement a workable solution to the massive amount of rainwater runoff that currently flows into the east side of New Hartford, along Vail Avenue.

Due to a number of historic construction projects by individual landowners and major county road projects, the amount of runoff has drastically increased the amount of water that New Hartford takes on following a heavy rainfall. The City feels that the establishment of this conservation and mitigation focused water district will substantial headway be made toward alleviation of the problem. This lengthy process is still ongoing, as much work continues to be needed.

Structural Projects Mitigation Actions

In addition to the above efforts, there have been many additional attempts to mitigate the flood hazards in the City of New Hartford. A number of berms have been built around the community, mostly to the north and the west of the developed portions of New Hartford. A road was rebuilt to the west to include rip-wrapping, in order to guard against future floodwater erosion. A number of culverts were built in the community, primarily along Vail Avenue on the east side of town. These culverts help to capture and direct some of the runoff water that is diverted into the community from neighboring farmland.

One of the biggest mitigating factors is the railroad on the south side of the City, which serves as a barrier to potential floodwater. The railroad tracks were built in an elevated fashion which also acts as a berm. Therefore, potential runoff is diverted to the east. The railroad drainage ditch/berm also had improvements made during construction in previous years.

In addition to raising the berm to protect the city, drainage projects are planned to help divert and control water run-off.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table 51) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each period each of the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, City's chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a time line for each activity, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table H12 is the City of New Hartford's Implementation Strategy.

TABLE H12 : FUTURE HAZARD MITIGATION ACTIVITIES- CITY OF NEW HARTFORD						
Mitigation Action	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goals**	**Agencies Responsible for Implementation** * - Denotes primary agency
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, County Sheriff. First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc)	Flash Flood, River Flooding, Tornado/Windstorm, Levee/Dam Failure	High	Active	High	All	City Council*, Mayor, EMA, Fire/Ambulance
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	River Flooding, Levee/Dam Failure, Flash Flood	High	Short-Term	High	All	Board of Supervisors, EMA, City Engineer, City Council*
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	River Flooding, Flash Flood, Tornado, Levee/Dam Failure	High	Active	High	All	City Council*, Mayor, Fire/Ambulance, Trustees
Join or Maintain Membership of National Flood Insurance Program	Flash Flood, River Flooding, Levee/Dam Failure	Low	Active	Medium	All	City Council*, Mayor
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both	River Flooding	High	Active	Low	1	City Council*
Establish a Drainage District	Flash Flood, Levee/Dam Failure	High	Long-Term	High	All	Board of Supervisors, City Council*, Mayor
Flood Proof Critical Facilities	Flash Flood, Levee/Dam Failure	High	Active	High	All	City Council*, Mayor, City Engineer
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.)	Flash Flood	High	Active	High	All	City Council*, City Engineer
Maintain Mosquito Spraying Program	Human Disease, Animal/Plant/Crop Disease	Moderate	Active	High	2,5	City Council*
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Extreme Heat, Tornado/Windstorm	High	Active	Medium	2,3,5,7	EMS, City Council*, EMA
Complete and Maintain Secondary Off-Site Dispatch Center	All	Moderate	Active	Low	All	Fire/EMS, EMA, City Council*, Mayor

TABLE H12 : FUTURE HAZARD MITIGATION ACTIVITIES- CITY OF NEW HARTFORD						
Mitigation Action	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goals**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Develop and Maintain an Emergency Response Plan	Tornado/Windstorm, Flash Flood,	Moderate	Active	Medium	1,2,3,4,5,7	Fire/EMS, EMA, City Council*, Mayor, County Sheriff
Develop and Maintain Continuity of Operations Plan (COOP)	All	Moderate	Active	Medium	1,2,3	Fire/EMS, EMA, City Council*, Mayor
Develop and Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, Etc.	Levee/Dam Failure	Moderate	Active	Medium	1,2,4,,6,7	Fire/EMS, EMA, City Council*, Mayor
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	Extreme Heat	Moderate	Active	Medium	1,2,3,4,6,7	Fire/EMS, EMA, City Council*, Mayor
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Tornado	Moderate	Active	High	2,3	EMA, Fire/EMS, City Council*, School Staff
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	Flash Flood, Severe Winter Storm	High	Active	High	1,2,3,4,5	City Council*
Develop a Clean Up/Recovery Procedure / Plan	All	Medium	Active	Medium	3,5,7	City Council*, Mayor
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Extreme Heat	Medium	Active	Medium	2,3,7	City Council*, Mayor
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Tornado/Windstorm	Medium	Active	Medium	2,3,7	City Council*, Mayor
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Infrastructure Failure	Moderate	Active	Medium	2,3,5,6,7	City Council*, Mayor, City Engineer
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Infrastructure Failure, River Flooding, Flash Flooding, Sinkholes	Low	Active	Medium	All	City Council*, Mayor
Acquire and/or Annex Land for Relocation of Community	River Flooding, Flash Flood	Moderate	Active	Medium	2, 5	City Council*, Mayor
Develop and Maintain Command Procedures & Center	All	High	High	High	All	City Council*, Mayor, EMS/Fire
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Earthquake, Extreme Heat, Flash Flood, grass/Wild fire, Human Disease, Landslide, River	High	Active	Low	All	City Council*, Mayor

TABLE H12 : FUTURE HAZARD MITIGATION ACTIVITIES- CITY OF NEW HARTFORD						
Mitigation Action	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goals**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
	Flooding, Severe Winter Storm, Tornado/Windstorm, HAZMAT Incident, Levee/Dam Failure, Radiological Incident, Transportation Incident, Terrorism					
Purchase Natural Gas Generators for Critical Facilities & Shelters	Earthquake, Extreme Heat, Severe Winter Storm, Tornado/Windstorm	Low	Active	Medium	4,5	City Council*, Mayor
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	Transportation Incident	Low	Active	Medium	2,3	City Council*, Mayor
Establish, Adopt, & Enforce Building Codes	Infrastructure Failure	Low	Active	Medium	3,4	City Council*, Mayor
NOAA Weather Radio Awareness Program	Extreme Heat, Flash Flood, Grass/Wild Fire, Landslide, River flooding, Severe Winter Storm, Thunderstorms/Lighting/Hail, Tornado/Windstorm, Levee/Dam Failure	Minimal	Active	Low	1,2,3	City Council*, Mayor
Purchase Additional Warning Sirens for Underserved Areas of Community	Tornado/Windstorm, Thunderstorm/Lighting /Hail	Low	Active	Low	2,3,4	City Council*, Mayor, Fire/EMS
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size	Tornado/Windstorm, Thunderstorm/Lighting /Hail	Low	Active	Low	2,3,4	City Council*, Mayor
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	HAZMAT Incident, Radiological Incident, Levee/Dam Failure, Transportation Incident	Low	Active	High	2,3,4	Fire/EMS*, EMA
Continue Agreement with NE Iowa Response Group	All	Low	Active; agreement maintained	High	2,3,4	City Council*, Mayor
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	HAZMAT Incident	Minimal	Active	Medium	2,5,7	City Council*, Mayor
Ensure Tier II Reports are Completed and Reported per Applicable Laws	HAZMAT Incident, Transportation Incident	Minimal	Active	Low	2,5,7	City Council*, Mayor
Conduct Annual Fire Inspections of Industries and Businesses	HAZMAT Incident, Transportation Incident, Infrastructure Failure	Minimal	Active	Low	2,3,5,7	Fire Dept.*
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	Levee/Dam Failure, Transportation Incident	Minimal	Active	High	2,5,7	City Council*
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Severe Winter Storm	Minimal	Active	Medium	5,7	City Council*

TABLE H12 : FUTURE HAZARD MITIGATION ACTIVITIES- CITY OF NEW HARTFORD						
Mitigation Action	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goals**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	All	Minimal	Active	Medium	4,5	City Council
Install Dry Hydrants in Rural Areas and in Underserved Ares	Grass/Wild Fire, Infrastructure Failure	Minimal	Active	Medium	3,4,5	City Council, Trustees
Maintain and Update Bioterrorism Response Plan	Terrorism	Minimal	Active	Medium	3,4,5	City Council*
Identify and Improve Security at Critical Facilities	All	Minimal	Actively maintained	Medium	4,5,7	EMA, City Council*
Establish an Emergency Notification System and Conduct Drills	All	Minimal	Active	Medium	4,5	EMA, City Council*
Develop a Water Rationing Plan	Drought	Minimal	Active; in place	Medium	2,3,4	EMA, City Council*
Maintain Roadside Vegetation Management Program	Landslide	Minimal	Actively maintained	Medium	2,3,4	City Council*
Widen T-55 Bridge to increase flow under bridge to 400 ft. wide	River Flooding, Flash Flooding, Levee/Dam Failure	High	Short-Term	High	1,2,3,4	City Council*, Board of Supervisors, EMA, Fire
Develop plan to add culverts to relieve emergency flows to protect city from flooding	River Flooding, Flash Flooding, Levee/Dam Failure	High	Short-Term	High	1,2,4	City Council*, Supervisors, EMA, Fire

Appendix I: City of Parkersburg

Community Profile

Location

The City of Parkersburg is located in south-central Butler County. The community is located at the intersection of Iowa Highways 14 and 57. Beaver Creek is located along the northern boundary of the City.

History/Development Trends

The land was originally purchased from the U.S. Government in 1854 by a speculator whose name has been lost to history. No improvements were made upon the land until 1857, when John Connell and his son William, purchased the land and built a log cabin. When the railroad company surveyed this area in the 1860's, they realized the natural advantage of a town being located in this area. A depot was erected in 1865 and two railroads were built through Parkersburg: the Illinois Central and the Chicago Northwestern, giving the town most desirable shipping facilities. The town was soon platted and recorded and given the name of "Parkersburg" in honor of Pascal P. Parker, a prominent settler and the town's first postmaster. The village of Parkersburg became an incorporated town early in the year 1875. The first sign of business life arose with the establishment of a hotel built by Thomas Williams, called "The Williams House;" it was later known as the "Commercial House".

During the holidays of 1913-1914, Parkersburg installed a series of five globe electrifiers. The electric power was furnished by the Parkersburg Electric Light & Power Company, who built a plant in 1898 at a cost of ten thousand dollars. The town's roads weren't paved until 1920. The first water tower stood on the southeast corner of the school yard and had a capacity of 40,000 gallons.

The very first "Little Red School House" was built in the 1860's. Later, it would be used to store fire-fighting equipment. Parkersburg became an independent school district in the spring of 1871. A new school was built in 1872. This building disappeared in flames on October 9, 1893 in the "great fire of Parkersburg," which also destroyed most of the business district. The fire burned with such intensity that the light from the fire could be seen for 25 miles. The following year (in 1894) a modern, three-story, brick structure was built. It would take until 1930 for the school to add an auditorium and gymnasium.

One of Parkersburg's most beautiful links to the past is the C.C. Wolf Mansion, now called The Parkersburg Historical Home. The Queen Anne style mansion was built in 1895 as a wedding gift for Wolf and his bride Mary Wilson. Some of the outstanding features in the home are the leaded glass stained windows, and the imported hand-carved woodwork. A closed passageway underneath the front staircase brings many stories of a secret tunnel out to the stables. The Parkersburg Historical Society has restored this home, preserving it as a museum that is a popular tourist attraction. In the year 2000, Parkersburg celebrated its 125th year as an incorporated community. The major employers' in the community are the schools: Aplington-Parkersburg Elementary and High.

The City of Parkersburg drastically changed after being struck by an EF-5 tornado in May 2008. From the Parkersburg's 2008 *Long-Term Community*

Recovery Report: Targeted Technical Assistance Report:

> *"At approximately 5 p.m. on May 25, 2008, the City of Parkersburg was struck by a powerful EF-5 tornado, estimated to be three-quarters (3/4) of a mile wide. As it moved across the southern half of the City, the tornado caused severe damage, destroying at least twenty (20) businesses and over two hundred fifty (250) homes along with City Hall and Aplington-Parkersburg High School. Numerous other homes, businesses and civic buildings were damaged. Approximately two (2) weeks later, Beaver Creek was among the many Iowa streams to flood. While Parkersburg was not affected significantly by flooding, a number of properties were damaged, including Beaver Meadows Golf Course and a City Park with athletic fields" (FEMA Region VII-ESF #14 Long-Term Community Recovery, pg 5).*

Immediately after the tornado, Parkersburg's recovery began. With the assistance of thousands of local emergency and civilian volunteers, hundreds of volunteer and paid contractors, regional, state, and federal agencies, and donations from all over the nation, Parkersburg began to pick up the pieces and rebuild. By the end of 2009, a new $19 million high school was rebuilt and ready for students. Also in 2009, City Hall and the Parkersburg Emergency Services Building, which sustained over $500,000 in damage, were rebuilt. Through a collaborative effort of volunteers, donations, and Miracle Recreation, three new playgrounds were rebuilt in 2009 for the children of Parkersburg and their families. One of the playgrounds, Miracle Park, is now one of the premier outdoor recreational playgrounds in the Midwest.

Since 2009, Parkersburg has secured funding for many capital projects. An expansion of Parkersburg's Kothe Memorial Library was completed in 2012. Three other large capital improvement projects have also been completed as well. The first capital project was an update of the Highway 14/57 corridor which included the construction of a new roadway, curb and gutter, drainage improvements, and a pedestrian trail. The second capital project was the construction and installation of a storm sewer system throughout Parkersburg in specific areas of concern. The third capital improvement was an expansion of the Parkersburg Industrial Park completed in 2013. Since 2011, the City began a program to replace the city's underground infrastructure. This program has involved televising the entire sanitary sewer system and determining water mains in need of replacement. In 2019, nearly 3400' off water main are being replaced on Railroad Street.

After losing 288 homes in the Parkersburg Tornado, more than 234 homes have been rebuilt in Parkersburg and all but two of the destroyed businesses have been rebuilt. In addition, more than 20 businesses have since started up or have moved their operations to Parkersburg since the tornado. The City of Parkersburg continues to report strong residential and commercial building projects. Parkersburg's steady growth has allowed the City to maintain its high level of service to the citizens. Recovery has been steady and ongoing since the devastation of 2008. This continued growth is providing positive economic growth and valuation to not only Parkersburg, but for the Aplington-Parkersburg School District and Butler County as well. Today Parkersburg is a thriving community and a national example of a small town's ability to recovery from a natural disaster.

Natural Environment

Before its development, Parkersburg was covered with heavy growth of brush and was spoken of by pioneers as the "brush bed of the Beaver". It is located where the north and south forks of the Beaver meet and in the early times, the creeks furnished much needed water power.

The lowest point in the community is approximately 900 feet above mean sea level with a rise to over 1,000 feet above mean sea level on the southern edge of the community.

The soils in the community, as excerpted from the Butler County Soil Survey, are generally comprised of buildable soil types that will support development. However, there are a few very small areas in the northern part of the community where the soils appear to have some development limitations. However, these limitations may be able to be overcome through the design and engineering process.

Transportation

Parkersburg sits at the crossroads of Iowa Highway 14 and Iowa Highway 57. Iowa Highway 14 is a north/south route that travels along the western and southern edges of the City. Highway 57 is an east/west route cutting through the southern half the City.

According to the Iowa Department of Transportation's 2017 traffic study, an average 1,050 cars and trucks travel on Highway 14 north of the City each day, an increase of 680 cars compared to the 2014 study. 2,010 vehicles per day travel the route south of town. In additional 3,220 vehicles travel on Highway 57, west of Parkersburg. 2,810 vehicles travel on Highway 57 east of the City, an increase of 320 compared to the prior study.

The city maintains approximately 13.5 miles of asphalt streets. In addition, there is approximately 1/8 of a mile of gravel streets within the community. Except for State highways 14 and 57, the town maintains the streets within their jurisdiction.

Butler County's only airport is located in Allison, approximately 12 miles north of Parkersburg. The Allison Municipal Airport, FAA Identifier K98, is a public airport located on the northwest edge of the City and is accessible via Iowa Highway 14 and 7th St. The facility is classified as a local service airport offering a 1,790-foot-long, 175-foot-wide turf runway, six hangar parking spaces, and two aircraft tie-down locations. In 2010, there were five aircraft based at the airport generating approximately 1,250 annual operations. These figures are projected to increase to six aircraft and 1,500 annual operations by 2030.

The closest major airport is the Waterloo Regional Airport (ALO), located approximately 20 miles east of Parkersburg. This public airport is owned and operated by the City of Waterloo and overseen by an Airport Commission appointed by the Mayor. The primary runway is 8,400-foot-long, 150-foot-wide, and has a grooved asphalt surface. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service.

Parkersburg is served by the Canadian National Railroad (DNR), which runs through the northern side of Parkersburg. The CNR provides freight service for agriculturally based industries in town.

Community Services

Parkersburg's water supply is served by two wells, located at the water treatment plan, and a 400,000-gallon water tower. Well #1 was drilled prior to 1935. This well is 280 feet in depth and is equipped with a vertical turbine pump. Well #2 was constructed in 1955 and is 310 feet in depth and is also

equipped with a vertical turbine pump. There are 835 water service connections in the community and average daily water consumption of 168,000-gallons per day. Maximum daily water consumption is 345,000-gallons per day. In 2012, a 100 KW generator was installed to provide emergency power to Parkersburg's water supply in the event of an emergency.

Parkersburg's sanitary sewer system is provided to residents through a collection network and a 4-cell waste stabilization lagoon and three lift stations. The system's design and flow information is as follows: the average dry weather flow is 140,000-gallons per day, while the average wet weather flow is 489,000-gallons per day indicating the system has significant inflow and infiltration of storm water into the sanitary sewer system during days of precipitation. The maximum wet weather flow, by design, is 1,125,000-gallons per day.

Currently all city storm sewers drain to Beaver Creek running along the west and north side of Parkersburg or to Phelps Creek runs east of the City. Parkersburg has also constructed a water detention pond that serves the Industrial Park and a newly constructed pond that serves as a recreational area as well as a water retention pond. A retention bio-cell was installed as a part of the Highway 57/14 corridor improvement project that was recently completed.

The City contracts with City Sanitary Service for weekly garbage pickup. Parkersburg has a recycling center that is open Wednesday evenings and Saturday mornings.

Table I1 displays the primary utility providers for the city.

TABLE I1: PARKERSBURG UTILITY PROVIDERS

Electric	Gas	Water	Sewer	Sanitation	Telephone	Internet	Cable
MidAmerican Energy	MidAmerican Energy	City of Parkersburg	City of Parkersburg	City Sanitation Service	Century Link or Mediacom	Century Link, Mediacom, or Satellite Providers	Century Link, Mediacom, or Satellite Providers

Demographics

Tables I2 provides an overview of city's demographics. The City's population has remained relatively steady with some growth over the past several years. There was a population decrease of 19 persons reported between the 2000 to 2010 U.S. Census. However, the 2017 ACS Census reported a total population of 1,972 which is an increase of 102 persons since the 2010 Census.

Table I2: City of Parkersburg Demographics			
General Population, 2010 Census		***Economic Characteristics, 2013-2017 ACS***	
Total Population	1870	Total Population (16 yrs. and over)	1515
Males	899	Population in Labor Force (16 yrs. and over)	987
Females	971	Persons in Civilian Labor Force	984
Median Age	37.2	Persons Employed	948
At-Risk Population (under 18 years)	504	Persons Unemployed	36
At-Risk Population (65 years and over)	339	Persons in Armed Forces	3
One Race	1860	Avg. Commute to Work in Minutes	23.9
White	1851	Management, business, science, and arts occupations	301
Black or African American	4	Service occupations	148
American Indiana and Alaska Native	0	Sales and office occupations	246
Asian	4	Natural resources, construction, and maintenance occupations	105
Native Hawaiian or Other Pacific Islander	0	Production, transportation, and material moving occupations	148
Two or More Races	10	Median Household Income	44,444
Hispanic or Latino (of any race)	19	Median Family Income	60,769
Not Hispanic or Latino	1851	Per Capita Income	26,273
Household Population	779		
Group Quarters Population	0		
Group Quarters – Institutionalized	0	School Enrollment (3 yrs. and over)	507
Group Quarters – Noninstitutionalized	0	Nursery school/preschool	48
		K – 12th Grade	385
Housing Characteristics, 2010 Census		K – 8th Grade	279
Total Housing Units	870	9th Grade – 12th Grade	106
Owner-Occupied Housing Units	611	College or Graduate School	74
Renter-Occupied Housing Units	168	Educational Attainment – Population 25+ yrs.	
Vacant Housing Units	91	Less than 9th Grade	40
		9th Grade – 12th Grade, No Diploma	43
2018 Population Estimate	1943	High School Degree or Equivalency	480
		Some college, no degree	244
		Associate's Degree	193
		Bachelor's Degree	199
		Graduate or Higher Degree	103
Source: Census 2010; 2013-2017 ACS; 2018 Population Estimates			

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Parkersburg evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The City's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions included: Historical Occurrence, Probability, Magnitude/Severity, Warning Time, and Duration. Due to recent disasters and events that have impacted the planning area, the committee determined that even though the historical occurrences were low for certain hazards, the probability ranking for future occurrences should be higher.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Table I3 is the analysis scores for the City of Parkersburg. The top hazards for Parkersburg are flash flooding and river flooding.

TABLE I3 HAZARD RISK ASSESMENT FOR PARKERSBURG						
Hazard Rank	City of Parkersburg	Hazard Factors				Final Assessment Score
		Probability	Magnitude/ Severity	Warning Time	Duration	
1	Flash Flood	4	2	4	4	**3.4**
2	River Flooding	4	1	3	4	**2.95**
3	Terrorism	1	4	4	4	**2.65**
4	Tornado/Windstorm	2	2	4	4	**2.5**
5	Extreme Heat	3	2	1	2	**2.3**
6	Thunderstorm/Lighting/Hail	2	1	4	1	**1.9**
7	Landslide	1	2	4	2	**1.85**
8	Severe Winter Storm	2	1	2	3	**1.8**
9	Drought	2	1	1	4	**1.75**
9	Earthquake	1	1	4	4	**1.75**
11	Dam / Levee Failure	1	1	4	3	**1.65**
11	Radiological Incident	1	1	4	3	**1.65**
13	HAZMAT Incident	1	1	4	2	**1.55**
13	Infrastructure Failure	1	1	4	2	**1.55**
13	Transportation Incident	1	1	4	2	**1.55**
16	Animal/Plant/Crop Disease	1	1	1	4	**1.3**
16	Human Disease	1	1	1	4	**1.3**
18	Sinkholes	1	1	1	3	**1.2**
19	Grass/Wild Fire	1	1	1	2	**1.1**
20	Expansive Soils	1	1	1	1	**1**

Vulnerability – Identifying Critical Facilities

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Parkersburg.

Table I4: Shelters in Parkersburg	
Veteran's Memorial Building	Aplington-Parkersburg High
Parkersburg Civic enter	Aplington-Parker Elementary
Parkersburg First Congregational	Police Station
Parkersburg St. Patrick's Church	Fire Station
Parkersburg Bethel Lutheran	Parkersburg Emergency
Parkersburg United Methodist	Parkersburg Christian
Source: Community	

Critical Facilities

Identifying the location of critical facilities is important in order to assess their vulnerability to hazards, since these facilities are important to the community's operations, quality of life, and economic sector. These include but are not limited to schools, health care facilities, libraries, police and fire stations, water towers, city and county buildings, sirens, and lift stations. Attachment 7i shows the locations of these critical facilities throughout Parkersburg

Table I4 shows the locations identified as shelters in Parkersburg. The High School includes a FEMA certified tornado safe room. While these locations have been identified for use if deemed necessary, there may also be hazard events which require residents to shelter themselves "in place". Therefore, any location could potentially become a makeshift shelter for purposes of disaster response.

The Aplington-Parkersburg High School and Middle School are critical facilities serving as shelters but also areas where large numbers of people congregate that could be placed at risk during a disaster event. When school is in session, hundreds of people are in the facility daily. This includes people from other communities attending various events throughout the year. The Aplington-Parkersburg Middle School was used as a Red Cross shelter following the Parkersburg tornado in May 2008. The Aplington-Parkersburg School District is a member of the 2015 Butler County Multi-Jurisdictional Hazard Mitigation Plan, for information on the District, reference Appendix K.

Homes in Hazardous Areas

Approximately 81 acres of the city's 834 acres of area is within a 100-year floodplain. No part of the city is within the 500-year floodplain. The east/west flowing Beaver Creek is in the northern portion of the city while the south/north flowing Phelps Creek is in the eastern half. Of the 33 parcels of land in the floodplain, the land value is estimated at $220,833 and the total building and dwelling value is $332,950. The primary cause of flooding in Butler County is river flooding. See Attachment 3j and Attachment 4j for the city's flood scenario maps.

TABLE I5: FLOODPLAIN DATA FOR PARKERSBURG						
	# of Parcels	Area in Acres	Land Value	Building Value	Dwelling Value	Total Value
1.0% Annual Chance Floodplain Values	31	81.54	$227,590	$159,670	$100,980	$488,240
0.2% Annual Chance Floodplain Values	0	0.0000	$0	$0	$0	$0
Total Floodplain Values	31	81.54	$227,590	$159,670	$100,980	$488,240
Total City Values	1188	916.43	$18,679,910	$12,689,745	$98,436,077	$129,805,732
Source: INRCOG & Butler County Assessor Parcel value information current as of 9/12/18, Butler County Assessor Office. FEMA Digital Firm 9/16/2011. Incorporated boundaries as of 04/01/2019. For actual determination if a location is within the floodplain, contact your local floodplain administrator.						

All structures are vulnerable in the event of a Tornado / Windstorm hazard. As part of a vulnerability assessment, a hypothetical tornado scenario was created for the community. Attachment 5r and Attachment 5s illustrate the impact of a hypothetical tornado event in Parkersburg. Table I6 displays the degree of impact that hypothetical tornado scenarios of various strengths would have on the city.

Persons living in mobile homes can be placed at greater risk during a tornado/windstorm hazard event. At the time of the 2017 American Community Survey, there were 5 manufactured housing units in Parkersburg. Using the average persons per household of 2.4, there are approximately 12 persons living in manufactured housing units in Parkersburg.

In addition, persons living in some multi-family housing units may also be at risk, due to the lack of a proper tornado shelter. According to the 2013 5-year ACS averages there were 107 multi-family housing units in buildings with at least three or more housing units. Using the average persons per household, it can be assumed there are approximately 257 persons living in multi-family housing buildings with three or more housing units.

TABLE I6: TORNADO SCENARIO FOR PARKERSBURG				
Scale	Tornado Width	# of Parcels	Damaged Value	% of City Damaged
EF0	50 Meters	91	$2,269,413	7.66%
EF1	150 Meters	169	$4,249,179	14.23%
EF2	250 Meters	254	$12,768,439	21.38%
EF3	500 Meters	417	$20,962,218	35.10%
EF4	900 Meters	608	$61,130,845	51.18%
EF5	1100 Meters	701	$70,483,219	59.01%
Parcel information current as of 1/1/2019; Source: Butler County Assessor and INRCOG				

Vulnerability – Identifying Social Asset Populations

The social vulnerability assessment identified how the hazards affect the population of Parkersburg and it assumes that the identified populations are more likely to require assistance during times of disaster; therefore, are considered, generally speaking, more “at-risk” than the remaining population. The “at-risk” population must be identified and targeted in successful mitigation efforts. Table I2 identifies the population makeup of the city, including those persons at a higher risk.

The elderly are often identified as an "at risk" population. According to 2017 ACS Census data, Parkersburg has an aging population of 431 persons, 21.8 percent of the population, 65 years or older. The 2017 American Community Survey 5-year estimate places 11.2 percent of Parkersburg's population age 75 or older. Parkersburg Place Retirement Community is a retirement and assisted living community that is home to a number of older community residents.

Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young people often are not aware of the proper actions to take in the event of a disaster. In addition, very young children can be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2017, there were 502 people, 25 percent of the population, under the age of 18. 241 of the City's 844 total households, 28 percent, have a child under the age of 18.

TABLE I7: PARKERSBURG "AT-RISK" POPULATION

Total Community Population	1972
Youth (18 Yrs. and younger)	502
Elderly (65 Yrs. and older)	431
Living in Group Quarters	0
Householder Living Alone	280
Estimated Population in Mobile Homes*	12
Non-English Speaking Population (speaks English less than 'very well')	0
Persons with Disabilities - Under 18 Yrs. Old	20
Persons with Disabilities - 18-64 Yrs. Old	101
Persons with Disabilities - 65 Yrs. and Older	132

*Source: 2013-2017 American Community Survey 5-Year Estimates & US Census Data. 2010; *Number of mobile home units multiplied by average household size*

The populations living in multi-family housing units and mobile homes, as discussed in the "Critical Facilities" section may also be placed at a higher risk during a hazard event. There are an estimated 213 multifamily and mobile home structures, according to the 2017 ACS Census Data. There are no residential group homes in Parkersburg.

As mentioned in the previous section, the Aplington-Parkersburg School District has an elementary and high school in Parkersburg. The Parkersburg Elementary, located at 602 Lincoln Street has approximately 215 students, grades Kindergarten through eighth grade with approximately 24 staff members in the facility. The High School, located at 610 N Johnson St., has approximately 277 students, grades 9-12, with 38 staff members. See Appendix K for additional information.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (I8) lists assets that would be affected in the event affected the unincorporated area of the county. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

TABLE I8: ASSET INVENTORY – VALUE OF STRUCTURES IN PARKERSBURG

Type of Structure	Lot / Land Value	Value of Structures	Total Value	Number of Structures
Residential	$ 15,860,650	$ 103,582,190	$ 119,442,840	759
Commercial	$ 2,328,759	$ 14,426,143	$ 16,754,902	92
Industrial	$ 20,260	$ 20,750	$ 41,010	1
Agriculture	NA	NA	NA	NA
Total	$ 18,209,669	$ 118,029,083	$ 136,238,752	852

Source: Butler County Assessor; Values as of 2019

This information was made available from the Butler County Assessors. It should be noted however that these dollar amounts do not include gas and electric utility valuations nor

do the evaluations include exempt properties, including government buildings, infrastructure, and religious/nonprofit properties. These results should be considered preliminary, as a full accounting of assets has not been completed.

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development. Fortunately, the planning area has not experienced a significant change in development since the area is rural and the amount of development – residential, commercial, and industrial – has not changed in the past five years.

Repetitive Loss Properties

Since the 2010 plan, Parkersburg has joined the National Flood Insurance Program. As of 06/30/2019 only two policies were in force within the city. See Table I9 for details on the city's flood insurance status. Parkersburg FIRM was last updated September 16, 2011.

TABLE I9: NFIP STATISTICS FOR PARKERSBURG

CID #	# of NFIP Policies	NFIP Insurance in Force ($)	Total Paid Losses #	Total Payments Made ($)
190337	2	$364,000	0	0

Source: Federal Emergency Management Agency (FEMA)
Data as of 06/30/2019

FEMA defines a repetitive loss property as an insurable building that has experienced losses in a 10-year period in which each loss is $1,000 or more. As of 09/30/2019 Parkersburg does not have any recorded repetitive loss properties. Table I9 shows details of Parkersburg NFIP.

This hazard mitigation plan attempts to reduce loss by identifying potential natural, technological, and human caused hazards. As a result of many natural and human caused hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs when necessary.

Mitigation Strategy

Hazard Mitigation Plan Goals

The City's existing hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at the third committee meeting. After reviewing the goals, the Committee decided to renew these broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for Parkersburg are:

1. Reduce the chance of and impact of flooding in the community.
2. Minimize the occurrence of injuries and loss of life due to hazards.
3. Minimize or eliminate damages that may occur as a result of hazards.
4. Increase the city's ability to respond to natural disasters and manmade hazards.
5. Return to the community to similar or improved pre-event conditions as quickly as possible following a disaster event.
6. Incorporate the City Plan into the proposed Multi-Jurisdictional Plan.
7. Continually re-assess and re-evaluate the plan and mitigation activities.

Current Mitigation Actions

Prevention Mitigation Actions

Table I10 provides a compilation of the current planning and regulatory documents in place for Parkersburg.

TABLE I10: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR PARKERSBURG

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Community

Property Protection Mitigation Actions

The City does not have any residential or commercial buildings in the floodplain, thus has not participated in any buyout program. A retention bio-cell was installed as a part of the Highway 57/14 corridor improvement project that was recently completed.

Public Education and Awareness Mitigation Actions

The City of Parkersburg through its Police, Ambulance, and Fire Departments have community events scheduled throughout the year reminding citizens, children and adult alike, of the hazards of many types of disasters or dangerous occurrences. Storm spotter training is offered through the National Weather Service. Safety reminders are published periodically in our local newspaper. Safety Programs are also offered to students at both Aplington-Parkersburg High School and Aplington-Parkersburg Elementary School in Parkersburg. Information is readily available at City Hall for hazardous events.

Along with Butler County, the City of Parkersburg converted from a CodeRed emergency alert program to AlertIowa. As described on the Iowa Homeland Security & Emergency Management website, "AlertIowa will allow citizens to sign up for the types of alerts they would like to receive. Messages can be issued via landline or wireless phone, text message, email, FAX, TDD/TYY, and social media. Messages can contain photo, video and audio attachments to help subscribers better understand the situation at hand, or where to find additional information"[7]

Emergency Services Mitigation Actions

Butler County Emergency Management Agency: Parkersburg relies on the Butler County's Emergency Management Coordinator, based in Allison, for emergency management guidance and assistance. The Emergency Management Coordinator works with the local fire, police, and city officials to draft and implement workable emergency action plans in the community. The current Emergency Management Coordinator is Chris Showalter and current contact information is as follows: 428 6th Street, Allison, Iowa 50602, (319) 267-9968, email: butlercoEMA@butlercoiowa.org

Fire Department: The City of Parkersburg currently has twenty six (26) volunteer firefighters. All firefighters are trained to NFPA 1001 standards, and a combination certified in Fire Fighter One and Fire Fighter Two. The department's coverage area includes the City of Parkersburg and approximately 78 square miles surrounding Parkersburg in south-central Butler County and north-central Grundy County.

Apparatus operated by the Fire Department includes: (2) Engines, (1) Rescue, (2) Tankers, and (3) Grass trucks. The fire department performs fire suppression, rescue, and operations level hazardous materials. Other rescue equipment includes: thermal imaging device, portable generators, breathing units, TNT Jaws of Life, flood pumps, air packs and compressors, chain saws, ladders, and other rescue equipment.

The Fire Department is a member of the Iowa Mutual Aid Compact (IMAC) and Northeast Iowa Response Group (NIRG). We are also a part of a county-wide mutual aid agreement in both Butler County and Grundy County. The Fire Department's communication system includes two base radios in the Emergency Services Building. Each apparatus has a mobile radio and all firefighters are issued a portable radio. Members are also issued a pager. The Fire Chief is Dustin Stotler with Rod Truax Jr. and Ryan Siems as Assistant Chiefs. The Fire Department is housed in the Emergency Services Building located at 1005 Commerce Street on the south side of Conn Street between Florence Street and Commerce Street. Immediate contact can be made to Parkersburg City Hall at (319) 346-2262.

Ambulance Service: The City of Parkersburg maintains an ambulance service of 12 volunteer members. Members include 10 emergency medical technicians (EMT) and three drivers. The service is also housed in the Emergency Services Building with the Parkersburg Fire Department. The

[7] http://homelandsecurity.iowa.gov/about_HSEMD/alert_iowa.html

Parkersburg Ambulance Service's jurisdiction includes south-central Butler County and north-central Grundy County. This area encompasses approximately 101 square miles.

Ambulance communication systems include dispatch from the Butler County Sheriff's Office. It also includes a base radio system maintained at the Emergency Services Building and also at Parkersburg City Hall. Each member of the ambulance service is issued an emergency pager. Cell phones are also available in emergency situations when necessary. The ambulance service has in place mutual aid agreements with surrounding communities and jurisdictions. Some of which include Aplington, New Hartford, and Dike. The Ambulance Service is at 1005 Commerce Street on the south-east side of Parkersburg at the intersection of Florence Street and Conn Street. Immediate contact can be made to Parkersburg City Hall at (319) 346 – 2262.

Medical Services: Parkersburg is fortunate to have the Aplington-Parkersburg Family Practice located in Parkersburg, with a doctor and physician's assistant on staff. This is a satellite clinic of the Allen Iowa Health System. Allen Memorial Hospital, in Waterloo, is located approximately 25 mile drive east of Parkersburg. Mercy One Clinic is also located at 1306 Highway 57.

The community also has an optometrist, chiropractor, dentist, and physical therapy clinic. Parker Place Retirement Community provides assisted living facilities as well as a memory care program for residents with memory impairment.

Law Enforcement: The City of Parkersburg currently has two full-time police officers, one part-time investigator, and one reserve officer. The Parkersburg Police Department is responsible for the jurisdiction within Parkersburg city limits. Equipment maintained by the department includes three vehicles – two four-wheel drive sport utility vehicles and one police cruiser. Other equipment includes night-vision goggles, a thermal imager, rifles, shotguns, tasers, etc. Mutual aid agreements have been developed with the Butler County Sheriff's Department and the Aplington Police Department. Communication methods include departmental issued radios in each police vehicle, hand-held radios for each officer, cell phones, and pagers.

Hazardous Materials: Parkersburg contracts with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The Training Center provides training to fire departments and companies from around the state and country. Not only is this a training center it also serves as a hazardous materials quick response unit to Black Hawk County, surrounding counties, and many municipalities in a ten county region. The Unit provides local fire departments with hazard materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the activities with the local department. Contact information for the facility is as follows: Hazardous Materials Regional Training Center, 1925 Newell Street, Waterloo, Iowa 50707, Phone: (319) 291-4275, Toll Free: (800) 291-4682, Fax: (319) 291-4285

The jurisdiction also partners the Northeast Iowa Response Group for assistance in responding to any methamphetamine labs located in the city limits. The Response Group assists the Police Departments in containment of the site and disposal of the hazardous chemicals.

Snow Removal/Public Works: The City of Parkersburg currently maintains three full-time staff members at City Hall and two full-time employees operating the city water, sewer, and street departments on a daily basis. Duties of these employees require them to keep the city functioning on

a daily basis and providing full-time service to the citizens of Parkersburg. Three of these members are also members of the police department, fire department, and/or ambulance service.

Equipment operated by the city includes four full-size dump trucks with multiple attachments for snow/ice removal, front-end loader, construction tractor, street sweeper, four-wheel drive trucks, utility tractor, etc. The city also owns a 60K generator as well as other portable generators for practical and emergency usage. These pieces of equipment are used for everyday maintenance of the city as well during times of emergency. The City of Parkersburg maintains approximately fifteen miles of roadways.

Warning System: The City of Parkersburg currently has two outdoor warning sirens which have the ability to alert the citizens of Parkersburg and those within close proximity in the rural area surrounding Parkersburg of impending storms and/or other hazardous events. These sirens are both equipped to be operated manually and remotely via handheld or base radio. Local emergency officials are trained in the activation of our sirens and are trained in storm spotting. Our emergency officials operate the Incident Command System before, during, and after serious weather or when other serious conditions exist. The Parkersburg Emergency Services Building will have an emergency back-up communications system in the near future.

Natural Resource Protection Mitigation Actions: Parkersburg recently improved their storm water system through local funds and a CDBG grant. The CDBG storm sewer improvement project included the installation of over 5400 linear feet of storm sewer pipe, sub-drains, storm sewer intakes and other drainage improvements. As a part of the Highway 57/14 corridor improvement project, natural resource protection mitigation has been aided by the construction of a retention bio-cell, bio-swales, permeable paving, and the planting of native prairie grasses and hundreds of trees along the corridor. A sewer lining program began in 2017.

Structural Projects Mitigation Actions: The community has rebuilt a significant portion of the City that was destroyed in the 2008 tornado and continues to report strong residential and commercial building projects. The City has a building code, flood plain ordinance, zoning ordinance, and storm sewer ordinance to regulate structural projects.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognizes that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE

feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table 51) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity

Timeline

The Committee identified the time period each period each of the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, City's chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future

hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a time line for each activity, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table I11 is the City of Parkersburg's Implementation Strategy.

TABLE I11 : FUTURE HAZARD MITIGATION ACTIVITIES- PARKERSBURG						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
High	Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	All	City Council*, Fire Dept., Public Works, EMA, Butler Co. Public Health	Active	Minimal	2,3,4,7
High	Establish an Emergency Notification System and Conduct Drills	All	City Council, Police Dept., Fire/Ambulance Dept.*, EMA, Mayor	Active	Low	1,2,4,7
High	Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	All	EMA, Fire/Ambulance Dept.*, Mayor	Active	Minimal	1,2,4,6
High	Develop and Maintain an Emergency Response Plan	All	City Council, EMA, Fire/Ambulance/Police Dept.*	Active	Minimal	1,2,3,4
High	Develop and Maintain Command Procedures & Center	All	City Council and Mayor*, City Departments, Fire Dept.	Active	Minimal	1,2,3,4,7
High	Develop and Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, Etc.	All	City Council and Mayor*, Fire/Ambulance/Police Dept.	Active	Low	1,2,3,4,5
High	Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc)	All	City Council and Mayor*, Fire/Ambulance/Police Dept.	Active	Moderate	1,2,3,4,5
High	Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	All	City Council and Mayor, EMA, Fire/Ambulance/Police Dept.	Active	Low	1,2,3,4,5
High	Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	All	EMA, Fire Dept., Police Dept., Ambulance Service, schools*	Active	Minimal	2,3,4,7
High	Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	All	City Council and Mayor*, Zoning Administrator	Active	Minimal	1,2,3,4,5
High	Provide Off-Site Backup of Essential Data	All	City Hall*, Fire/Ambulance/Police Dept.	Active	Minimal	3,4,5
High	Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	City Council and Mayor*	Active	Moderate	2,3,4

TABLE I11 : FUTURE HAZARD MITIGATION ACTIVITIES- PARKERSBURG						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
High	Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Human Disease, HAZMAT Incident, Terrorism	City Council and Mayor, Water Superintendent*	Active	Minimal	2,4,5
High	Maintain Mosquito Spraying Program	Human Disease	City Council and Mayor, Public Works*	Active	Low	1,2
Medium	Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	All	City Council and Mayor*, Fire Dept., EMA	Active	Low	2,4,5
Medium	Develop and Maintain Continuity of Operations Plan (COOP)	All	City Council and Mayor*, EMA, City Departments	Active	Minimal	1,2,3,4,5
Medium	Develop a Clean Up/Recovery Procedure / Plan	All	City Council and Mayor*	Active	Minimal	2,4,5
Medium	Place GPS Units in all Critical Service Vehicles	All	City Council and Mayor, Fire/Ambulance/Police Dept.*	Short-term	Low	4
High	Purchase Natural Gas Generators for Critical Facilities & Shelters	Earthquakes, Extreme Heat, Flash Flood, River Flooding, Severe Winter Storm, Sinkholes, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident	City Council and Mayor*, Fire Dept., Public Works	Active	Low	4,5
Medium	Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Animal/ Plant/ Crop Disease, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, Severe Winter Storm	City Council and Mayor*, Public Works	Active	Low	2,3,4,5
Medium	Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, Earthquake, Extreme Heat, Grass/ Wild Fire, Radiological Incident, Terrorism	City Council and Mayor*, EMA, Ambulance/Fire Dept.	Active	Minimal	2,4,5
Medium	Continue Agreement with NE Iowa Response Group	HAZMAT Incident, Radiological Incident, Terrorism, Human Disease	City Council and Mayor, Fire Dept.*	Active	Minimal	2,3,4
High	Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Earthquake, Grass/ Wild Fire, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Incident, Terrorism	City Council and Mayor*, Water Superintendent, City Engineer	Active	High	4,5,6,7

TABLE I11 : FUTURE HAZARD MITIGATION ACTIVITIES- PARKERSBURG						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
Medium	Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Earthquake, Flash Flood, Grass/ Wild Fire, Landslide, River Flooding, Severe Winter Storm, Sinkholes, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, Infrastructure Incident, Levee/ Dam Failure, Terrorism	City Council and Mayor*, City Engineer, Public Works	Active	Minimal	1,2,3,4,5,7
Medium	Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.)	Flash Flood, River Flooding, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, Infrastructure Failure, Levee/ Dam Failure	City Council and Mayor*, City Engineer, Public Works	Active	Moderate	1,2,3,4,5,6
Medium	Maintain and Update Bioterrorism Response Plan	Human Disease, HAZMAT Incident, Terrorism	City Council and Mayor*	Active	Minimal	2,3,4,5,6,7
High	Identify and Improve Security at Critical Facilities	Human Disease, Terrorism	City Council and Mayor, Police Department*	Active	Low	2,4,5,7
Medium	Maintain Wellness Clinics and Public Health Department	Human Disease, HAZMAT Incident, Radiological Incident, Terrorism	City Council and Mayor*, Butler County Public Health, local organizations	Active	Low	1,2,4,5
Medium	Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	All	City Council and Mayor*, City Departments	Active	Low	1,4,5
Low	Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	HAZMAT Incident, Transpiration Incident	City Council and Mayor, Public Works, Police Department*	Active	Low	2,3,7
Medium	Flood Proof Critical Facilities	Flash Flood, River Flooding, Thunderstorm/ Lighting/ Hail, Levee/ Dam Failure	City Council and Mayor, Public Works*	Active	Moderate	1,4,5,7
Low	Develop a Water Rationing Plan	Drought, Earthquake, Extreme Heat, Grass/ Wild Fire, Terrorism	City Council and Mayor, Water Superintendent*	Active	Low	2,4,5,7
Low	Maintain Roadside Vegetation Management Program	Landslide, Transportation Incident	City Council and Mayor, Public Works*	Active	Low	3,4,5
High	Establish, Adopt, & Enforce Building Codes	Earthquake, Expansive Soils, Grass/ Wild Fire, Landslide, Severe Winter Storm, Sinkholes, Thunderstorm/ Lighting/ Hail Tornado/ Windstorm, Infrastructure Incident	City Council and Mayor*, Zoning Administrator	Active	Low	All

TABLE I11 : FUTURE HAZARD MITIGATION ACTIVITIES- PARKERSBURG						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**	**Timeline**	**Est. Cost**	**Associated Goal(s)**
Medium	NOAA Weather Radio Awareness Program	Earthquake, Extreme Heat, Flash Flood, Grass/ Wild Fire, Human Disease, Landslide, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm HAZMAT Incident, Levee/ Dam Failure, Radiological Incident, Terrorism	City Council and Mayor*	Active	Minimal	1,2,4,5
Low	Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size	Earthquake, Grass/ Wild Fire, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	City Council and Mayor*, Zoning Administrator	Active	Minimal	2,3,4
Medium	Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	HAZMAT Incident, Radiological Incident, Terrorism	EMA, Fire Dept.*	Active	Minimal	2,4,6
Low	Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	HAZMAT Incident	City Council and Mayor*, EMA	Active	Minimal	2,4,7
Low	Ensure Tier II Reports are Completed and Reported per Applicable Laws	HAZMAT Incident	City Council and Mayor*, EMA	Active	Minimal	4,5
Medium	Conduct Annual Fire Inspections of Industries and Businesses	Grass/ Wild Fire, Terrorism, Infrastructure Failure	City Council and Mayor, Fire Department*	Active	Low	2,3,4,5
Low	Maintain Membership of National Flood Insurance Program	Flash Flood, River Flooding	City Council and Mayor*, Zoning Administrator	Active	Minimal	1,2,3
Low	Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	Earthquake, Flash Flood, Grass/ Wild Fire, River Flooding, Tornado/ Windstorm, Thunderstorm/ Lighting\ Hail, Radiological Incident, Terrorism	City Council and Mayor*, Fire/Ambulance/Police Dept., Public Works	Active	Low	1,2,3,4,5
Low	Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	Flash Flood, River Flooding, Levee/ Dam Failure, Transportation Incident, Infrastructure Failure	City Council and Mayor*, City Engineer	Active	Moderate	1,2,3,4

Appendix J: City of Shell Rock

Community Profile

Location

Shell Rock is located in eastern Butler County, in northeastern Iowa, at latitude 42.71 N x longitude 92.58 W. The city's elevations ranges from 900 to 950 feet above sea level. The city is bisected by the Shell Rock River. The land within the city is generally flat with a few areas of steeper grade near the river. The City of Shell Rock is located five miles from Waverly, IA. Its relative location to Waverly is important because Waverly is the largest city in the Butler/Bremer county area. Also significant is the fact that Shell Rock is only 22 miles from Waterloo, Iowa, the prevalent municipality in northeast Iowa.

Shell Rock City Hall is located at 802 N. Public Road. It houses the Mayor's office, Council Chambers, City Clerk's office, and American Legion Post.

History/Development Trends

In the year 1853. George Washington Adair came to the area now known as Shell Rock and purchased forty acres of land. The grand total paid for these forty acres and a mill site was $100. One year later, the first church service was held at the G.W. Adair residence.

The City of Shell Rock was officially platted in March of 1855. Within the year the first school classes were conducted during the summer months, a post office was established, and the first dam was constructed. G.W. Adair, using logs as the construction material, was responsible for the construction of the dam.

Fire has played a significant role in the history of the community; in 1874 the east schoolhouse was completely destroyed by a fire. Approximately eight years later, a town pump was installed for the purpose of fire protection. The pump would eventually prove useful, if not completely effective. In 1884 a fire started in the general store and threatened to burn down Main Street. Five years later, in 1889, another fire began in the back room of A.R. Walker's Grocery Store and destroyed nearly half of the businesses in town. Unfortunately, this was not the end of Shell Rock's unfortunate instances of fire. In 1898 the west side school burned and a second fire burned down several businesses. These events were sufficient to prompt the community to establish a water works system. All was quiet until 1908, when a fire was set in the fire station and eventually burned all seven buildings in the business district, including a newly constructed wooden water tank.

In addition to fire, Shell Rock has also been impacted by flooding due to its location along the Shell Rock River. Throughout the 20th Century there were several flood events that directly affected the city, the most recent in the fall of 2016. Regardless of these numerous disasters, the community of Shell Rock has come together and now enjoys an established business district with a population of 1,296 people.
In 2014, the City began raising funds to construct a new emergency services building which doubled the size of the current facility. The building opened in October 2016 and houses the fire department and first response crews.

Natural Environment

Shell Rock's general topography indicates the broad flat areas of flood plain to the northwest and southeast. The existing community has been primarily developed on higher areas adjacent to the Shell Rock River.

According to the Butler County Soil Survey conducted in 1982 by the United State Department of Agriculture Soil Conservation Service, the soil in Shell Rock is "Loamy alluvial land, channeled … nearly level and gently sloping, excessively drained to poorly drained loamy soils formed in loamy alluvial sediments; on bottom lands and terraces". Drainage can be a problem if there is no suitable outlet for the waters. In addition, due to their location in and near the Shell Rock River floodplains, some of the soils in Shell Rock may be subject to flooding.

Transportation

Shell Rock is positioned less than 2 miles west of U.S. Highway 218, which connects to the City via Iowa Highway 3. Highway 3 also links the City with Waverly, less than 4 miles to the east. The east/west traveling Highway 3 also connects to Allison and Dumont.

With its proximity to Highway 218 and Highway 3, the City of Shell Rock receives a fair amount of traffic. According to the Iowa Department of Transportation's 2017 traffic study, just to the east of the City, Highway 3 averages 6,400 vehicles a day. The section of Highway 3 on the northwest side of Shell Rock averages 3,620 vehicles per day. The City currently maintains 17 miles of paved streets. In addition, there are 5 miles of rock surfaced gravel roads in the community.

The Waverly Municipal Airport (C25) is less than 4 miles northeast of Shell Rock. The local service airport offers 2,800-foot-long, 50-foot-wide asphalt runway. In 2010, there were 23 aircraft based at the airport generating approximately 5,750 annual operations. The closest major airport is the Waterloo Regional Airport (ALO), located 14 miles southeast of the City. This public airport is owned and operated by the City of Waterloo and overseen by an Airport Commission appointed by the Mayor. The primary runway is 8,400-foot-long, 150-foot-wide, and has a grooved asphalt surface. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service.

The Iowa Northern Railway Company (IANR) operates a rail line that travels through the south edge of the City. This 169-mile track connects Manly and Cedar Rapids. As a Class III carrier, IANR's largest commodities are farm products such as grain, and chemicals including fertilizer.

Shell Rock is part of the regional Rolling Prairie Bike Trail, owned by the County and is located on a converted Iowa Pacific Railroad bed. The current trail travels east from Allison, through Clarksville and ends in Shell Rock. However, there are plans and a concerted effort to extend the trail to other communities in the area.

Community Services

As identified in the City's Comprehensive Plan, the Shell Rock water supply is served by two water wells. Well #1 was drilled in 1939 to a depth of 180 feet and has an operating output at approximately 250 gallons per minute (gpm) or 360,000 gallons per day (gpd). Well #2 was drilled in 1954 to a depth

of 180 feet and can operate at approximately 258 gpm (371,520 gpd). Both wells are classified as deep wells (not influenced by surface supplies) and both access the Devonian (Cedar Valley Limestone) aquifer. No chemicals other than chlorine are used at either well.

The water tower is rated at 200,000 gallons and was constructed in 1979. It is operated at an average pressure of approximately 67 psi. Average water consumption is approximately 112,000 gpd. The Shell Rock water system currently serves approximately 550 residential customers. A small number of residents are served by private wells.

Shell Rock has an aerated lagoon wastewater treatment plant (WWTP) located outside the city limits southeast of town. It is a three-cell aerated lagoon system. The wastewater system has three lift stations. The plant is designed for up to about 306 pounds carbonaceous biochemical oxygen demand (CBOD5) per day. The Shell Rock waste water system is gauged by the following statistics: 150,000 gpd average dry weather flow, 282,000 gpd average wet weather flow, and 617,000 gpd maximum wet weather flow.

In essence, the Shell Rock River serves as the storm sewer system for the community. The natural topography of the area allows the storm water to flow towards the river that divides the town. One detention pond has been built by the city.

Table J1 shows the primary utility providers in the city.

TABLE J1: SHELL ROCK UTILITY PROVIDERS

Electric	Natural Gas	Water	Sewer	Sanitation	Telephone	Internet	Cable
MidAmerican Energy	MidAmerican Energy	City of Shell Rock	City of Shell Rock	Jendro Sanitation	Butler-Bremer Communications	Butler-Bremer Communications	Mediacom or Butler-Bremer Communications

Demographics

Tables J2 provides an overview of the city's demographics. Over the past several decades, the city has experienced a population decrease. From 1980 to 1990, the population decreased 6.3 percent from 1,478 to 1,385. The City again decreased by 6.3 percent from 1990 to 2000. More recently, the City has maintained a steady population, seeing only a two person decrease in population between 2000 and 2010 U.S. Census. The 2017 ACS survey reported the population at 1297.

Table J2: City of Shell Rock Demographics			
General Population, 2010 Census		***Economic Characteristics, 2013-2017 ACS***	
Total Population	1296	Total Population (16 yrs. and over)	1048
Males	635	Population in Labor Force (16 yrs. and over)	729
Females	661	Persons in Civilian Labor Force	729
Median Age	44.1	Persons Employed	703
At-Risk Population (under 18 years)	152	Persons Unemployed	26
At-Risk Population (65 years and over)	166	Persons in Armed Forces	0
One Race	1275	Avg. Commute to Work in Minutes	18.5
White	1263	Management, business, science, and arts occupations	215
Black or African American	0	Service occupations	104
American Indiana and Alaska Native	5	Sales and office occupations	163
Asian	3	Natural resources, construction, and maintenance occupations	47
Native Hawaiian or Other Pacific Islander	0	Production, transportation, and material moving occupations	174
Two or More Races	21	Median Household Income	52,578
Hispanic or Latino (of any race)	15	Median Family Income	69,205
Not Hispanic or Latino	1281	Per Capita Income	27,078
Household Population	554		
Group Quarters Population			
Group Quarters – Institutionalized		School Enrollment (3 yrs. and over)	242
Group Quarters – Noninstitutionalized		Nursery school/preschool	10
		K – 12th Grade	190
Housing Characteristics, 2010 Census		K – 8th Grade	146
Total Housing Units	588	9th Grade – 12th Grade	44
Owner-Occupied Housing Units	418	College or Graduate School	39
Renter-Occupied Housing Units	136	Educational Attainment – Population 25+ yrs.	
Vacant Housing Units	34	Less than 9th Grade	23
		9th Grade – 12th Grade, No Diploma	32
		High School Degree or Equivalency	323
2018 Population Estimate	1284	Some college, no degree	237
		Associate's Degree	132
		Bachelor's Degree	116
		Graduate or Higher Degree	30
Source: Census 2010; 2013-2017 ACS; 2018 Population Estimates Program			

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the City of Shell Rock evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The City's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the community. This analysis provides an all-hazard approach when evaluating the hazards of that affect the city, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas manmade or technological events tend to change over time with advancement in technology and methods of operation. Five criteria were used by the Committee to assure a systematic and comprehensive approach to hazard analysis for their individual jurisdictions included: Historical Occurrence, Probability, Magnitude/Severity, Warning Time, and Duration.

The Committee assessed the defined hazards relevant to potential impact on the city. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Table J3 is the analysis scores for the City of Shell Rock. The top hazards for Shell Rock are: River Flooding, Flash Flood, Tornado/Windstorm, and Animal/Plant/Crop Disease.

Table J3: Hazards City of Shell Rock						
Hazard Rank	Hazard	Hazard Factors				Final Assessment Score
		Probability	Magnitude /Severity	Warning Time	Duration	
1	River Flooding	4	3	2	3	**3.3**
2	Flash Flood	4	2	4	2	**3.2**
2	Tornado/Windstorm	4	2	4	2	**3.2**
4	Animal/Plant/Crop Disease	3	2	4	4	**2.95**
5	HAZMAT Incident	3	2	4	3	**2.85**
6	Grass/Wild Fire	4	1	4	1	**2.8**
6	Thunderstorm/Lighting/Hail	4	1	4	1	**2.8**
8	Drought	3	3	1	4	**2.8**
9	Severe Winter Storm	4	1	2	2	**2.6**
10	Extreme Heat	4	1	1	3	**2.55**
11	Transportation Incident	3	1	4	2	**2.45**
12	Dam / Levee Failure	2	2	4	3	**2.4**
13	Human Disease	2	2	4	1	**2.2**
14	Infrastructure Failure	2	1	4	3	**2.1**
15	Radiological Incident	1	2	4	3	**1.95**
16	Earthquake	1	2	4	1	**1.75**
16	Terrorism	2	1	1	4	**1.75**
18	Expansive Soils	1	1	4	1	**1.45**
18	Landslide	1	1	4	1	**1.45**
18	Sinkholes	1	1	4	1	**1.45**

Vulnerability – Identifying Critical Facilities

This section will describe the vulnerability for existing and future buildings, infrastructure, and critical facilities in those areas that can be impacted by the prioritized hazards. Since the majority of the hazards have an undefined hazard area (i.e., affecting an entire community or larger area) the following vulnerability assessment will only address those hazards that affect a specified area – flooding (river and flash). However, due to the community's historical occurrences of tornadoes this hazard was added to the assessment. The following discussion only considers the assets in the community of Shell Rock.

TABLE J4: SHELTERS IN THE CITY	
City Hall	First United Methodist Church
Shell Rock Elementary	Faith Lutheran Church
Community Center	Emergency Services Building
Feldmeier Equipment	
Source: Community	

Critical Facilities

Identifying the location of critical facilities is important in order to assess their vulnerability to hazards, since these facilities are important to the community's operations, quality of life, and economic sector. These include but are not limited to schools, health care facilities, libraries, police and fire stations, water towers, city and county buildings, sirens, and lift stations. Attachment *7j* shows the locations of these critical facilities throughout Shell Rock. Table J4 identifies critical facilities within the city that include potential vulnerable populations.

Table J4 shows the locations identified as shelters in Shell Rock. While these locations have been identified for use if deemed necessary, there may also be hazard events which require residents to shelter themselves "in place". Therefore, any location could potentially become a makeshift shelter for purposes of disaster response.

The Waverly-Shell Rock Elementary school is another critical facility. The large student population and school events that can attract hundreds of attendees may be put at risk during a hazard. See Appendix M for additional information on the Waverly-Shell Rock School District.

Homes in Hazardous Areas

As of the 2011 FIRM update, Shell Rock had 167 or 781 parcels identified as in the floodplain within its city limits. The estimated dwelling value in the 100-year floodplain is $6,181,200. The total land, building, and dwelling value in the 100-year floodplain is $8,512,220. There are approximately $964,000 in dwelling values in the 500-year floodplain. The total value in the 500-year floodplain is estimated to be $1,219,120. See Table J5.

TABLE J5: FLOODPLAIN DATA FOR SHELL ROCK						
	# of Parcels	**Area in Acres**	**Land Value**	**Building Value**	**Dwelling Value**	**Total Value**
1.0% Annual Chance Floodplain Values	146	453.31	$1,909,670	$421,350	$6,181,200	$8,512,220
0.2% Annual Chance Floodplain Values	21	23.10	$254,420	$700	$964,000	$1,219,120
Total Floodplain Values	167	476.42	$2,164,090	$422,050	$7,145,200	$9,731,340
Total City Values	781	1,084.63	$12,141,070	$6,648,293	$53,088,127	$71,877,490
Source: INRCOG & Butler County Assessor Parcel value information current as of 9/12/18, Butler County Assessor Office. FEMA Digital Firm 9/16/2011. Incorporated boundaries as of 04/01/2019. For actual determination if a location is within the floodplain, contact your local floodplain administrator.						

All structures are vulnerable in the event of a Tornado / Windstorm hazard. As part of a vulnerability assessment, a hypothetical tornado scenario was created for the community. Attachment 5v and Attachment 5w illustrate the impact of a hypothetical tornado event in Shell Rock. Table J6 displays the degree of impact that hypothetical tornado scenarios of various strengths would have on the city.

According to the 2017 ACS Data there are two mobile homes in Shell Rock. Mobile homes may put residents at greater risk in the event of a tornado or high wind event. Using the average persons per household size of 2.26 persons, it can be assumed there are approximately 5 persons living in mobile homes.

Persons living in some multi-family units may also be at risk due to the lack of a proper tornado shelter. According to the 2013-2017 ACS 5-Year Estimates, there were an estimated 60 housing units in buildings with at least three units. Using the city's the average persons per household there are approximately 136 persons living in multi-family units within the city.

Nursing homes or skilled living centers are also highly vulnerable to tornadoes. These facilities are designed for caring for the elderly population, majority of which use wheelchairs or other assistance devices, limiting mobility. Also, the majority of nursing homes are constructed as a single-level building with or without basements. Shell Rock has one assisted living facility, The Meadows.

TABLE J6: TORNADO SCENARIO FOR SHELL ROCK

Scale	Tornado Width	# of Parcels	Damaged Value	% of City Damaged
EF0	50 Meters	91	$1,921,816	11.65%
EF1	150 Meters	191	$4,034,990	24.46%
EF2	250 Meters	265	$11,194,375	33.93%
EF3	500 Meters	451	$19,053,203	57.75%
EF4	900 Meters	664	$56,100,549	85.02%
EF5	1100 Meters	739	$62,435,120	94.62%

Parcel information current as of 1/1/2019; Source: Butler County Assessor and INRCOG

TABLE J7: SHELL ROCK "AT-RISK" POPULATION

Total Community Population	1297
Youth (18 Yrs. and younger)	272
Elderly (65 Yrs. and older)	219
Living in Group Quarters	42
Householder Living Alone	181
Estimated Population in Mobile Homes*	
Non-English Speaking Population (speaks English less than 'very well')	0
Persons with Disabilities - Under 18 Yrs. Old	4
Persons with Disabilities - 18-64 Yrs. Old	66
Persons with Disabilities - 65 Yrs. and Older	73

*Source: 2013-2017 American Community Survey 5-Year Estimates & US Census Data. 2010; *Number of mobile home units multiplied by average household size*

Vulnerability – Identifying Social Asset Populations

The social vulnerability assessment also identified how the hazards affect the population of Shell Rock, and it is assumed that the identified populations are more likely to require assistance during times of disaster and are therefore, generally speaking, more at-risk than the remaining population. The at-risk population must be identified and targeted in successful mitigation efforts. Table J6 identifies the various population segments that may consider "at-risk" in the event of a hazard.

According to 2010 U.S. Census data, 255 persons in the Shell Rock are 65 years or older. Persons under the age of 18 are also at higher risk during some disasters. This is mostly due to the fact that young people often are not aware of the proper actions to take in the event of a disaster. In addition, very

young children would be more susceptible to a disaster such as a disease epidemic simply due to their age. In 2010, approximately 276 persons in Shell Rock were under 18 years of age.

As mentioned previously, persons living in mobile homes (approximately 5) and persons living in multi-family housing units (approximately 189) are also considered at risk. Persons living in group quarters may also be at a higher risk during a hazard. There is an estimated 42 persons living in group quarters in Shell Rock.

The Shell Rock Elementary, part of Waverly-Shell Rock Community Schools is located in Shell Rock. There are approximately 181 students, grades, K-4 with 24 staff members. When school is in session, hundreds of people are in the school buildings daily. This includes people from other communities attending various events throughout the year. Waverly-Shell Rock Community Schools is a member of the 2015 Butler County Multi-Jurisdictional Hazard Mitigation Plan. Information on the school can be found in Appendix M.

Vulnerability – Estimating Potential Property Losses

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster. The following table (J8) lists assets that could be affected in the event of a disaster. This data was used in the Vulnerability discussion in each of the Hazard Profiles in Section 3.

This information was made available from the Butler County Assessor. It should be noted however that these dollar amounts do not include gas and electric utility valuations nor do the evaluations include exempt properties, including government buildings, infrastructure, and religious/nonprofit properties. These results should be considered preliminary, as a full accounting of assets has not been completed.

TABLE J8: ASSET INVENTORY – VALUE OF STRUCTURES IN SHELL ROCK

Type of Structure	Lot / Land Value	Value of Structures	Total Value	Number of Structures
Residential	$ 10,552,970	$ 55,432,150	$ 65,985,120	497
Commercial	$ 812,532	$ 5,578,903	$ 6,391,435	92
Industrial	$ 303,080	$ 2,398,230	$ 2,701,310	3
Agriculture	NA	NA	NA	NA
	$ 11,668,582	$ 63,409,283	$ 75,077,865	592

Source: Butler County Assessor; Values as of 2019

Future Development

Future development within identified hazard areas can change the threat level of an area by placing critical facilities, businesses, transportation networks, utilities, and populations within vulnerable areas. While it can be difficult to curb development in the planning area, it is the jurisdiction's advantage to be aware of development trends in order to successfully mitigation future hazards as risks increase. However, continued conformity with the State Building Codes and local land use ordinances and regulations (zoning, subdivision, floodplain management, etc.) will help to mitigate the effects hazards have on new and future development. Fortunately, the planning area has not experienced a significant change in development since the area is rural and the amount of development – residential, commercial, and industrial – has not changed in the past five years.

Repetitive Loss Properties

Shell Rock has been enrolled in the National Flood Insurance Program since May 1, 1992. The city's floodplain ordinance places restrictions on development in the floodplain, which includes both the floodway and flood-fringe areas, within flood-prone areas of the city. The city's FIRM maps were updated September 16, 2011. Shell Rock continues to participate in flood buy-out programs and bought two additional houses after the 2016 flood.

According to available FEMA's data (as of 10/31/2014), Shell Rock participates in NFIP program with 9 policies ($1,619,000 in force). See Table J9.

FEMA defines a repetitive loss property as an insurable building that has experienced losses in a 10-year period in which each loss is $1,000 or more. Table J9 shows Shell Rock has had one repetitive loss property that has not been mitigated.

TABLE J9: NFIP STATISTICS FOR SHELL ROCK

CID #	# of Policies	Total Coverage in Force ($)	Total Paid Losses #	Total Payments Made ($)
190338	9	$1,619,000	23	$482,433

Source: Federal Emergency Management Agency (FEMA)
Data as of 6/30/2019

TABLE J10: SHELL ROCK REPETITIVE LOSS PROPERTIES

Total number of RL Buildings	Total number of RL Instances	Total RL Losses
1	3	$105.663

Source: Iowa Department of Natural Resources; Data as of 9/30/2019 Data does not include properties that have been mitigated; RL = Repetitive Loss

This hazard mitigation plan attempts to reduce loss by identifying potential natural, technological, and human caused hazards. As a result of many natural and human caused hazards, repairs and reconstruction area often completed in a way that returns the structure to pre-disaster condition yet does little to prevent a reoccurrence of damage. Replication of the pre-disaster conditions allows for the repetitive cycle of property damage, reconstruction, and re-damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction are analyzed, and sound, less vulnerable conditions are produced. Additionally, other mitigation strategies may be considered, such as voluntary property buy-outs when necessary.

Mitigation Strategy

Hazard Mitigation Plan Goals

The City's existing hazard mitigation plan goals were reviewed by the Hazard Mitigation Planning Committee at the third committee meeting. After reviewing the goals, the Committee decided to renew these broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. The hazard mitigation plan goals for Shell Rock are:

1. Reduce the chance of and impact of flooding in the community.
2. Minimize the occurrence of injuries and loss of life due to hazards.
3. Minimize or eliminate damages that may occur as a result of hazards.
4. Increase the city's ability to respond to natural disasters and manmade hazards.
5. Return to the community to similar or improved pre-event conditions as quickly as possible following a disaster event.
6. Incorporate the City Plan into the proposed Multi-Jurisdictional Plan.
7. Continually re-assess and re-evaluate the plan and mitigation activities.

Current Mitigation Actions

Prevention Mitigation Actions

The City has adopted a Flood Plain Management Ordinance, located in chapter 160 of the City's Code of Ordinance. The City Clerk (who also serves as the Zoning Administrator) and the Public Works Director enforce the floodplain ordinance in addition to other duties. The Federal Insurance Administration manages the insurance component of the NFIP, and works closely with FEMA's Mitigation Directorate, which oversees the floodplain management aspect of the program. Shell Rock, because of its newfound membership will now be eligible for the insurance benefits provided by this program.

A Flood Insurance Study was conducted by the Federal Emergency Management Agency (FEMA). The previous study, effective August 12th, 1999, was updated with new federal insurance rate maps (FIRM) which became effective September 16, 2011. The study analyzed the CRS measurements for the Shell Rock River and the Shell Rock River Overflow Channel that intersects the Shell Rock River at Lake Street. By evaluating these measurements and placing them against prior flooding events calculations could then be made to determine the proper elevation levels for the delineation of the 100-year and 500-year floodplain boundaries. A copy of the Flood Insurance Study is kept on hand at City Hall in Shell Rock and is available for public viewing.

The City adopted their original single-jurisdiction Hazard Mitigation Plan on June 5, 2001 and adopted an updated on December 2, 2003 to incorporate new Disaster Mitigation Act 2000 requirements. The City was part of the 2010 and 2015 Butler County Multi-Jurisdictional Hazard Mitigation Plans.

The City currently has and enforces a Zoning Ordinance and is currently updating it to be consistent with the Comprehensive Plan, updated in 2009. Shell Rock currently has and enforces a Zoning Ordinance. The City Clerk and the Public Works Director are charged with enforcing the Zoning Ordinance. The City also has a snow ordinance that is in effect during snow season. This ordinance serves to assist the City in its efforts to clear the city streets after a snow event.

Table J11 identifies the city's current regulatory tools for hazard mitigation.

TABLE J11: CURRENT PLANNING AND REGULATORY DOCUMENTS FOR SHELL ROCK

Previous HMP	Comprehensive Plan	Building Code	Zoning Ordinance	Subdivision Regulations	Floodplain Management Ordinance	Tree-Trimming Ordinance	Storm Water Ordinance	Snow Removal Ordinance
Yes – 2015	Yes	No	Yes	Yes	Yes	Yes	No	Yes

Source: Community

Property Protection Mitigation Actions

Following the historic 2008 and 2016 floods, the City bought out eight properties that had been impacted. All these properties are now open green spaces.

As a result of the 1999 Flood and a Federal Disaster Declaration the City participated in a Housing Buy Out program funded through FEMA, IDED, and the Iowa Emergency Management Division (IEMD). Through this program five structures were purchased, at a total cost of $231,393.46. These structures were then demolished or otherwise removed from the floodplain. The remaining lots have been deeded to the city and as specified on the deed, all future development will be restricted only development that meets the guidelines of the city's floodplain ordinance. As additional funding becomes available, further efforts will be made to remove more structures from the floodplain.

Public Education and Awareness Mitigation Actions

The City provides basic safety information for various hazard events (i.e., tornados) and what to do before, during, and after an event. Information regarding how to protect one's self in the event of a tornado is largely publicized in the form of flyers, radio, newspaper, and television announcements.

Shell Rock and the rest of Butler County converted from a CodeRed emergency alert program to Alert Iowa. As described on the Iowa Homeland Security & Emergency Management website, "Alert Iowa will allow citizens to sign up for the types of alerts they would like to receive. Messages can be

issued via landline or wireless phone, text message, email, FAX, TDD/TYY, and social media. Messages can contain photo, video and audio attachments to help subscribers better understand the situation at hand, or where to find additional information"[8]

Emergency Services Mitigation Actions

The community currently has one warning siren. Communications used by city personnel include pagers, radios, and cellular phones. Radio, television, cellular telephones, landline telephones, newspapers, warning sirens, Internet access, and NOAA Radio Service are available to the public at large. There is an antenna atop the city water tower that usually not used. However, in the event of an emergency the Red Cross can utilize this antenna for communications to assist in coordination efforts.

Butler County Emergency Management Agency: Shell Rock relies on the Butler County's Emergency Management Coordinator, based in Allison, for emergency management assistance. The Emergency Management Coordinator works the local fire, police, and city officials to draft and implement workable emergency action plans in the community. The current Emergency Management Coordinator is Chris Showalter and current contact information is as follows: 428 6th Street, Allison, Iowa 50602, (319) 267-9968, email: ButlercoEMA@butlercoiowa.org

Fire Department: The City of Shell Rock currently has 21 volunteer firefighters. Equipment owned and operated by the local fire department includes 2 grass units, 2 pumpers, 1 tanker, 1 rescue unit, 2 Amkus Rescue tools and fans, 2 generators, and a self-contained breathing apparatus. The fire department has in place 28E agreements with surrounding communities to provide and receive assistance as needed on a mutual aid basis. The communities that the Shell Rock Volunteer Fire Department maintains 28E agreements include: Janesville, Plainfield, Waverly, Allison, Aplington, Aredale, Bristow, Clarksville, Dumont, Greene, New Hartford, Parkersburg, and Waterloo Fire and Rescue. The fire department ensures communication through several methods. Those methods include 911Service, Radio Communication, Pagers, Alarm Systems, Sirens, and Cellular Phones. To date the fire department is not GPS equipped.

Ambulance Service: The Shell Rock First Responder Service and Waverly Ambulance Service provide emergency rescue and ambulance service to the community.

Medical Services: Shell Rock is served primarily by the Waverly Health Center, which is located approximately 6.4 miles from town. There are three other hospitals available in a 21-mile radius of the City of Shell Rock. Of these hospitals, one is in Cedar Falls and two are in Waterloo. The City is served by the following health care services: Covenant Clinic, Shell Rock Clinic, Shell Rock Health Care Center, The Meadows, Waverly Municipal Hospital.

Law Enforcement: Police protection is provided by Butler County Law Enforcement, and the Iowa State Patrol.

Hazardous Materials: Shell Rock contracts with Northeast Iowa Response Group for response to hazardous material spills. The Northeast Iowa Response Group is a division of Waterloo Fire Rescue as is the Hazardous Materials Regional Training Center. The Training Center provides

[8] http://homelandsecurity.iowa.gov/about_HSEMD/alert_iowa.html

training to fire departments and companies from around the state and country. Not only is this a training center it also serves as a hazardous materials quick response unit to Black Hawk County, surrounding counties, and many municipalities in a ten county region. The Unit provides local fire departments with hazard materials emergency procedures thus reducing additional contamination. An evacuation plan is also in place in conjunction with the activities with the local department. Contact information for the facility is as follows: Hazardous Materials Regional Training Center, 1925 Newell Street, Waterloo, Iowa 50707, Phone: (319) 291-4275, Toll Free: (800) 291-4682, Fax: (319) 291-4285

The jurisdiction also partners the Northeast Iowa Response Group for assistance in responding to any methamphetamine labs located in the city limits. The Response Group assists the Police Departments in containment of the site and disposal of the hazardous chemicals.

Snow Removal / Public Works: The City of Shell Rock views proper snow and ice removal from roadways to be essential in mitigating negative effects of these events. Snow emergencies are announced on local radio station KWAY and local television station KWWL. Snow removal and ice prevention techniques are practiced by city and state employees on the corresponding local and state roadways within the city limits. The city currently employs two full time drivers for snow removal efforts. Equipment used for snow and ice removal includes: Two Dump Trucks with Snow Blades, and One Maintainer.

One driver is used for each piece of equipment. In the event that a driver cannot perform his or her duties, drivers are pulled from other city departments as necessary. Finally, the City also has a snow ordinance that is in effect during snow season. This ordinance serves to assist the City in its efforts to clear the city streets after a snow event.

Warning Systems: Shell Rock has one tornado siren to alert residents.

Future Mitigation Actions

While the existing mitigation activities discussed above detail the comprehensive efforts to mitigate hazards when possible and to respond to hazards in a timely and efficient manner, the Committee also recognized that there are many more mitigation activities and projects that would benefit community residents. Thus, the Committee developed a list of future hazard mitigation activities that, if accomplished, would serve to further reduce the risk of hazards to the community. The list may include a combination of projects the Committee feels the community should try to accomplish and mitigation efforts that are ongoing that the Committee view as vital to the continued well-being of the public.

Priority

The Committee analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE

feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental. See Table J12 for STAPLEE criteria.

The Committee was asked to discuss the STAPLEE elements (Table 51) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each period each of the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The city will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

One of the first steps the Committee took was to review the City's existing Hazard Mitigation Activities and provide an update on their status. Based on each activity's progress, City's chose to continue the activity or drop it from the plan update. Once the Committee identified and ranked the future hazard mitigation activities, the activities were then analyzed. In addition, the Committee identified a time line for each activity, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table J12 is the city's Implementation Strategy.

TABLE J12 : FUTURE HAZARD MITIGATION ACTIVITIES- SHELL ROCK						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** * - Denotes primary agency
Establish an Emergency Notification System and Conduct Drills	Animal/ Plant/ Crop Disease, Drought, Extreme Heat, Flash Flood, Grass/ Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Transportation Incident	Low	Mid-term	High	2,3	EMA*
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Extreme Heat, Flash Flood, Grass/ Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, Levee/ Dam Failure, Transportation Incident, Terrorism	Minimal	Mid-term	Medium	2,4	Fire Dept. Police Dept., EMA*
Develop and Maintain Continuity of Operations Plan (COOP)	All	Minimal	Mid-term	High	7	Mayor and City Council*
Develop and Maintain Command Procedures & Center	All	Minimal	Long-term	High	7	Mayor* and City Council
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc)	All	Moderate	Long-term	High	2,3	Mayor and City Council*, Fire Dept
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	All	Low	Long-term	High	2,3	City Council* and Mayor, Fire Departments
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Earthquake, Extreme Heat, Flash Flood, Grass/ Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Levee/ Dam Failure, Transportation Incident, Terrorism	Low	Mid-term	High	2,3,4,5	City Council* and Mayor

TABLE J12 : FUTURE HAZARD MITIGATION ACTIVITIES- SHELL ROCK						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** * - Denotes primary agency
Provide Off-Site Backup of Essential Data	Flash Flood, Grass/ Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Low	Mid-term	High	7	City Council* and Mayor
Purchase Natural Gas Generators for Critical Facilities & Shelters	Drought, Extreme Heat, Flash Flood, Grass/ Wild Fire, Human Disease, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Moderate	Mid-term	High	6,7	City Council* and Mayor, Public Works Dept.
Continue Agreement with NE Iowa Response Group	All	Minimal	Mid-term	Medium	7	City Council and Mayor*, EMA
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	Infrastructure Failure, Radiological Incident, Transportation Incident	Minimal	Long-Term	Low	5	City Council and Mayor, EMA*, Public Health
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Radiological Incident, Transportation Incident, Terrorism	Minimal	Mid-term	High	5,6	City Council and Mayor
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	All	Low	Mid-term	Medium	3,4	City Council and Mayor, EMA, Public Health*
Develop and Maintain an Emergency Response Plan	All	Low	Mid-term	High	2,3,4,5	City Council* and Mayor
Develop and Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, Etc.	Extreme Heat, Flash Flood, Grass/ Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Transportation Incident, Terrorism	Low	Long-term	Medium	5,6,7	City Council and Mayor*, EMA, Public Health

TABLE J12 : FUTURE HAZARD MITIGATION ACTIVITIES- SHELL ROCK						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** * - Denotes primary agency
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	Extreme Heat, Flash Flood, Grass/ Wild Fire, Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, HAZMAT Incident, Infrastructure Failure, Levee/ Dam Failure, Transportation Incident, Terrorism	Low	Mid-term	Medium	5	City Council and Mayor*
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	All	Minimal	Long-term	Medium	5	City Council* and Mayor, Public Works
Develop a Clean Up/Recovery Procedure / Plan	All	Minimal	Long-term	Medium	5	City Council* and Mayor, Public Works
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	All	Minimal	Long-term	High	2,3,4	City Council* and Mayor, Public Works
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	All	Moderate	Long-term	High	5	City Council and Mayor, EMA*
NOAA Weather Radio Awareness Program	River Flooding, Severe Winter Storm,, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm	Minimal	Short-term	Low	4	City Council and Mayor, EMA*
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	HAZMAT Incident, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	Minimal	Mid-term	Low	6	City Council* and Mayor
Ensure Tier II Reports are Completed and Reported per Applicable Laws	All	Minimal	Long-term	Medium	6,7	City Council and Mayor*
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Human Disease, River Flooding, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, Infrastructure Failure, Levee/ Dam Failure, Transportation Incident, Terrorism	Minimal	Long-term	Medium	5,6,7	City Council and Mayor*
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Infrastructure Failure, Terrorism	Minimal	Long-term	Medium	5,6,7	City Council* and Mayor
Conduct Annual Fire Inspections of Industries and Businesses	HAZMAT Incident, Infrastructure Failure, Radiological Incident, Transportation Incident, Terrorism	Minimal	Long-term	Medium	3,6	City Council and Mayor, Fire Department*

TABLE J12 : FUTURE HAZARD MITIGATION ACTIVITIES- SHELL ROCK						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** * - Denotes primary agency
Maintain Membership of National Flood Insurance Program	Infrastructure Failure, River Flooding, Flash Flood	Minimal	Mid-term	Medium	4,5	City Council* and Mayor
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	Infrastructure Failure, Transportation Incident	Minimal	Mid-term	Medium	5,6	City Council* and Mayor
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both	Infrastructure Failure, River Flooding, Flash Flood	Minimal	Long-term	Medium	5	City Council* and Mayor
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.)	Flash Flood, Infrastructure Failure	Minimal	Long-term	Medium	5	City Council and Mayor*
Maintain and Update Bioterrorism Response Plan	Animal/ Crop/ Plant Disease, Human Disease, Radiological Incident, Terrorism	Low	Long-term	Low	5,6,7	City Council* and Mayor
Identify and Improve Security at Critical Facilities	Infrastructure Failure, Terrorism	Minimal	Long-term	Medium	7	City Council* and Mayor
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure	Infrastructure Failure, Levee/ Dam Failure, Transportation Incident	Minimal	Long-term	Medium	5	City Council and Mayor, Public Works Dept.*
Place GPS Units in all Critical Service Vehicles	Flash Flood, Severe Winter Storm, Grass/ Wild Fire, Thunderstorm/ Lighting/ Hail, Tornado/ Windstorm, Transportation Incident, HAZMAT Incident, Infrastructure Failure, Terrorism	Minimal	Long-term	High	2,3,4	City Council* and Mayor, Fire Dept. EMS, Public Works*
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Severe Winter Storm, Thunderstorm/ Lighting/ Hail	Minimal	Long-term	Medium	5	City Council and Mayor, Public Works*, City Maintenance
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	Transportation Incident	Low	Long-term	Low	5	City Council and Mayor, Fire Dept.
Establish, Adopt, & Enforce Building Codes	Infrastructure Failure	Low	Long-term	Low	7	City Council* and Mayor
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size	All	Minimal	Mid-term	Medium	6,7	City Council* and Mayor
Encourage Installation of Surge Protector on Electrical Lines	Extreme Heat, Severe Winter Storm, Thunderstorm/ Lighting/ Hail, Infrastructure Failure	Minimal	Mid-term	Low	6,7	City Council* and Mayor
Establish a Drainage District	Flash Flood, River Flooding, Infrastructure Failure	Minimal	Mid-term	High	7	City Council* and Mayor

TABLE J12 : FUTURE HAZARD MITIGATION ACTIVITIES- SHELL ROCK						
Mitigation Action/Program/Project	**Associated Hazards**	**Estimated Cost**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** *** - Denotes primary agency**
Flood Proof Critical Facilities	River Flooding, Flash Flood, Infrastructure Failure	Minimal	Long-term	Low	5,6,7	City Council* and Mayor
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Infrastructure Failure	Low	Long-term	Medium	5,7	City Council* and Mayor
Maintain Mosquito Spraying Program	Animal/ Plant/ Crop Disease, Human Disease	Low	Long-term	Low	7	City Council and Mayor*
Develop a Water Rationing Plan	Drought, Extreme Heat,	Low	Short-term	Low	7	City Council* and Mayor
Maintain Roadside Vegetation Management Program	Landslide, Flash Flood	Low	Short-term	Low	7	City Council* and Mayor

Appendix K: Aplington-Parkersburg Community School District

District Profile

Location

The Aplington-Parkersburg Community School District (A-P) includes the communities of Aplington and Parkersburg, in southern Butler County. Both the City of Aplington and City of Parkersburg are participating members of this plan. Additional details on city wide hazards and programs, some which the School District utilizes, are located in their appendices, appendix B and I, respectively.

There are three educational facilities in the district. Table K1 displays the location, student, and staff population at each location.

Table K1: Aplington-Parkersburg School District Locations

Facility Name / Use	Street Address, City	Grade Levels	# Students	# FTE Staff
High School	610 N. Johnson Street, Parkersburg	9-12	228	22.1
Elementary School	602 Lincoln Street, Parkersburg	PreK-4	346	14.98
Elementary / Middle School	215 10th Street, Aplington	3-8	174	14.05

Source: IES / National Center for Education Statistics 2018-2019

History/Development Trends

Aplington-Parkersburg had a certified enrollment of 803 students, as January 2, 2019. This is slightly down from the 2015 certified enrollment of 788 students. The new A-P High School Building opened in August of 2009 and replaced the former high school building that was destroyed in an EF-5 tornado on May 25, 2008.

Transportation

The cities of Aplington and Parkersburg are connected by east/west Highway 57, approximately 5 miles apart. The district utilizes 11 buses and 6 vans to transport students. A-P has six regular bus routes, one special education bus route and two special education routes supported by a school van. A-P transported 448 students on these routes last year not counting the daily shuttle between Parkersburg and Aplington. The

district covers approximately 98,636 miles for regular bus routes, 6,414 miles for special education bus routes, 56,302 miles for special education van routes for a total of 161,352 miles on routes.

Community Services

Table K2 displays the primary utility providers for the school district:

Table K2: Aplington-Parkersburg School District Utility Provides

Community	Electric	Natural Gas	Telephone	Internet	Cable TV	Water	Sewer	Sanitation
Aplington	City of Aplington	MidAmerican Energy	Windstream	Iowa Communication Network	Mediacom	City of Aplington	City of Aplington	City Sanitary Services of Parkersburg
Parkersburg	MidAmerican Energy	MidAmerican Energy	Century Link	Iowa Communication Network	Mediacom	City of Parkersburg	City of Parkersburg	City Sanitary Services of Parkersburg

Demographics

The school district's student population is expected to remain steady in the coming years. Based off the 2018-2019 district certified enrollment of 823 students, the Iowa Department of Education projects a decline in the Aplington-Parkersburg School District enrollment to 775 students in the next five years.

Hazard Risk Assessment

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the committee evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The school's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the school. This analysis provides an all-hazard approach when evaluating the hazards of that affect the school, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas human caused or technological events tend to change over time with advancement in technology and methods of operation.

The Committee assessed the defined hazards relevant to potential impact on the school district. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Table K3 displays the school's hazard scores. The top three hazard events are: Tornado/Windstorm, Flash Flood, and Levee/Dam Failure.

TABLE K3: HAZARD RISK ASSESSMENT FOR APLINGTON-PARKERSBURG SCHOOL DISTRICT						
Hazard Rank	**Hazard**	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**Final Score**
1	Tornado/Windstorm	3	3	4	4	**3.25**
2	Flash Flood	3	3	3	3	**3**
3	Levee/Dam Failure	2	4	3	4	**2.95**
4	Severe Winter Storm	4	2	1	3	**2.85**
5	Terrorism	1	4	4	4	**2.65**
6	Thunderstorm/Lighting/Hail	4	1	2	1	**2.5**
7	Transportation Incident	2	2	4	2	**2.3**
8	River Flooding	1	4	1	3	**2.1**
9	Extreme Heat	3	1	1	2	**2**
10	HAZMAT Incident	1	2	4	3	**1.95**
11	Animal/Plant/Crop Disease	2	1	1	4	**1.75**
11	Drought	2	1	1	4	**1.75**
11	Sinkholes	1	1	4	4	**1.75**
11	Infrastructure Failure	1	1	4	4	**1.75**
15	Grass/Wild Fire	1	1	4	2	**1.55**
15	Radiological Incident	1	1	4	2	**1.55**
17	Earthquake	1	1	4	1	**1.45**
18	Expansive Soils	1	1	1	4	**1.3**
18	Human Disease	1	1	1	4	**1.3**
20	Landslide	1	1	1	2	**1.1**

Vulnerability – Identifying Assets

Critical Facilities

All the school's buildings and campus areas are all considered critical facilities because of their student population. In the event of a hazard that requires seeking shelter, the school facilities themselves are utilized for sheltering in place. In the instance of hazard that requires sheltering, students and staff seek shelter "in place" within the respective school buildings. The recently constructed high school in Parkersburg includes a tornado safe room which can accommodate up to 500 persons.

Social Asset Populations

The nature of a school's student population congregates large populations of "at-risk" individuals. Younger residents are often not aware of the proper actions to take in the event of a disaster. In addition, very young children can be more susceptible to disasters simply due to their age. As mentioned in District Profile, there are approximately 840 students and 110 staff in the district. The district actively takes steps to reduce the threat to their student population, as described below in the "Current Activities" section.

When school is in session, hundreds of people are in the various school buildings daily. This includes people from other communities attending various events throughout the year.

Estimating Property Loss

Valuations are an important component of hazard mitigation planning in so much as it provides measurable data that can be used to form some type of estimate as to the potential losses a community could face in the event of a disaster.

Aplington-Parkersburg's three school buildings and their contents are fully insured. The buildings themselves are valued at $30,000,000.

Mitigation Strategy

Hazard Mitigation Plan Goals

The A-P School District has adopted the following hazard mitigation plan goals. The district set as a priority the development of broad-based goals that would address a multitude of hazards that encompass a variety of mitigation activities across the entire district. By identifying these goals the Committee was able to develop district-wide mitigation action steps that with a particular objective in mind. The hazard mitigation plan goals for the district are:

1. Protect the health and welfare of the entire community by utilizing pre-disaster planning and constructing mitigation projects.
2. Mitigate or minimize the impact of natural, technological, and/or man-made disasters.
3. Increase the district's ability to respond to natural disasters and man-made hazards.
4. Re-assess and re-evaluate the plan and mitigation activities.
5. Mitigate the potential of terrorism within our buildings

Current Activities

The school's buildings in Parkersburg are provided emergency services by the local Parkersburg fire department, police department, and EMS service. The nearest medical center is Grundy Center Hospital, located approximately 15 miles from Parkersburg.

The school in Aplington is provided emergency services by the local Aplington fire department, police department, and EMS service. The nearest medical center is Grundy Center Hospital, located approximately 20 miles from Aplington.

Located in the City limits, schools in both towns are within the services areas of the respective city's early warning siren system.

Aplington-Parkersburg CSD strives to create a friendly and safe learning environment for our students. Student safety measures have been in place for years, are reviewed and updated yearly and efforts are made to explore new options to further the environment and safety of our school. This plan includes communication and staff and student training.

A current focus area involves student safety with respect to outside intruders. A-P Staff has created a detailed policy to follow in the event of intruders, bomb threats or other concerns within the community. The policy was developed and is practiced yearly with the support of local police. This includes lockdown procedures and how staff and students should react to various intruders within our building.

The district periodically reviews our evacuation plans and shelter plans and completes documented practices 4 times a year within all buildings. With our experience in looking at the aftermath of actual tornado damage, the district changed a number of "safe areas"

Within the existing buildings, there is a safe area that can accommodate the entire student body as well as spectators at all school activities (inside and outside). This safe area is a concrete reinforced room located below ground, that functions primarily as a wrestling room.

Another area of focus is risk management reviews completed with our insurance company. An outside evaluator tours our buildings and looks to identify safety concerns. Everything from fire hazards, playgrounds, storage areas and cyber threats are examined. The resulting recommendations are evaluated by the district and corrected as needed and as possible.

The school district reports that Butler County is very helpful in providing information through trainings and even weather alerts.

Future Mitigation Actions

Priority

School representative analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, ***A****dministrative,* ***P****olitical,* ***L****egal,* ***E****conomic, and* ***E****nvironmental.*

The Committee was asked to discuss the STAPLEE elements (Table 51) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each period each of the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The School District will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

The Committee generated a list of action steps to be implemented to mitigate the hazards discussed. In addition, the Committee identified a time line for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table K4, below, the school district's Implementation Strategy.

TABLE K4: FUTURE HAZARD MITIGATION ACTIVITIES – APLINGTON-PARKERSBURG COMMUNITY SCHOOL DISTRICT						
Priority	**Mitigation Action/Program/Project**	**Associated Hazard(s)**	**Primary Agency Responsible for Implementation**	**Associated Goal(s)**	**Timeline**	**Estimated Cost ($)**
High	Maintain procedures for severe weather events	Tornado/ Windstorm	School Board	1,2,3	Active/routine	Minimal
High	Maintain and evaluate existing terrorism mitigation procedures	Terrorism	School Board	5	Active/routine	Minimal
Medium	Systematically Review and Update, as needed, Hazard Reponses Policies and Procedures	All	School Board	4	Active/routine	Minimal
Low	Research, secure grant dollars for, and build shelters and safe rooms	Tornado/ Windstorm	School Board	1,2,3	Long-term	Moderate

Appendix L: Dike-New Hartford Community School District

District Profile

Location

The Dike-New Hartford Community School District (D-NH CSD) provides education to approximately 870 students. The district includes the communities of Dike and New Hartford and spans across both Butler and Grundy County (directly south of Butler County). The district has educational facilities in both Dike and New Hartford

The City of New Hartford, also member of this plan, is located in the southeast corner of Butler County with a 2010 Census population of 516 residents. New Hartford is home to a portion of the district's lower elementary along with the Junior High School. The elementary and Junior High are located at 508 Beaver St. The building houses approximately 170 elementary students in grades levels PK, K, 1, 2, and 5 and 210 junior high students in grades 6, 7, and 8. There are approximately 50 staff members who include teachers, associates, cooks, custodians and administrative personnel.

The high school, district office, and an elementary are located in Dike at 330 Main St. Dike, with a 2010 Census population of 1,209, lies in northeast Grundy County, which is directly to the south of Butler County. Table L1 depicts the enrollment and staffing by grade level for 2017-2018. D-NH CSD had a certified enrollment of 872 students, as 2019-2020. High School enrollment is 280 with 27 teachers. Overall enrollment is characterized as stable, after a seven-year trend which gained 100 students in the district.

Table L1: D-NH CSD School District Locations

Facility Name / Use	Street Address, City	Grade Levels	# Students	# Teachers
DNH High School	330 Main Street, Dike IA	9-12	994	80
DNH Junior High	508 Beaver, New Hartford	6, 7, 8		
New Hartford Elementary School	508 Beaver, New Hartford	PreK-5		

Source: IES National Center for Education Statistics 2017-2018; DNH Community School District

History/Development Trends

The communities of Dike and New Hartford elected to consolidate their schools in the early 1990's and it has proven to be a solid partnership

over the years. The communities have also had their fair share of weather-related hazards over the years with severe storms, flooding and tornados. Because of this they have worked extensively with State and Federal agencies to make improvements with watersheds, berms, and roadways. This work has shown dramatic improvements in limiting the destruction created by severe weather, but there are still things that need to be done. There have been new housing developments in both communities, and with this, the school district has seen increased enrollment over recent years. The school district has added on to each building to help accommodate for the growth and there are other plans being developed for future expansion. Plans are being developed for building expansions on both campuses, including safe rooms / tornado safe areas.

Natural Environment

The City of New Hartford is located adjacent to Beaver Creek. A majority of the city's development, including the school building, are south of the creek. The topography of the city can best be described as flat, with little or no natural relief present in the community. There are, however, some areas that have been elevated in order to provide flood protection. Along the south side of the community, the railroad has elevated the track location in order to maintain a level transportation route.

The community is located on the right descending (south) bank of Beaver Creek. The recently constructed berm protects a majority of the city from river flooding. Elevations in the city limit range from approximately 890 to 900 feet above the mean sea level.

Community Services

The New Hartford district utility providers are listed in Table L2.

Table L2: Dike-New Hartford School District Utility Providers

Electric	Natural Gas	Telephone	Internet	Water	Sewer	Sanitation
MidAmerican Energy	MidAmerican Energy	Century Link	Iowa Communications Network	City of New Hartford	City of New Hartford	Community Sanitation Services of Parkersburg

Hazard Risk Assessment

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the committee evaluated the

risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The school's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the school. This analysis provides an all-hazard approach when evaluating the hazards of that affect the school, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas human caused or technological events tend to change over time with advancement in technology and methods of operation.

The Committee assessed the defined hazards relevant to potential impact on the school district. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Table L3 displays the school districts hazard risk assessment. The top three hazards identified are: Tornado / Windstorm, River Flooding, and Flash Flood.

TABLE L3: HAZARD RISK ASSESSMENT FOR DIKE-NEW HARTFORD SCHOOL DISTRICT						
Hazard Rank	**Hazard**	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**Final Score**
1	Tornado/Windstorm	3	3	4	4	**3.25**
2	River Flooding	3	4	1	4	**3.1**
3	Flash Flood	3	3	3	3	**3**
4	Dam/ Levee Failure	2	4	3	4	**2.95**
5	Severe Winter Storm	4	2	1	3	**2.85**
6	Terrorism	1	4	4	4	**2.65**
7	Thunderstorm/Lighting/Hail	4	1	2	1	**2.5**
8	Transportation Incident	2	2	4	3	**2.4**
9	Extreme Heat	3	1	1	2	**2**
10	HAZMAT Incident	1	2	4	3	**1.95**
11	Animal/Plant/Crop Disease	2	1	1	4	**1.75**
11	Drought	2	1	1	4	**1.75**
11	Infrastructure Failure	1	1	4	4	**1.75**
11	Sinkholes	1	1	4	4	**1.75**
15	Grass/Wild Fire	1	1	4	2	**1.55**
15	Radiological Incident	1	1	4	2	**1.55**
17	Earthquake	1	1	4	1	**1.45**
18	Expansive Soils	1	1	1	4	**1.3**
18	Human Disease	1	1	1	4	**1.3**
20	Landslide	1	1	1	2	**1.1**

Vulnerability – Identifying Assets & Property Losses

Critical Facilities

All the school's buildings and campus areas are considered critical facilities because of their student population. In the event of a hazard that requires seeking shelter, the school facilities themselves are utilized for sheltering in place. In the event the school must be evacuated due to a hazard or threat relocation points have been established near each school so that teachers and students know where to gather in the case of an evacuation.

The school's New Hartford location is located within the 100-year floodplain. The City of New Hartford has completed construction of a berm, which will protect much of the city beyond a 100-year flood.

Social Asset Populations

The nature of a school's student population creates a large population of "at-risk" individuals. Younger residents are often not aware of the proper actions to take in the event of a disaster. In addition, very young children can be more susceptible to disasters simply due to their age. As mentioned in District Profile, there are approximately 840 students and 110 staff in the district. The district actively takes steps to reduce the threat to their student population, as described below in the "Current Activities" section. When school is in session, hundreds of people are in the various school buildings daily. This includes people from other communities attending various events throughout the year.

Mitigation Strategy

Hazard Mitigation Plan Goals

The DNH School District has developed the following hazard mitigation plan goals. The district set as a priority the development of broad-based goals that would address a multitude of hazards that encompass a variety of mitigation activities across the entire district. By identifying these goals the Committee was able to develop district-wide mitigation action steps that with a particular objective in mind. The hazard mitigation plan goals for the district are:

1. Maintain emergency services during hazard events, or if this is not possible, return to pre-disaster service levels as soon as possible.
2. Protect the health and welfare of students and staff by utilizing pre-disaster planning and constructing mitigation projects.
3. Mitigate or minimize the impact of natural, technological, and/or man-made disasters.
4. Minimize the occurrence of injuries and loss of life due to hazards.
5. Minimize or eliminate damages that may occur as a result of hazards.
6. Return to similar or improved pre-event conditions as quickly as possible following a disaster event.

Current Activities

The school district already takes the following mitigation activities:

- The district has reviewed current emergency procedure plans with local city and county agencies
- A flip chart of Crisis Procedures is provided to all staff members and copies of these charts are kept in each classroom
- The district is in the process of planning for, and adding electronic security to limit access to each building.
- The School District adopted and was amended into the Grundy County Multi-Jurisdictional Hazard Mitigation Plan on October 21, 2013. This covered the facilities in Dike.
- The District is in the process of seeking a grant to construct a safe room in the Elementary/High School located in Dike.
- Fire and tornado drills are conducted as required by State guidelines.
- Staff development is being expanded to include more safety procedures.

Future Mitigation Actions

School representative analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table 51) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity

Timeline

The Committee identified the time period each period each of the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The School District will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

The estimated cost(s) for each mitigation action, program, or project is either: Minimal, Low, Moderate, or High depending upon various factors.

Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

The Committee generated a list of action steps to be implemented to mitigate the hazards discussed. In addition, the Committee identified a time line for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Table L4 is the school district's Implementation Strategy.

TABLE L4: FUTURE MITIGATION ACTIVITIES - DIKE-NEW HARTFORD SCHOOL DISTRICT						
Mitigation Action/Program/Project	**Associated Hazard(s)**	**Estimated Cost ($)**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation** * - Denotes primary agency
Educate the Student Population/Public through: continued cooperation with local service organizations (American Red Cross, County EMA, etc) to educate residents on how to prepare for and respond to a various hazard.	ALL	Min	Active	High	All	School* and Local Fire/Police
Identify Locations (all school facilities, shelter locations) where it would be beneficial to have Backup Power Generation or maintain backup power generation.	Tornadoes/Windstorms, Severe Winter Storms, Thunderstorm/ Lightning/Hail	Min	Short-Term	High	2	School* and City
Maintain and Update as Needed, 28E Agreements with Surrounding Entities.	ALL	Min	Active	High	2	School* and City
Continue Participation in the National Flood Insurance Program (NFIP).	River Flood, Flash Flood	Min	Active	High	6	School* and City
Systematically Review and Update, as needed, Hazard Reponses Policies and Procedures.	ALL	Min	Active	High	1	School*
Identify and Evaluate Critical Facilities for Accessibility, Vulnerability, and Risk .	Terrorism	Min	Short-Term	High	1	School* and City
Continue to Cooperate with Local Medical Facilities and Health Department to increase likelihood of detection and proper response to outbreaks.	Human Disease	Min	Active	High	1, 2	School* and City
Place Air Conditioning in Schools.	Extreme Heat	Low	Mid-Term	Medium	2	School*
Develop and Maintain Tree-Trimming Program in Order to Reduce the Chances of Falling Branches on Infrastructure and Property.	Thunderstorm / Lighting / Hail	Low	Active	Medium	3	School* and City
Develop and Maintain a List of Interpreters in order to Enhance Communication Barriers within the community .	Communication Failure	Min	Active	Low	2	School* and City
Restrict Water Usage, as necessary, to Maintain Water Supply	Drought	Min	Active	High	1, 2	School* and City
Construct new or retrofit current facilities to include tornado safe rooms .	Tornado/Windstorm	High	Mid-Term	Medium	4	School*
Maintain and evaluate existing terrorism mitigation procedures.	Terrorism	Min	Active	High	3	School*, City, and Police

Appendix M: Waverly-Shell Rock Community Schools

District Profile

Location

Waverly-Shell Rock Community Schools (W-SR) provides education to approximately 2,268 students. The district includes the communities of Waverly and Shell Rock. The district stretches over both Butler and Bremer County (directly to the east). Six schools make up the district, including four elementary schools, a middle school and one high school. There is also a District office building in Waverly. A majority of the school district's facilities are in Waverly, which is in western Bremer County. Shell Rock, located in eastern Butler County, has an elementary school. A list of the school's educational facilities is shown in Table M1.

TABLE M1: Waverly – Shell Rock Community School Locations

Facility Name / Use	Street Address, City	Grade Level	# Staff	# Students
Margaretta Carey Elementary	220 9th Ave SW, Waverly	K-4	34	237
Southeast Elementary	809 4th St., Waverly	K-4	23	139
West Cedar Elementary	221 15th NW, Waverly	K-4	31	220
Shell Rock Elementary	214 N Cherry St, Shell Rock	K-4	24	181
Middle School	501 Heritage Way, Waverly	5-8	90.75	660
Senior High School	1405 4th St SW, Waverly	9-12	85	703

Source: Community

History/Development Trends

The Waverly-Shell Rock school district came to be in the early 1960s with the merger of Waverly and Shell Rock. Although the district is not at historical highs with regards to enrollment, the certified count is up by 135 students over the last three years. This is most attributable to the fact that both Waverly and Shell Rock are growing communities. Each of the elementary buildings and the high school are all at least 50 years old. The district did construct a new 5th-8th grade middle school following a flood event in 2008 that impacted two schools. Students moved into that facility in 2010. The most recent construction project was an addition to the high school that provides new office space, four classrooms, and a safe room with a capacity for over 1000 individuals. That space was just occupied in the fall of 2014. Given recent growth it may be necessary to expand further, particularly with our elementary buildings. None currently have safe rooms within them, so new construction will likely take that into effect.

Recently, the City of Waverly and the Waverly-Shell Rock Community Schools participated in the planning process to integrate the city's single-jurisdiction hazard mitigation plan into the Bremer County Multi-Jurisdiction Hazard Mitigation Plan. The school adopted the Bremer County MJ-HMP, with the city and school district's amendments, on July 14, 2014. The Bremer MJ-HMP addresses the portion of the district within Bremer County, which includes all the school locations except for Shell Rock Elementary.

Natural Environment

The City of Shell Rock's general topography indicates the broad flat areas of flood plain to the northwest and southeast. The existing community has been primarily developed on higher areas adjacent to the Shell Rock River.

According to the Butler County Soil Survey conducted in 1982 by the United State Department of Agriculture Soil Conservation Service, the soil in Shell Rock is "Loamy alluvial land, channeled … nearly level and gently sloping, excessively drained to poorly drained loamy soils formed in loamy alluvial sediments; on bottom lands and terraces". Drainage can be a problem if there is no suitable outlet for the waters. In addition, due to their location in and near the Shell Rock River floodplains, some of the soils in Shell Rock may be subject to flooding.

Transportation

W-SR has 17 bus routes, transporting approximately 850 students a day approximately 1,200 miles. Routes originate from both Waverly and Shell Rock. Those going out of Shell Rock return to that building to drop off attendees. It is also a place where rural Shell Rock students who attend school in Waverly (primarily students in grades 5-12) will be dropped off to catch a shuttle to Waverly. Unless special circumstances exist, prek-4 students in the rural Shell Rock area will attend the Shell Rock School. The district also operates a preschool special education program in Shell Rock. Students from throughout the district may attend, and for those students transportation to the school is provided, resulting in a few students being transported from Waverly to Shell Rock each morning.

The City of Shell Rock is located five miles west of Waverly and is approximately 22 miles northwest of Waterloo, the largest City in the region. Shell Rock is connected to Waverly and U.S. Highway 218 via State Highway 3, which runs along the northern edge of the city.

Community Services

The primary Shell Rock Elementary utility providers are listed in Table M2.

TABLE M2: Shell Rock Elementary Utility Providers

Electric	Natural Gas	Telephone	Internet	Water	Sewer	Sanitation
MidAmerican Energy	MidAmerican Energy	Butler-Bremer Communications	Butler-Bremer Communications	City of Shell Rock	City of Shell Rock	City of Shell Rock

Demographics

The school district's student population is expected to increase in the coming years. Based off the 2018-2019 district certified enrollment of 2,118 students, the Iowa Department of Education projects Waverly-Shell Rock Community Schools student population will increase to 2,321 in the next five years.

Hazard Risk Assessment

Hazard Analysis

Section 3 identified and profiled the hazards for the entire planning area. However, each community analyzed their own vulnerability to those hazards applicable to their jurisdiction. Using the methodology outlined in Section 3 (Vulnerability Assessment), the committee evaluated the risk associated with a specific hazard, defined by probability and frequency of occurrence, magnitude, severity, exposures, and consequences. The school's vulnerability assessment provides in-depth knowledge of the hazards and vulnerabilities that affect the school. This analysis provides an all-hazard approach when evaluating the hazards of that affect the school, and the associated risks and impacts each hazard presents.

As mentioned previously in Section 3, the vulnerability assessment requires a five-year review with periodic updates, as needed. Potential future hazards and impacts may result from changing technology, new critical facilities, infrastructures, and development patterns, as well as demographic and socioeconomic changes that occur within or outside the area.

Disaster frequency and its effects or severity are important as a basis for planning emergency response and mitigation. Natural hazards tend to reoccur on a predictable seasonal basis, whereas human caused or technological events tend to change over time with advancement in technology and methods of operation.

The Committee assessed the defined hazards relevant to potential impact on the school district. Using the scoring criteria previously defined (Tables 19-22) the city assessed each of the identified hazards based on probability, magnitude/severity, warning time, and duration. The scores for each of the factors were weighted using the formula below to develop the final hazard assessment score.

(Probability x.45) + (Magnitude/Severity x .30) + (Warning Time x .15) + (Duration x .10) = Final Hazard Assessment Score

Table M3 displays the school's hazard analysis. The top two hazards identified are: River Flooding and Severe Winter Storm.

TABLE M3: HAZARD RISK ASSESSMENT FOR WAVERLY-SHELL ROCK COMMUNITY SCHOOLS						
Hazard Rank	**Hazard**	**Probability**	**Magnitude/ Severity**	**Warning Time**	**Duration**	**Final Score**
1	River Flooding	4	3	2	3	**3.3**
1	Severe Winter Storm	4	3	2	3	**3.3**
3	Tornado/Windstorm	3	3	4	1	**2.95**
3	Thunderstorm/Lighting/Hail	4	2	4	1	**3.1**
5	Extreme Heat	4	1	1	3	**2.55**
6	Infrastructure Failure	2	3	4	1	**2.5**
7	HAZMAT Incident	2	2	4	2	**2.3**
8	Flash Flood	3	1	3	1	**2.2**
8	Drought	3	1	1	4	**2.2**
10	Terrorism	1	3	4	1	**2.15**
11	Dam/ Levee Failure	1	3	4	1	**2.05**
11	Earthquake	1	3	4	1	**2.05**
13	Expansive Soils	3	1	1	1	**1.9**
14	Grass/Wild Fire	1	3	2	2	**1.85**
15	Transportation Incident	1	2	4	1	**1.75**
15	Sinkholes	1	2	4	1	**1.75**
15	Radiological Incident	1	2	4	1	**1.75**
15	Landslide	1	2	4	1	**1.75**
19	Animal/Plant/Crop Disease	2	1	1	3	**1.65**
20	Human Disease	1	2	2	2	**1.55**

Vulnerability – Identifying Assets & Property Loss

Critical Facilities

All the school's buildings and campus areas are considered critical facilities because of their student population. In the event of a hazard that requires seeking shelter, the school facilities themselves are utilized for sheltering in place. In the event the school must be evacuated due to a hazard or threat relocation points have been established near each school so that teachers and students know where to gather in the case of an evacuation.

Social Asset Populations

The nature of a school congregates large populations of children under the age of 18. Younger residents are often not aware of the proper actions to take in the event of a disaster. In addition, very young children can be more susceptible to disasters simply due to their age. As mentioned in District Profile, there are approximately 2134 students and 182 licensed staff and administrators, as well as approximately 100 classified staff in the district. There are 181 students and 24 staff members in the Shell Rock Elementary. The district actively takes steps to reduce the threat to their student population, as described below in the "Current Activities" section.

When school is in session, hundreds of people are in the various school buildings daily. This includes people from other communities attending various events throughout the year.

Mitigation Strategy

Hazard Mitigation Plan Goals

The school district has developed of broad-based district wide goals that would address a multitude of hazards and encompass a variety of mitigation activities. By identifying these goals the school was able to develop mitigation action steps that with a particular objective in mind. The hazard mitigation plan goals, which apply to the entire district, are as follows.

1. Reduce the chance of and impact of flooding in the community.
2. Minimize the occurrence of injuries and loss of life due to hazards.
3. Minimize or eliminate damages that may occur as a result of hazards.
4. Increase the district's ability to respond to natural disasters and man-made hazards.
5. Return to the community to similar or improved pre-event conditions as quickly as possible following a disaster event.
6. Maintain participation in the Butler County Multi-Jurisdictional Plan.
7. Re-assess and re-evaluate the plan and mitigation activities.

Current Activities

Prevention, Property Protection, Public Education and Awareness Mitigation Actions

As stated earlier, the school district is member of the Bremer County Multi-Jurisdictional Hazard Mitigation Plan. Following the City of Waverly's adoption of the Bremer County plan, the School District approved a resolution adopting the plan on July 14, 2014.

The District has been very proactive in recent years in their hazard mitigation activities. After the record floods of 2008, the Waverly-Shell Rock School District passed a referendum and received FEMA public assistance funds to construct a new elementary/middle school out of the floodplain in Waverly. In doing so, the School District has eliminated the threat of river flooding as there are no remaining facilities existing in the floodplain.

There are also two safe rooms completed in Waverly. The first was built in 2011 in the middle school auditorium and has a capacity of approximately 850 persons. The second has a capacity of approximately 1,000 persons and serves the high school. There still remains a need for safe rooms at the School District's elementary school facilities.

The Waverly-Shell Rock School District maintains its own procedures for conducting safety drills during school hours. The district conducts fire and tornado drills for students and staff twice each semester. In addition, we have had ALICE training for our staff and talked through potential scenarios with students. Relocation points have been established near each of our schools so that teachers and students know where to gather in case of an evacuation. The district maintains a communication plan for both internal and external communications should it become necessary to get word out to inform stakeholders. The district maintains a close relationship with both the local police departments and county sheriff's offices.

Emergency Services

Shell Rock Elementary primary emergency services are provided by the volunteer Shell Rock Fire Department and Shell Rock Ambulance Service. The City of Shell Rock has one full time police officer and contracts for additional assistance from the Butler County Sheriff's office.

Shell Rock Clinic, of Waverly Health Center is located in the City and provides family health care services. The closest hospital, with 24- hour emergency room service, is the Waverly Health Center, approximately 6 miles east of Shell Rock in Waverly.

Future Mitigation Actions

Priority

School representative analyzed the potential mitigation activities. This analysis included a discussion of the potential benefits of implementing the activity, some hurdles that the community may face in implementing the action step, and the drawbacks of implementation. The analysis utilized the STAPLEE feasibility criteria. The STAPLEE technique is a FEMA suggested method of evaluation. The STAPLEE approach assesses both positive and negative impacts on the following

aspects: **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental.

The Committee was asked to discuss the STAPLEE elements (Table 51) and determine each element's ranking (High -H, Medium -M, Low-L) for each identified future mitigation activity. Afterwards, the average priority for each migration activity was recorded as the overall priority ranking for that particular future mitigation activity.

Timeline

The Committee identified the time period each period each of the proposed mitigation activity will occur. Activities that occur regularly (either daily, weekly, monthly or annually) were identified as Active. If the action is to occur within the next 1-5 years it was identified as Short-Term, if the activity would take 5-10 years it was labeled as Mid-Term, and any activities that would take 10 or more years were identified as Long-Term.

Funding

Although in the long-term hazard mitigation actions will save money by avoiding the loss of lives or property damages, in the short-term each action will have an associated cost. The School District will rely heavily on local funding sources to fulfill most of the plan obligations; however, they will also seek funds from State and Federal agencies for both pre- and post-disaster mitigation activities.

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Funding Need	Estimate for Project or Program	Description
Minimal	$10,000 or less	Based on using current staff, time commitment, continuous of current duties, proposed action/program/ project, and funding sources.
Low	$10,001 - $99,999	Based on existing proposed treatment, time commitment, any further study that is needed and level of engineering, and project components (permits, acquisition, coordination, etc.).
Moderate	$100,000 - $299,999	Based on existing conditions, time commitment, proposed action/ program/project, any further study that is needed, and level of engineering, and project components (permits, acquisition, coordination, etc.), and funding sources.
High	$300,000 or higher	

Implementation Strategy

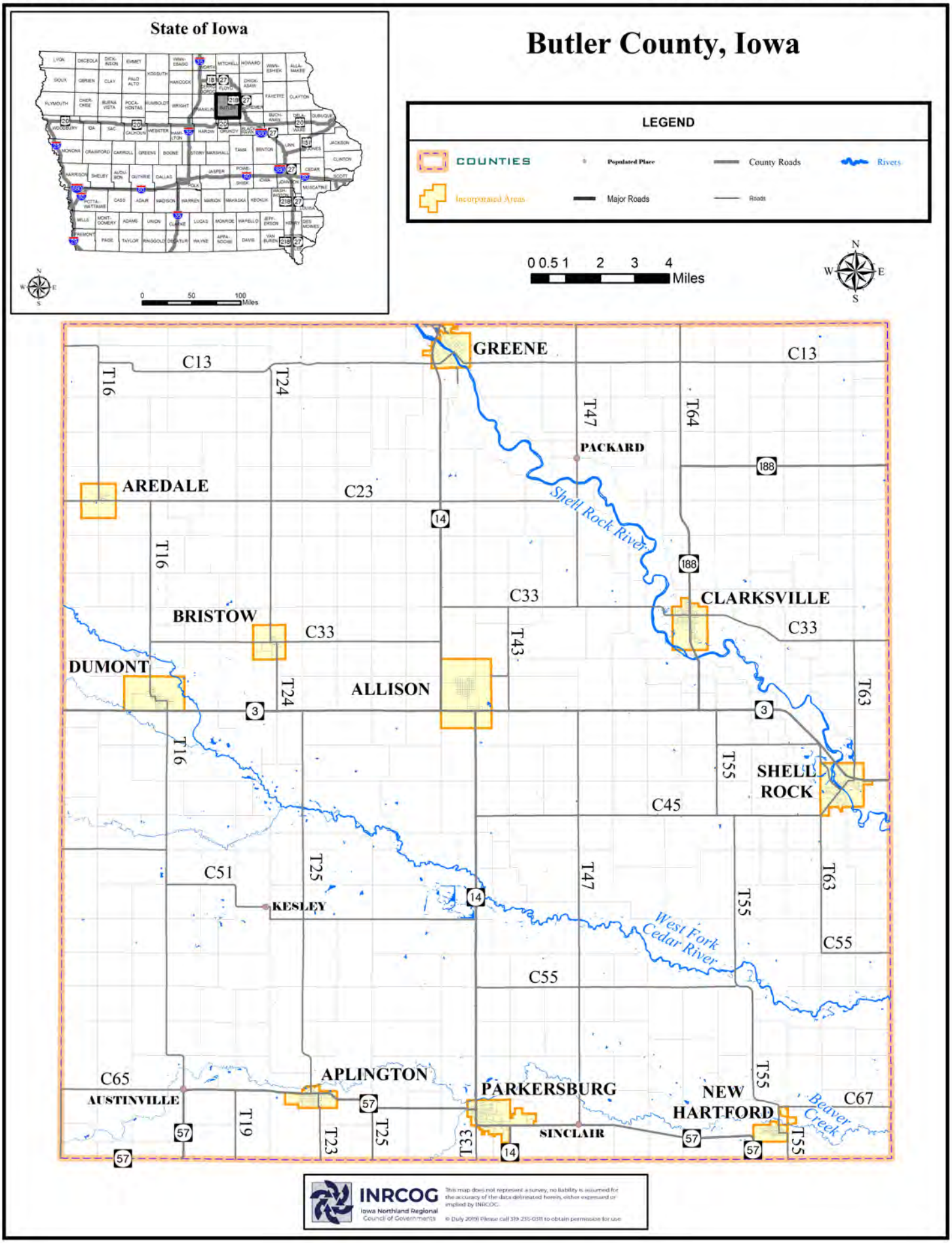
The Committee generated a list of action steps to be implemented to mitigate the hazards discussed. In addition, the Committee identified a time line for each activity, associated hazards, estimated cost, priority, identified the responsible party or parties for each activity, and finally related each activity to at least one of the Hazard Mitigation Plan Goals listed above. Waverly-Shell Rock Community Schools Future Mitigation Activities and Implementation Strategy is shown in Table M4.

Table M4: Future Hazard Mitigation Activities - Waverly-Shell Rock Community Schools						
Mitigation Action/Program/Project	**Associated Hazard**	**Estimated Cost (s)**	**Timeline**	**Priority**	**Associated Goal(s)**	**Agencies Responsible for Implementation * - Denotes primary agency**
Develop a "Tornado Safe Room" awareness program	Tornado/Windstorm	Minimal	Active	Low	2,3	School Board*, City Council
Research and secure grant dollars for shelter and safe room construction	Tornado/Windstorm	Minimal	Active	Medium	2,3,4	School Board*, City Council
Retrofit current facilities to include tornado safe rooms	Tornado/Windstorm	High	Active	Low	2,3,4	School Board*, City Council
Encourage the inclusion of tornado safe rooms in newly constructed public facilities	Tornado/Windstorm	Minimal	Active	High	2,3,4	School Board*, City Council
Evaluate current terrorism mitigation efforts	Terrorism	Minimal	Active	Low	7	School Board*, City Council
Construct storm shelters and tornado safe rooms	Tornado/Windstorm	Low to High	Active	High	2,3,4	School Board*
Maintain procedures for severe weather events	All	Minimal	Active	High	1,2,3,4,5	School Board*
Maintain and evaluate existing terrorism mitigation procedures	Terrorism	Minimal	Active	High	2,3,4,6,7	School Board*

ATTACHMENTS

ATTACHMENT 1:	Location of the County Map
ATTACHMENT 2:	Topographic Map of the County
ATTACHMENT 3a-3k:	County and City Flood Plain Maps
ATTACHMENT 4a-4k:	County and City Flood Scenario Maps
ATTACHMENT 5a:	Historic Tornado Map of the County
ATTACHMENT 5b-5w:	Tornado Scenario Maps
ATTACHMENT 6a-6y:	Butler County Critical Sites Map
ATTACHMENT 7a-7j:	City Critical Sites Maps
ATTACHMENT 8:	Plan Adoption Resolutions
ATTACHMENT 9:	Previous Hazard Mitigation Plan Info
ATTACHMENT 10:	Planning Committee & Public Involvement
ATTACHMENT 11:	Plan Evaluation Forms
ATTACHMENT 12:	Hazard Mitigation Plan Review Tool

ATTACHMENTS 1-7J


State of Iowa
0 50 100 Miles
Butler County, Iowa
LEGEND
COUNTIES
Populated Place
County Roads
Rivers
Incorporated Areas
Major Roads
Roads
0 0.5 1 2 3 4 Miles
GREENE
PACKARD
AREDALE
BRISTOW
DUMONT
ALLISON
CLARKSVILLE
SHELL ROCK
KESLEY
APLINGTON
PARKERSBURG
NEW HARTFORD
SINCLAIR
AUSTINVILLE
C13
C23
C33
C45
C51
C55
C65
C67
T16
T24
T47
T64
T43
T63
T55
T25
T19
T23
T133
Shell Rock River
West Fork Cedar River
Beaver Creek
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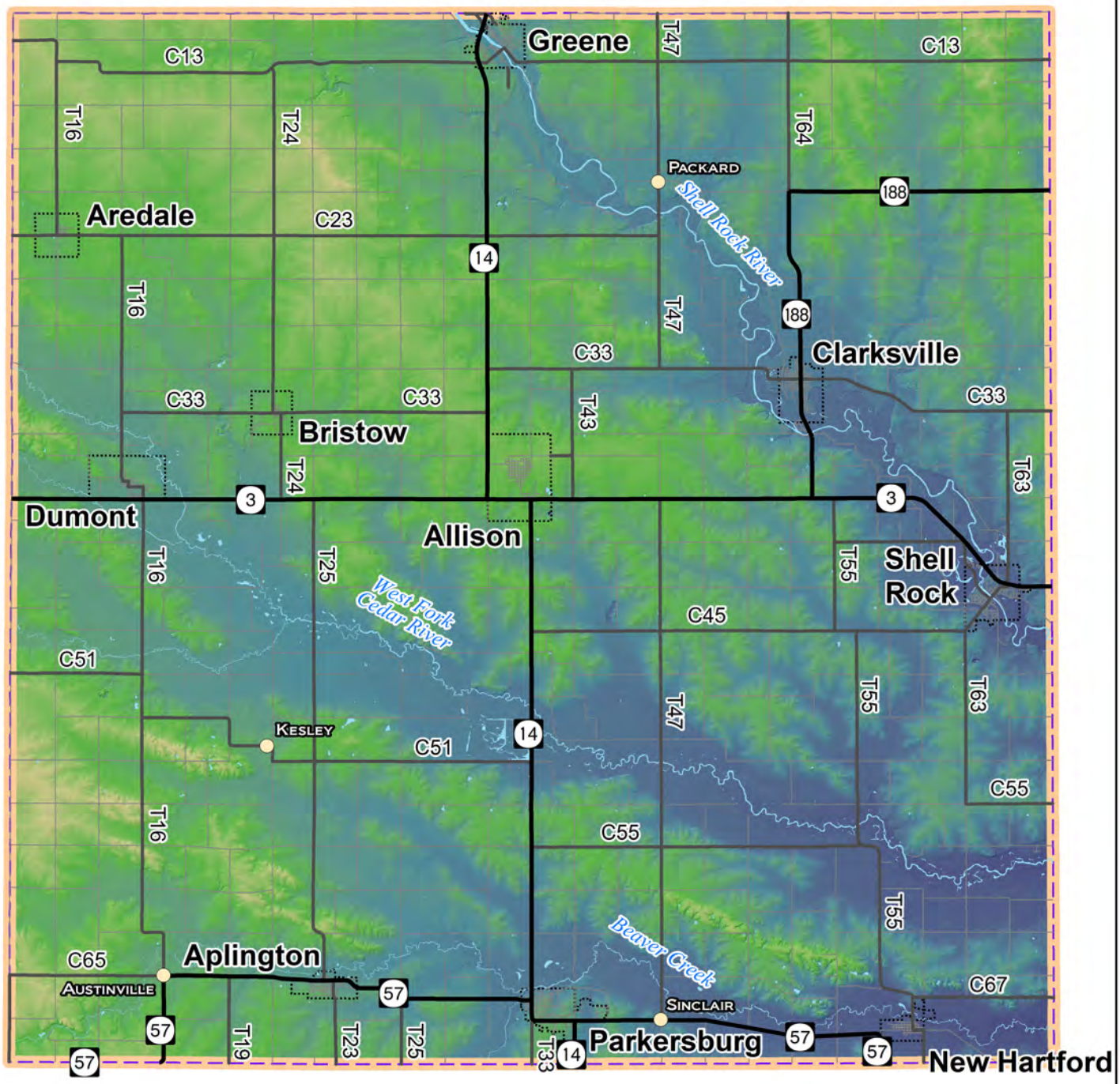
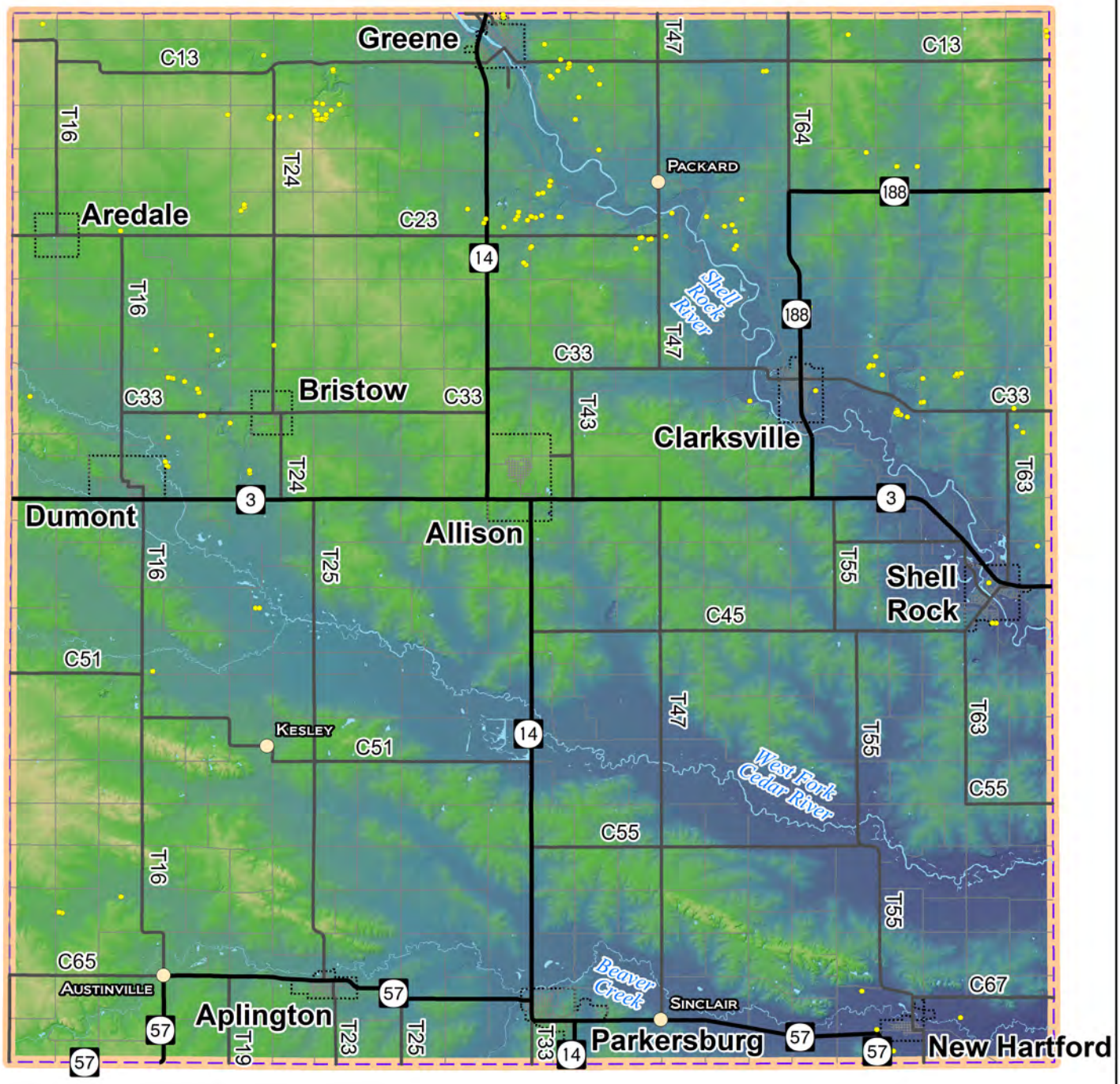
Butler County, Iowa
Topographic Map



Butler County, Iowa
Sinkhole Map



Sinkhole Data Source
Sinkhole Geographic Information Systems (GIS) data was obtained from the Iowa Department of Natural Resources in cooperation with the Iowa Geologic Survey. The date of publication for this data is: July 21, 2014 The title of the data is: Current and Historic Sinkhole and Depression locations in Iowa This edition was published on: December 14, 2017

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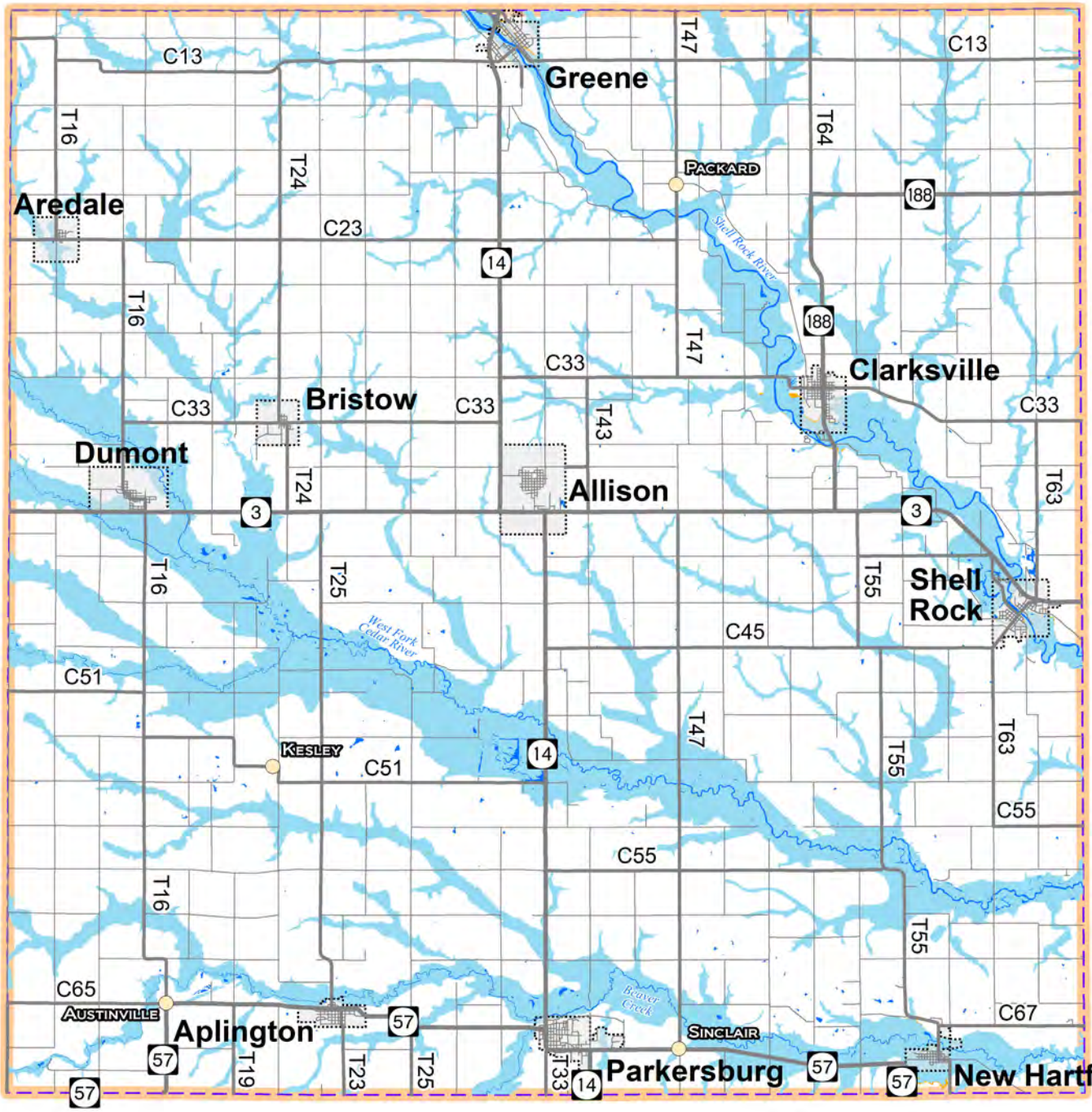
Sinkhole
Water
Incorporated Area

Elevation Feet
1155
1015
875

N W E S

0 1 2 4 Miles

Butler County, Iowa
Flood Plain Map



DISCLAIMER

This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Black Hawk County. The effective date is 9/16/2011.

For actual determination if a location is within the floodplain please contact your local floodplain administrator.

INRCOG Iowa Northland Regional Council of Governments

N W E S

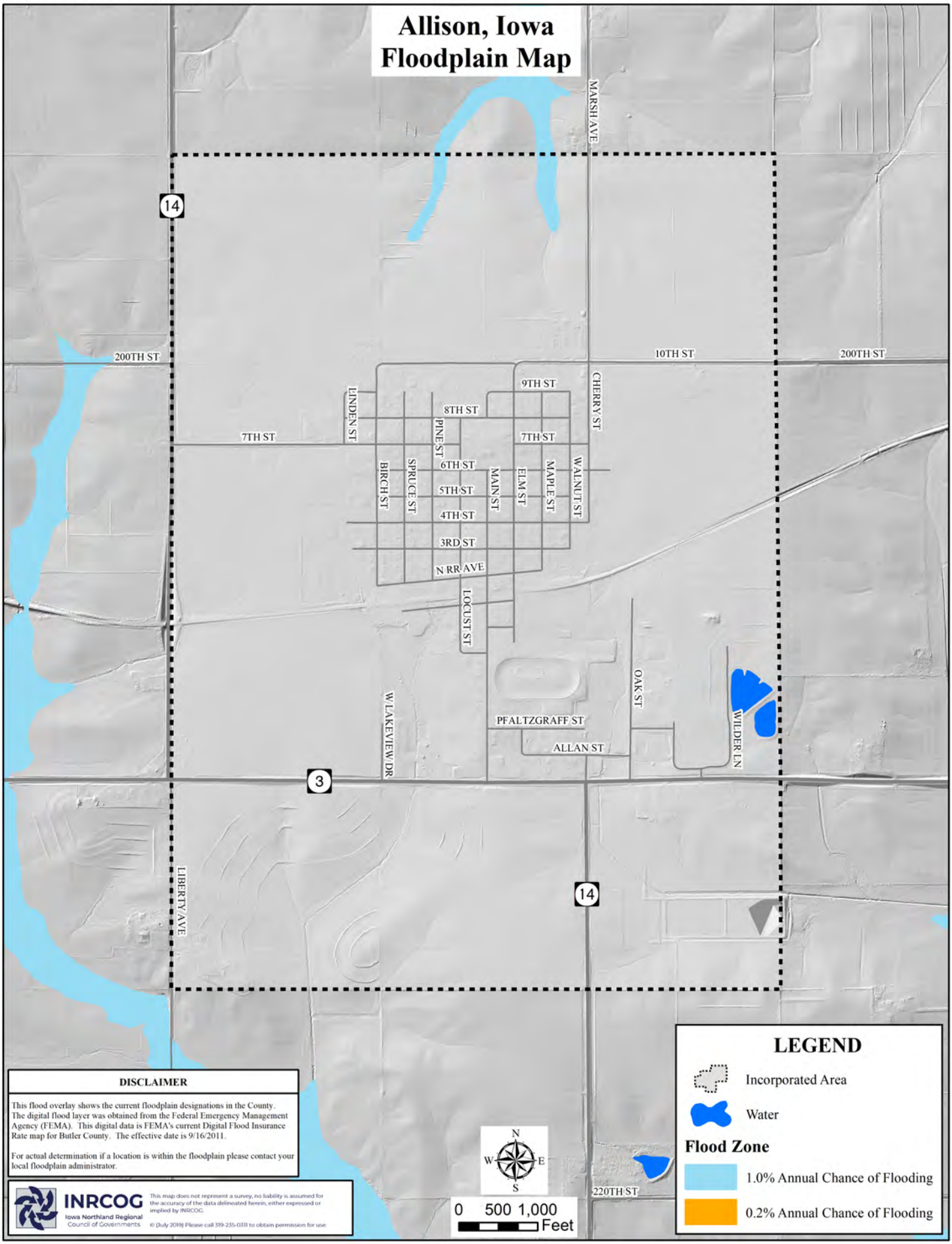
0 1 2 4 Miles

LEGEND

- Incorporated Area
- Water

Flood Zone

- 1.0% Annual Chance of Flooding
- 0.2% Annual Chance of Flooding


Allison, Iowa
Floodplain Map
MARSH AVE
14
200TH ST
10TH ST
200TH ST
9TH ST
CHERRY ST
LINDEN ST
8TH ST
PINE ST
7TH ST
7TH ST
BIRCH ST
SPRUCE ST
6TH ST
MAIN ST
ELM ST
MAPLE ST
WALNUT ST
5TH ST
4TH ST
3RD ST
N RR AVE
LOCUST ST
OAK ST
W LAKEVIEW DR
PFALTZGRAFF ST
ALLAN ST
WILDER LN
3
14
LIBERTY AVE
220TH ST
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Butler County. The effective date is 9/16/2011.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
INRCOG
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This map does not represent a survey, no liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.
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N
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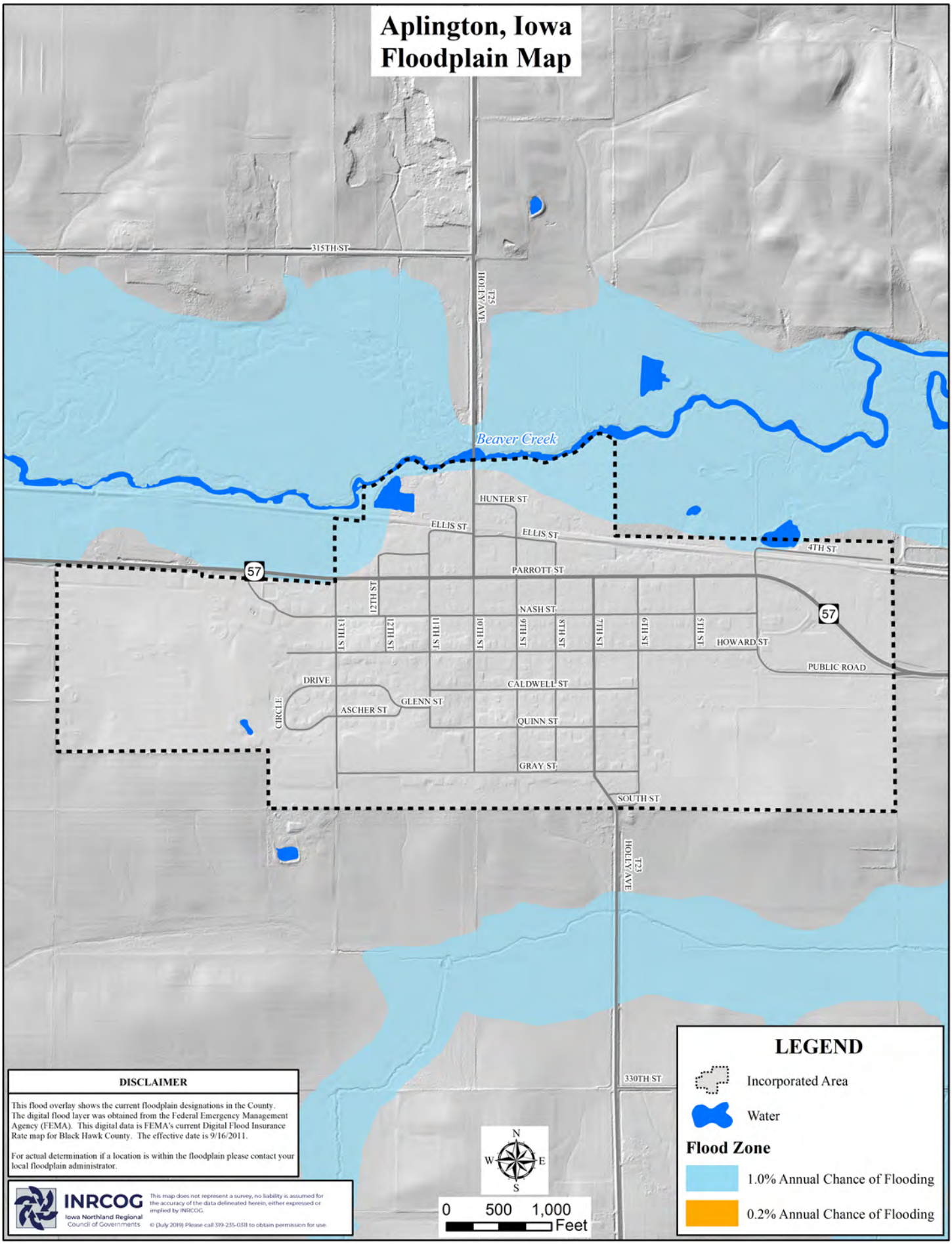
0 500 1,000
Feet
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Aplington, Iowa
Floodplain Map
315TH ST
T35
HOLLY AVE
Beaver Creek
HUNTER ST
ELLIS ST
ELLIS ST
4TH ST
57
PARROTT ST
12TH ST
NASH ST
57
13TH ST
12TH ST
11TH ST
10TH ST
9TH ST
8TH ST
7TH ST
6TH ST
5TH ST
HOWARD ST
PUBLIC ROAD
DRIVE
CALDWELL ST
CIRCLE
GLENN ST
ASCHER ST
QUINN ST
GRAY ST
SOUTH ST
HOLLY AVE
T25
330TH ST
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Black Hawk County. The effective date is 9/16/2011.
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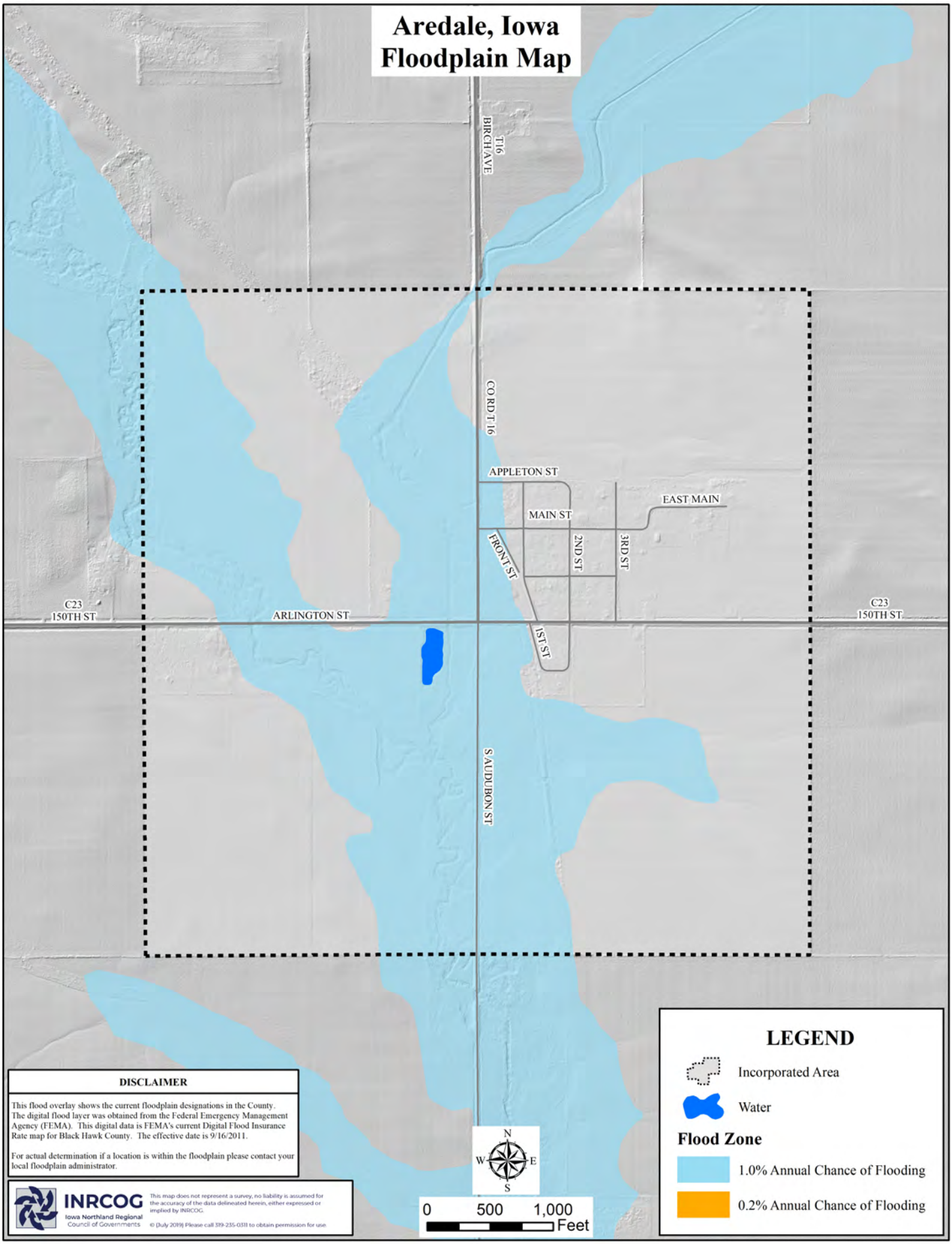
N
W
E
S
0 500 1,000 Feet
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Aredale, Iowa
Floodplain Map
BIRCH AVE
T16
CO RD T 16
APPLETON ST
EAST MAIN
MAIN ST
FRONT ST
2ND ST
3RD ST
C23
150TH ST
ARLINGTON ST
1ST ST
S AUDUBON ST
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding
DISCLAIMER
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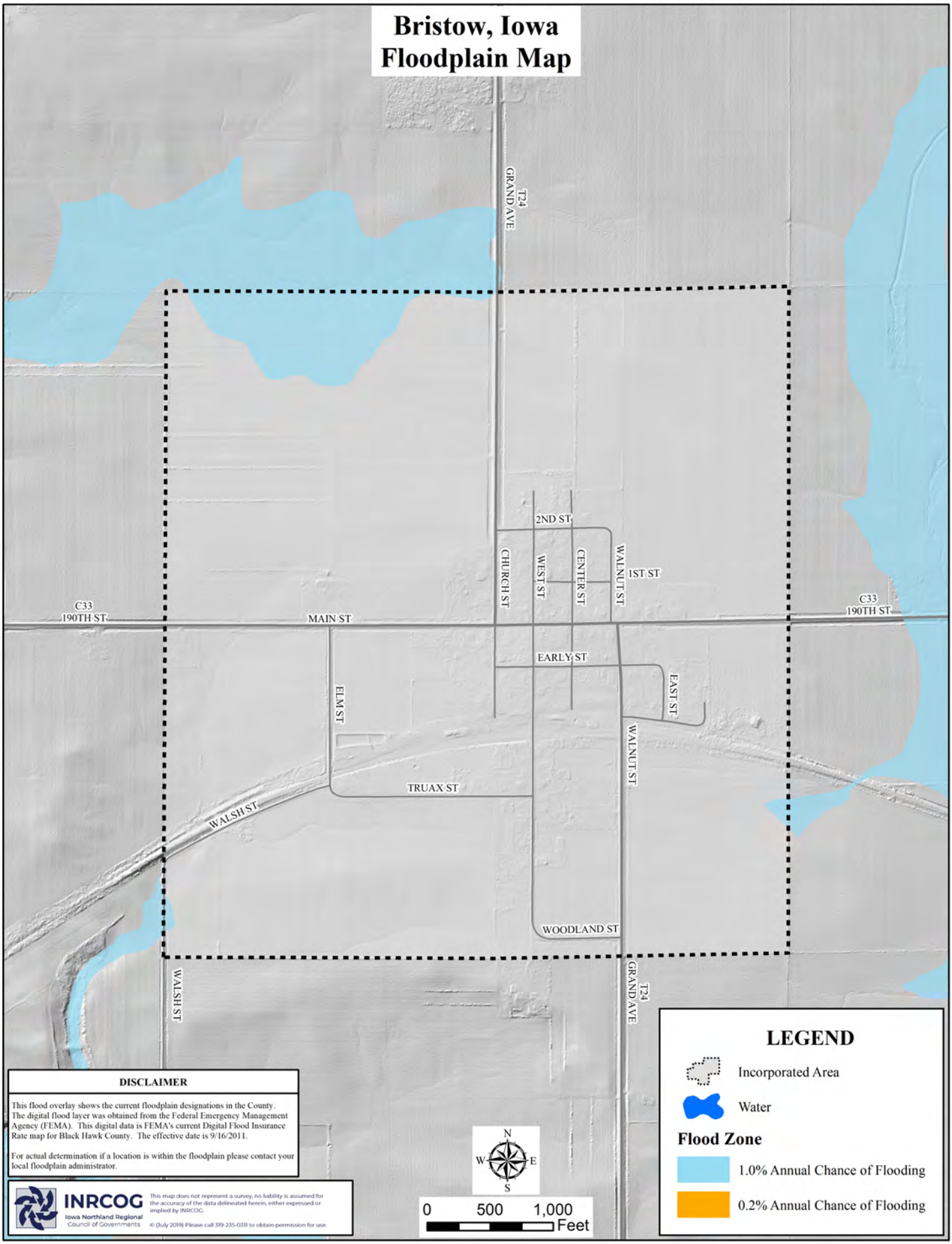
Bristow, Iowa
Floodplain Map
GRAND AVE
T24
2ND ST
CHURCH ST
WEST ST
CENTER ST
WALNUT ST
1ST ST
C33
190TH ST
MAIN ST
C33
190TH ST
EARLY ST
EAST ST
ELM ST
WALNUT ST
TRUAX ST
WALSH ST
WOODLAND ST
WALSH ST
GRAND AVE
T24
DISCLAIMER
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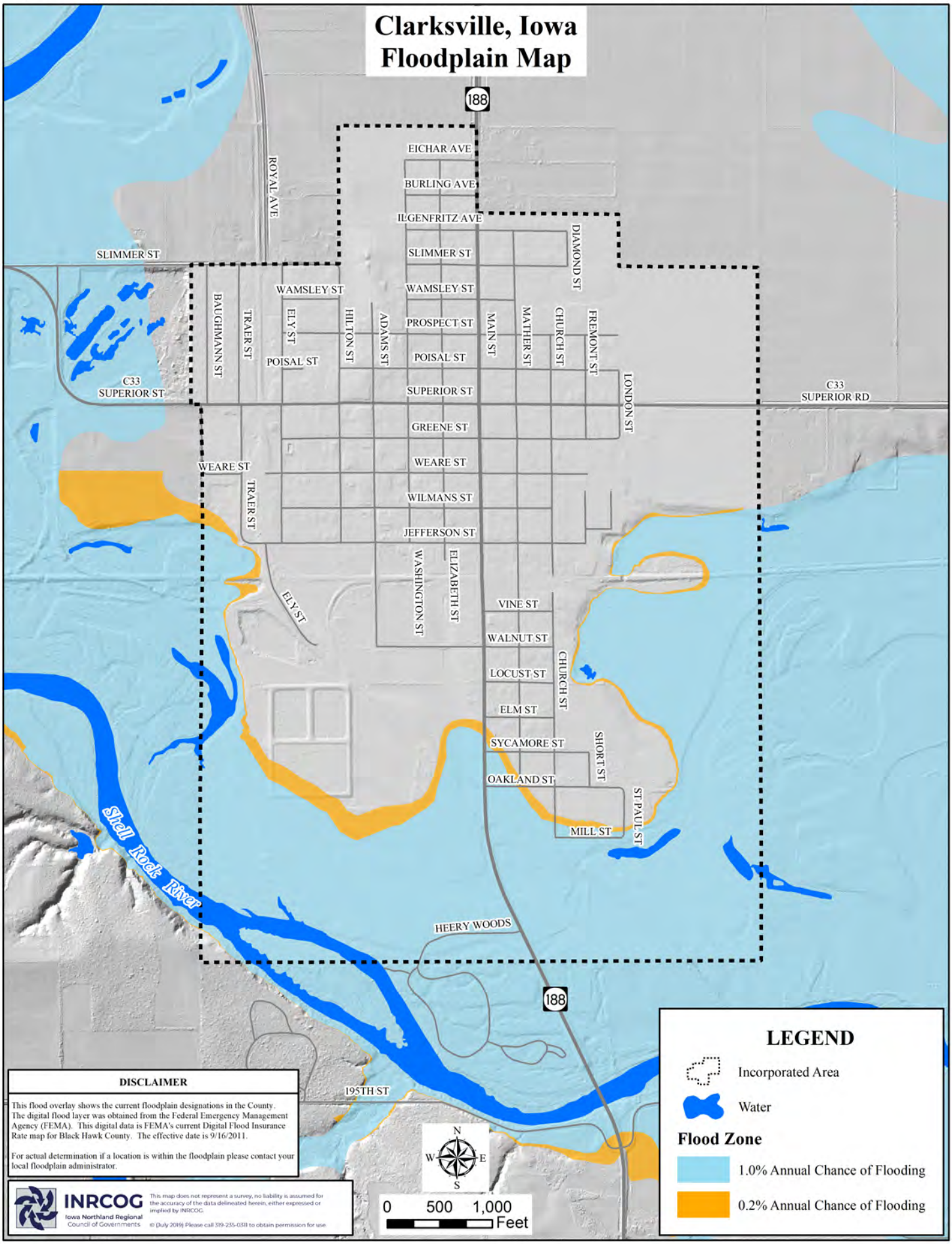
Feet
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Clarksville, Iowa
Floodplain Map
188
EICHAR AVE
BURLING AVE
ILGENFRITZ AVE
SLIMMER ST
WAMSLEY ST
PROSPECT ST
POISAL ST
SUPERIOR ST
GREENE ST
WEARE ST
WILMANS ST
JEFFERSON ST
VINE ST
WALNUT ST
LOCUST ST
ELM ST
SYCAMORE ST
OAKLAND ST
MILL ST
ROYAL AVE
DIAMOND ST
BAUGHMANN ST
TRAER ST
ELY ST
HILTON ST
ADAMS ST
MAIN ST
MATHER ST
CHURCH ST
FREMONT ST
LONDON ST
WASHINGTON ST
ELIZABETH ST
SHORT ST
ST PAUL ST
C33
SUPERIOR ST
C33
SUPERIOR RD
Shell Rock River
HEERY WOODS
195TH ST
DISCLAIMER
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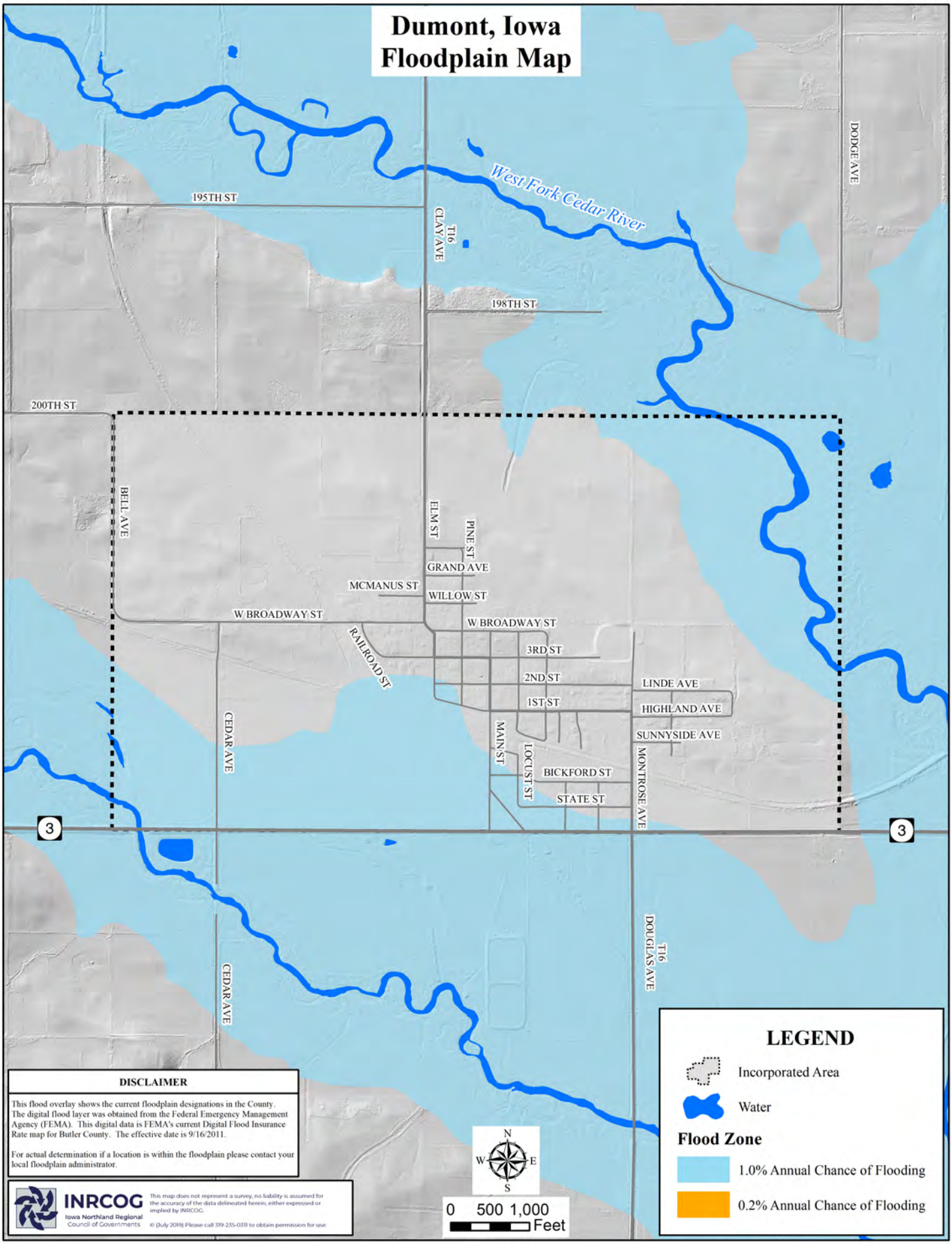
Feet
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Dumont, Iowa
Floodplain Map
West Fork Cedar River
195TH ST
198TH ST
200TH ST
CLAY AVE
T16
DODGE AVE
BELL AVE
ELM ST
PINE ST
GRAND AVE
MCMANUS ST
WILLOW ST
W BROADWAY ST
W BROADWAY ST
RAILROAD ST
3RD ST
2ND ST
1ST ST
LINDE AVE
HIGHLAND AVE
SUNNYSIDE AVE
MAIN ST
LOCUST ST
BICKFORD ST
STATE ST
MONTROSE AVE
CEDAR AVE
CEDAR AVE
DOUGLAS AVE
T16
3
3
DISCLAIMER
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N
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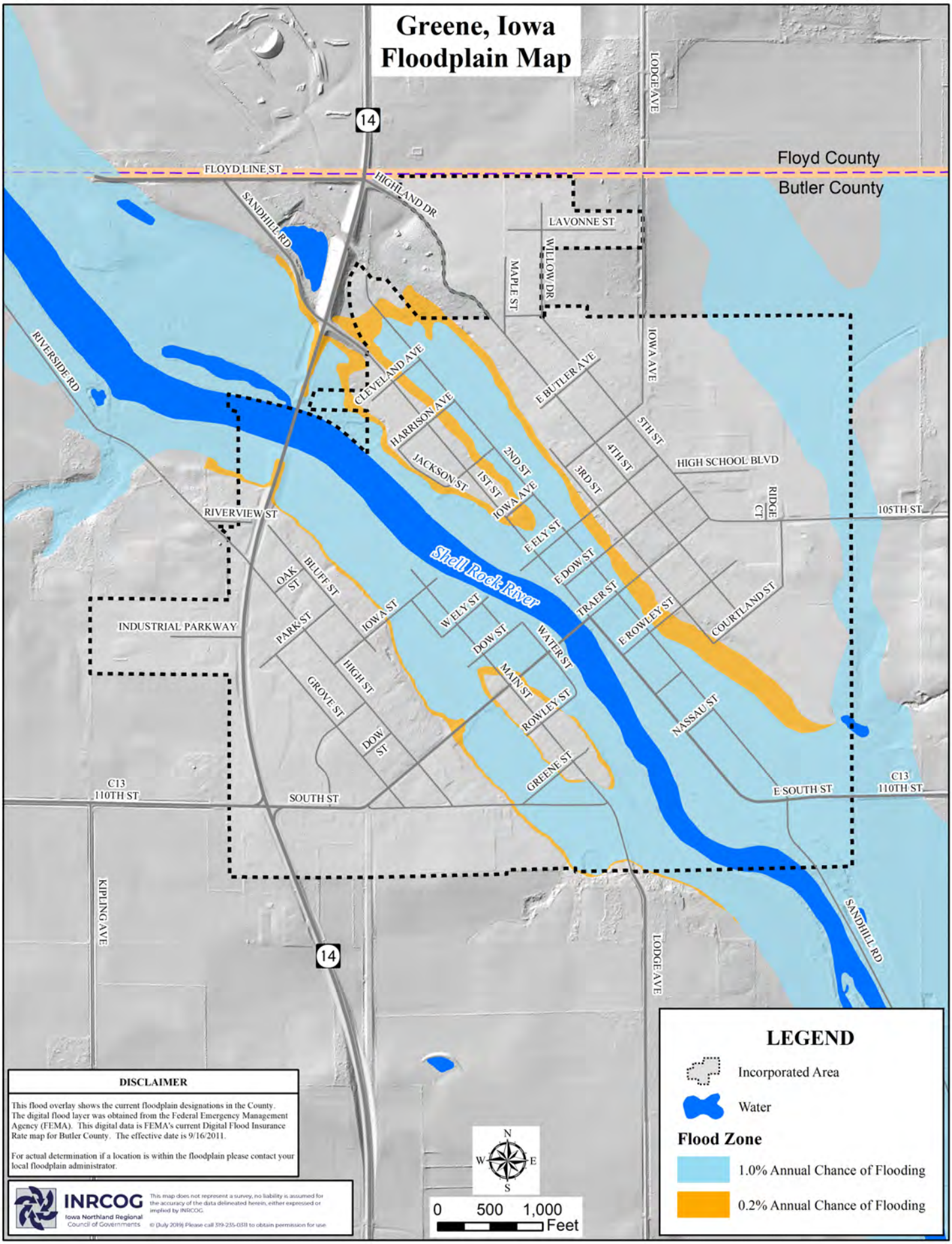
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Greene, Iowa
Floodplain Map
Floyd County
Butler County
FLOYD LINE ST
HIGHLAND DR
SANDHILL RD
LAVONNE ST
LODGE AVE
WILLOW DR
MAPLE ST
IOWA AVE
E BUTLER AVE
CLEVELAND AVE
HARRISON AVE
JACKSON ST
1ST ST
2ND ST
3RD ST
4TH ST
5TH ST
HIGH SCHOOL BLVD
RIDGE CT
105TH ST
RIVERSIDE RD
RIVERVIEW ST
Shell Rock River
E ELY ST
E DOW ST
TRAER ST
E ROWLEY ST
COURTLAND ST
OAK ST
BLUFF ST
IOWA ST
W ELY ST
DOW ST
WATER ST
MAIN ST
ROWLEY ST
NASSAU ST
INDUSTRIAL PARKWAY
PARK ST
HIGH ST
GROVE ST
DOW ST
GREENE ST
E SOUTH ST
C13
110TH ST
SOUTH ST
KIPLING AVE
SANDHILL RD
14
N
W
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0 500 1,000
Feet
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding
DISCLAIMER
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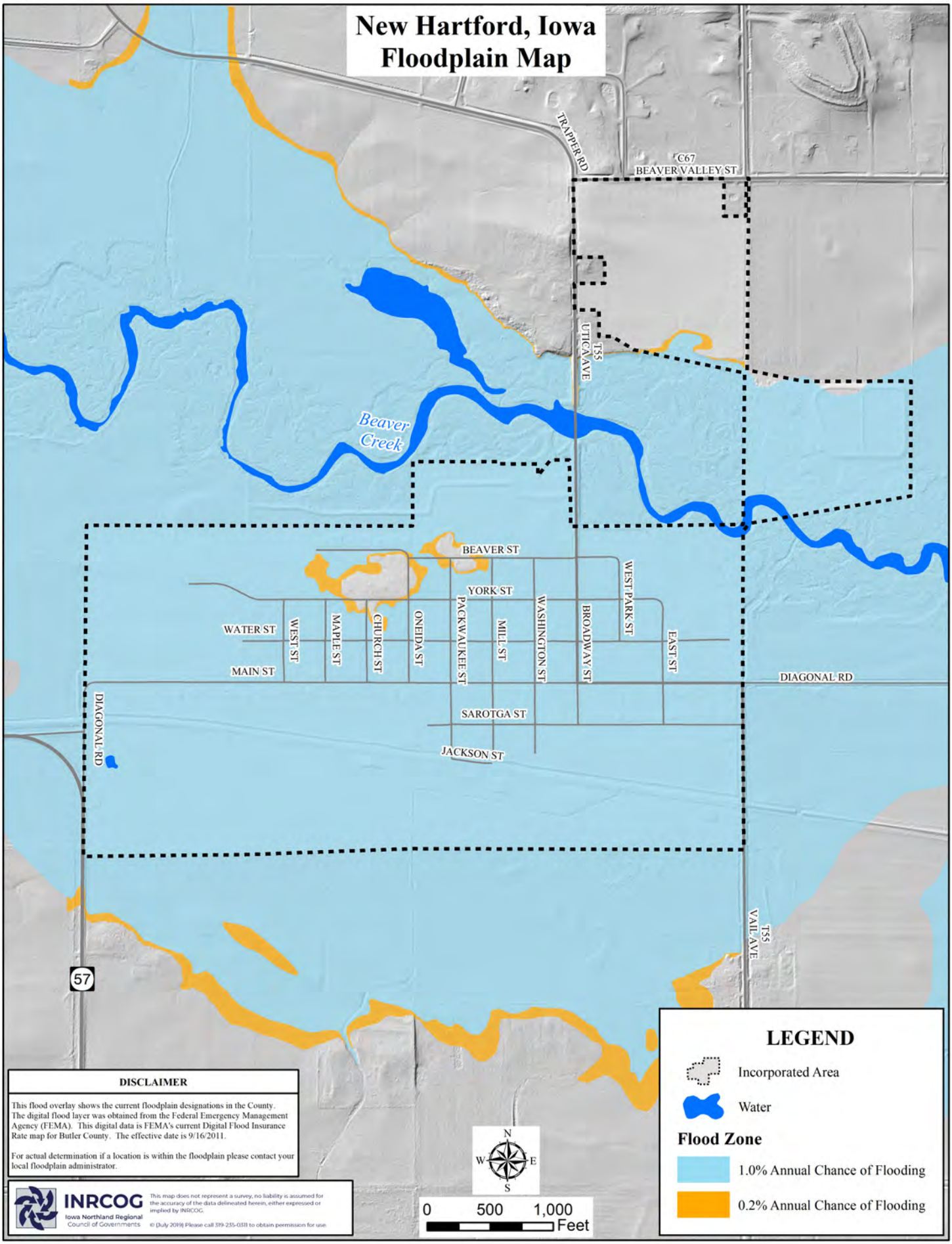
New Hartford, Iowa
Floodplain Map
TRAPPER RD
C67
BEAVER VALLEY ST
UTICA AVE
T55
Beaver Creek
BEAVER ST
YORK ST
WEST PARK ST
WATER ST
WEST ST
MAPLE ST
CHURCH ST
ONEIDA ST
PACKWAUKEE ST
MILL ST
WASHINGTON ST
BROADWAY ST
EAST ST
MAIN ST
DIAGONAL RD
SAROTGA ST
JACKSON ST
DIAGONAL RD
VAIL AVE
T55
57
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding
N
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Feet
DISCLAIMER
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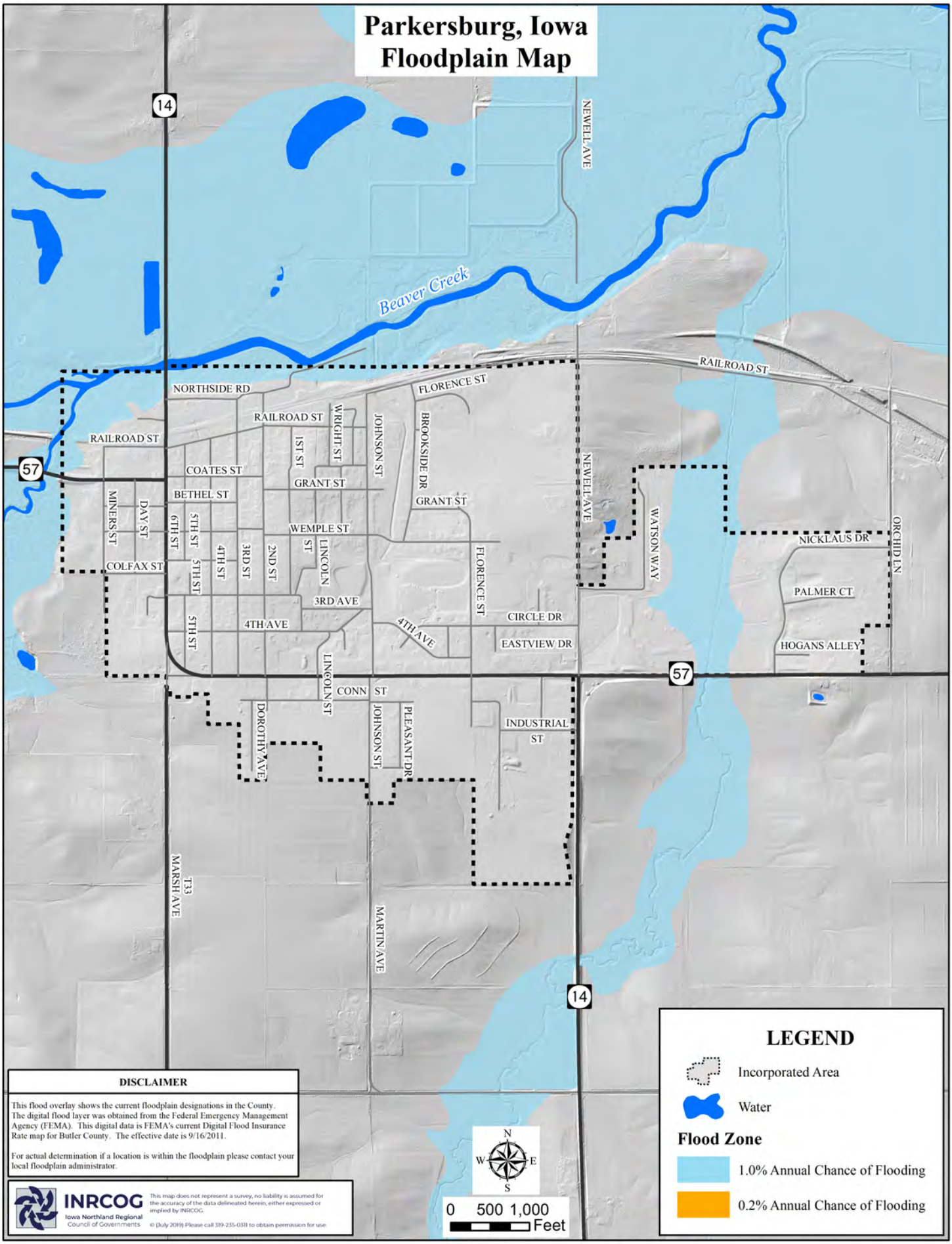
Parkersburg, Iowa
Floodplain Map
Beaver Creek
NEWELL AVE
RAILROAD ST
NORTHSIDE RD
FLORENCE ST
WRIGHT ST
JOHNSON ST
BROOKSIDE DR
1ST ST
COATES ST
GRANT ST
BETHEL ST
MINERS ST
DAY ST
6TH ST
5TH ST
4TH ST
3RD ST
2ND ST
WEMPLE ST
LINCOLN ST
COLFAX ST
3RD AVE
4TH AVE
CIRCLE DR
EASTVIEW DR
WATSON WAY
NICKLAUS DR
ORCHID LN
PALMER CT
HOGANS ALLEY
CONN ST
DOROTHY AVE
PLEASANT DR
INDUSTRIAL ST
MARSH AVE
T33
MARTIN AVE
14
57
N
W
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0 500 1,000 Feet
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding
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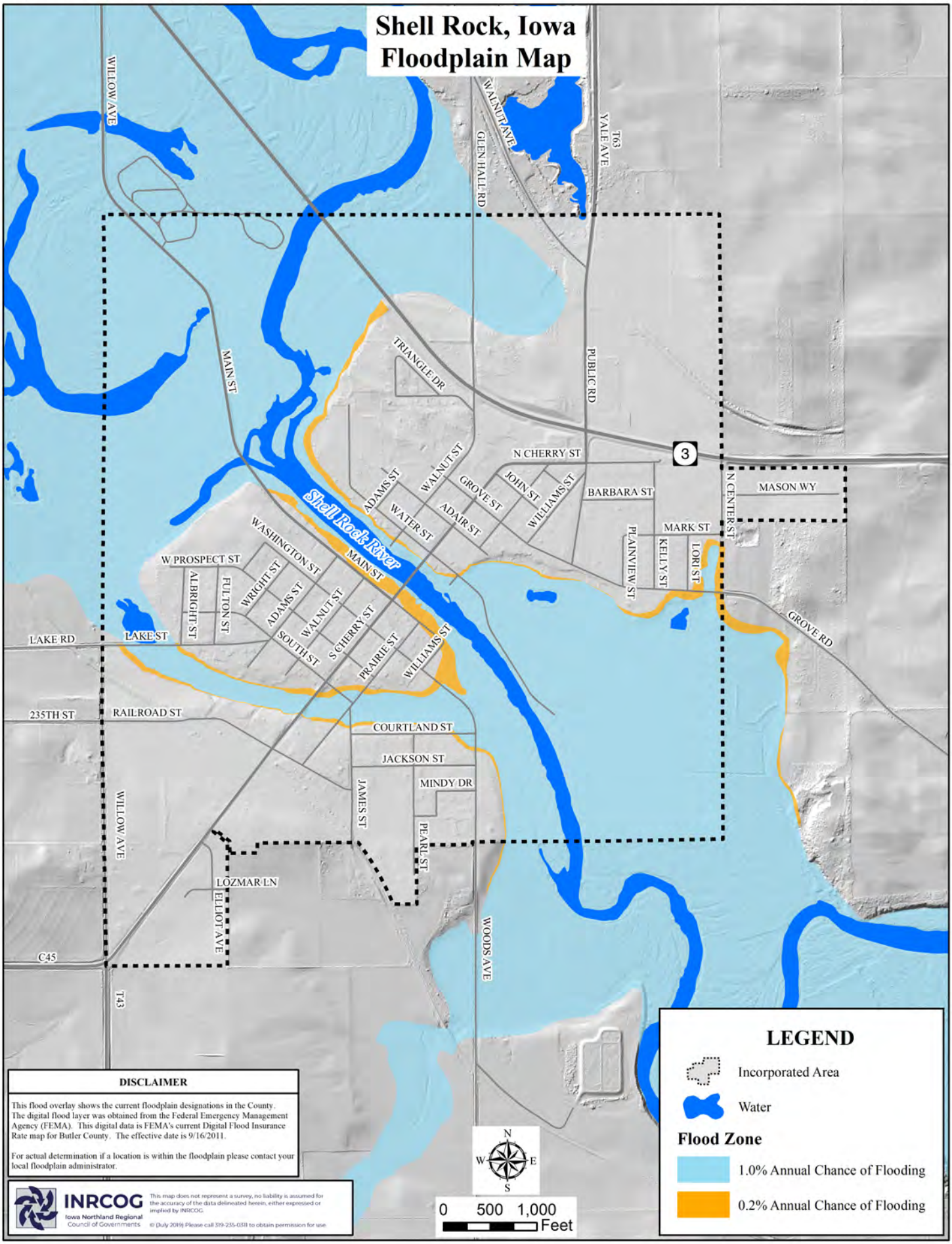
Shell Rock, Iowa
Floodplain Map
WILLOW AVE
WALNUT AVE
GLEN HALL RD
YALE AVE
T63
MAIN ST
TRIANGLE DR
PUBLIC RD
3
N CHERRY ST
ADAMS ST
WALNUT ST
GROVE ST
JOHN ST
WILLIAMS ST
BARBARA ST
MASON WY
N CENTER ST
WATER ST
ADAIR ST
MARK ST
PLAINVIEW ST
KELLY ST
LORI ST
Shell Rock River
WASHINGTON ST
MAIN ST
W PROSPECT ST
ALBRIGHT ST
FULTON ST
WRIGHT ST
ADAMS ST
WALNUT ST
SOUTH ST
S CHERRY ST
PRAIRIE ST
WILLIAMS ST
GROVE RD
LAKE RD
LAKE ST
235TH ST
RAILROAD ST
COURTLAND ST
JACKSON ST
MINDY DR
JAMES ST
PEARL ST
WILLOW AVE
LOZMAR LN
ELLIOT AVE
WOODS AVE
C45
T43
DISCLAIMER
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N
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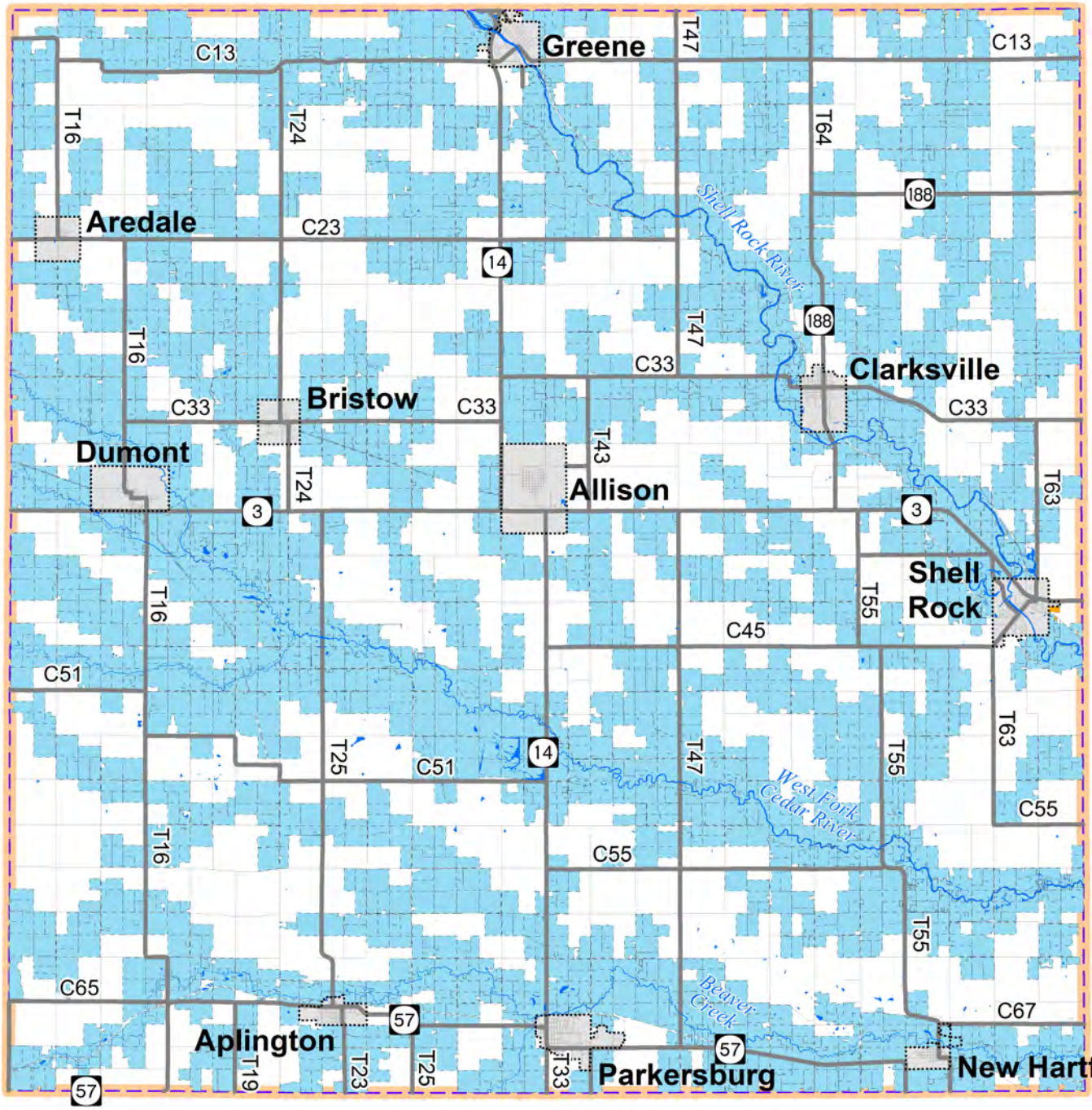
Feet
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding

Flood Scenario Map for the Unincorporated Areas of Butler County, Iowa



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DISCLAIMER

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Damage Estimates

Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 3418

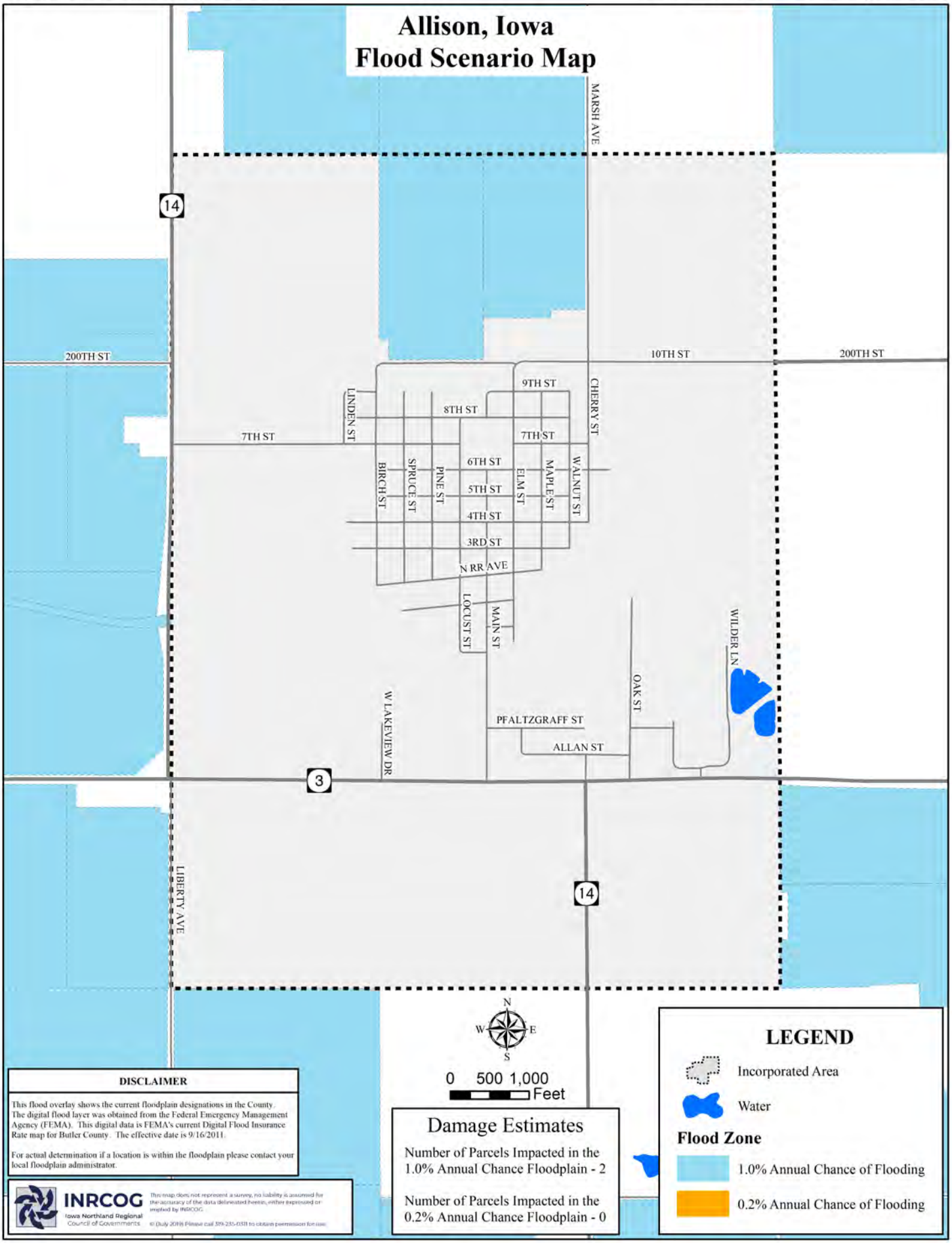
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 7

LEGEND

- Incorporated Area
- Water

Flood Zone

- 1.0% Annual Chance of Flooding
- 0.2% Annual Chance of Flooding


Allison, Iowa
Flood Scenario Map
MARSH AVE
14
200TH ST
10TH ST
200TH ST
9TH ST
CHERRY ST
LINDEN ST
8TH ST
7TH ST
7TH ST
6TH ST
5TH ST
4TH ST
3RD ST
N RR AVE
BIRCH ST
SPRUCE ST
PINE ST
ELM ST
MAPLE ST
WALNUT ST
LOCUST ST
MAIN ST
WILDER LN
OAK ST
W LAKEVIEW DR
PFALTZGRAFF ST
ALLAN ST
3
14
LIBERTY AVE
N
W
E
S
0 500 1,000
Feet
DISCLAIMER
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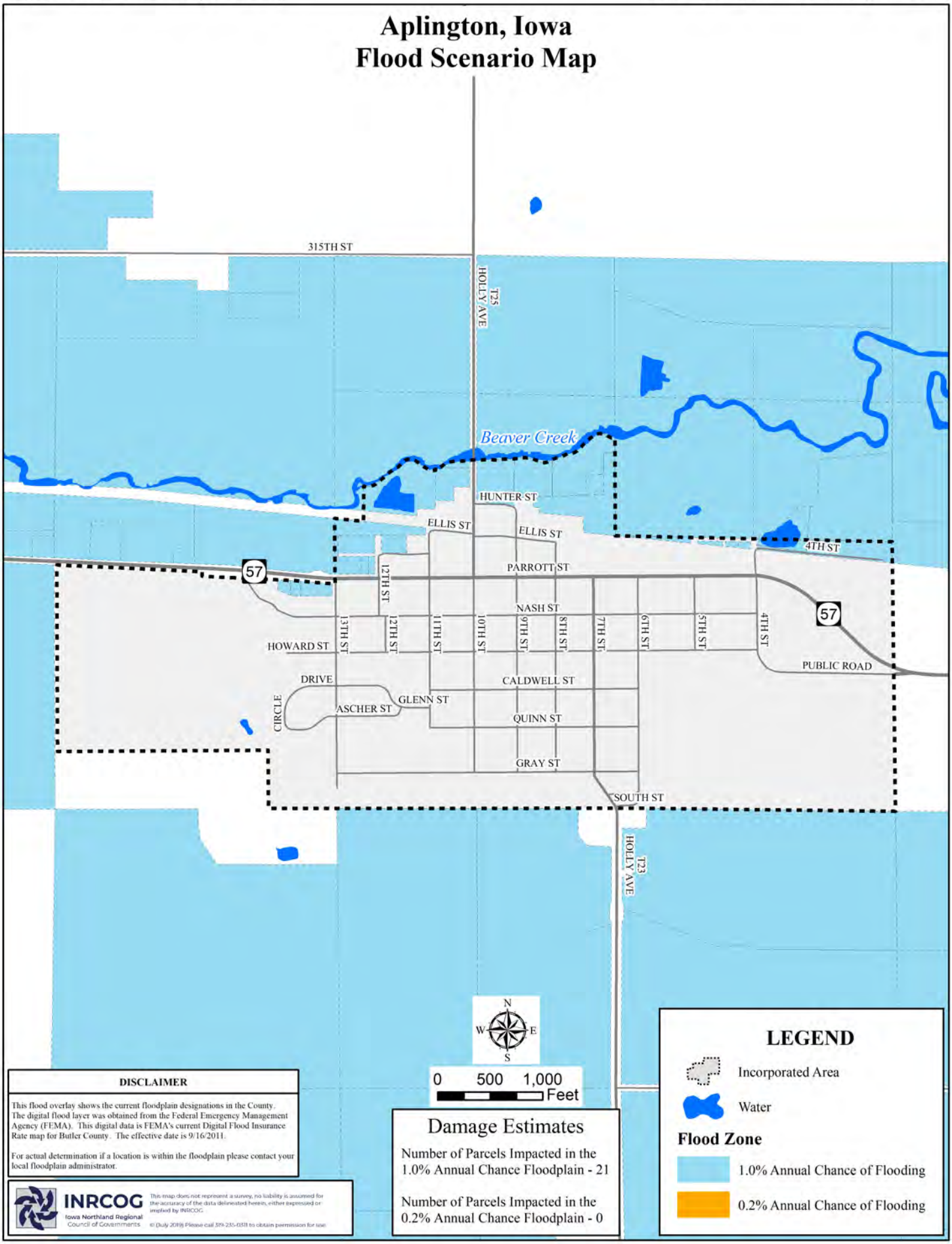
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 2
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 0
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Aplington, Iowa
Flood Scenario Map
315TH ST
HOLLY AVE
T25
Beaver Creek
HUNTER ST
ELLIS ST
ELLIS ST
4TH ST
57
PARROTT ST
12TH ST
NASH ST
57
13TH ST
12TH ST
11TH ST
10TH ST
9TH ST
8TH ST
7TH ST
6TH ST
5TH ST
4TH ST
HOWARD ST
PUBLIC ROAD
DRIVE
CALDWELL ST
CIRCLE
GLENN ST
ASCHER ST
QUINN ST
GRAY ST
SOUTH ST
HOLLY AVE
T23
N
W
E
S
0 500 1,000
Feet
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding
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Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 21
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 0


Aredale, Iowa
Flood Scenario Map
BIRCH AVE
T16
CO RD T16
APPLETON ST
EAST MAIN
MAIN ST
FRONT ST
ADLAKE ST
2ND ST
3RD ST
1ST ST
C23
150 ST
ARLINGTON ST
C23
150 ST
S AUDUBON ST
N
W
E
S
0 500 1,000
Feet
DISCLAIMER
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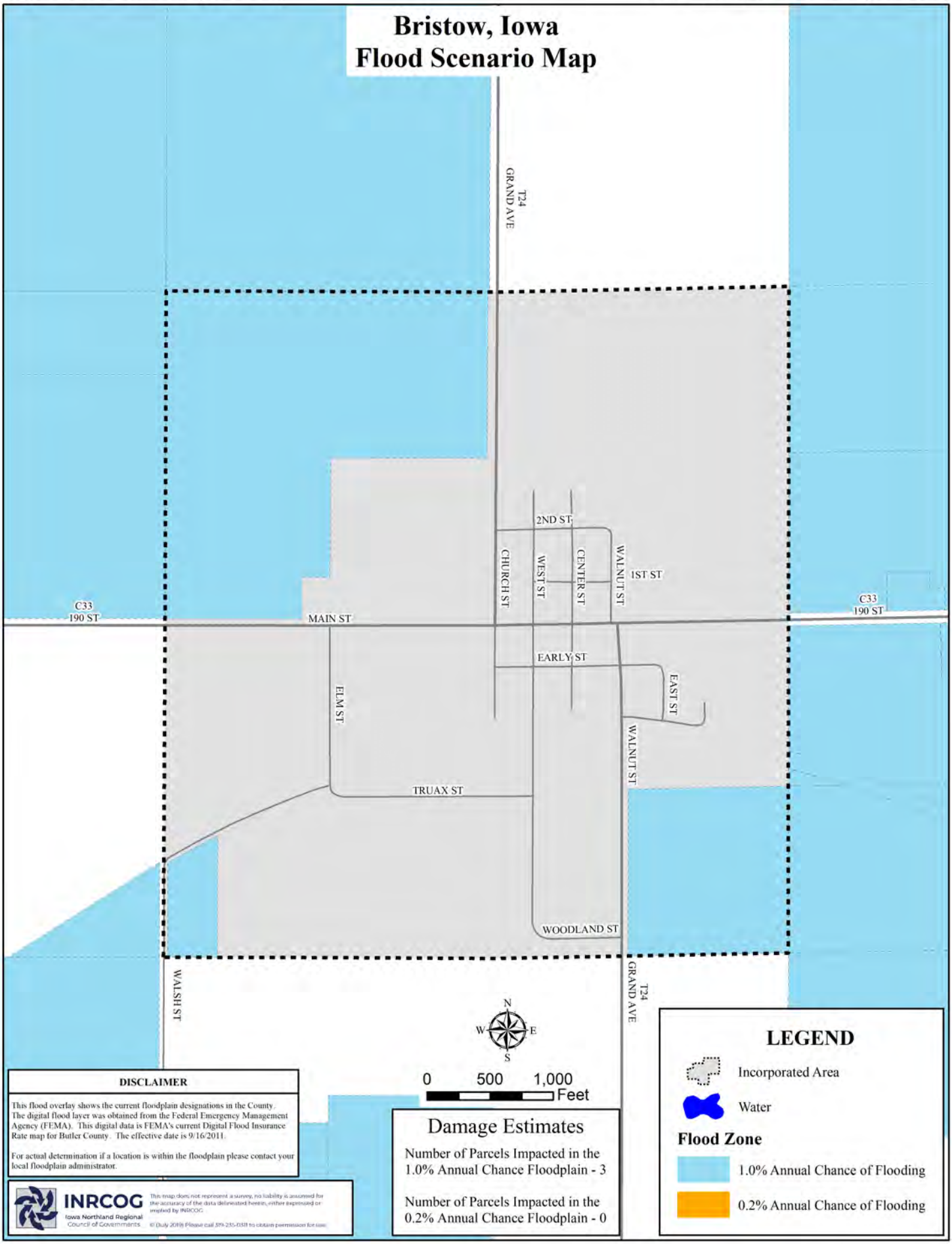
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 35
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 0
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Bristow, Iowa
Flood Scenario Map
T24
GRAND AVE
2ND ST
CHURCH ST
WEST ST
CENTER ST
WALNUT ST
1ST ST
C33
190 ST
MAIN ST
EARLY ST
EAST ST
ELM ST
TRUAX ST
WOODLAND ST
WALSH ST
N
W
E
S
0 500 1,000
Feet
DISCLAIMER
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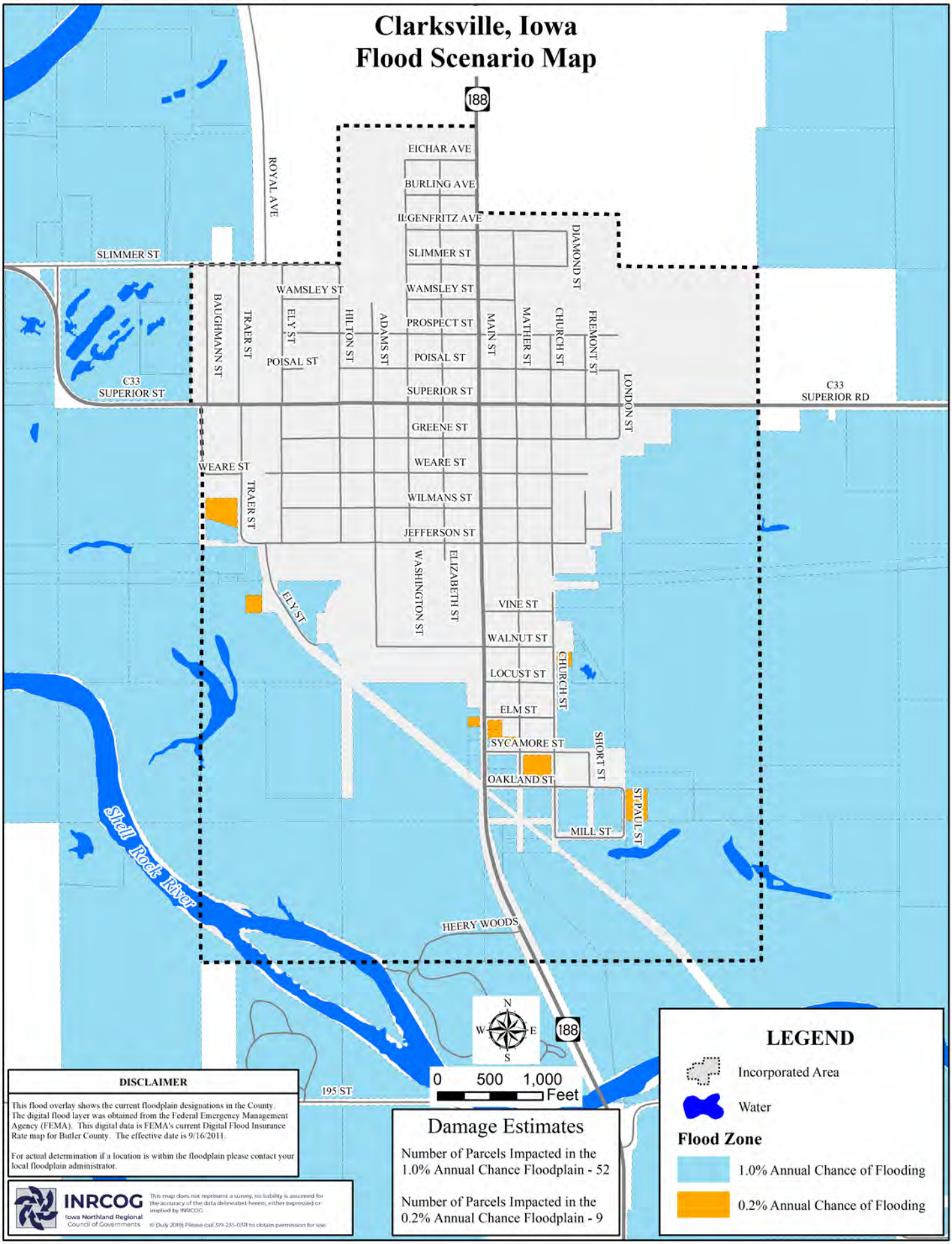
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 3
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 0
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Clarksville, Iowa
Flood Scenario Map
188
EICHAR AVE
BURLING AVE
ILGENFRITZ AVE
SLIMMER ST
WAMSLEY ST
PROSPECT ST
POISAL ST
SUPERIOR ST
GREENE ST
WEARE ST
WILMANS ST
JEFFERSON ST
VINE ST
WALNUT ST
LOCUST ST
ELM ST
SYCAMORE ST
OAKLAND ST
MILL ST
ROYAL AVE
DIAMOND ST
BAUGHMANN ST
TRAER ST
ELY ST
HILTON ST
ADAMS ST
MAIN ST
MATHER ST
CHURCH ST
FREMONT ST
LONDON ST
WASHINGTON ST
ELIZABETH ST
SHORT ST
ST PAUL ST
C33
SUPERIOR ST
C33
SUPERIOR RD
Shell Rock River
HEERY WOODS
195 ST
N
W
E
S
0 500 1,000
Feet
DISCLAIMER
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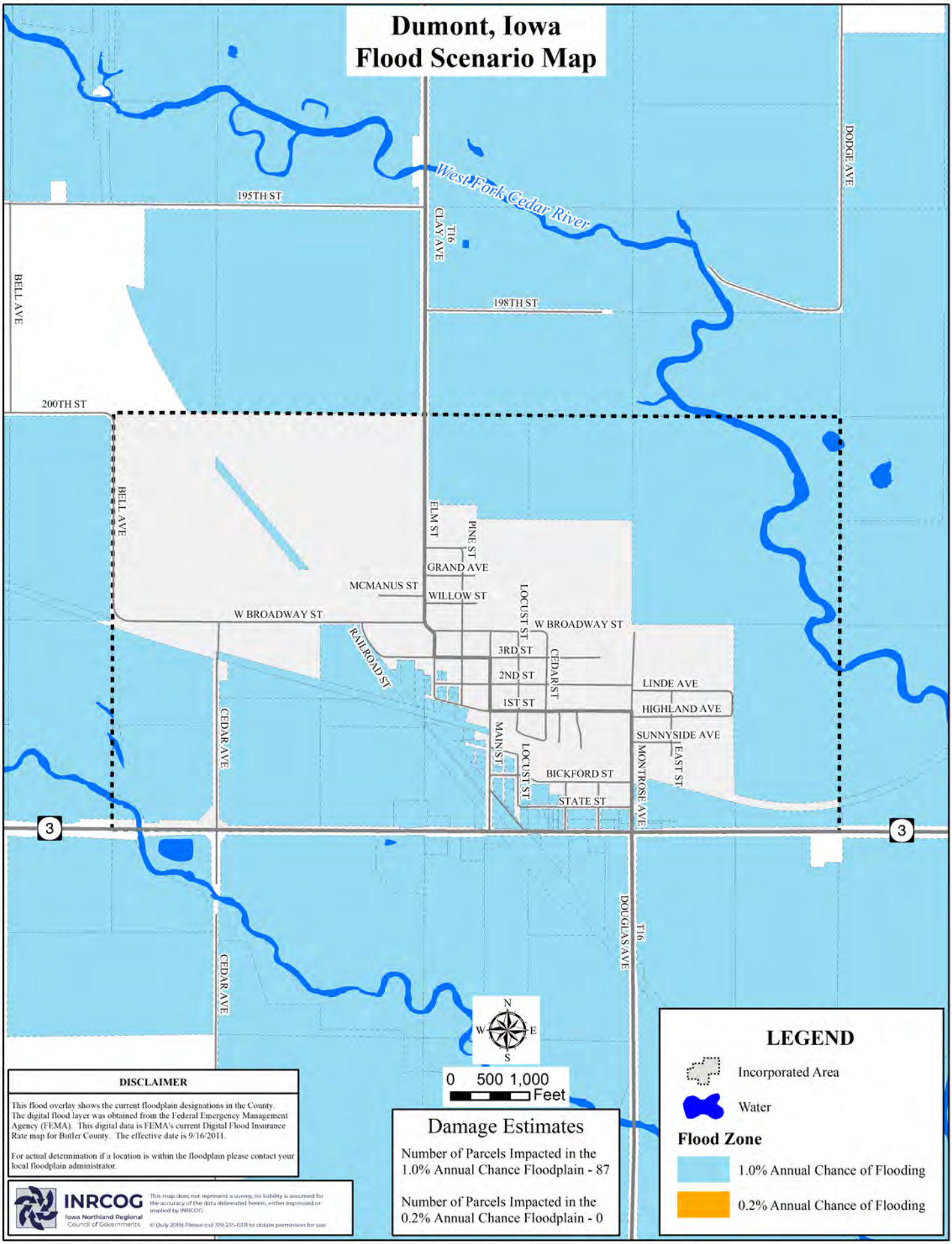
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 52
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 9
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Dumont, Iowa
Flood Scenario Map
West Fork Cedar River
195TH ST
198TH ST
200TH ST
DODGE AVE
CLAY AVE
T16
BELL AVE
ELM ST
PINE ST
GRAND AVE
MCMANUS ST
WILLOW ST
LOCUST ST
W BROADWAY ST
RAILROAD ST
3RD ST
2ND ST
1ST ST
CEDAR ST
LINDE AVE
HIGHLAND AVE
SUNNYSIDE AVE
EAST ST
MAIN ST
BICKFORD ST
STATE ST
MONTROSE AVE
CEDAR AVE
DOUGLAS AVE
3
N
W
E
S
0 500 1,000
Feet
DISCLAIMER
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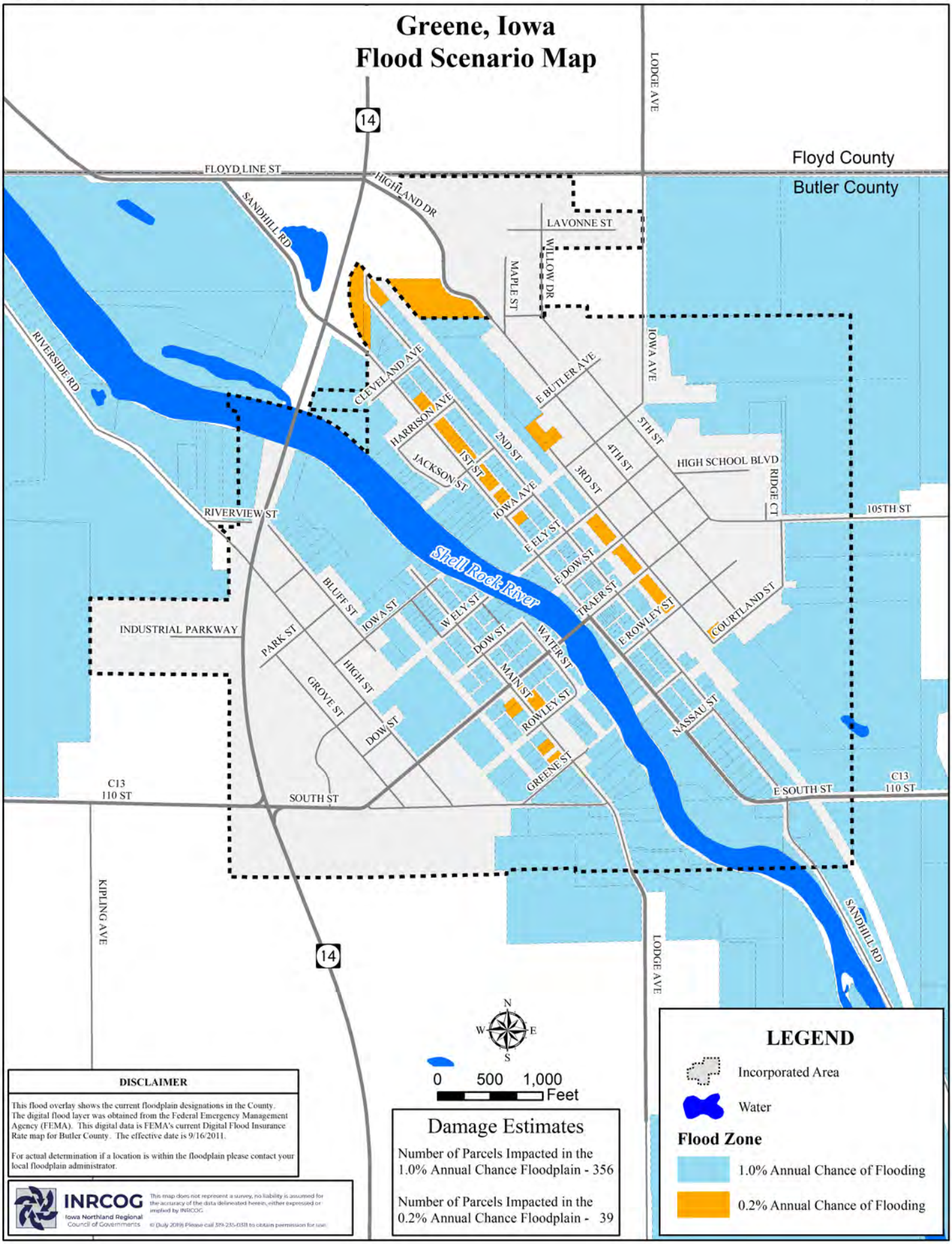
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 87
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 0
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Greene, Iowa
Flood Scenario Map
Floyd County
Butler County
Shell Rock River
FLOYD LINE ST
HIGHLAND DR
SANDHILL RD
LAVONNE ST
WILLOW DR
MAPLE ST
LODGE AVE
RIVERSIDE RD
CLEVELAND AVE
HARRISON AVE
JACKSON ST
1ST ST
2ND ST
3RD ST
4TH ST
5TH ST
IOWA AVE
E BUTLER AVE
HIGH SCHOOL BLVD
RIDGE CT
105TH ST
RIVERVIEW ST
E ELY ST
E DOW ST
TRAER ST
E ROWLEY ST
COURTLAND ST
BLUFF ST
IOWA ST
W ELY ST
DOW ST
WATER ST
MAIN ST
ROWLEY ST
GREENE ST
NASSAU ST
INDUSTRIAL PARKWAY
PARK ST
HIGH ST
GROVE ST
DOW ST
C13
110 ST
SOUTH ST
E SOUTH ST
KIPLING AVE
14
N
W
E
S
0 500 1,000
Feet
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Butler County. The effective date is 9/16/2011.
For actual determination if a location is within the floodplain please contact your local floodplain administrator.
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Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 356
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 39
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


New Hartford, Iowa
Flood Scenario Map
TRAPPER RD
C67
BEAVER VALLEY ST
UTICA AVE
T55
Beaver Creek
BEAVER ST
YORK ST
WEST PARK ST
WATER ST
WEST ST
MAPLE ST
CHURCH ST
ONEIDA ST
PACKWAUKEE ST
MILL ST
WASHINGTON ST
BROADWAY ST
EAST ST
MAIN ST
DIAGONAL RD
SAROTGA ST
JACKSON ST
VAIL AVE
57
N
W
E
S
0 500 1,000 Feet
DISCLAIMER
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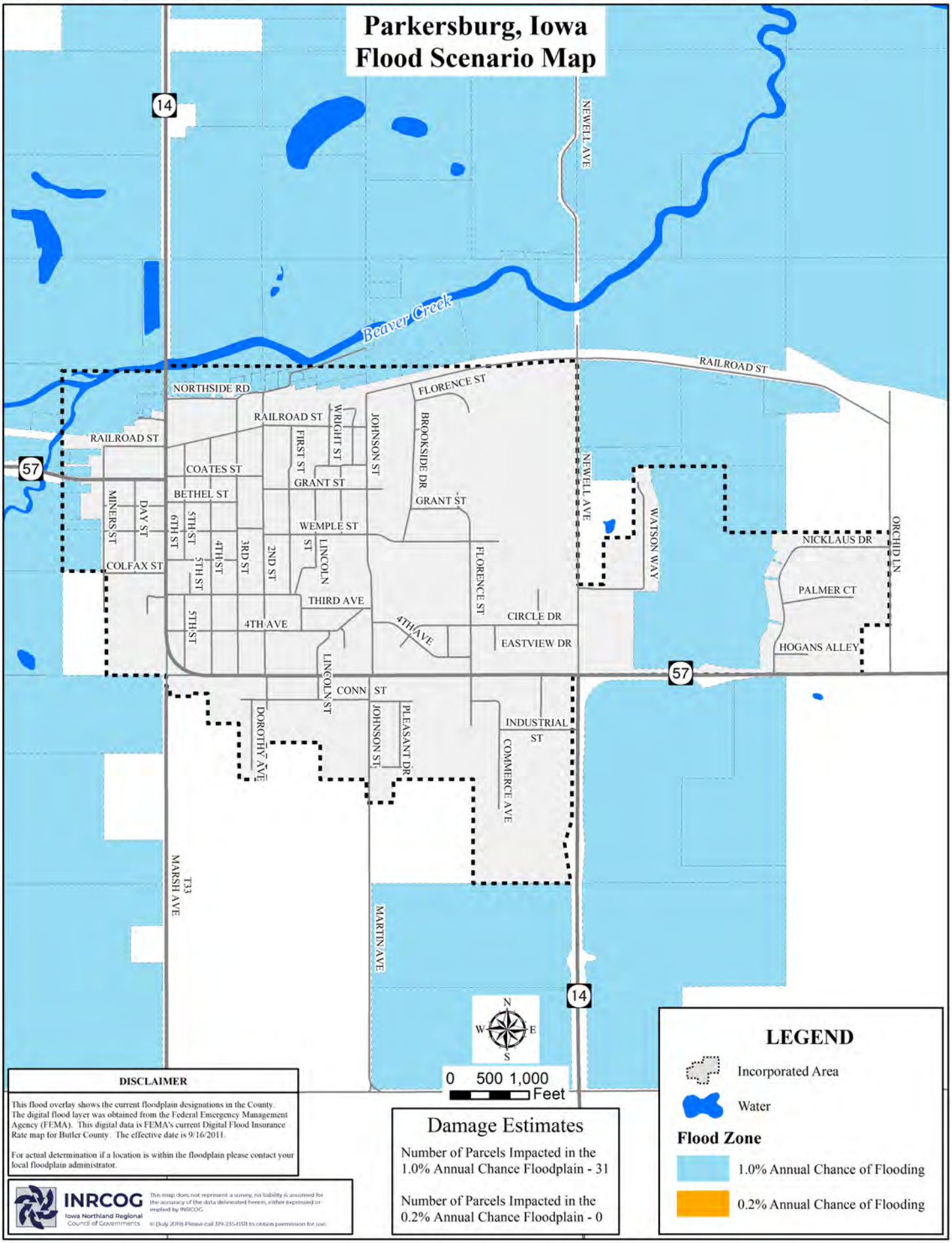
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 346
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 5
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Parkersburg, Iowa
Flood Scenario Map
Beaver Creek
RAILROAD ST
NORTHSIDE RD
FLORENCE ST
NEWELL AVE
WRIGHT ST
JOHNSON ST
BROOKSIDE DR
FIRST ST
GRANT ST
COATES ST
BETHEL ST
MINERS ST
DAY ST
6TH ST
5TH ST
4TH ST
3RD ST
2ND ST
LINCOLN ST
WEMPLE ST
COLFAX ST
WATSON WAY
ORCHID LN
NICKLAUS DR
PALMER CT
HOGANS ALLEY
THIRD AVE
4TH AVE
CIRCLE DR
EASTVIEW DR
CONN ST
DOROTHY AVE
PLEASANT DR
INDUSTRIAL ST
COMMERCE AVE
MARSH AVE
T33
MARTIN AVE
14
57
N
W
E
S
0 500 1,000 Feet
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Butler County. The effective date is 9/16/2011.
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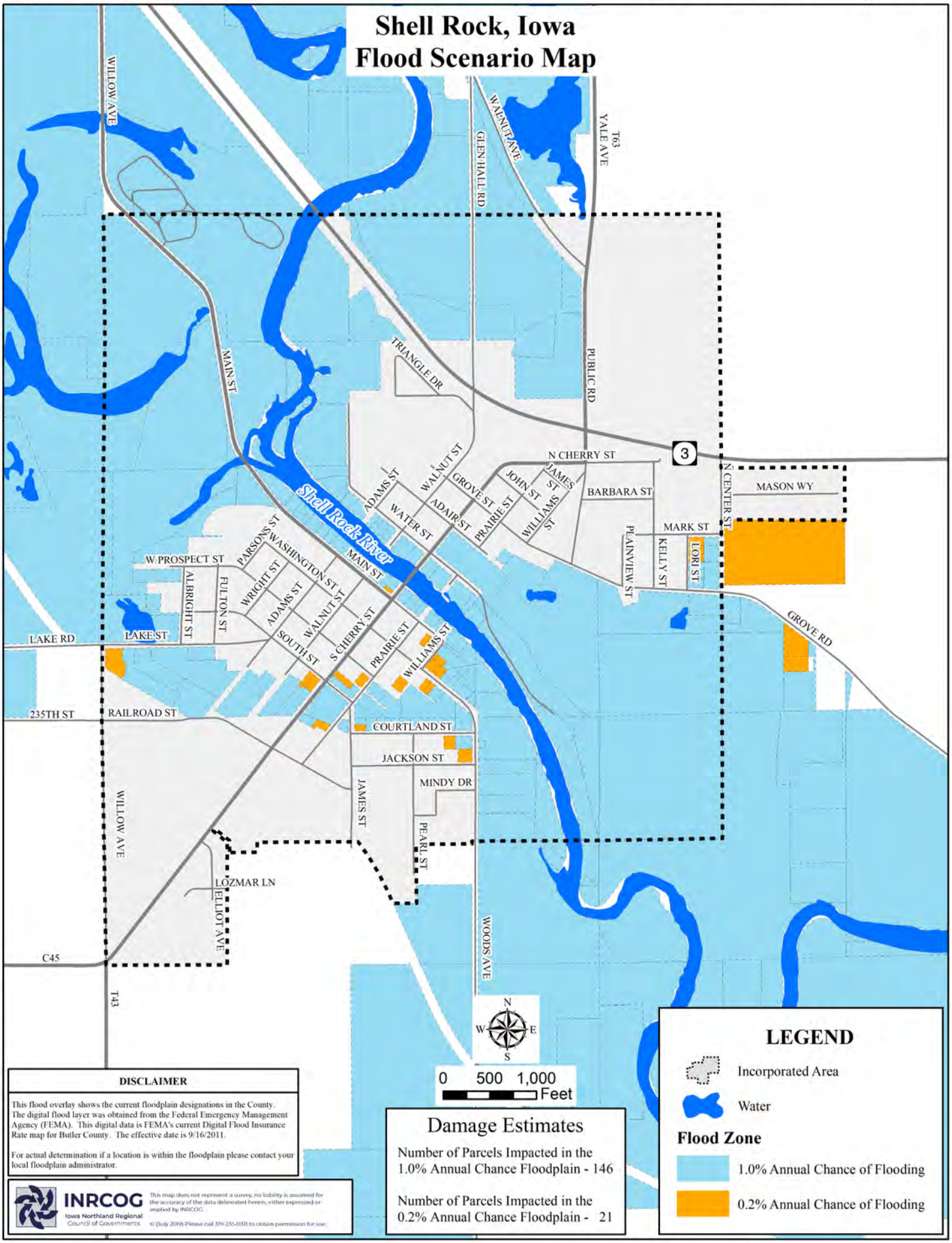
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 31
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 0
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Shell Rock, Iowa
Flood Scenario Map
WILLOW AVE
WALNUT AVE
GLEN HALL RD
YALE AVE
T63
MAIN ST
TRIANGLE DR
PUBLIC RD
N CHERRY ST
3
BARBARA ST
MASON WY
N CENTER ST
MARK ST
Shell Rock River
ADAMS ST
WALNUT ST
GROVE ST
JOHN ST
JAMES ST
WILLIAMS ST
ADAIR ST
PRAIRIE ST
WATER ST
PLAINVIEW ST
KELLY ST
LORI ST
W PROSPECT ST
PARSONS ST
WASHINGTON ST
WRIGHT ST
ALBRIGHT ST
FULTON ST
LAKE RD
LAKE ST
SOUTH ST
S CHERRY ST
GROVE RD
235TH ST
RAILROAD ST
COURTLAND ST
JACKSON ST
MINDY DR
JAMES ST
PEARL ST
LOZMAR LN
ELLIOT AVE
WOODS AVE
C45
T43
N
W
E
S
0 500 1,000
Feet
DISCLAIMER
This flood overlay shows the current floodplain designations in the County. The digital flood layer was obtained from the Federal Emergency Management Agency (FEMA). This digital data is FEMA's current Digital Flood Insurance Rate map for Butler County. The effective date is 9/16/2011.
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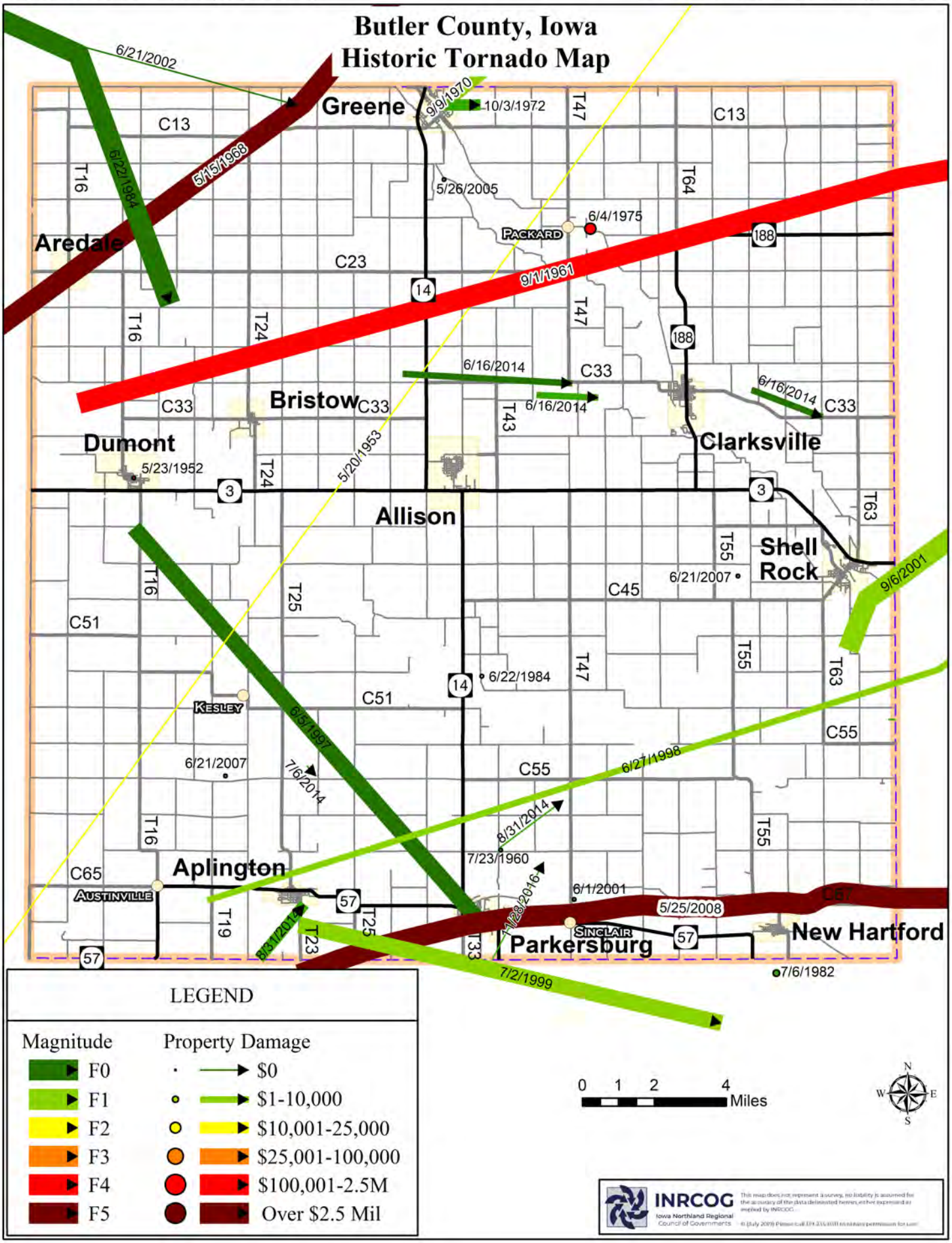
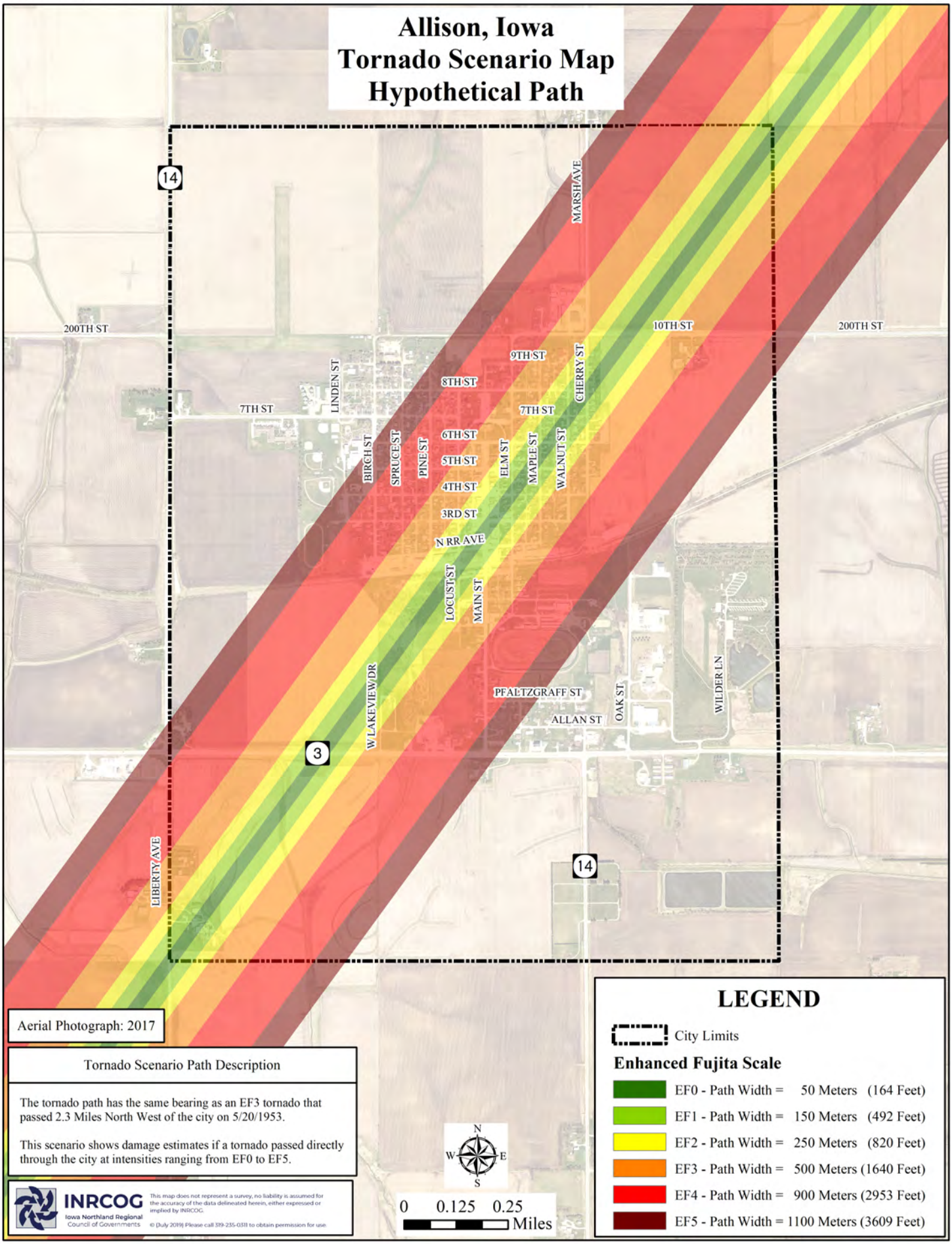
Damage Estimates
Number of Parcels Impacted in the 1.0% Annual Chance Floodplain - 146
Number of Parcels Impacted in the 0.2% Annual Chance Floodplain - 21
LEGEND
Incorporated Area
Water
Flood Zone
1.0% Annual Chance of Flooding
0.2% Annual Chance of Flooding


Butler County, Iowa
Historic Tornado Map
Greene
Aredale
Bristow
Dumont
Allison
Clarksville
Shell Rock
Kesley
Aplington
Austinville
Parkersburg
New Hartford
Packard
Sinclair
6/21/2002
6/22/1984
5/15/1968
9/9/1970
10/3/1972
5/26/2005
6/4/1975
9/1/1961
6/16/2014
5/20/1953
5/23/1952
6/21/2007
6/22/1984
6/5/1997
7/6/2014
6/27/1998
8/31/2014
7/23/1960
6/1/2001
5/25/2008
11/28/2016
8/31/2014
7/2/1999
7/6/1982
9/6/2001
C13
C23
C33
C45
C51
C55
C65
C67
T16
T24
T25
T47
T64
T43
T55
T63
T19
T23
T33
14
188
3
57
LEGEND
Magnitude
F0
F1
F2
F3
F4
F5
Property Damage
$0
$1-10,000
$10,001-25,000
$25,001-100,000
$100,001-2.5M
Over $2.5 Mil
0 1 2 4 Miles
N
W
E
S
INRCOG
Iowa Northland Regional Council of Governments


Allison, Iowa
Tornado Scenario Map
Hypothetical Path
14
MARSH AVE
200TH ST
10TH ST
200TH ST
9TH ST
8TH ST
7TH ST
LINDEN ST
CHERRY ST
7TH ST
6TH ST
5TH ST
4TH ST
3RD ST
N RR AVE
BIRCH ST
SPRUCE ST
PINE ST
ELM ST
MAPLE ST
WALNUT ST
LOCUST ST
MAIN ST
W LAKEVIEW DR
PFALTZGRAFF ST
ALLAN ST
OAK ST
WILDER LN
3
14
LIBERTY AVE
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path has the same bearing as an EF3 tornado that passed 2.3 Miles North West of the city on 5/20/1953.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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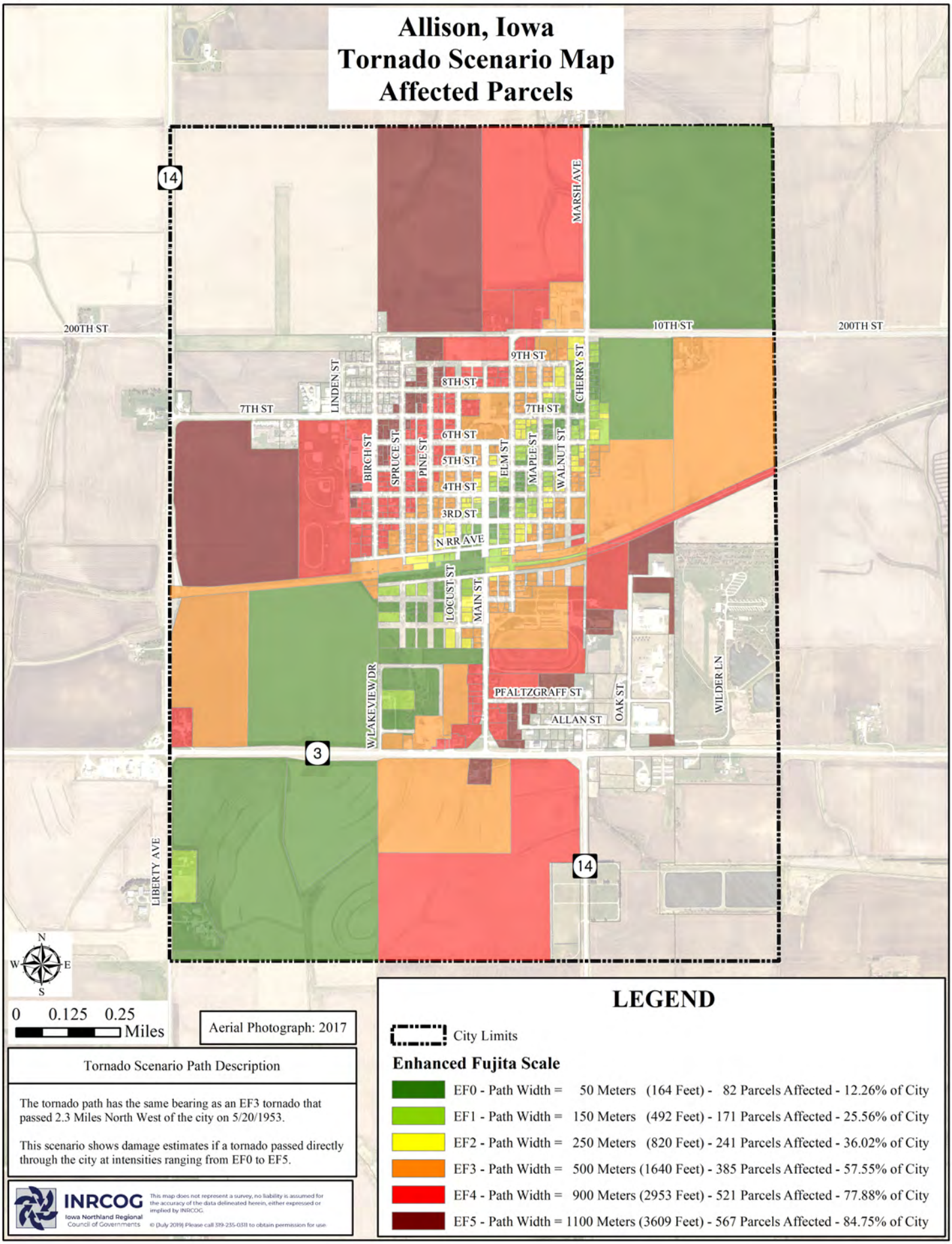
N
W
E
S
0 0.125 0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet)
EF1 - Path Width = 150 Meters (492 Feet)
EF2 - Path Width = 250 Meters (820 Feet)
EF3 - Path Width = 500 Meters (1640 Feet)
EF4 - Path Width = 900 Meters (2953 Feet)
EF5 - Path Width = 1100 Meters (3609 Feet)


Allison, Iowa
Tornado Scenario Map
Affected Parcels
14
MARSH AVE
200TH ST
10TH ST
200TH ST
9TH ST
8TH ST
7TH ST
7TH ST
LINDEN ST
CHERRY ST
BIRCH ST
SPRUCE ST
PINE ST
6TH ST
5TH ST
4TH ST
3RD ST
ELM ST
MAPLE ST
WALNUT ST
N RR AVE
LOCUST ST
MAIN ST
W LAKEVIEW DR
PFALTZGRAFF ST
ALLAN ST
OAK ST
WILDER LN
3
14
LIBERTY AVE
N
W
E
S
0 0.125 0.25
Miles
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path has the same bearing as an EF3 tornado that passed 2.3 Miles North West of the city on 5/20/1953.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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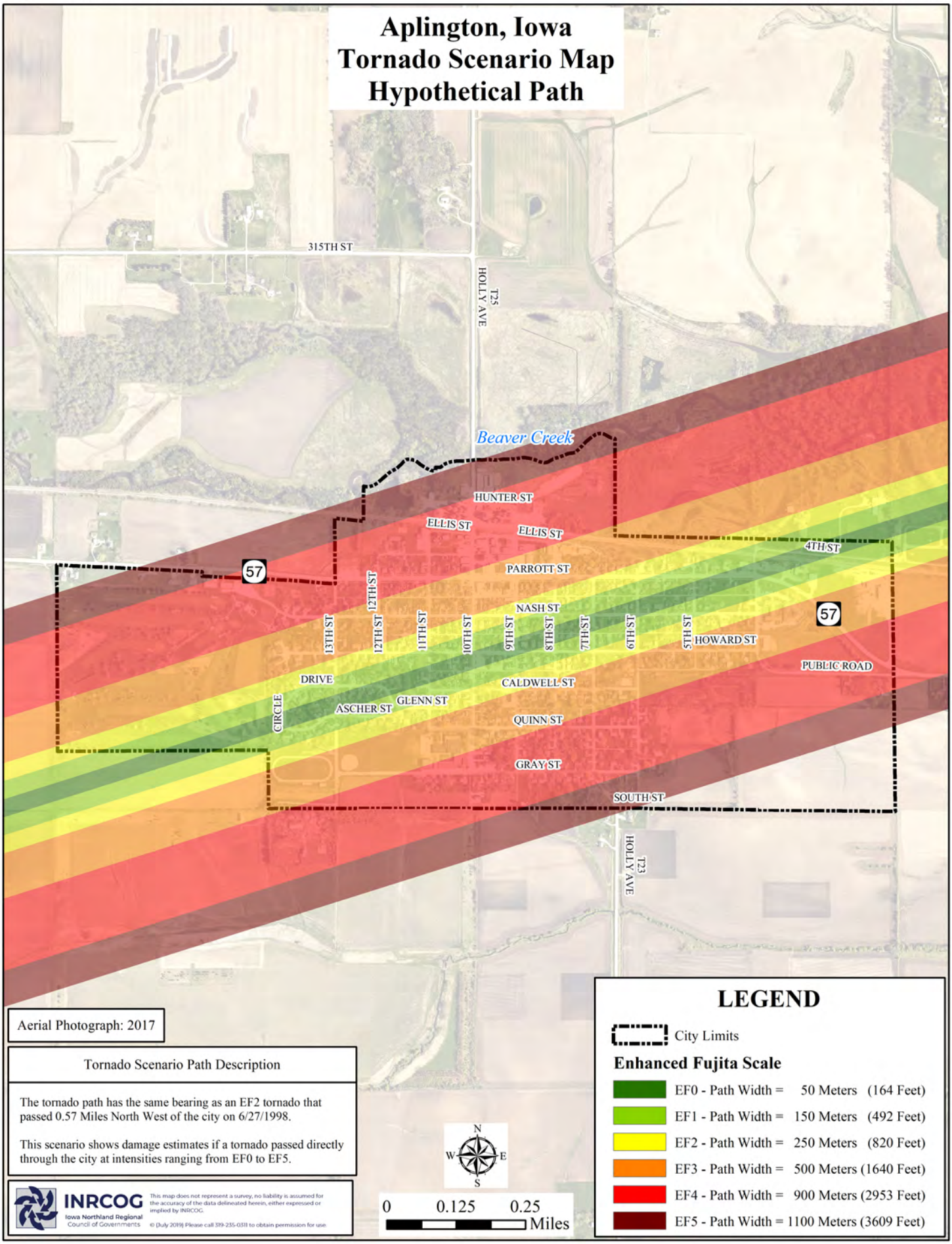
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 82 Parcels Affected - 12.26% of City
EF1 - Path Width = 150 Meters (492 Feet) - 171 Parcels Affected - 25.56% of City
EF2 - Path Width = 250 Meters (820 Feet) - 241 Parcels Affected - 36.02% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 385 Parcels Affected - 57.55% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 521 Parcels Affected - 77.88% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 567 Parcels Affected - 84.75% of City


Aplington, Iowa
Tornado Scenario Map
Hypothetical Path
315TH ST
HOLLY AVE
T25
Beaver Creek
HUNTER ST
ELLIS ST
ELLIS ST
4TH ST
57
PARROTT ST
NASH ST
57
13TH ST
12TH ST
12TH ST
11TH ST
10TH ST
9TH ST
8TH ST
7TH ST
6TH ST
5TH ST
HOWARD ST
PUBLIC ROAD
DRIVE
CALDWELL ST
CIRCLE
ASCHER ST
GLENN ST
QUINN ST
GRAY ST
SOUTH ST
HOLLY AVE
T23
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path has the same bearing as an EF2 tornado that passed 0.57 Miles North West of the city on 6/27/1998.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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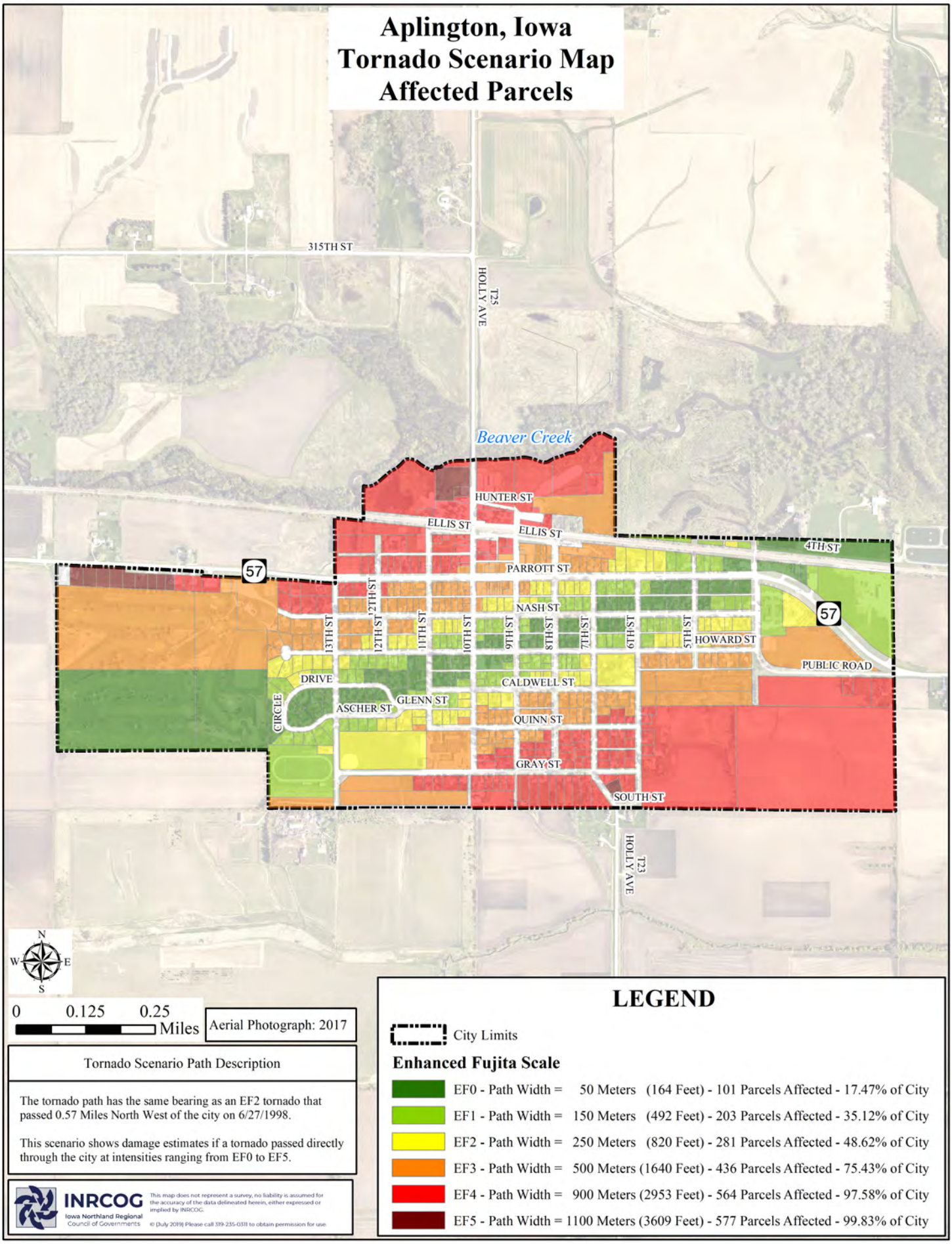
N
W
E
S
0 0.125 0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet)
EF1 - Path Width = 150 Meters (492 Feet)
EF2 - Path Width = 250 Meters (820 Feet)
EF3 - Path Width = 500 Meters (1640 Feet)
EF4 - Path Width = 900 Meters (2953 Feet)
EF5 - Path Width = 1100 Meters (3609 Feet)


Aplington, Iowa
Tornado Scenario Map
Affected Parcels
315TH ST
HOLLY AVE
T25
Beaver Creek
HUNTER ST
ELLIS ST
ELLIS ST
4TH ST
PARROTT ST
57
57
NASH ST
13TH ST
12TH ST
12TH ST
11TH ST
10TH ST
9TH ST
8TH ST
7TH ST
6TH ST
5TH ST
HOWARD ST
PUBLIC ROAD
DRIVE
CALDWELL ST
CIRCLE
GLENN ST
ASCHER ST
QUINN ST
GRAY ST
SOUTH ST
HOLLY AVE
T23
N
W
E
S
0 0.125 0.25 Miles
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path has the same bearing as an EF2 tornado that passed 0.57 Miles North West of the city on 6/27/1998.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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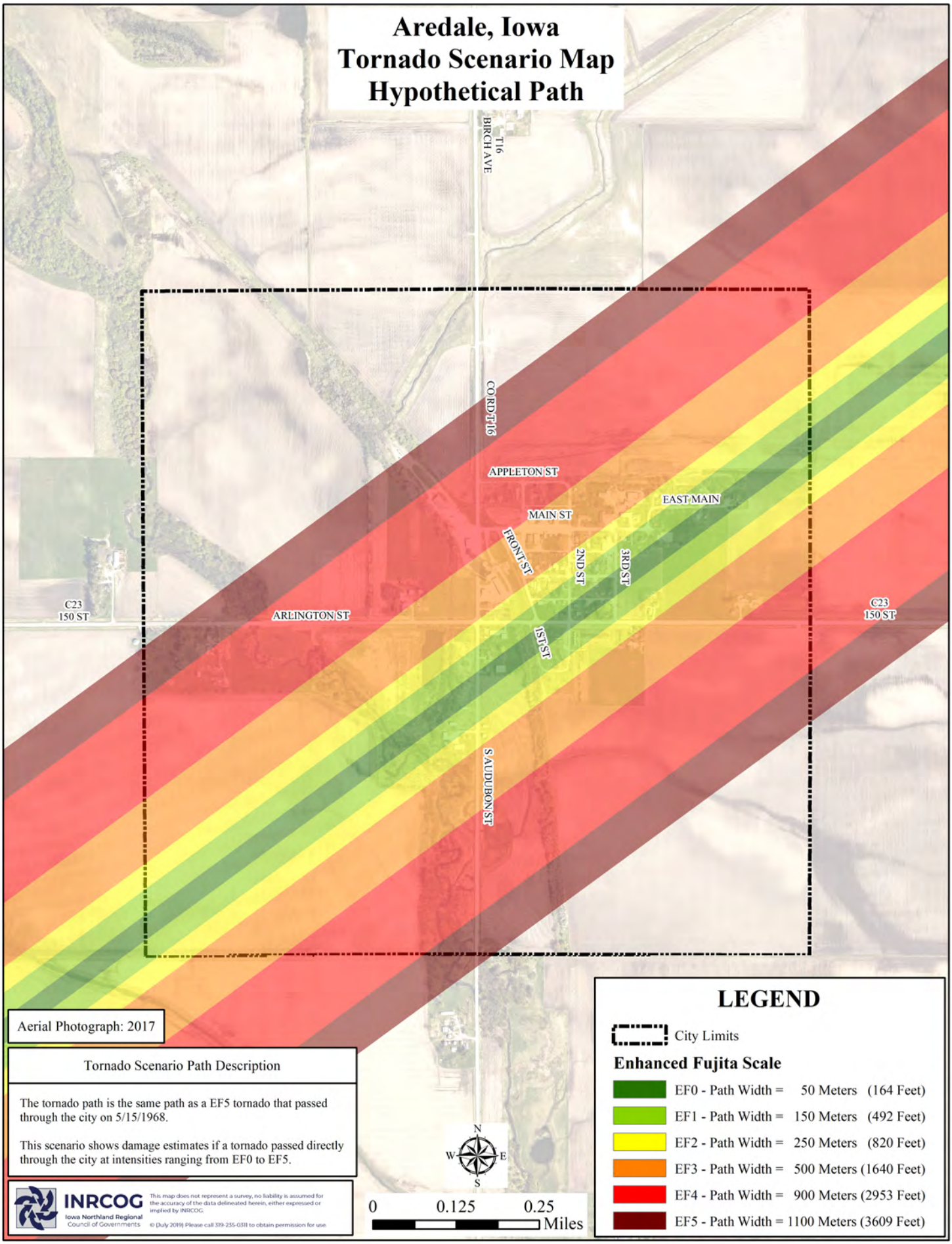
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 101 Parcels Affected - 17.47% of City
EF1 - Path Width = 150 Meters (492 Feet) - 203 Parcels Affected - 35.12% of City
EF2 - Path Width = 250 Meters (820 Feet) - 281 Parcels Affected - 48.62% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 436 Parcels Affected - 75.43% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 564 Parcels Affected - 97.58% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 577 Parcels Affected - 99.83% of City


Aredale, Iowa
Tornado Scenario Map
Hypothetical Path
BIRCH AVE
T16
CO RD T16
APPLETON ST
EAST MAIN
MAIN ST
FRONT ST
2ND ST
3RD ST
1ST ST
C23
150 ST
ARLINGTON ST
C23
150 ST
S AUDUBON ST
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path is the same path as a EF5 tornado that passed through the city on 5/15/1968.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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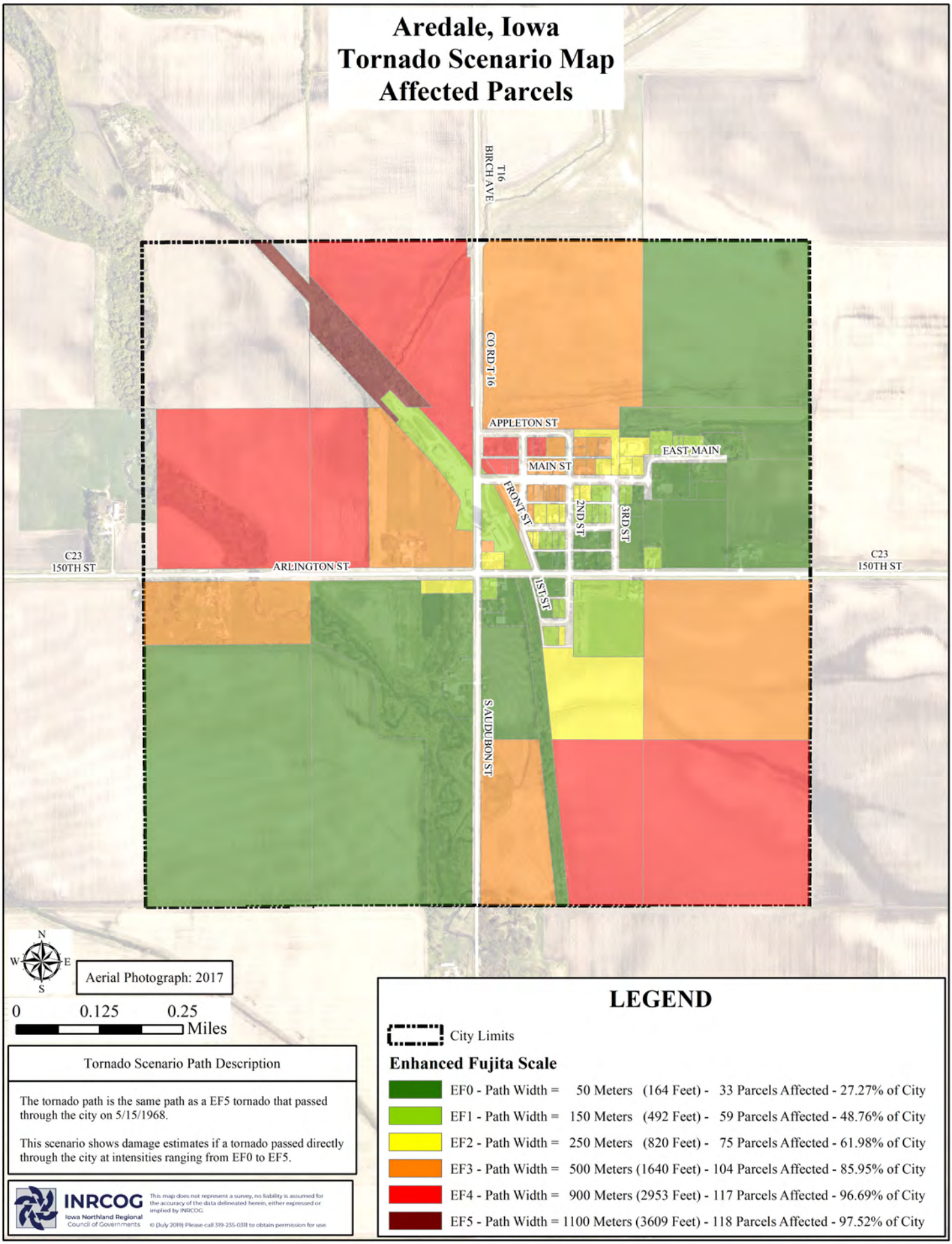
N
W
E
S
0
0.125
0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet)
EF1 - Path Width = 150 Meters (492 Feet)
EF2 - Path Width = 250 Meters (820 Feet)
EF3 - Path Width = 500 Meters (1640 Feet)
EF4 - Path Width = 900 Meters (2953 Feet)
EF5 - Path Width = 1100 Meters (3609 Feet)


Aredale, Iowa
Tornado Scenario Map
Affected Parcels
T16
BIRCH AVE
CO RD T16
APPLETON ST
EAST MAIN
MAIN ST
FRONT ST
2ND ST
3RD ST
C23
150TH ST
ARLINGTON ST
C23
150TH ST
1ST ST
S AUDUBON ST
N
W
E
S
Aerial Photograph: 2017
0
0.125
0.25
Miles
Tornado Scenario Path Description
The tornado path is the same path as a EF5 tornado that passed through the city on 5/15/1968.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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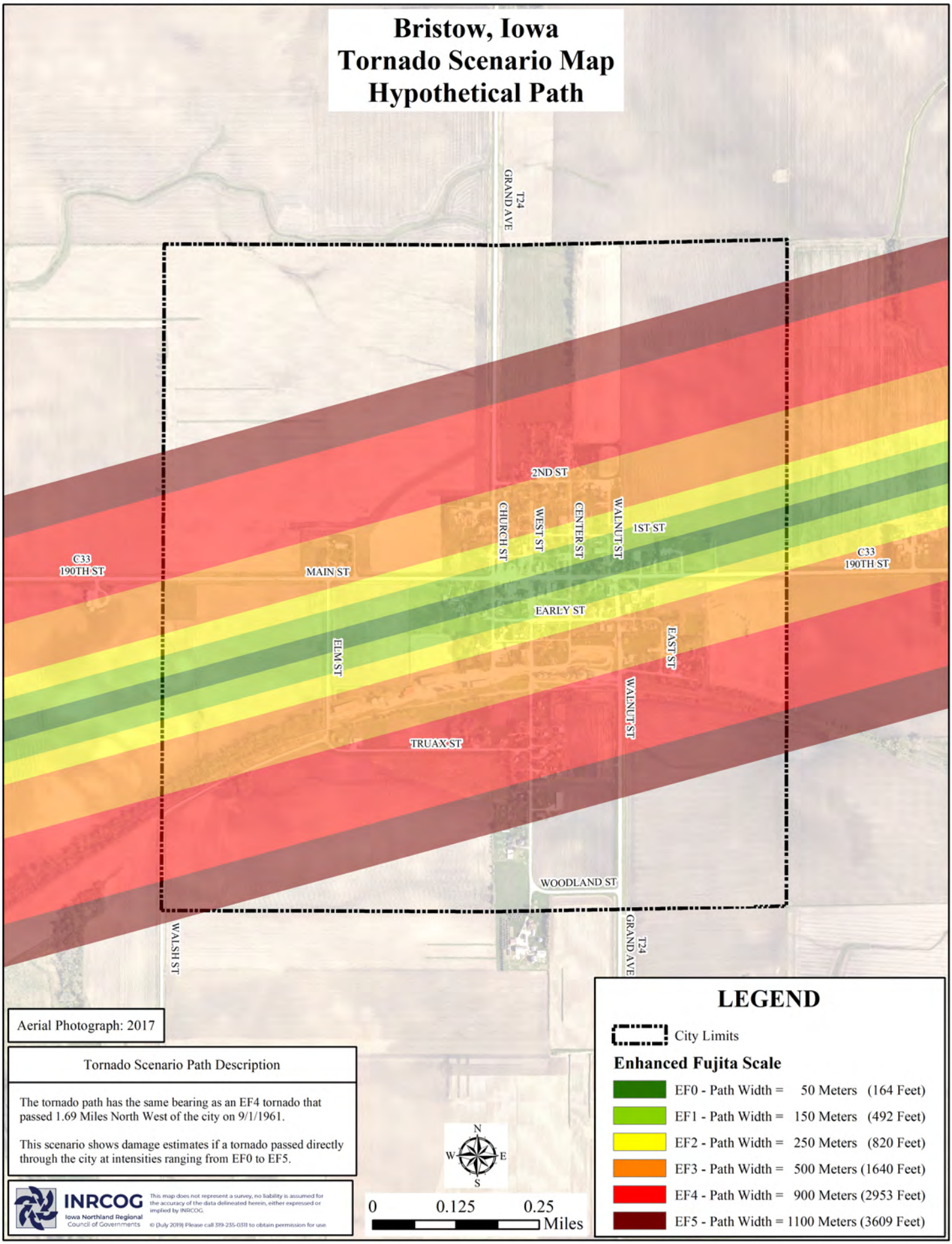
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 33 Parcels Affected - 27.27% of City
EF1 - Path Width = 150 Meters (492 Feet) - 59 Parcels Affected - 48.76% of City
EF2 - Path Width = 250 Meters (820 Feet) - 75 Parcels Affected - 61.98% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 104 Parcels Affected - 85.95% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 117 Parcels Affected - 96.69% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 118 Parcels Affected - 97.52% of City


Bristow, Iowa
Tornado Scenario Map
Hypothetical Path
T24
GRAND AVE
2ND ST
CHURCH ST
WEST ST
CENTER ST
WALNUT ST
1ST ST
C33
190TH ST
MAIN ST
EARLY ST
ELM ST
EAST ST
WALNUT ST
TRUAX ST
WOODLAND ST
WALSH ST
T24
GRAND AVE
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path has the same bearing as an EF4 tornado that passed 1.69 Miles North West of the city on 9/1/1961.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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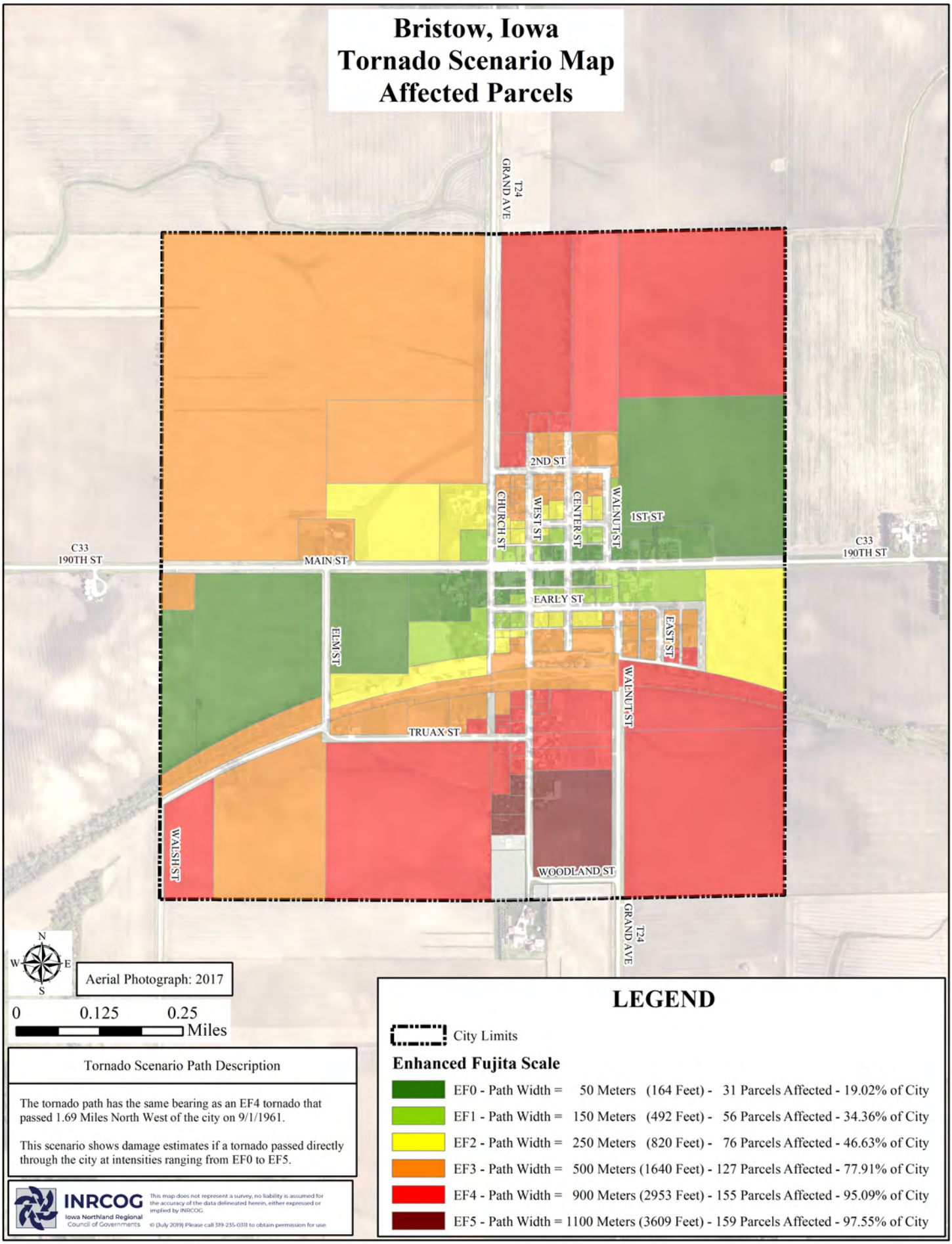
N
W
E
S
0
0.125
0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet)
EF1 - Path Width = 150 Meters (492 Feet)
EF2 - Path Width = 250 Meters (820 Feet)
EF3 - Path Width = 500 Meters (1640 Feet)
EF4 - Path Width = 900 Meters (2953 Feet)
EF5 - Path Width = 1100 Meters (3609 Feet)


Bristow, Iowa
Tornado Scenario Map
Affected Parcels
T24
GRAND AVE
2ND ST
CHURCH ST
WEST ST
CENTER ST
WALNUT ST
1ST ST
C33
190TH ST
MAIN ST
EARLY ST
ELM ST
EAST ST
TRUAX ST
WALSH ST
WOODLAND ST
N
W
E
S
Aerial Photograph: 2017
0
0.125
0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 31 Parcels Affected - 19.02% of City
EF1 - Path Width = 150 Meters (492 Feet) - 56 Parcels Affected - 34.36% of City
EF2 - Path Width = 250 Meters (820 Feet) - 76 Parcels Affected - 46.63% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 127 Parcels Affected - 77.91% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 155 Parcels Affected - 95.09% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 159 Parcels Affected - 97.55% of City
Tornado Scenario Path Description
The tornado path has the same bearing as an EF4 tornado that passed 1.69 Miles North West of the city on 9/1/1961.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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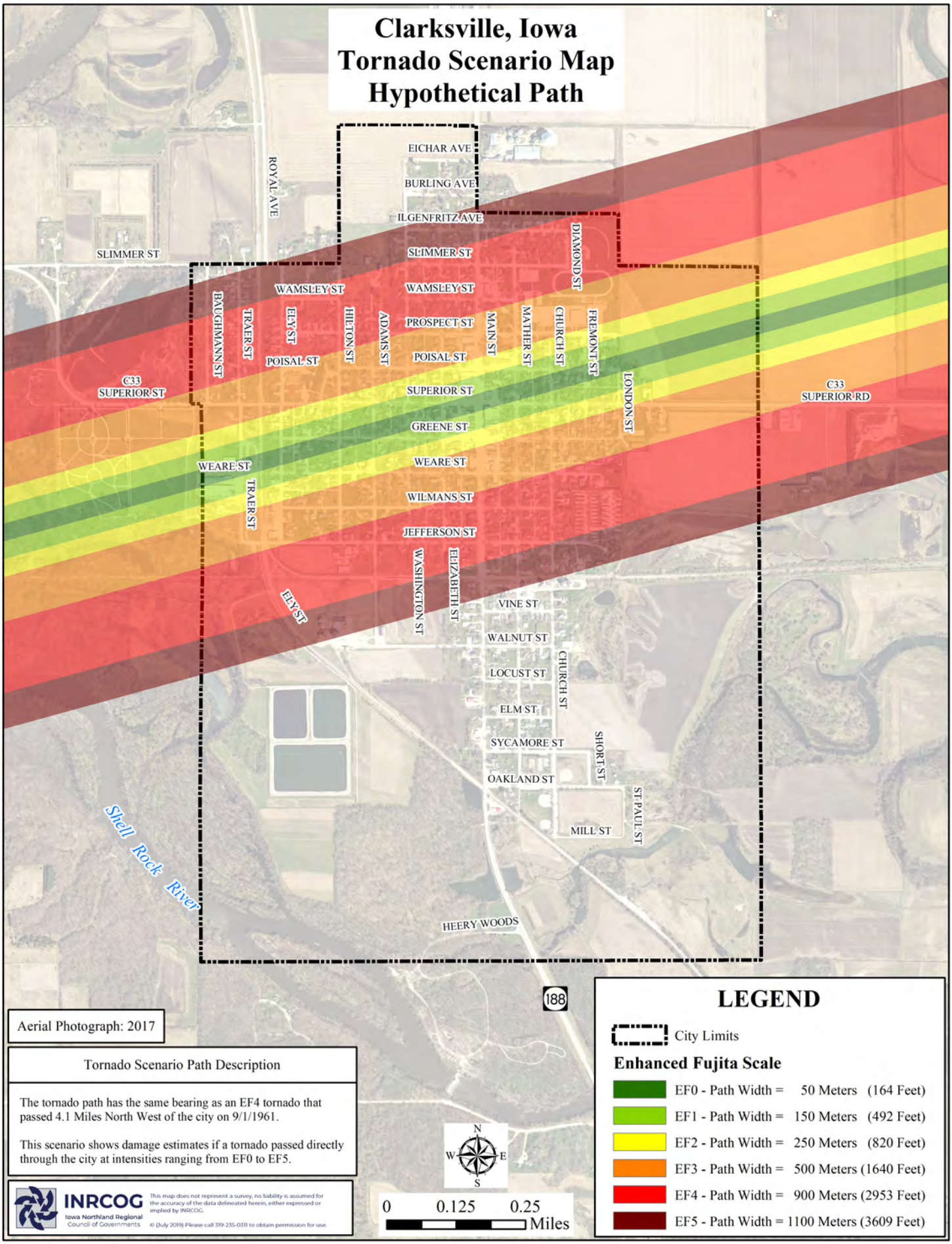
Clarksville, Iowa
Tornado Scenario Map
Hypothetical Path
EICHAR AVE
BURLING AVE
ILGENFRITZ AVE
SLIMMER ST
WAMSLEY ST
PROSPECT ST
POISAL ST
SUPERIOR ST
GREENE ST
WEARE ST
WILMANS ST
JEFFERSON ST
ROYAL AVE
DIAMOND ST
BAUGHMANN ST
TRAER ST
ELY ST
HILTON ST
ADAMS ST
MAIN ST
MATHER ST
CHURCH ST
FREMONT ST
LONDON ST
C33
SUPERIOR ST
C33
SUPERIOR RD
WASHINGTON ST
ELIZABETH ST
VINE ST
WALNUT ST
LOCUST ST
ELM ST
SYCAMORE ST
OAKLAND ST
SHORT ST
ST PAUL ST
MILL ST
Shell Rock River
HEERY WOODS
188
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path has the same bearing as an EF4 tornado that passed 4.1 Miles North West of the city on 9/1/1961.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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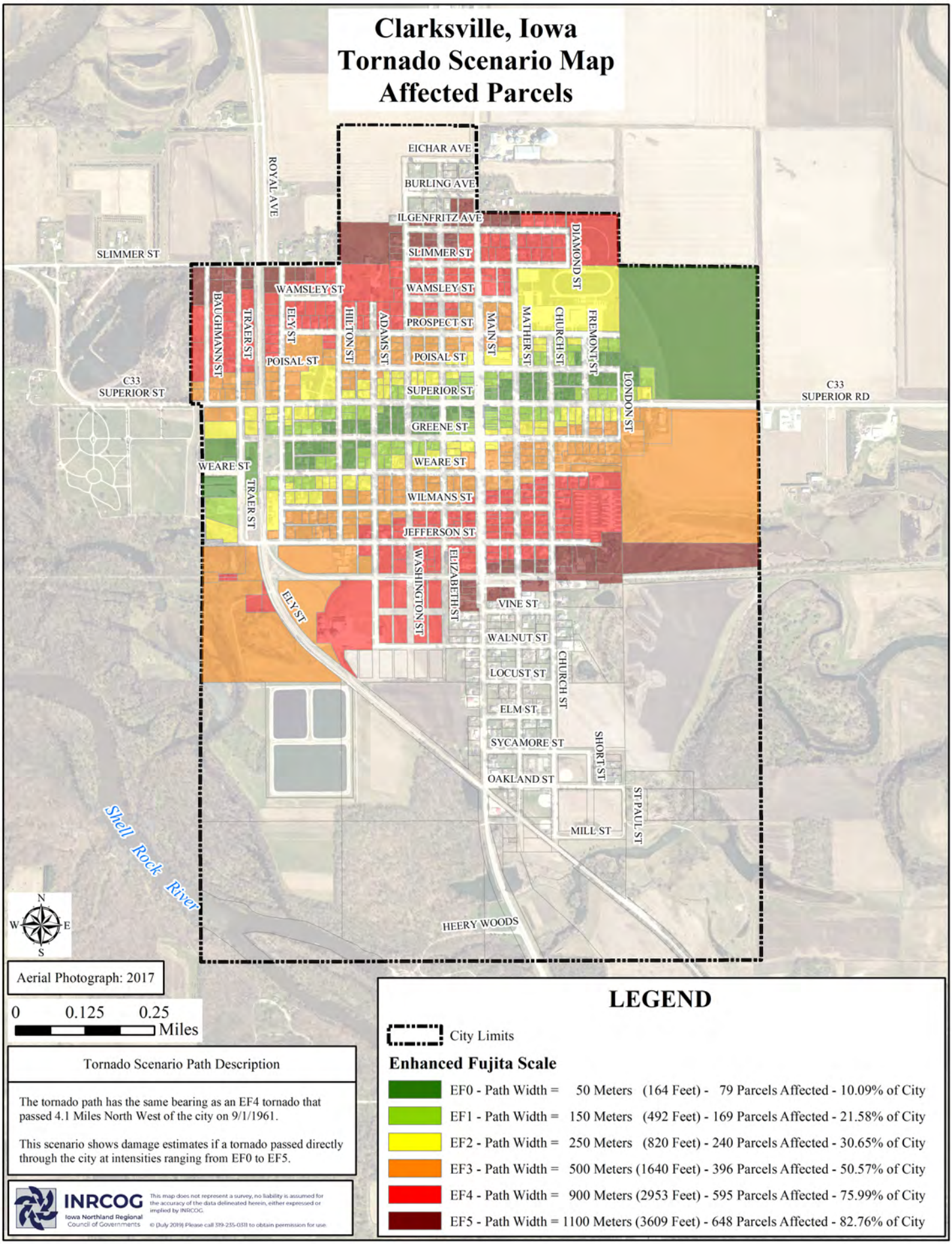
N
W
E
S
0 0.125 0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet)
EF1 - Path Width = 150 Meters (492 Feet)
EF2 - Path Width = 250 Meters (820 Feet)
EF3 - Path Width = 500 Meters (1640 Feet)
EF4 - Path Width = 900 Meters (2953 Feet)
EF5 - Path Width = 1100 Meters (3609 Feet)


Clarksville, Iowa
Tornado Scenario Map
Affected Parcels
EICHAR AVE
BURLING AVE
ILGENFRITZ AVE
ROYAL AVE
SLIMMER ST
WAMSLEY ST
PROSPECT ST
POISAL ST
SUPERIOR ST
GREENE ST
WEARE ST
WILMANS ST
JEFFERSON ST
VINE ST
WALNUT ST
LOCUST ST
ELM ST
SYCAMORE ST
OAKLAND ST
MILL ST
HEERY WOODS
C33
SUPERIOR ST
C33
SUPERIOR RD
BAUGHMANN ST
TRAER ST
ELY ST
HILTON ST
ADAMS ST
MAIN ST
MATHER ST
CHURCH ST
FREMONT ST
DIAMOND ST
LONDON ST
WASHINGTON ST
ELIZABETH ST
SHORT ST
ST PAUL ST
Shell Rock River
N
W
E
S
Aerial Photograph: 2017
0 0.125 0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 79 Parcels Affected - 10.09% of City
EF1 - Path Width = 150 Meters (492 Feet) - 169 Parcels Affected - 21.58% of City
EF2 - Path Width = 250 Meters (820 Feet) - 240 Parcels Affected - 30.65% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 396 Parcels Affected - 50.57% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 595 Parcels Affected - 75.99% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 648 Parcels Affected - 82.76% of City
Tornado Scenario Path Description
The tornado path has the same bearing as an EF4 tornado that passed 4.1 Miles North West of the city on 9/1/1961.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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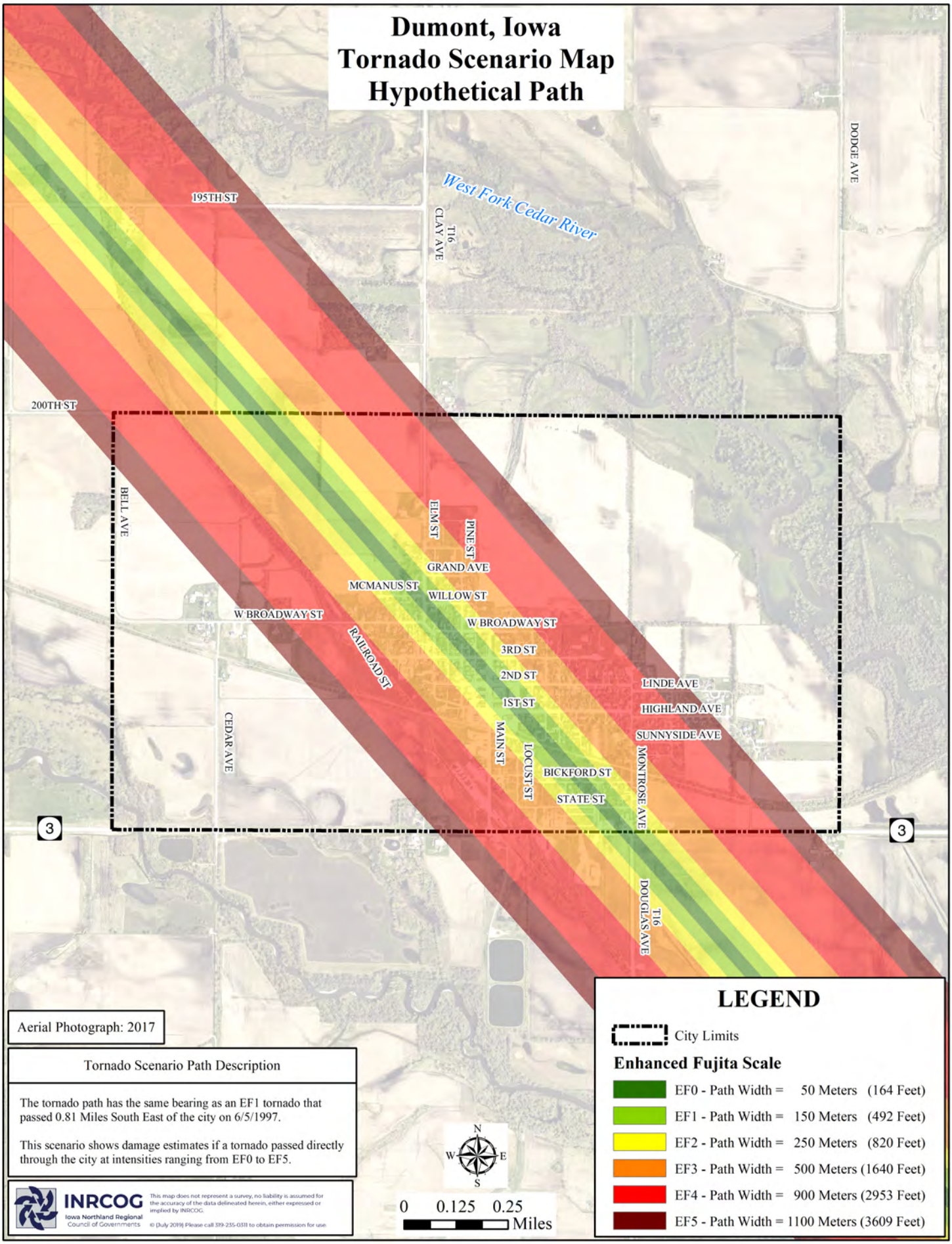
Dumont, Iowa
Tornado Scenario Map
Hypothetical Path
West Fork Cedar River
195TH ST
200TH ST
CLAY AVE
T16
DODGE AVE
BELL AVE
ELM ST
PINE ST
GRAND AVE
MCMANUS ST
WILLOW ST
W BROADWAY ST
W BROADWAY ST
RAILROAD ST
3RD ST
2ND ST
1ST ST
LINDE AVE
HIGHLAND AVE
SUNNYSIDE AVE
CEDAR AVE
MAIN ST
LOCUST ST
BICKFORD ST
STATE ST
MONTROSE AVE
DOUGLAS AVE
T16
3
3
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path has the same bearing as an EF1 tornado that passed 0.81 Miles South East of the city on 6/5/1997.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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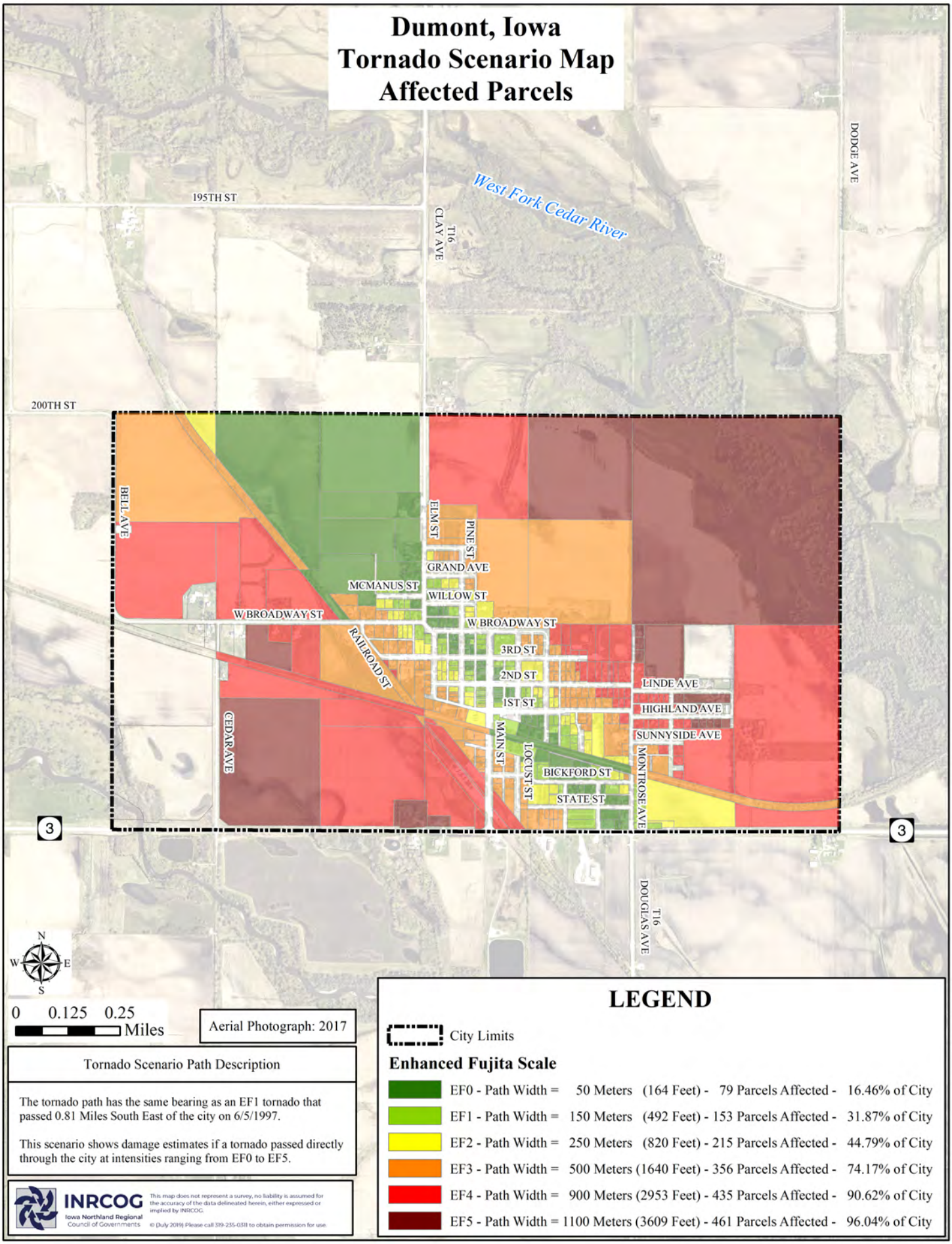
N
W
E
S
0 0.125 0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet)
EF1 - Path Width = 150 Meters (492 Feet)
EF2 - Path Width = 250 Meters (820 Feet)
EF3 - Path Width = 500 Meters (1640 Feet)
EF4 - Path Width = 900 Meters (2953 Feet)
EF5 - Path Width = 1100 Meters (3609 Feet)


Dumont, Iowa
Tornado Scenario Map
Affected Parcels
195TH ST
200TH ST
West Fork Cedar River
CLAY AVE
T16
DODGE AVE
BELL AVE
ELM ST
PINE ST
GRAND AVE
MCMANUS ST
WILLOW ST
W BROADWAY ST
W BROADWAY ST
RAILROAD ST
3RD ST
2ND ST
1ST ST
LINDE AVE
HIGHLAND AVE
SUNNYSIDE AVE
CEDAR AVE
MAIN ST
LOCUST ST
BICKFORD ST
STATE ST
MONTROSE AVE
3
3
DOUGLAS AVE
T16
N
W
E
S
0 0.125 0.25
Miles
Aerial Photograph: 2017
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 79 Parcels Affected - 16.46% of City
EF1 - Path Width = 150 Meters (492 Feet) - 153 Parcels Affected - 31.87% of City
EF2 - Path Width = 250 Meters (820 Feet) - 215 Parcels Affected - 44.79% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 356 Parcels Affected - 74.17% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 435 Parcels Affected - 90.62% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 461 Parcels Affected - 96.04% of City
Tornado Scenario Path Description
The tornado path has the same bearing as an EF1 tornado that passed 0.81 Miles South East of the city on 6/5/1997.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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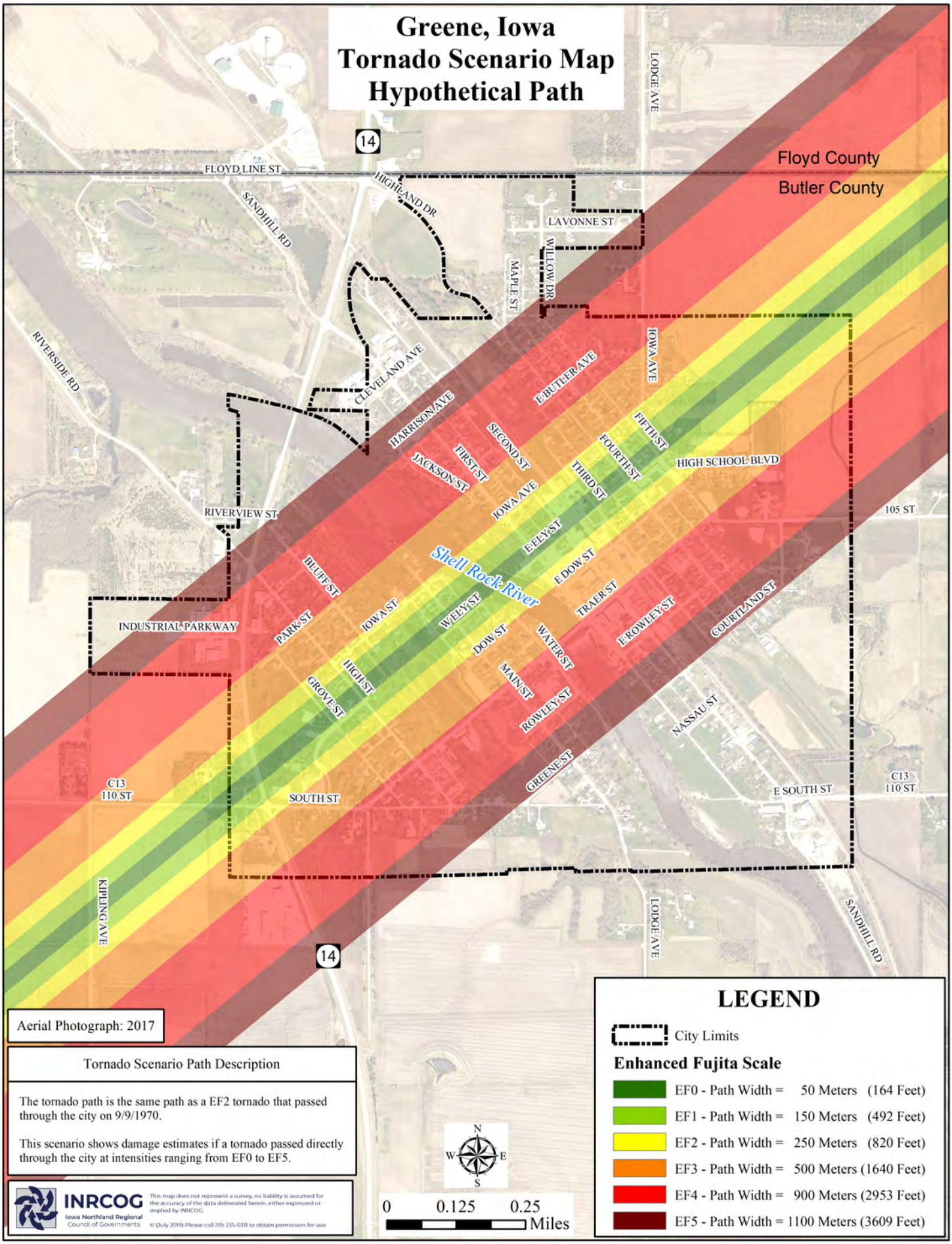
Greene, Iowa
Tornado Scenario Map
Hypothetical Path
Floyd County
Butler County
FLOYD LINE ST
HIGHLAND DR
SANDHILL RD
LAVONNE ST
WILLOW DR
MAPLE ST
LODGE AVE
RIVERSIDE RD
CLEVELAND AVE
HARRISON AVE
E BUTLER AVE
IOWA AVE
FIFTH ST
FOURTH ST
THIRD ST
SECOND ST
FIRST ST
JACKSON ST
HIGH SCHOOL BLVD
RIVERVIEW ST
105 ST
E ELY ST
E DOW ST
Shell Rock River
BLUFF ST
IOWA ST
WELY ST
TRAER ST
E ROWLEY ST
COURTLAND ST
INDUSTRIAL PARKWAY
PARK ST
DOW ST
WATER ST
HIGH ST
MAIN ST
GROVE ST
ROWLEY ST
NASSAU ST
GREENE ST
C13
110 ST
SOUTH ST
E SOUTH ST
KIPLING AVE
14
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path is the same path as a EF2 tornado that passed through the city on 9/9/1970.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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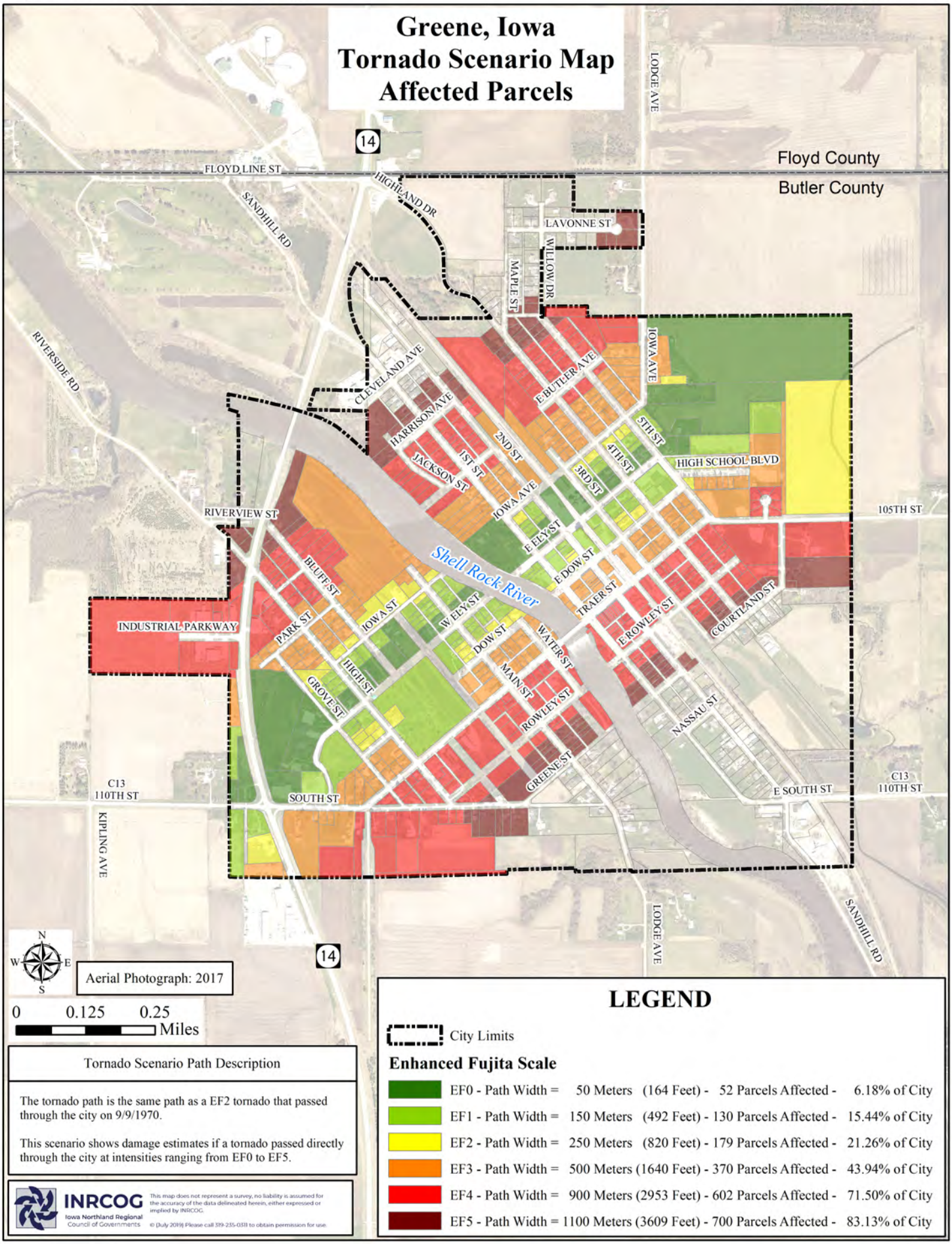
N
W
E
S
0 0.125 0.25 Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet)
EF1 - Path Width = 150 Meters (492 Feet)
EF2 - Path Width = 250 Meters (820 Feet)
EF3 - Path Width = 500 Meters (1640 Feet)
EF4 - Path Width = 900 Meters (2953 Feet)
EF5 - Path Width = 1100 Meters (3609 Feet)


Greene, Iowa
Tornado Scenario Map
Affected Parcels
Floyd County
Butler County
FLOYD LINE ST
HIGHLAND DR
SANDHILL RD
LAVONNE ST
WILLOW DR
MAPLE ST
LODGE AVE
RIVERSIDE RD
CLEVELAND AVE
HARRISON AVE
JACKSON ST
1ST ST
2ND ST
3RD ST
4TH ST
5TH ST
IOWA AVE
E BUTLER AVE
HIGH SCHOOL BLVD
105TH ST
RIVERVIEW ST
Shell Rock River
E ELY ST
E DOW ST
TRAER ST
E ROWLEY ST
COURTLAND ST
BLUFF ST
IOWA ST
W ELY ST
DOW ST
WATER ST
MAIN ST
ROWLEY ST
GREENE ST
NASSAU ST
PARK ST
HIGH ST
GROVE ST
INDUSTRIAL PARKWAY
C13
110TH ST
SOUTH ST
E SOUTH ST
KIPLING AVE
14
N
W
E
S
Aerial Photograph: 2017
0 0.125 0.25
Miles
Tornado Scenario Path Description
The tornado path is the same path as a EF2 tornado that passed through the city on 9/9/1970.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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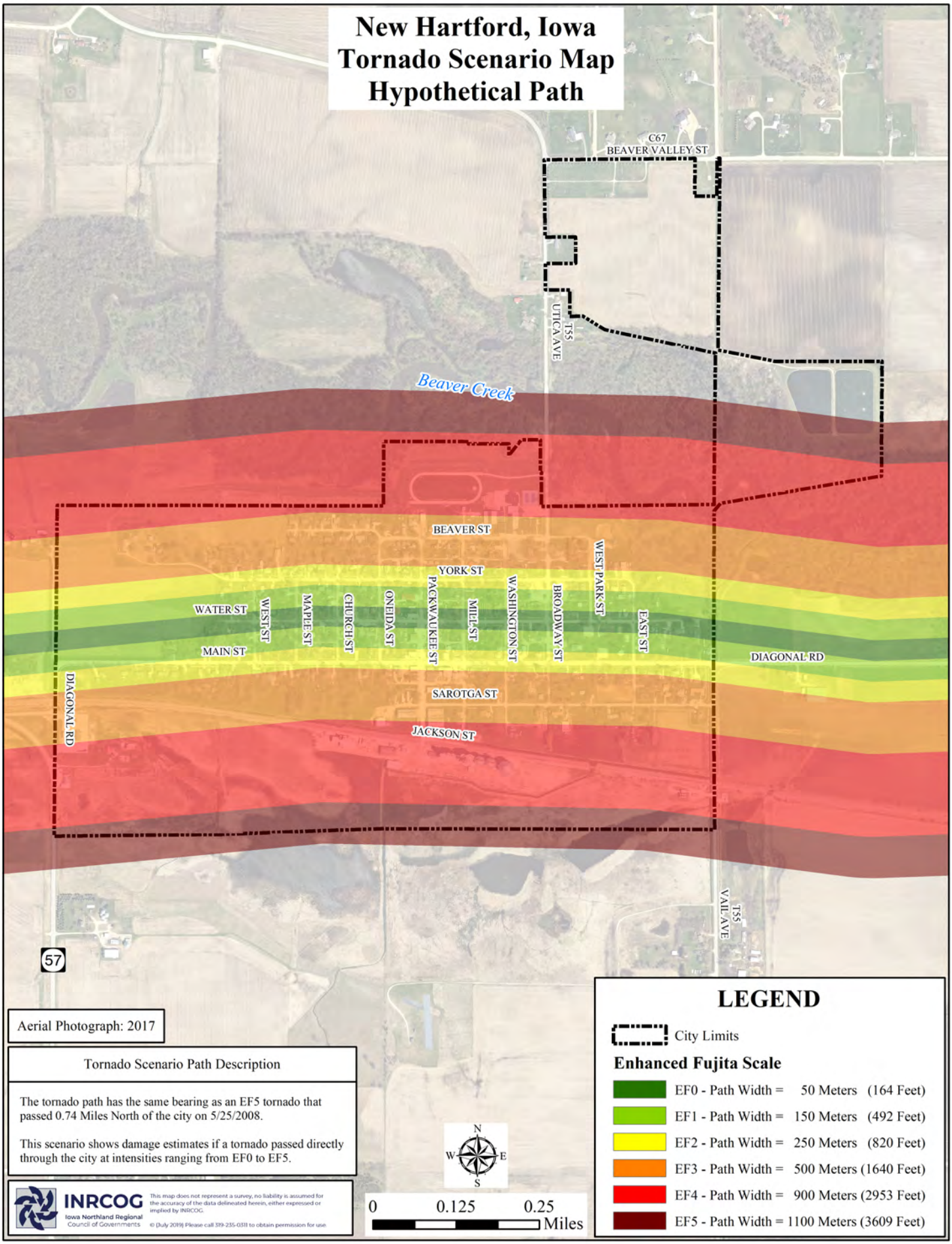
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 52 Parcels Affected - 6.18% of City
EF1 - Path Width = 150 Meters (492 Feet) - 130 Parcels Affected - 15.44% of City
EF2 - Path Width = 250 Meters (820 Feet) - 179 Parcels Affected - 21.26% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 370 Parcels Affected - 43.94% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 602 Parcels Affected - 71.50% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 700 Parcels Affected - 83.13% of City


New Hartford, Iowa
Tornado Scenario Map
Hypothetical Path
C67
BEAVER VALLEY ST
UTICA AVE
T55
Beaver Creek
BEAVER ST
YORK ST
WATER ST
MAIN ST
WEST ST
MAPLE ST
CHURCH ST
ONEIDA ST
PACKWAUKEE ST
MILL ST
WASHINGTON ST
BROADWAY ST
WEST PARK ST
EAST ST
DIAGONAL RD
SAROTGA ST
JACKSON ST
VAIL AVE
T55
57
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path has the same bearing as an EF5 tornado that passed 0.74 Miles North of the city on 5/25/2008.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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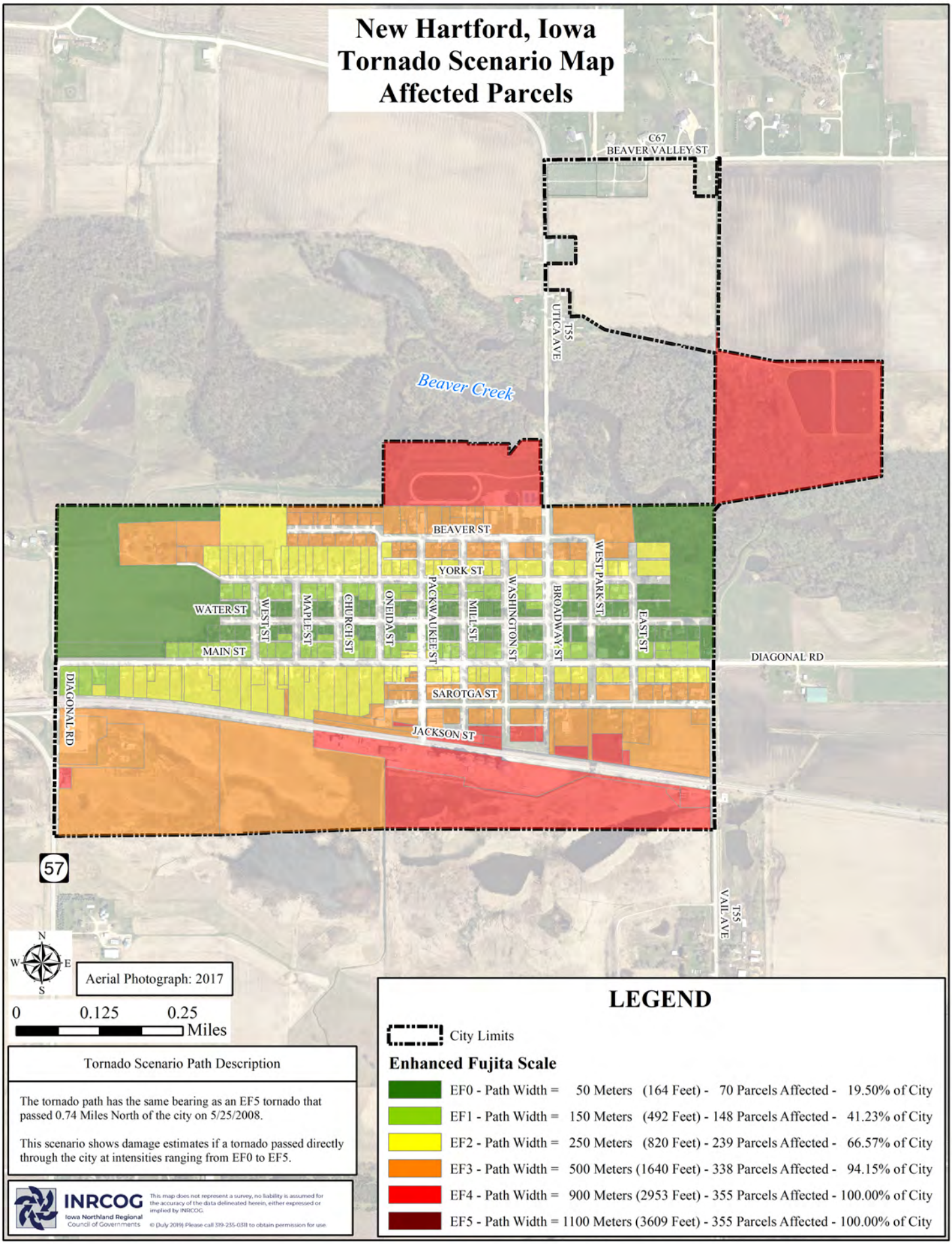
N
W
E
S
0
0.125
0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet)
EF1 - Path Width = 150 Meters (492 Feet)
EF2 - Path Width = 250 Meters (820 Feet)
EF3 - Path Width = 500 Meters (1640 Feet)
EF4 - Path Width = 900 Meters (2953 Feet)
EF5 - Path Width = 1100 Meters (3609 Feet)


New Hartford, Iowa
Tornado Scenario Map
Affected Parcels
C67
BEAVER VALLEY ST
UTICA AVE
T55
Beaver Creek
BEAVER ST
YORK ST
WATER ST
MAIN ST
WEST ST
MAPLE ST
CHURCH ST
ONEIDA ST
PACKWAUKEE ST
MILL ST
WASHINGTON ST
BROADWAY ST
WEST PARK ST
EAST ST
DIAGONAL RD
SAROTGA ST
JACKSON ST
57
VAIL AVE
T55
N
W
E
S
Aerial Photograph: 2017
0 0.125 0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 70 Parcels Affected - 19.50% of City
EF1 - Path Width = 150 Meters (492 Feet) - 148 Parcels Affected - 41.23% of City
EF2 - Path Width = 250 Meters (820 Feet) - 239 Parcels Affected - 66.57% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 338 Parcels Affected - 94.15% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 355 Parcels Affected - 100.00% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 355 Parcels Affected - 100.00% of City
Tornado Scenario Path Description
The tornado path has the same bearing as an EF5 tornado that passed 0.74 Miles North of the city on 5/25/2008.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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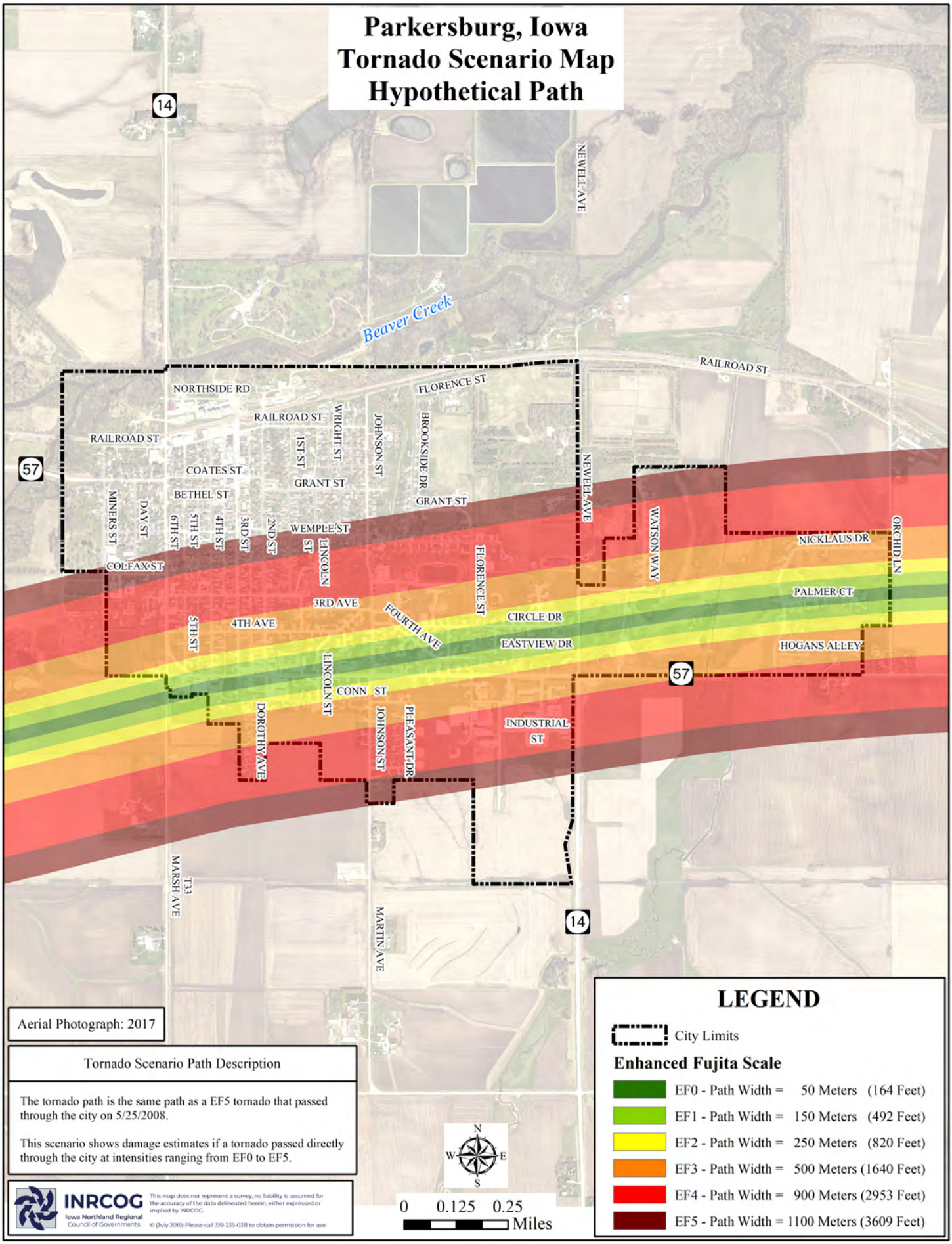
Parkersburg, Iowa
Tornado Scenario Map
Hypothetical Path
14
57
Beaver Creek
NEWELL AVE
RAILROAD ST
NORTHSIDE RD
FLORENCE ST
WRIGHT ST
JOHNSON ST
BROOKSIDE DR
1ST ST
COATES ST
GRANT ST
BETHEL ST
MINERS ST
DAY ST
6TH ST
5TH ST
4TH ST
3RD ST
2ND ST
WEMPLE ST
LINCOLN ST
COLFAX ST
WATSON WAY
NICKLAUS DR
ORCHID LN
PALMER CT
3RD AVE
FOURTH AVE
FLORENCE ST
CIRCLE DR
4TH AVE
EASTVIEW DR
HOGANS ALLEY
CONN ST
LINCOLN ST
DOROTHY AVE
JOHNSON ST
PLEASANT DR
INDUSTRIAL ST
T33
MARSH AVE
MARTIN AVE
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path is the same path as a EF5 tornado that passed through the city on 5/25/2008.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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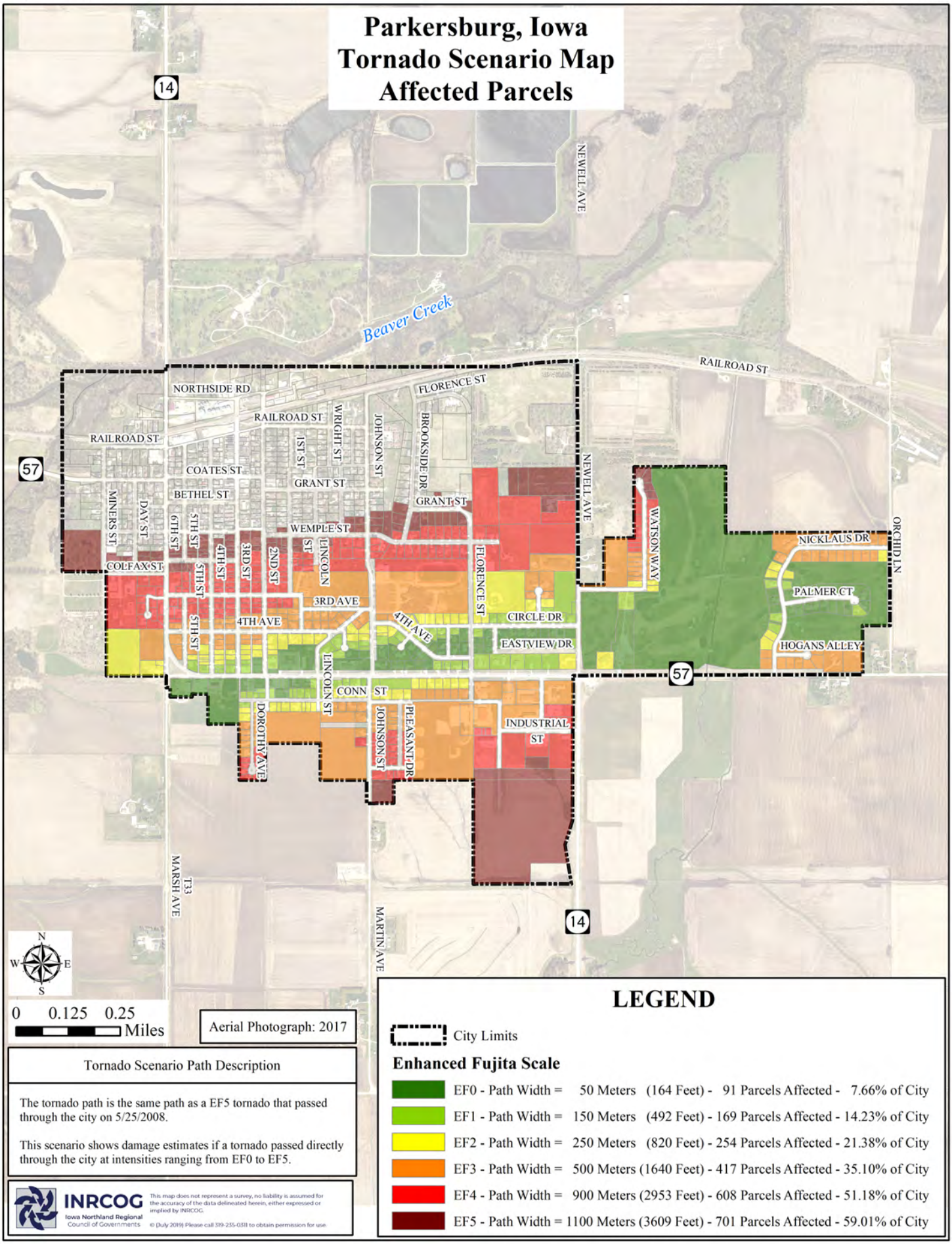
N
W
E
S
0 0.125 0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet)
EF1 - Path Width = 150 Meters (492 Feet)
EF2 - Path Width = 250 Meters (820 Feet)
EF3 - Path Width = 500 Meters (1640 Feet)
EF4 - Path Width = 900 Meters (2953 Feet)
EF5 - Path Width = 1100 Meters (3609 Feet)


Parkersburg, Iowa
Tornado Scenario Map
Affected Parcels
Beaver Creek
NORTHSIDE RD
RAILROAD ST
FLORENCE ST
NEWELL AVE
WRIGHT ST
JOHNSON ST
BROOKSIDE DR
COATES ST
GRANT ST
BETHEL ST
MINERS ST
DAY ST
6TH ST
5TH ST
4TH ST
3RD ST
2ND ST
1ST ST
WEMPLE ST
LINCOLN ST
COLFAX ST
3RD AVE
4TH AVE
CIRCLE DR
EASTVIEW DR
WATSON WAY
NICKLAUS DR
PALMER CT
HOGANS ALLEY
ORCHID LN
CONN ST
DOROTHY AVE
PLEASANT DR
INDUSTRIAL ST
MARSH AVE
MARTIN AVE
T33
14
57
N
W
E
S
0 0.125 0.25 Miles
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path is the same path as a EF5 tornado that passed through the city on 5/25/2008.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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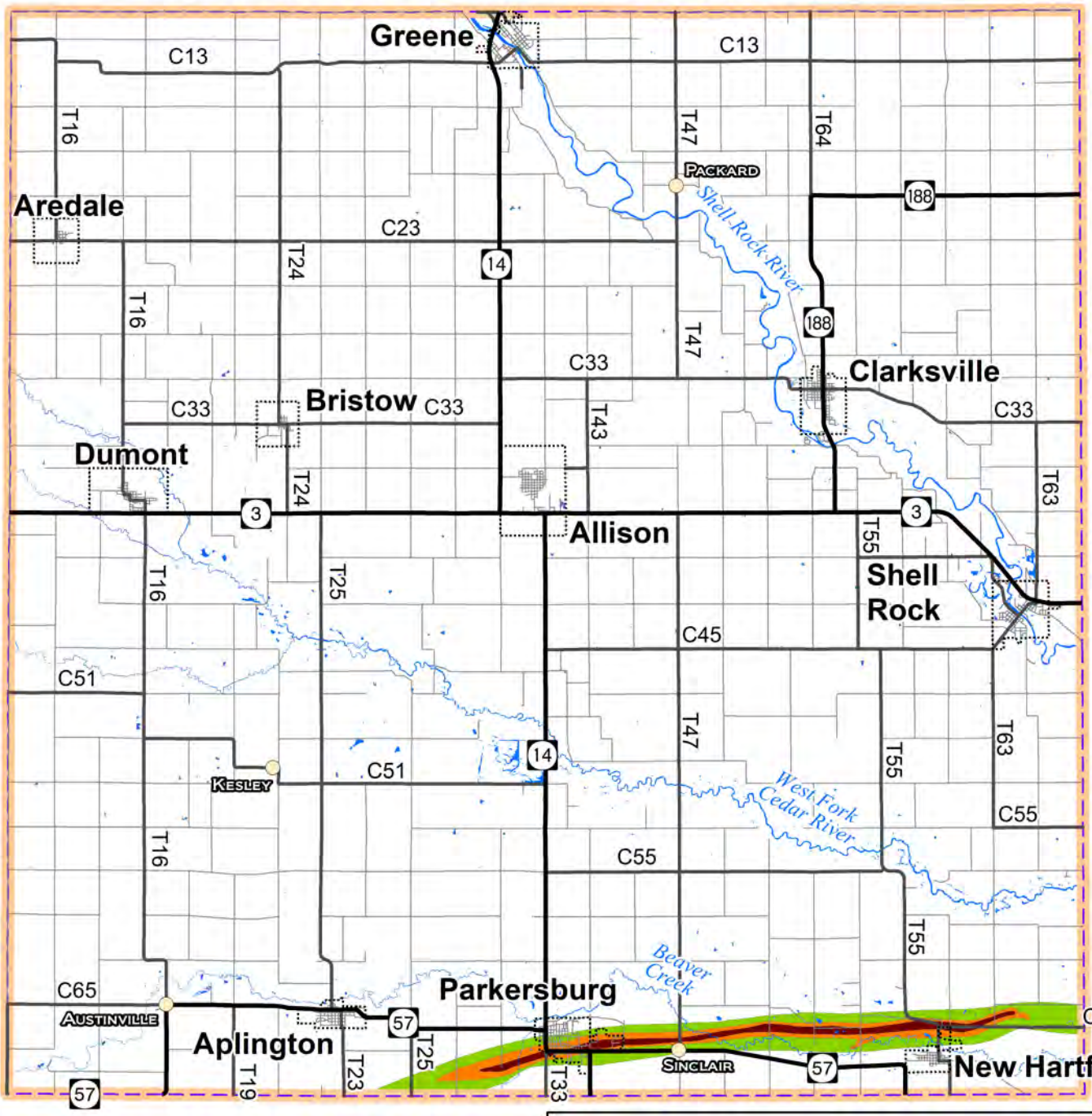
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 91 Parcels Affected - 7.66% of City
EF1 - Path Width = 150 Meters (492 Feet) - 169 Parcels Affected - 14.23% of City
EF2 - Path Width = 250 Meters (820 Feet) - 254 Parcels Affected - 21.38% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 417 Parcels Affected - 35.10% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 608 Parcels Affected - 51.18% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 701 Parcels Affected - 59.01% of City

Butler County, Iowa
5-25-2008 Historical Tornado Map - Estimated Tornado Path



Tornado Extents were created using NOAA data that was created by Created by Karl Jungbluth, Science Officer

NOAA information was obtained from this FTP site: http://www.crh.noaa.gov/images/dmx/parkersburg/

The Butler County Parcel information was current as of 10-3-2008

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Damage Estimates

Damage Based on the Enhanced Fujita Scale of Tornado Severity

EF0- EF2 326 Properties Affected
EF2 - EF4 171 Properties Affected
Over EF4 114 Properties Affected

EF0 - EF2 Path Width = 50 Meters(164 Feet) to 250 Meters(820 Feet)
EF2 - EF4 Path Width = 250 Meters(820 Feet) to 900 Meters(2953 Feet)
Over EF4 - Path Width = Over 900 Meters(2953 Feet)

0 0.5 1 2 Miles

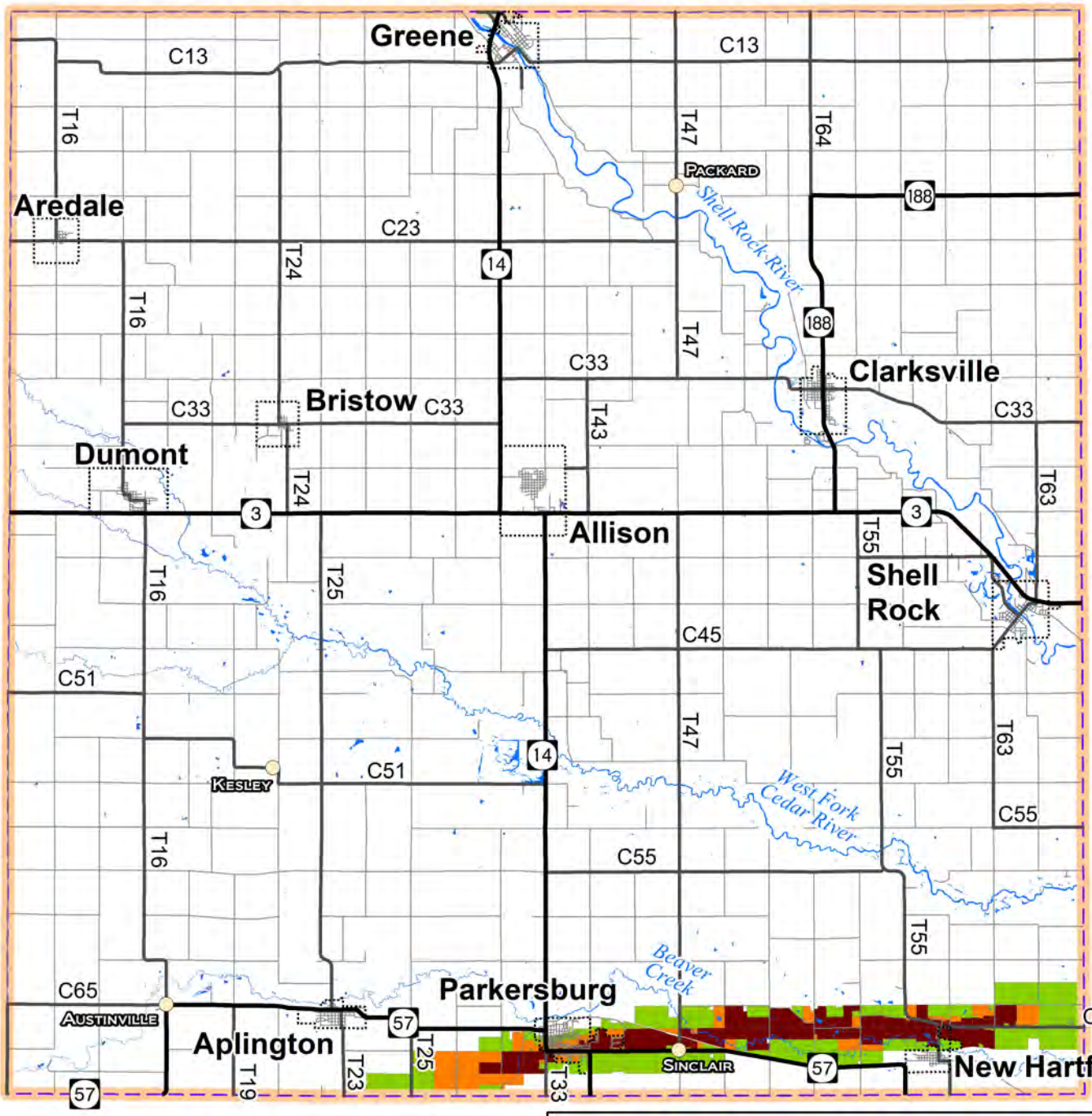
N W E S

LEGEND

Enhanced Fujita Scale

- Over EF4 Damage - 100%
- Over EF2 - Under EF4 - 50%
- Under EF2 Damage - 25%

Butler County, Iowa
5-25-2008 Historical Tornado Map - Estimated Affected Parcels



Tornado Extents were created using NOAA data that was created by Created by Karl Jungbluth, Science Officer

NOAA information was obtained from this FTP site: http://www.crh.noaa.gov/images/dmx/parkersburg/

The Butler County Parcel information was current as of 10-3-2008

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Damage Estimates

Damage Based on the Enhanced Fujita Scale of Tornado Severity

EF0- EF2 326 Properties Affected
EF2 - EF4 171 Properties Affected
Over EF4 114 Properties Affected

EF0 - EF2 Path Width = 50 Meters(164 Feet) to 250 Meters(820 Feet)
EF2 - EF4 Path Width = 250 Meters(820 Feet) to 900 Meters(2953 Feet)
Over EF4 - Path Width = Over 900 Meters(2953 Feet)

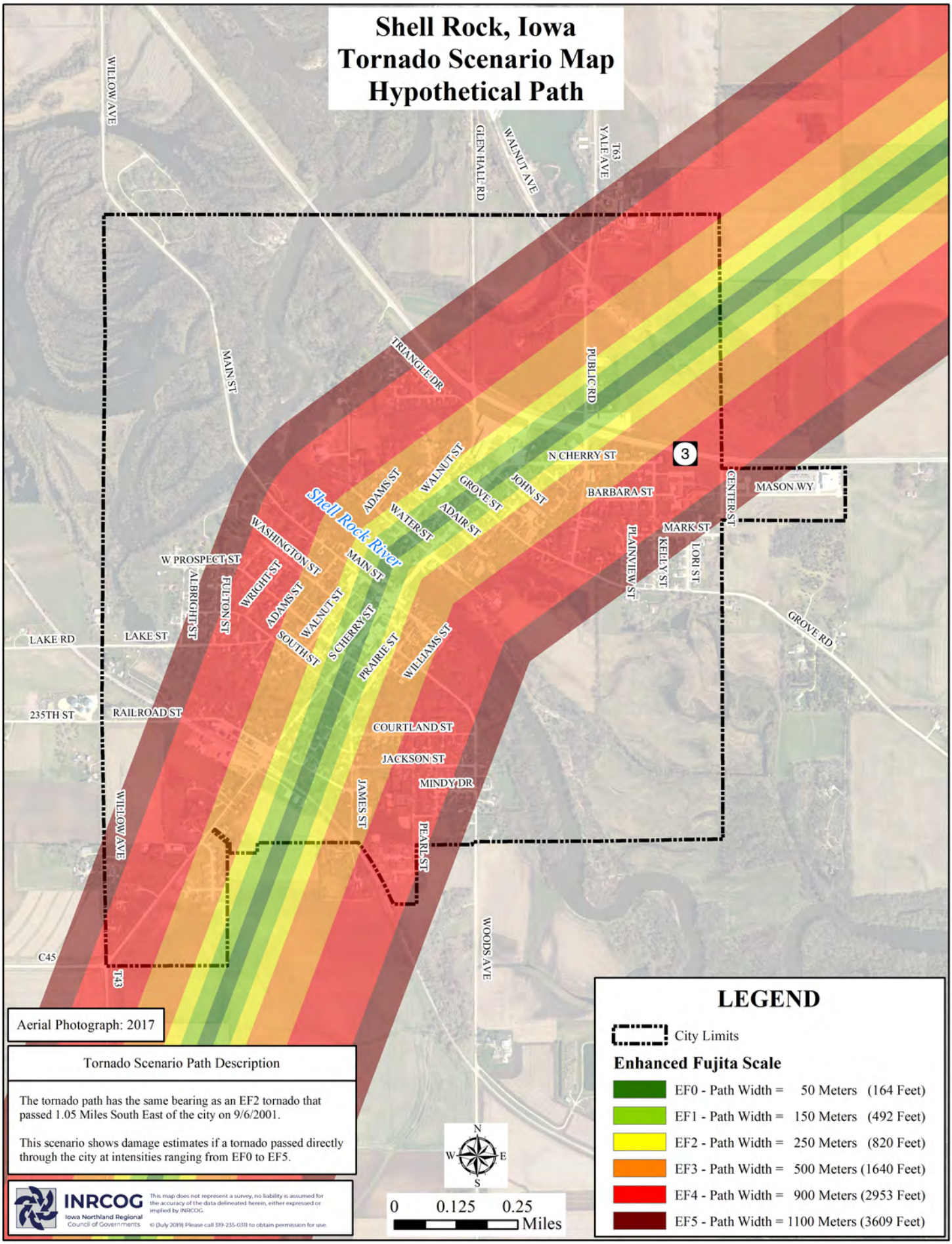
0 0.5 1 2 Miles

N W E S

LEGEND

Enhanced Fujita Scale

- Over EF4 Damage - 100%
- Over EF2 - Under EF4 - 50%
- Under EF2 Damage - 25%


Shell Rock, Iowa
Tornado Scenario Map
Hypothetical Path
WILLOW AVE
GLEN HALL RD
WALNUT AVE
YALE AVE
T63
MAIN ST
TRIANGLE DR
PUBLIC RD
N CHERRY ST
3
ADAMS ST
WALNUT ST
GROVE ST
JOHN ST
BARBARA ST
CENTER ST
MASON WY
Shell Rock River
WATER ST
ADAIR ST
MARK ST
WASHINGTON ST
MAIN ST
PLAINVIEW ST
KELLY ST
LORI ST
W PROSPECT ST
ALBRIGHT ST
FULTON ST
WRIGHT ST
ADAMS ST
WALNUT ST
SOUTH ST
S CHERRY ST
PRAIRIE ST
WILLIAMS ST
GROVE RD
LAKE RD
LAKE ST
235TH ST
RAILROAD ST
COURTLAND ST
JACKSON ST
MINDY DR
JAMES ST
PEARL ST
WILLOW AVE
WOODS AVE
C45
T43
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path has the same bearing as an EF2 tornado that passed 1.05 Miles South East of the city on 9/6/2001.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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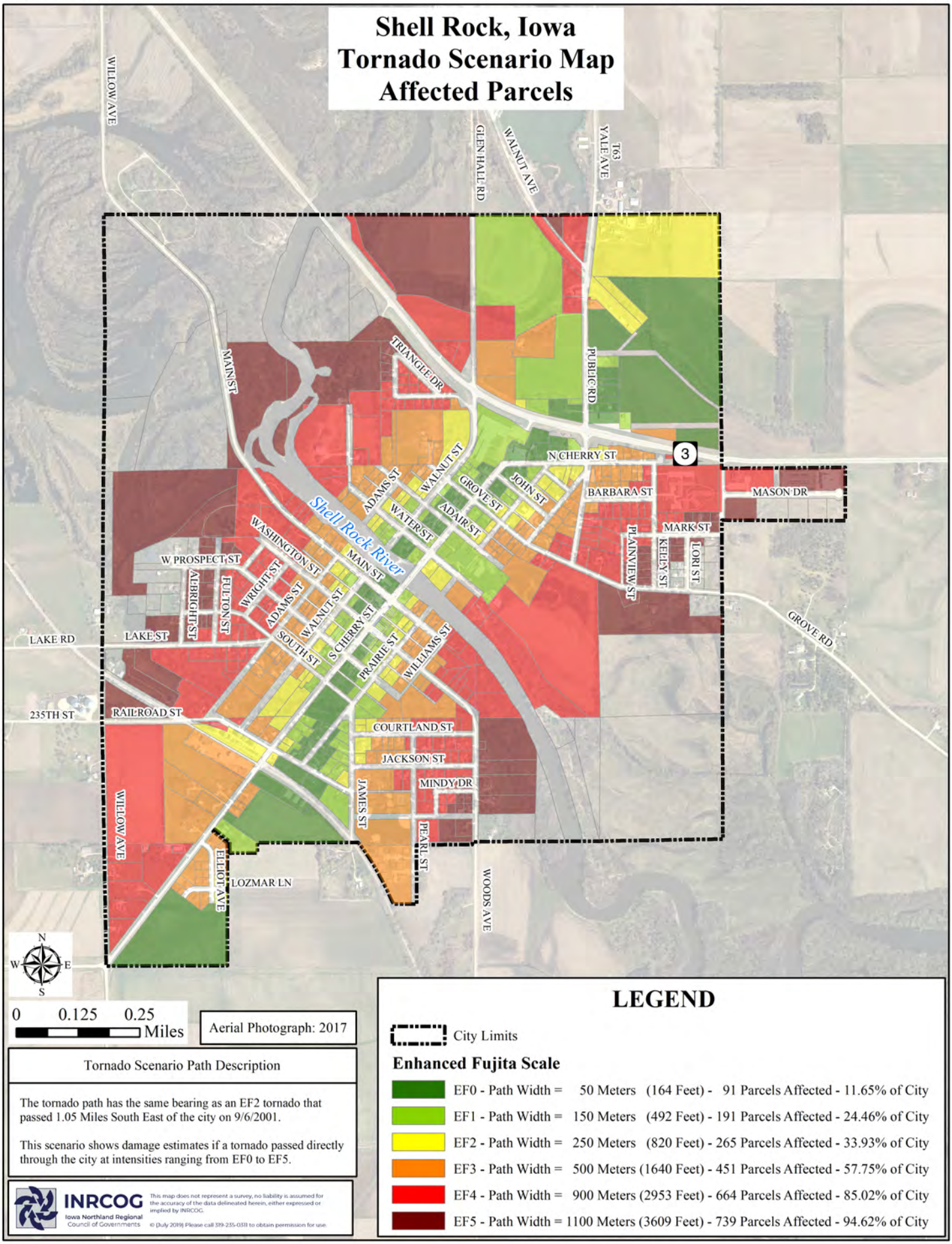
N
W
E
S
0 0.125 0.25
Miles
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet)
EF1 - Path Width = 150 Meters (492 Feet)
EF2 - Path Width = 250 Meters (820 Feet)
EF3 - Path Width = 500 Meters (1640 Feet)
EF4 - Path Width = 900 Meters (2953 Feet)
EF5 - Path Width = 1100 Meters (3609 Feet)


Shell Rock, Iowa
Tornado Scenario Map
Affected Parcels
WILLOW AVE
GLEN HALL RD
WALNUT AVE
YALE AVE
T63
MAIN ST
TRIANGLE DR
PUBLIC RD
N CHERRY ST
3
ADAMS ST
WALNUT ST
GROVE ST
JOHN ST
BARBARA ST
MASON DR
Shell Rock River
WATER ST
ADAIR ST
MARK ST
WASHINGTON ST
MAIN ST
PLAINVIEW ST
KELLY ST
LORI ST
W PROSPECT ST
ALBRIGHT ST
FULTON ST
WRIGHT ST
ADAMS ST
WALNUT ST
S CHERRY ST
LAKE RD
LAKE ST
SOUTH ST
PRAIRIE ST
WILLIAMS ST
GROVE RD
235TH ST
RAILROAD ST
COURTLAND ST
JACKSON ST
MINDY DR
JAMES ST
PEARL ST
WILLOW AVE
ELLIOT AVE
LOZMAR LN
WOODS AVE
N
W
E
S
0 0.125 0.25 Miles
Aerial Photograph: 2017
Tornado Scenario Path Description
The tornado path has the same bearing as an EF2 tornado that passed 1.05 Miles South East of the city on 9/6/2001.
This scenario shows damage estimates if a tornado passed directly through the city at intensities ranging from EF0 to EF5.
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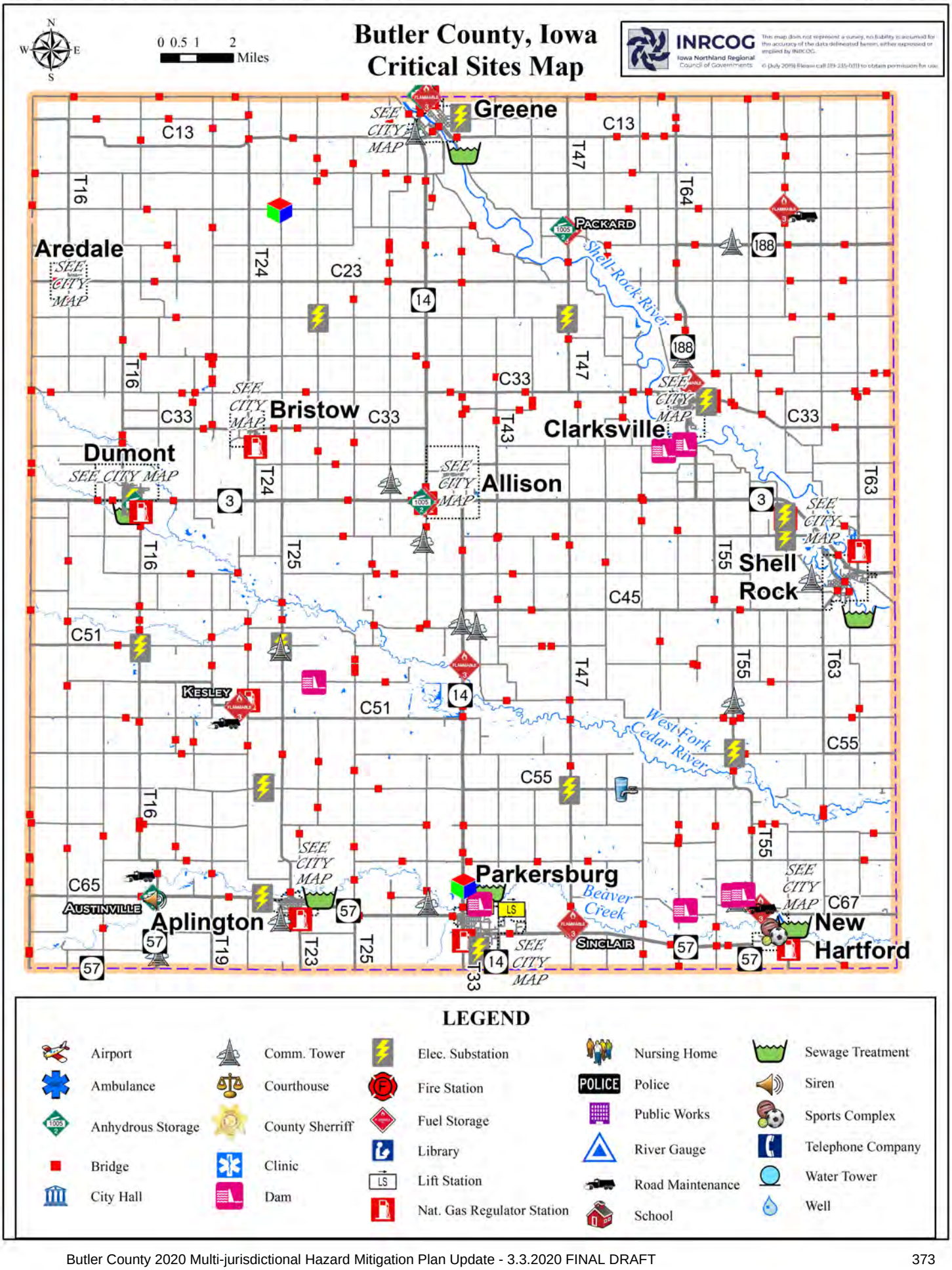
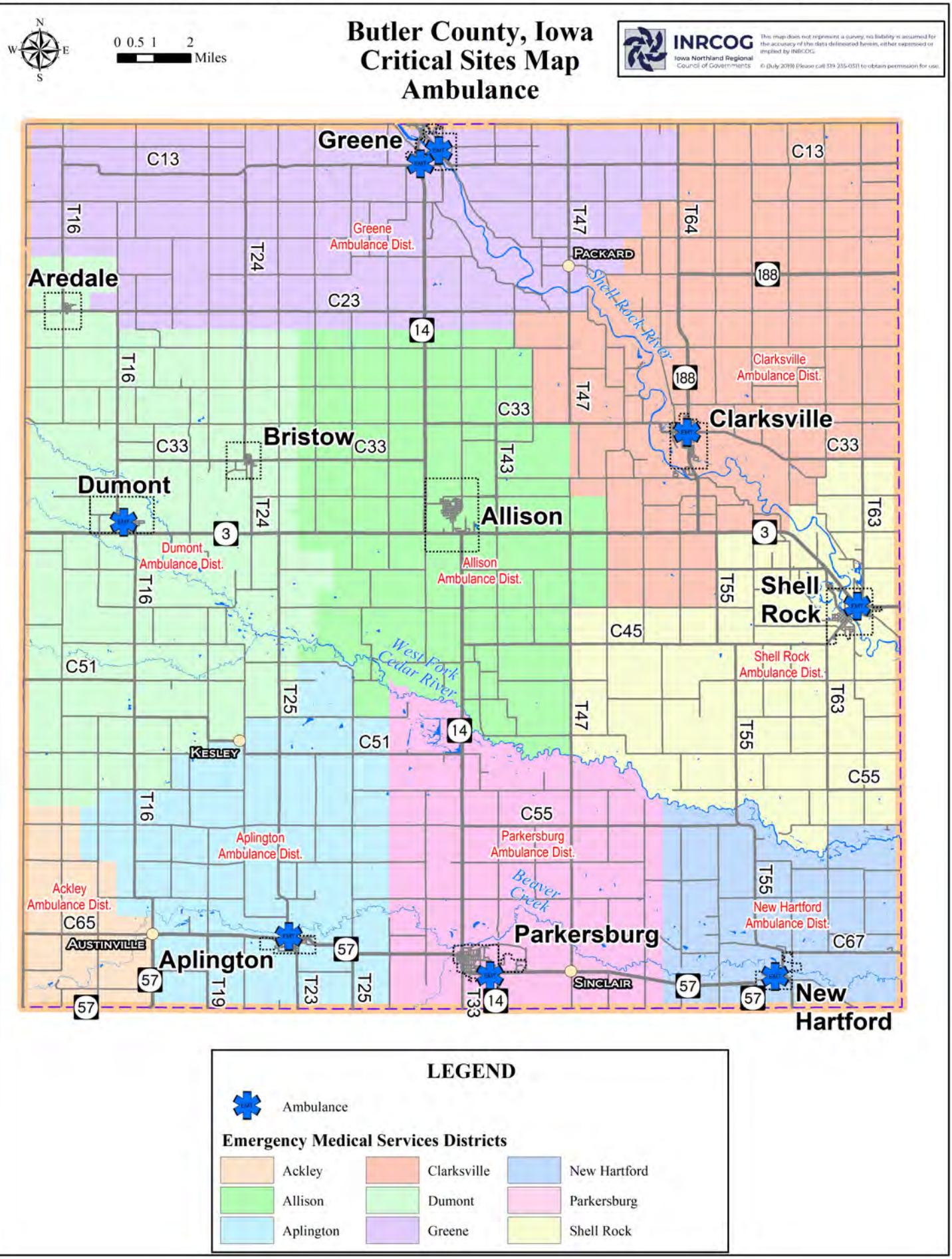
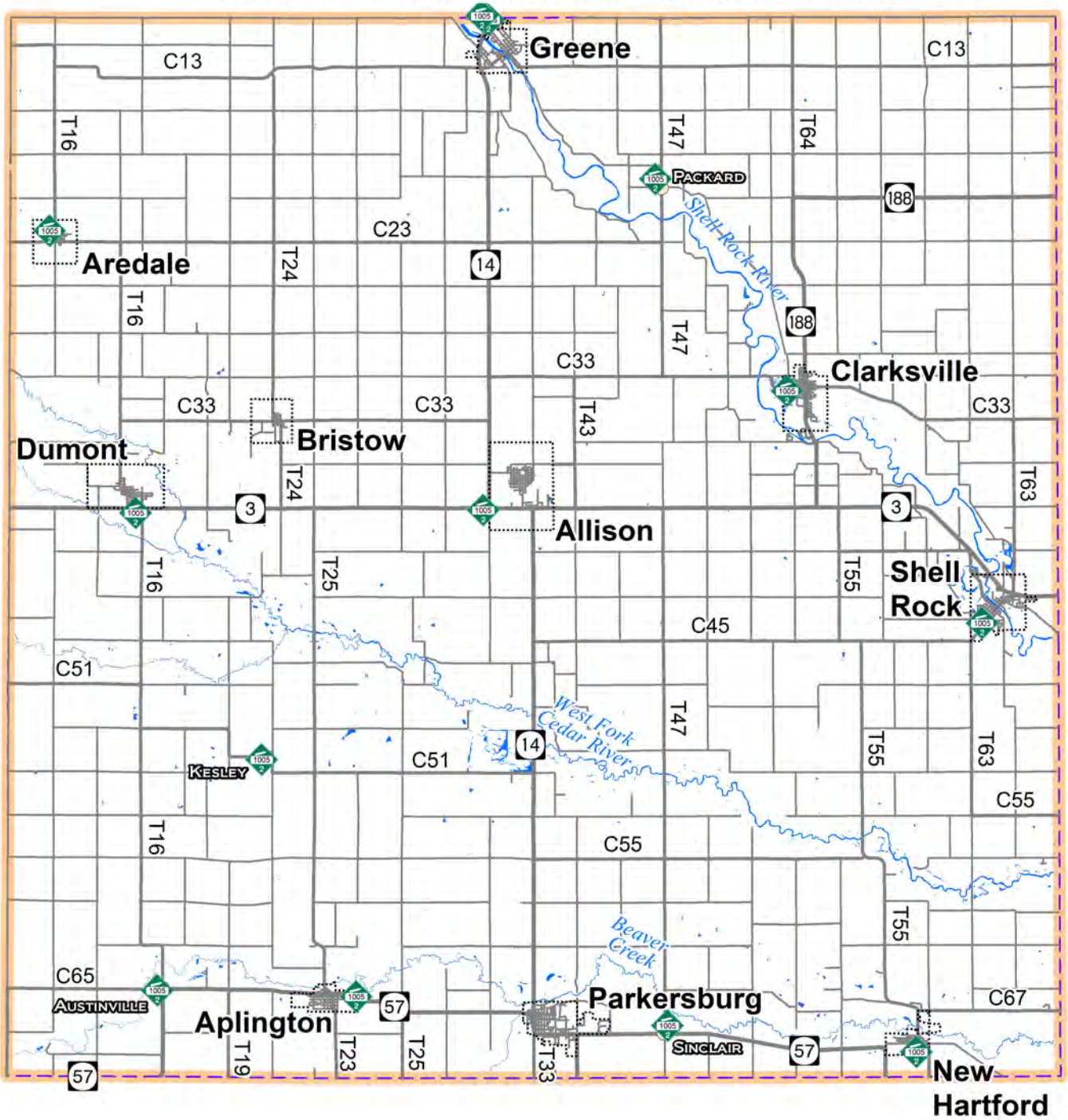
LEGEND
City Limits
Enhanced Fujita Scale
EF0 - Path Width = 50 Meters (164 Feet) - 91 Parcels Affected - 11.65% of City
EF1 - Path Width = 150 Meters (492 Feet) - 191 Parcels Affected - 24.46% of City
EF2 - Path Width = 250 Meters (820 Feet) - 265 Parcels Affected - 33.93% of City
EF3 - Path Width = 500 Meters (1640 Feet) - 451 Parcels Affected - 57.75% of City
EF4 - Path Width = 900 Meters (2953 Feet) - 664 Parcels Affected - 85.02% of City
EF5 - Path Width = 1100 Meters (3609 Feet) - 739 Parcels Affected - 94.62% of City


Butler County, Iowa
Critical Sites Map
INRCOG
Iowa Northland Regional Council of Governments
0 0.5 1 2 Miles
N
W
E
S
Greene
Aredale
Bristow
Dumont
Allison
Packard
Clarksville
Shell Rock
Kesley
Aplington
Austinville
Parkersburg
Sinclair
New Hartford
Shell Rock River
West Fork Cedar River
Beaver Creek
SEE CITY MAP
C13
C23
C33
C45
C51
C55
C65
C67
T16
T19
T23
T24
T25
T33
T43
T47
T55
T63
T64
14
3
57
188
LS
LEGEND
Airport
Ambulance
Anhydrous Storage
Bridge
City Hall
Comm. Tower
Courthouse
County Sherriff
Clinic
Dam
Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
Nat. Gas Regulator Station
Nursing Home
POLICE
Police
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well

Butler County, Iowa Critical Sites Map Ambulance



Butler County, Iowa
Critical Sites Map - Anhydrous Ammonia Storage



LEGEND

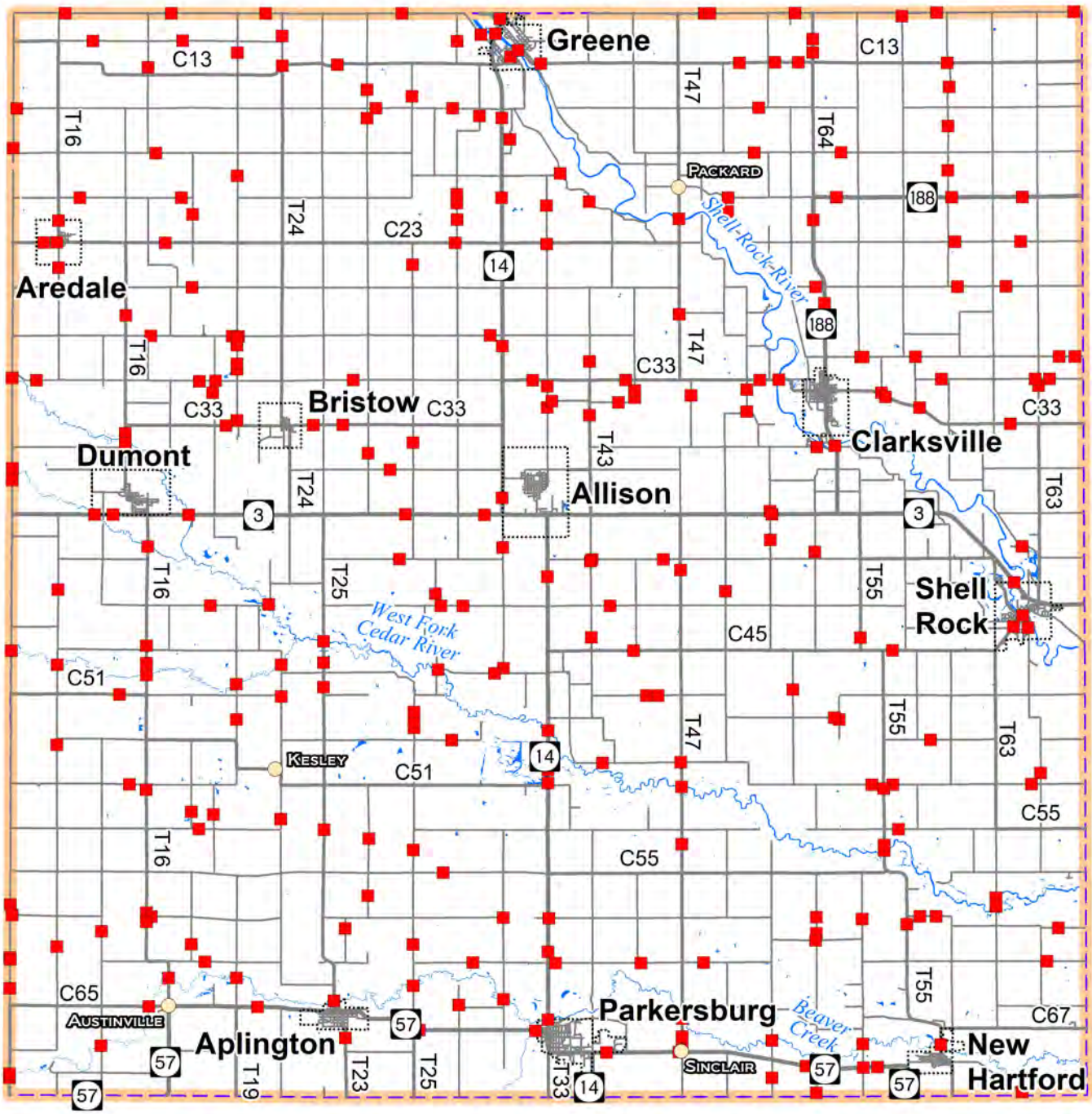
Anhydrous Storage

N W E S

0 0.5 1 2 Miles

INRCOG Iowa Northland Regional Council of Governments

Butler County, Iowa
Critical Sites Map - Bridges



LEGEND

■ Bridge

N
W E
S

0 0.5 1 2
Miles

INRCOG
Iowa Northland Regional Council of Governments

Butler County, Iowa
Critical Sites Map - City Hall and Courthouse

LEGEND

City Hall Courthouse

0 0.5 1 2 Miles

INRCOG
Iowa Northland Regional Council of Governments

Butler County, Iowa
Critical Sites Map - Civic Center

LEGEND

Civic Center

N
W E
S

0 0.5 1 2
Miles

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Butler County, Iowa
Critical Sites Map - Communication Towers

LEGEND

Communication Tower

N W E S

0 0.5 1 2 Miles

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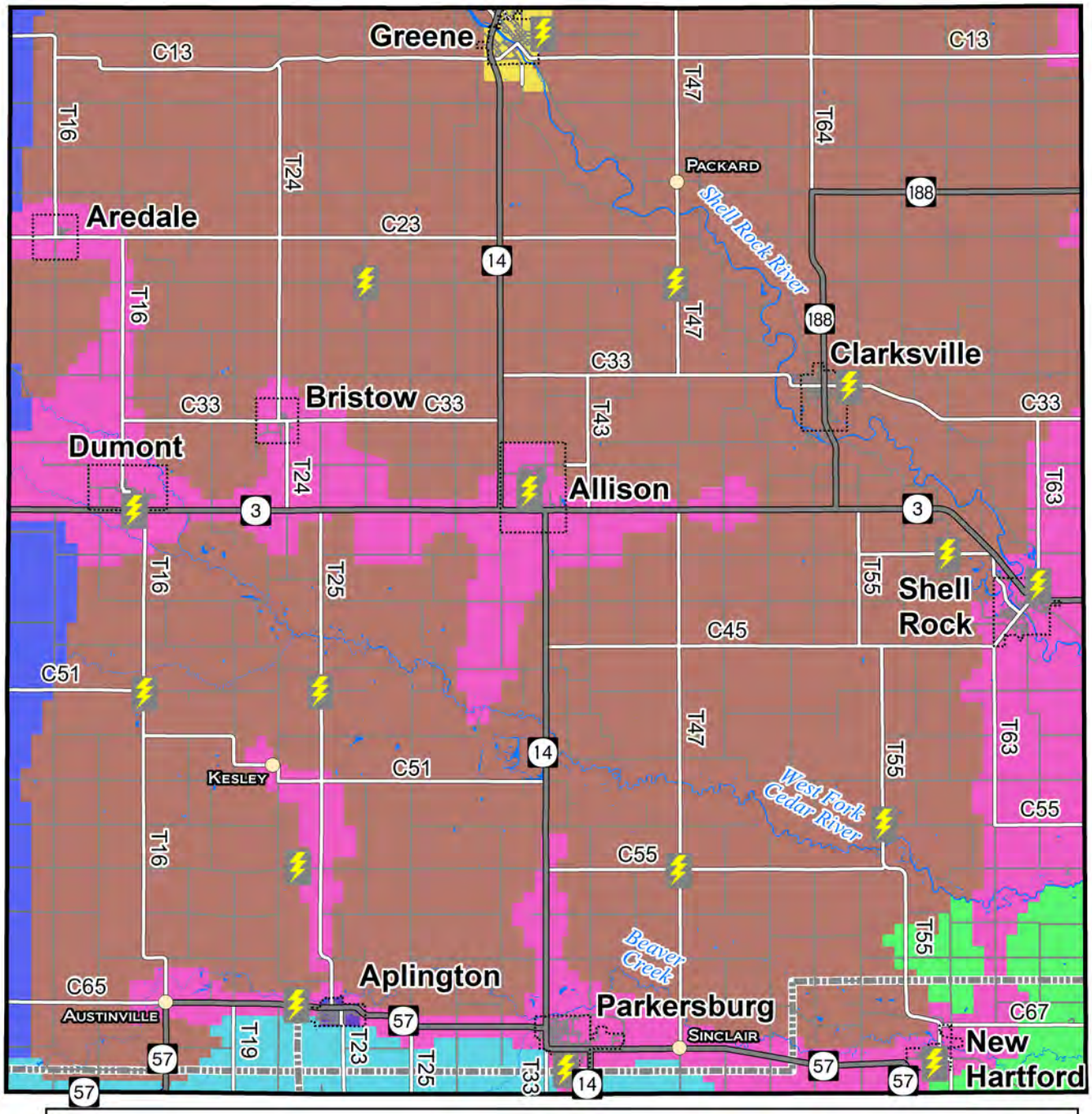
Iowa Northland Regional Council of Governments

Butler County, Iowa
Critical Sites Map - Electrical



LEGEND

Electric Service Providers

- Aplington Municipal
- Butler County Rural Electric Cooperative
- Cedar Falls Municipal
- Franklin Rural Electric Cooperative
- Grundy County Rural Electric Cooperative
- Interstate Power Company
- MidAmerican Electric Company
- Elec. Substation
- Major Electrical Lines
- City Limits

N W E S

0 0.5 1 2 Miles

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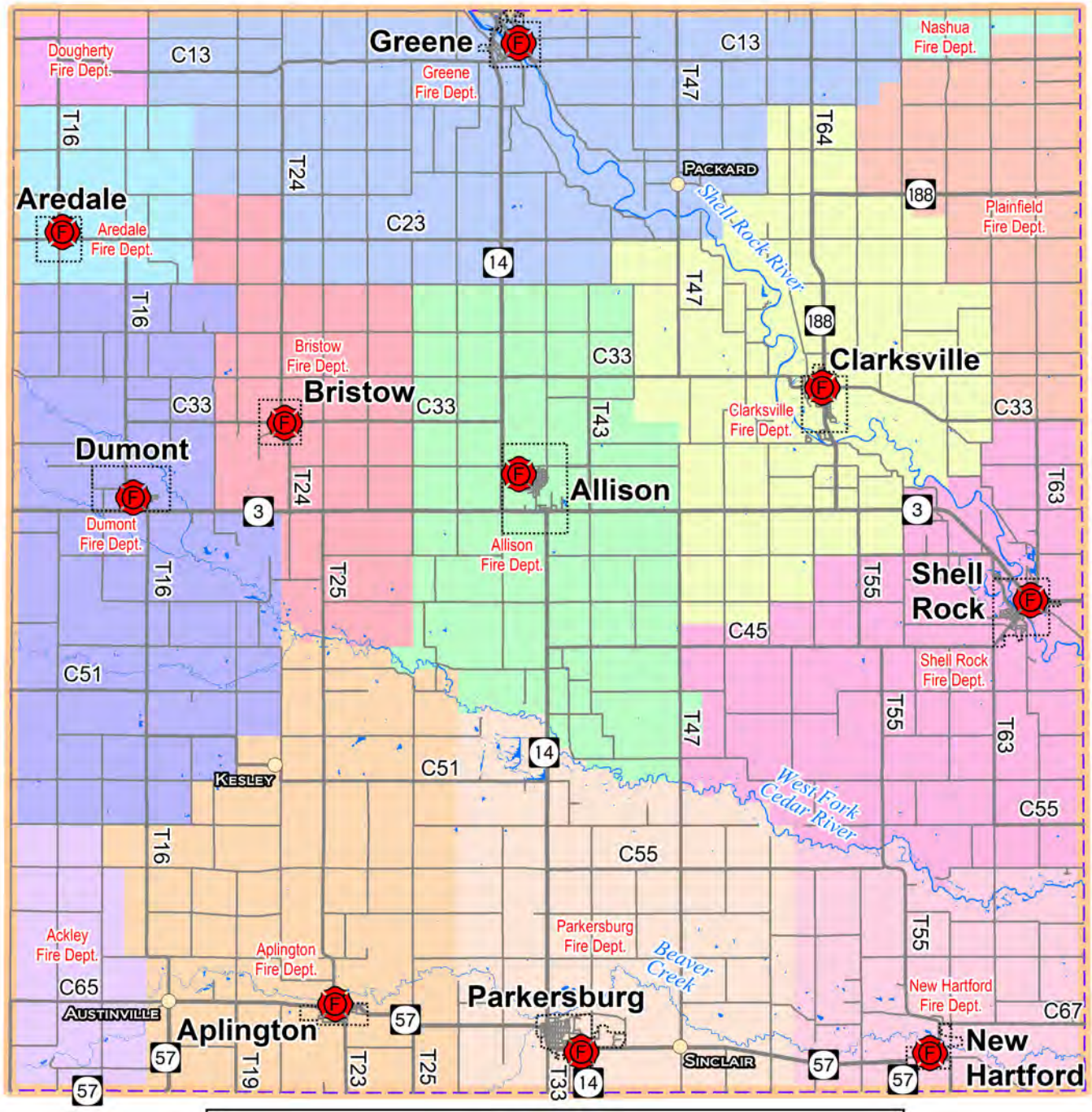
Butler County, Iowa
Critical Sites Map - Fire Departments

N W E S
0 0.5 1 2 Miles

INRCOG
Iowa Northland Regional Council of Governments



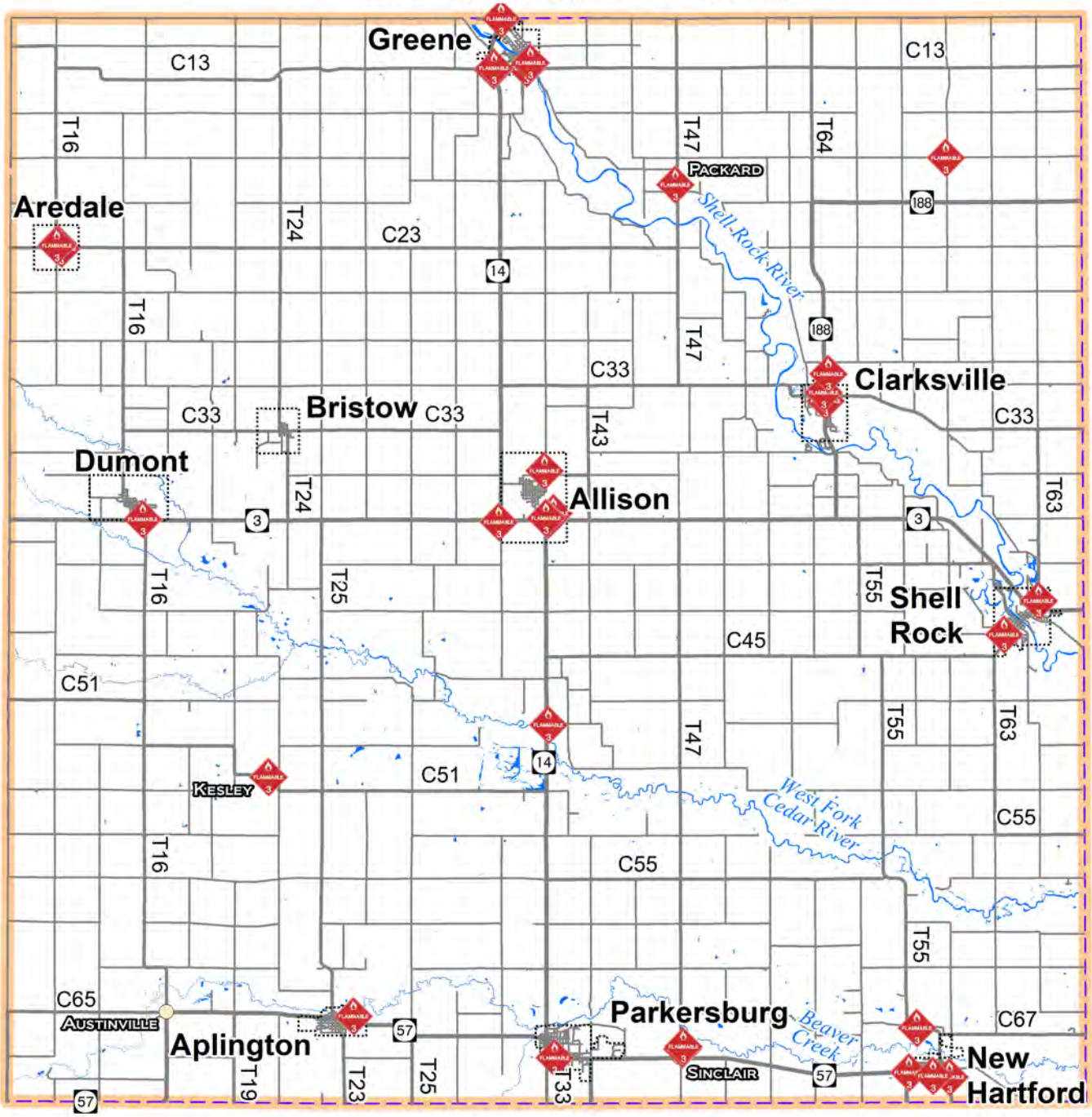
LEGEND

Fire Station

Fire Department Districts

- Ackley
- Allison
- Aplington
- Aredale
- Bristow
- Clarksville
- Dougherty
- Dumont
- Greene
- Nashua
- New Hartford
- Parkersburg
- Plainfield
- Shell Rock

Butler County, Iowa
Critical Sites Map - Fuel Storage



LEGEND

Fuel Storage

N
W E
S

0 0.5 1 2
Miles

INRCOG
Iowa Northland Regional Council of Governments

Butler County, Iowa
Critical Sites Map - Hospital/Clinic

LEGEND

Clinic

0 0.5 1 2 Miles

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Iowa Northland Regional Council of Governments

Butler County, Iowa
Critical Sites Map - Law Enforcement

LEGEND

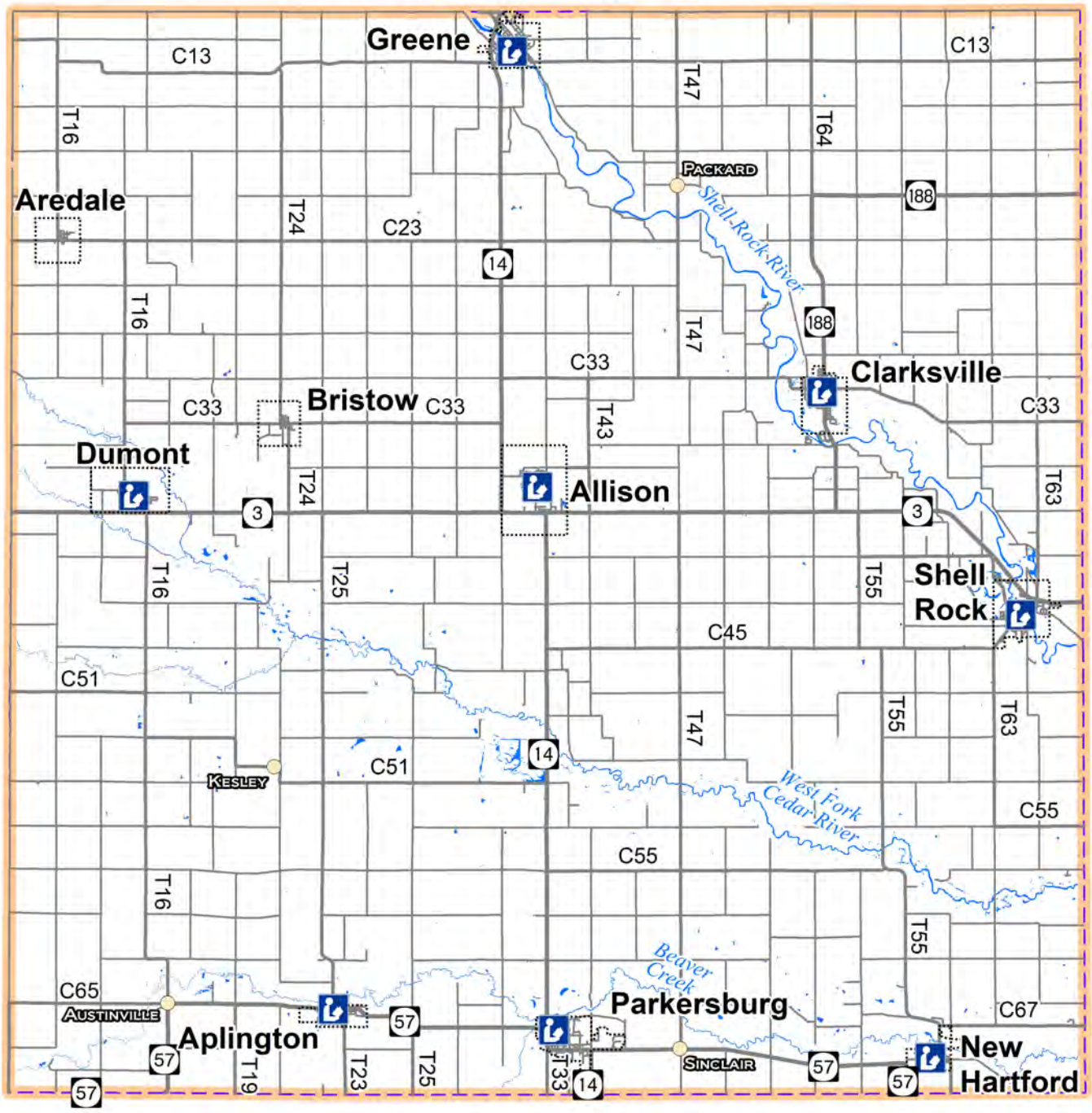
- County Sherriff
- POLICE — Police

N W E S

0 0.5 1 2 Miles

INRCOG
Iowa Northland Regional Council of Governments

Butler County, Iowa
Critical Sites Map - Library



LEGEND

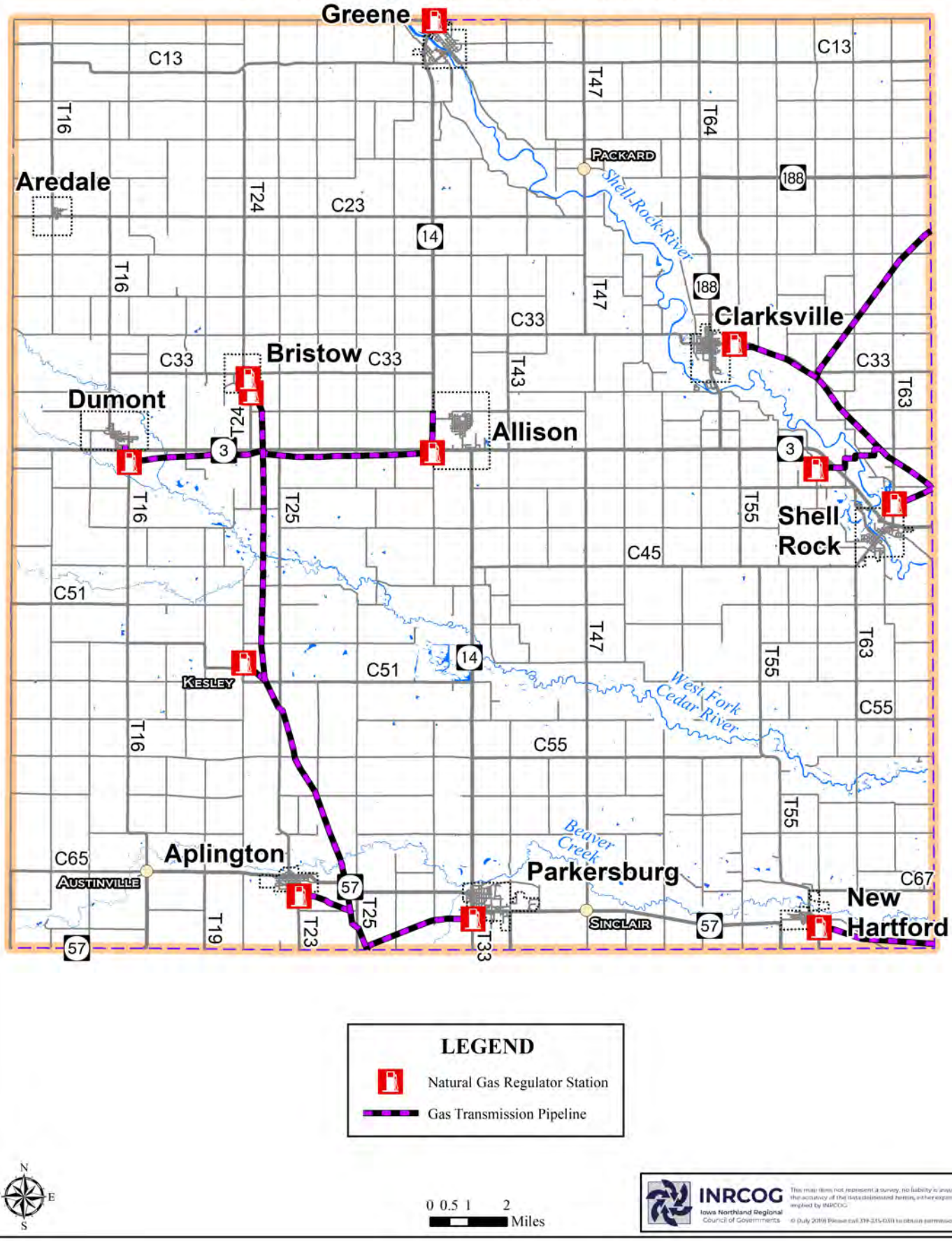
Library

N
W E
S

0 0.5 1 2
Miles

INRCOG
Iowa Northland Regional Council of Governments

Butler County, Iowa
Critical Sites Map - Natural Gas Service



Butler County, Iowa
Critical Sites Map - Nursing Home

LEGEND

Nursing Home

N W E S

0 0.5 1 2 Miles

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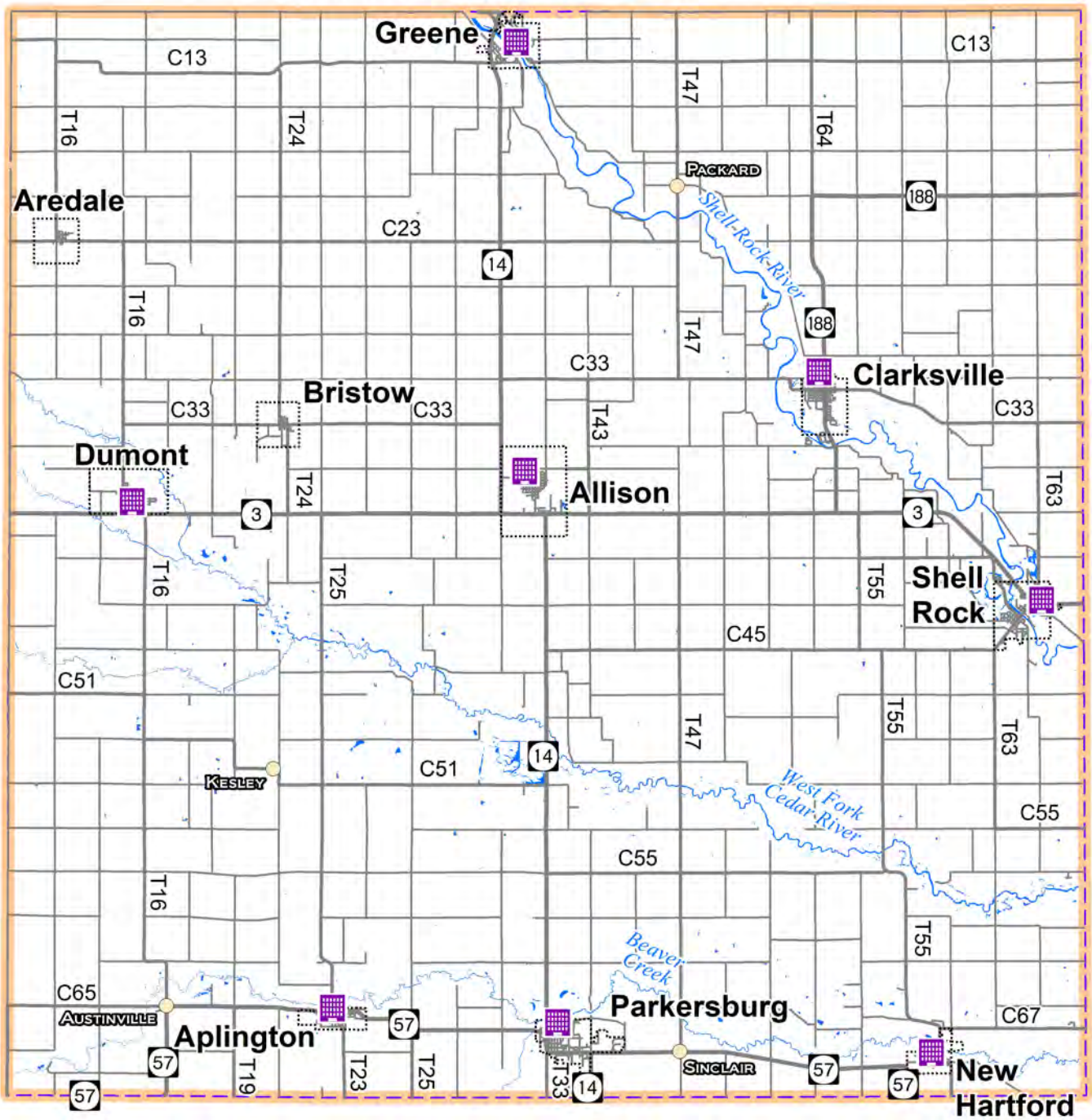
Butler County, Iowa
Critical Sites Map - Public Works Buildings



LEGEND

Public Works

0 0.5 1 2 Miles

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Butler County, Iowa
Critical Sites Map - Public Works (Fresh Water)

LEGEND

- Water Tower
- Well

0 0.5 1 2 Miles

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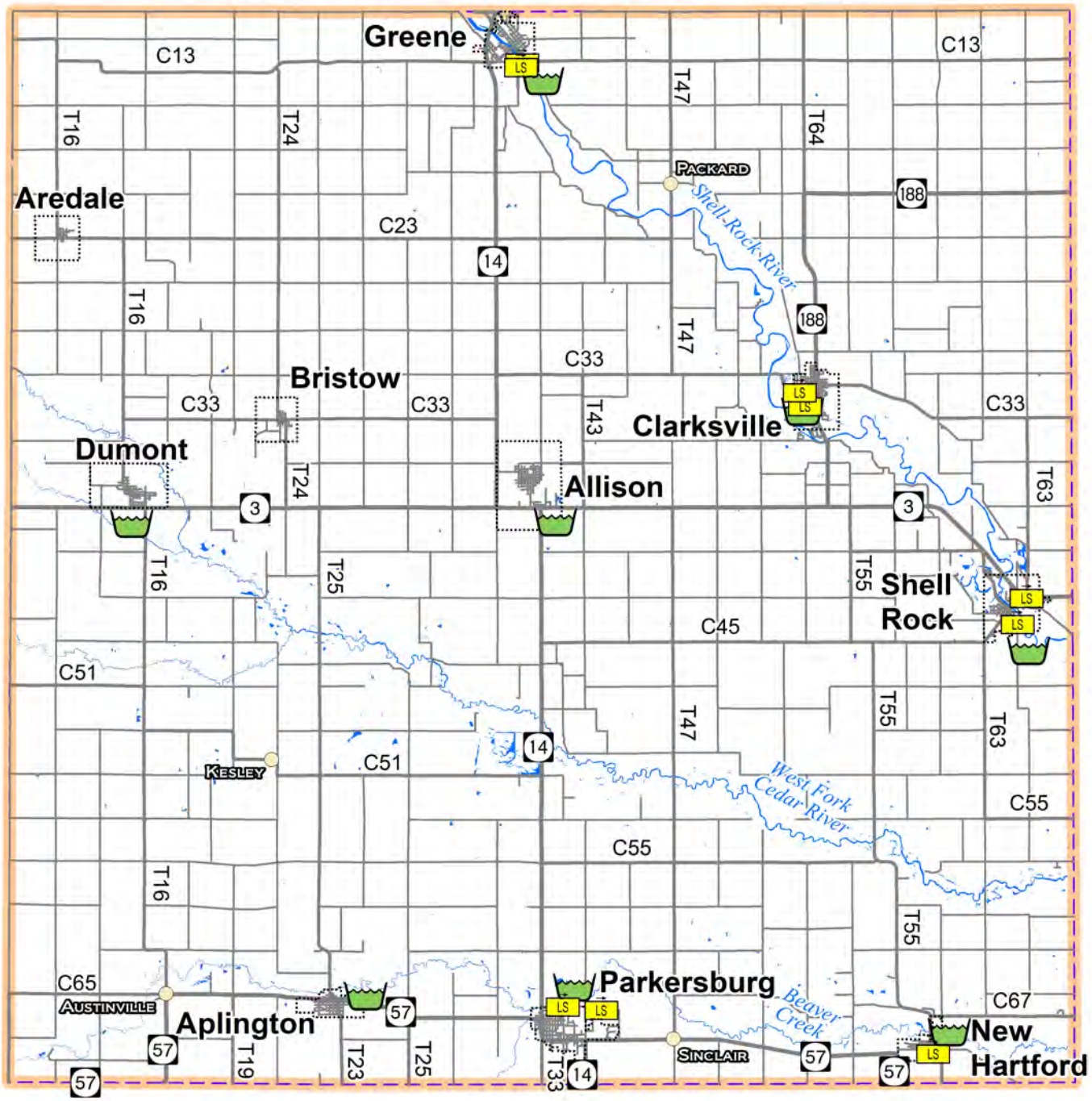
Butler County, Iowa
Critical Sites Map - Public Works (Sewage)



Butler County, Iowa
Critical Sites Map - Road Maintenance

LEGEND

Road Maintenance

N W E S

0 0.5 1 2 Miles

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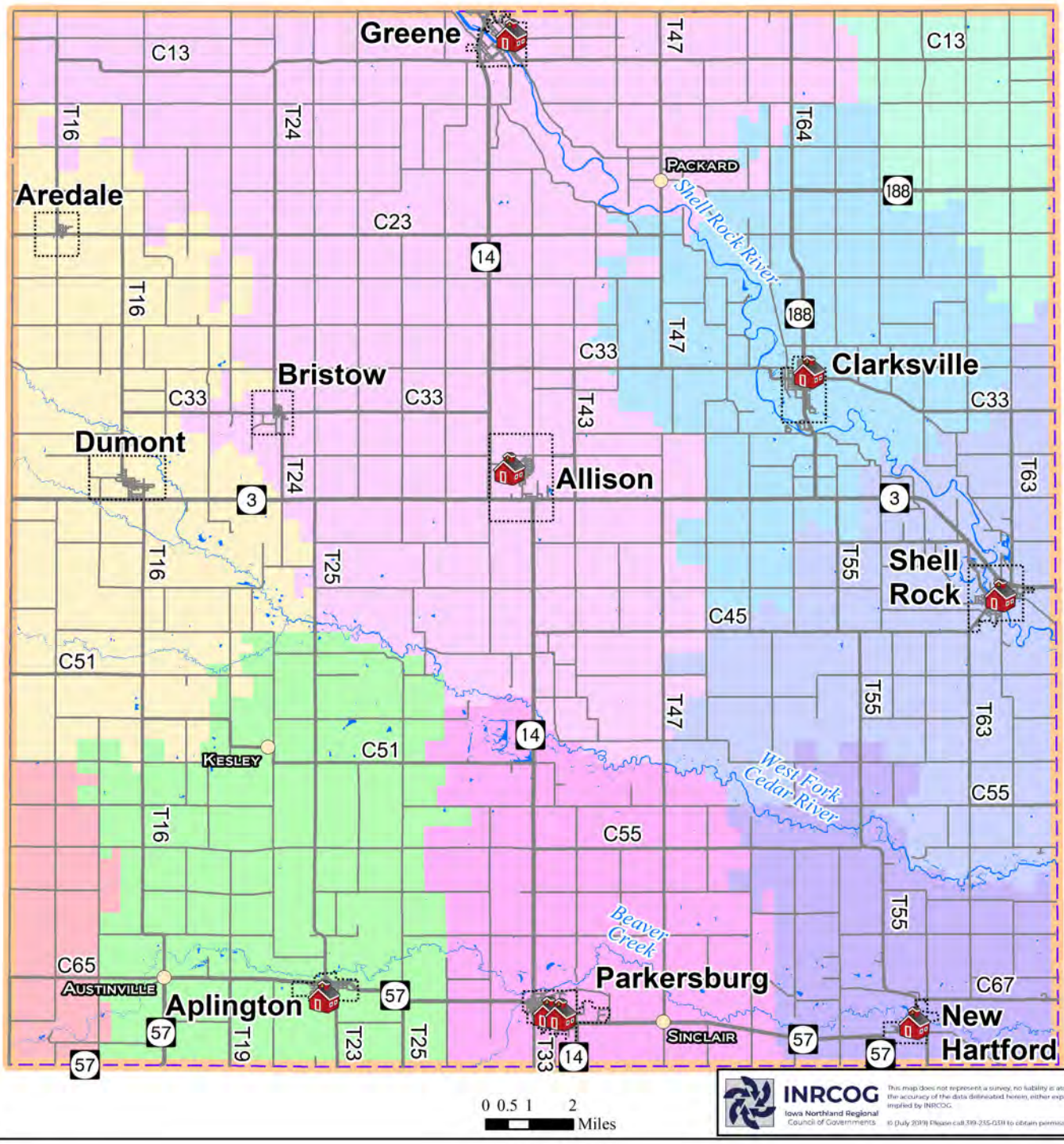
Butler County, Iowa
Critical Sites Map - Schools



0 0.5 1 2 Miles

INRCOG Iowa Northland Regional Council of Governments

LEGEND

School

School Districts

- ACKLEY-GENEVA COMMUNITY SCHOOL DISTRICT
- APLINGTON COMMUNITY SCHOOL DISTRICT
- CLARKSVILLE COMMUNITY SCHOOL DISTRICT
- DIKE-NEW HARTFORD COMMUNITY SCHOOL DISTRICT
- HAMPTON-DUMONT COMMUNITY SCHOOL DISTRICT
- NASHUA-PLAINFIELD COMMUNITY SCHOOL DISTRICT
- NORTH BUTLER COMMUNITY SCHOOL DISTRICT
- PARKERSBURG COMMUNITY SCHOOL DISTRICT
- WAVERLY-SHELL ROCK COMMUNITY SCHOOL DISTRICT

Butler County, Iowa
Critical Sites Map - Siren

LEGEND

Siren

N
W E
S

0 0.5 1 2
Miles

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Iowa Northland Regional Council of Governments

Butler County, Iowa
Critical Sites Map - Sports

LEGEND

Sports Complex

N
W E
S

0 0.5 1 2
Miles

INRCOG
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Butler County, Iowa
Critical Sites Map - Telephone

LEGEND

Telephone Company

N
W E
S

0 0.5 1 2
Miles

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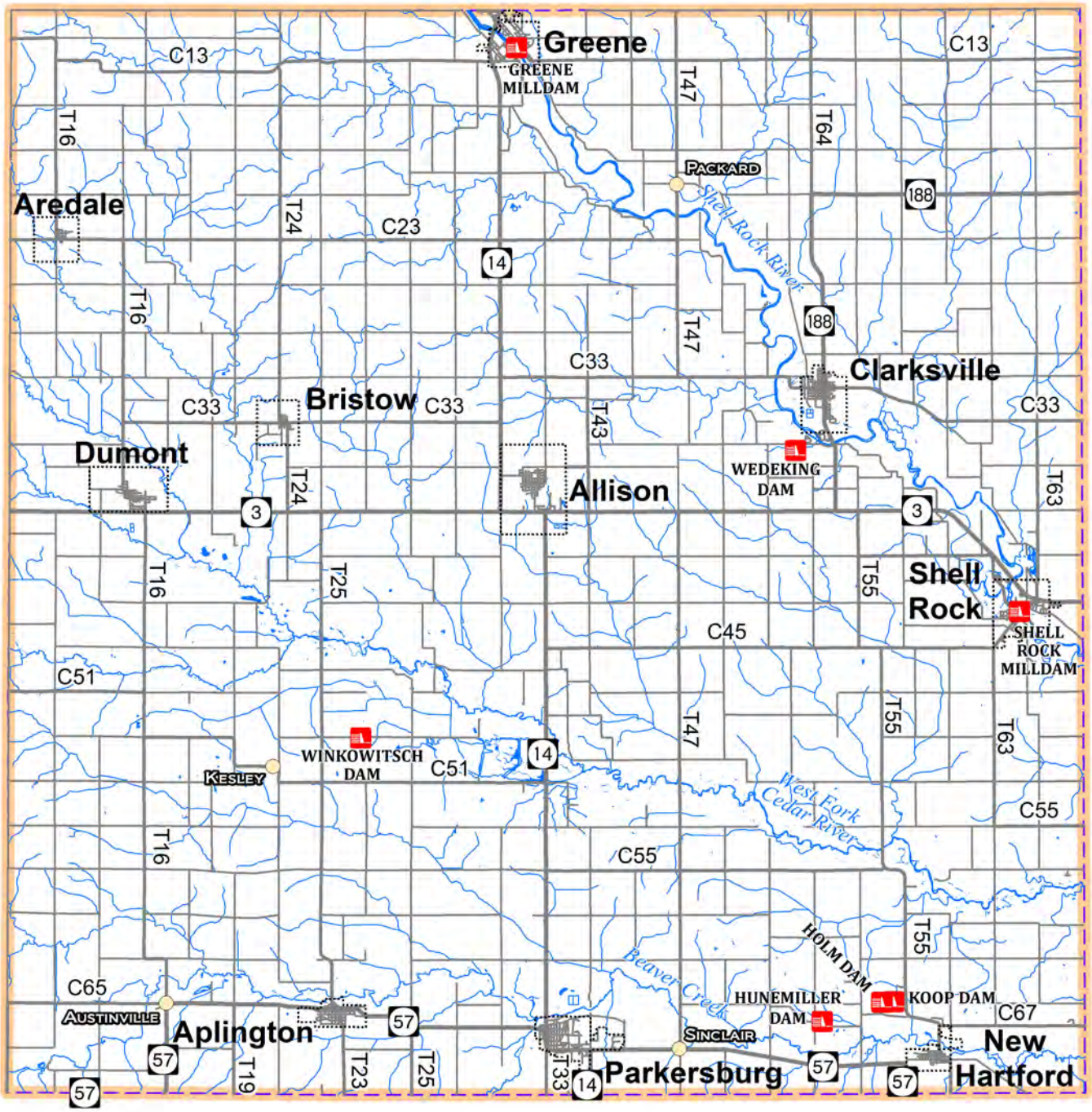
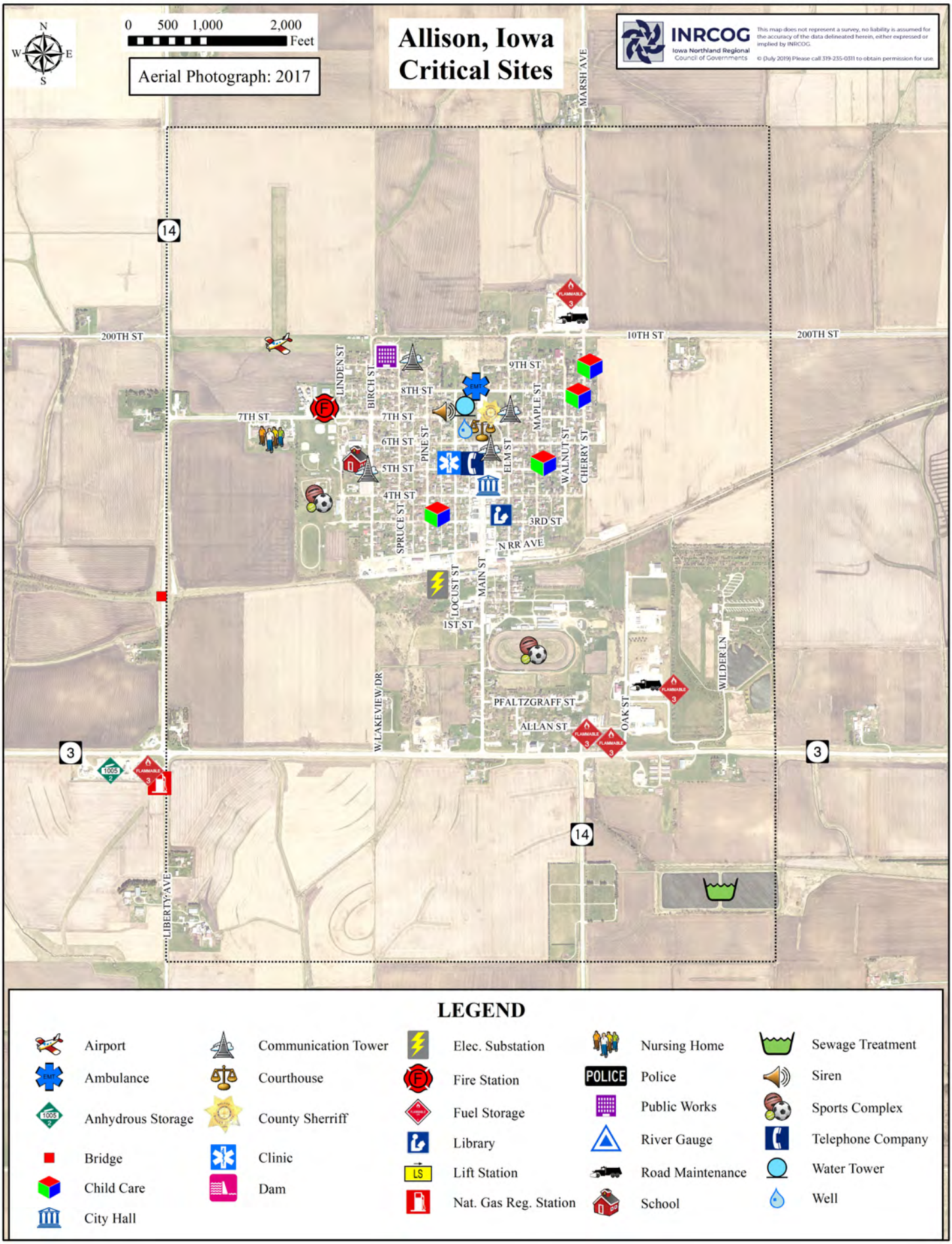
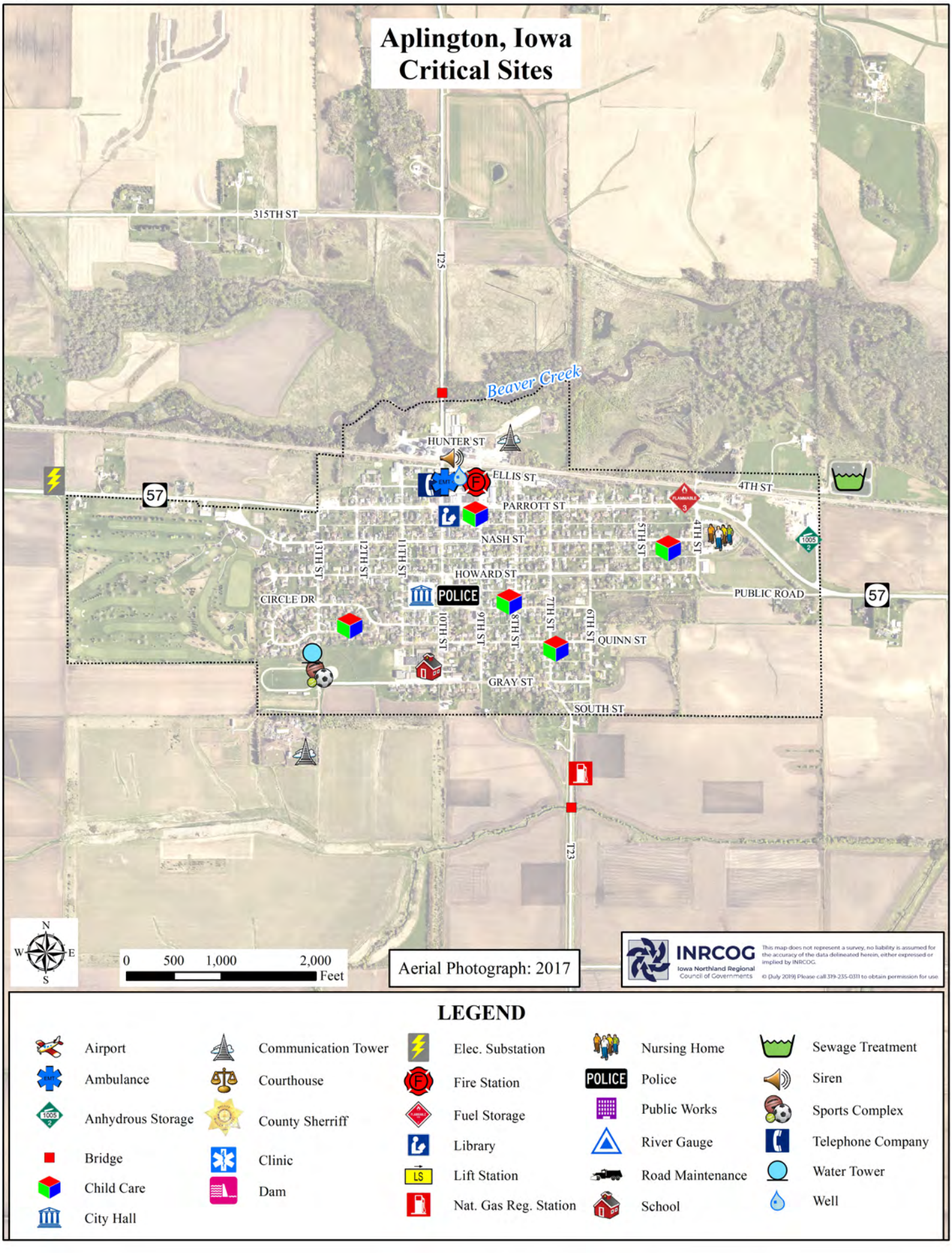
Butler County, Iowa
Dams Map




Allison, Iowa
Critical Sites
0 500 1,000 2,000
Feet
Aerial Photograph: 2017
INRCOG
Iowa Northland Regional Council of Governments
200TH ST
10TH ST
MARSH AVE
LINDEN ST
BIRCH ST
9TH ST
8TH ST
7TH ST
6TH ST
5TH ST
4TH ST
PINE ST
MAPLE ST
ELM ST
WALNUT ST
CHERRY ST
SPRUCE ST
3RD ST
N RR AVE
MAIN ST
LOCUST ST
1ST ST
W LAKEVIEW DR
PFALTZGRAFF ST
ALLAN ST
OAK ST
WILDER LN
LIBERTY AVE
14
3
LEGEND
Airport
Ambulance
Anhydrous Storage
Bridge
Child Care
City Hall
Communication Tower
Courthouse
County Sherriff
Clinic
Dam
Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
Nat. Gas Reg. Station
Nursing Home
Police
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well


Aplington, Iowa
Critical Sites
315TH ST
T25
Beaver Creek
HUNTER ST
ELLIS ST
PARROTT ST
NASH ST
HOWARD ST
CIRCLE DR
POLICE
GRAY ST
SOUTH ST
QUINN ST
PUBLIC ROAD
4TH ST
13TH ST
12TH ST
11TH ST
10TH ST
9TH ST
8TH ST
7TH ST
6TH ST
5TH ST
4TH ST
57
T23
N
W
E
S
0 500 1,000 2,000 Feet
Aerial Photograph: 2017
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Fire Station
Fuel Storage
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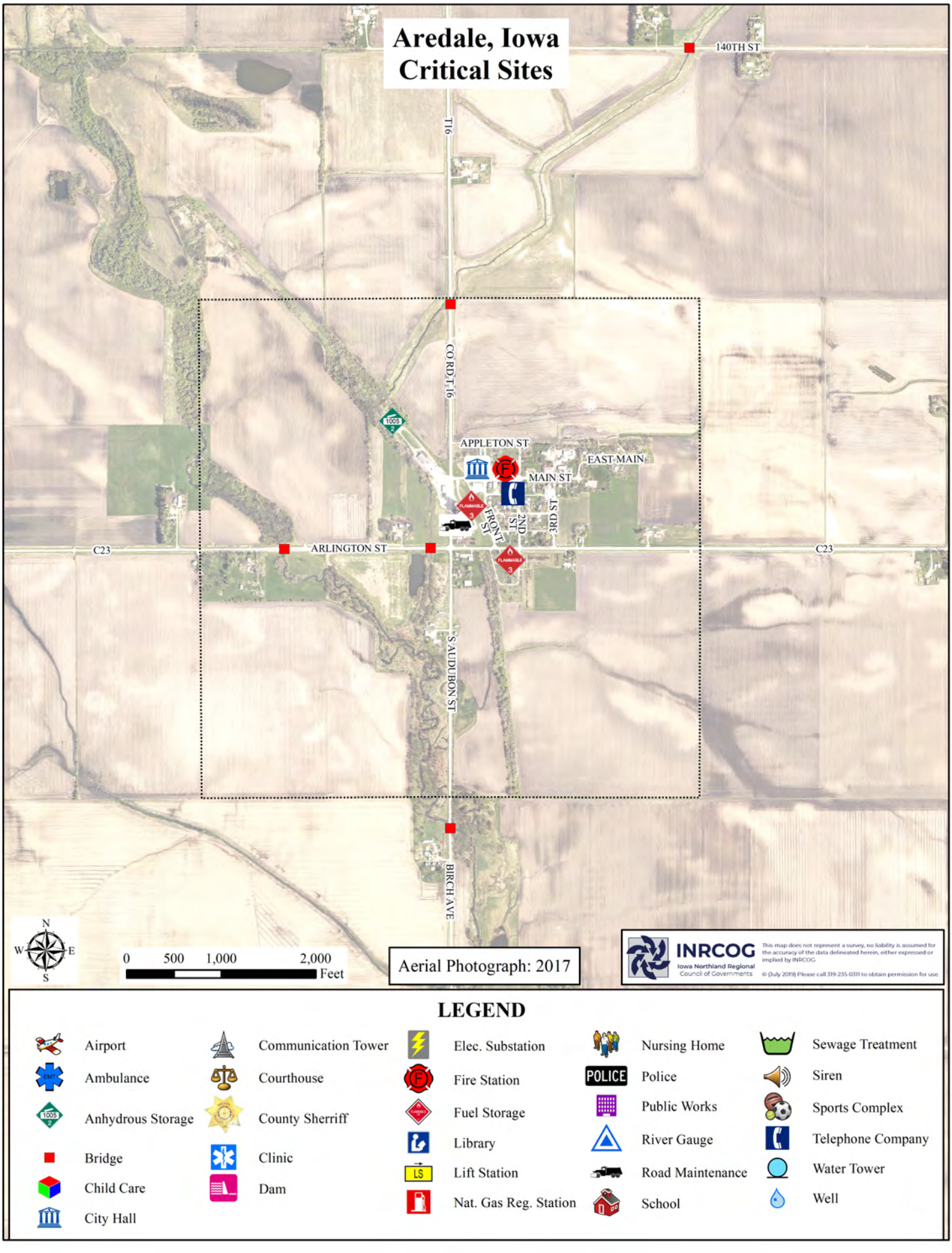
Police
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well


Aredale, Iowa
Critical Sites
140TH ST
T16
CO RD T 16
APPLETON ST
EAST MAIN
MAIN ST
2ND ST
3RD ST
FRONT ST
C23
ARLINGTON ST
C23
S AUDUBON ST
BIRCH AVE
1005
N
W
E
S
0 500 1,000 2,000 Feet
Aerial Photograph: 2017
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Clinic
Dam
Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
Nat. Gas Reg. Station
Nursing Home
Police
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well


Bristow, Iowa
Critical Sites
180 ST
T24
CHURCH ST
WALNUT ST
2ND ST
CENTER ST
C33
MAIN ST
EARLY ST
ELM ST
WEST ST
EAST ST
TRUAX ST
WOODLAND ST
WALSH ST
N
W
E
S
0 500 1,000 2,000 Feet
Aerial Photograph: 2017
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Courthouse
County Sherriff
Clinic
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Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
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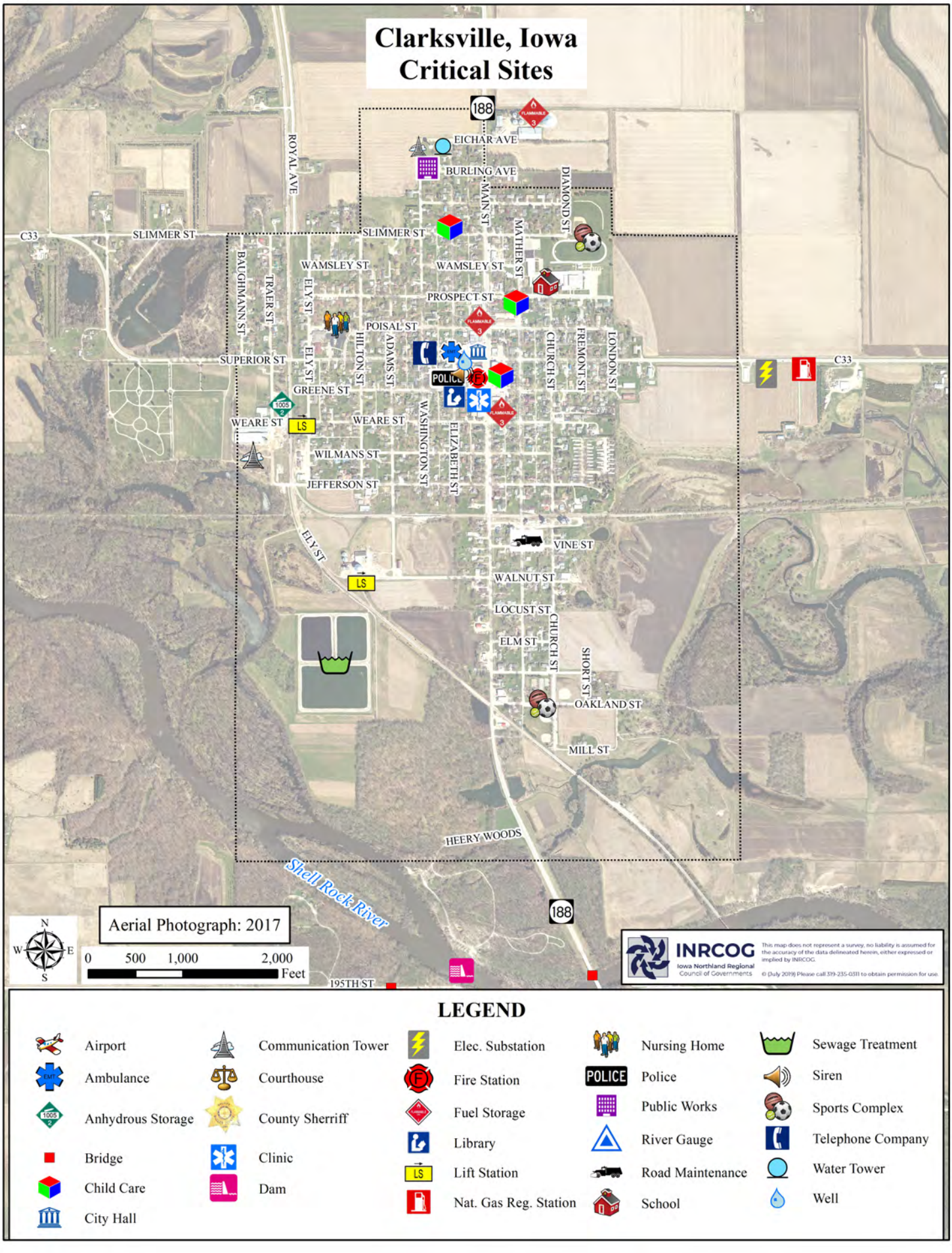
Police
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well


Clarksville, Iowa
Critical Sites
188
EICHAR AVE
BURLING AVE
ROYAL AVE
MAIN ST
DIAMOND ST
MATHER ST
C33
SLIMMER ST
WAMSLEY ST
PROSPECT ST
POISAL ST
BAUGHMANN ST
TRAER ST
ELY ST
HILTON ST
ADAMS ST
CHURCH ST
FREMONT ST
LONDON ST
SUPERIOR ST
GREENE ST
WEARE ST
WASHINGTON ST
ELIZABETH ST
WILMANS ST
JEFFERSON ST
VINE ST
WALNUT ST
LOCUST ST
ELM ST
SHORT ST
OAKLAND ST
MILL ST
HEERY WOODS
Shell Rock River
195TH ST
LS
POLICE
Aerial Photograph: 2017
0 500 1,000 2,000 Feet
N
W
E
S
INRCOG
Iowa Northland Regional Council of Governments
LEGEND
Airport
Ambulance
Anhydrous Storage
Bridge
Child Care
City Hall
Communication Tower
Courthouse
County Sherriff
Clinic
Dam
Elec. Substation
Fire Station
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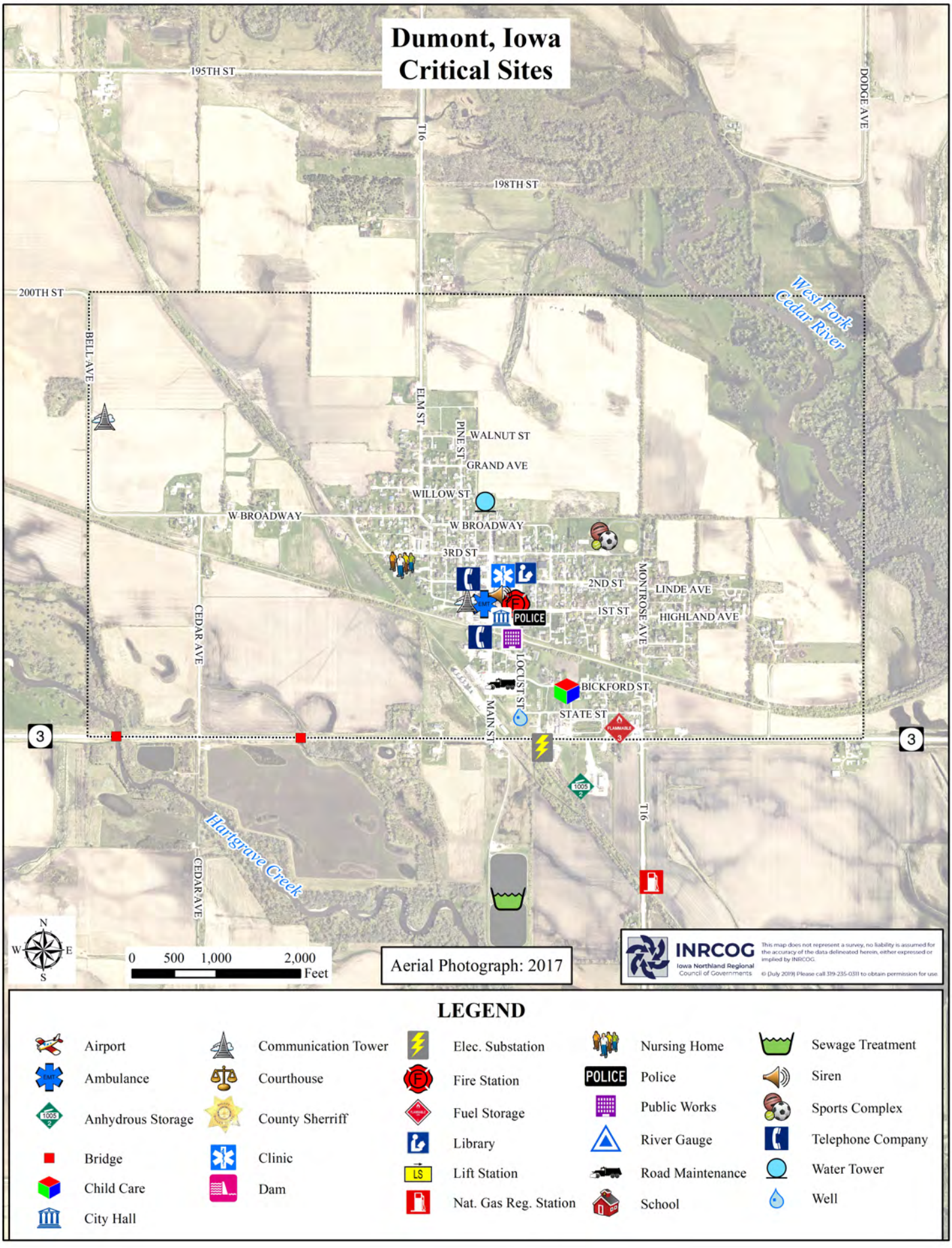
Nat. Gas Reg. Station
Nursing Home
Police
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well


Dumont, Iowa
Critical Sites
195TH ST
198TH ST
200TH ST
T16
DODGE AVE
BELL AVE
ELM ST
PINE ST
WALNUT ST
GRAND AVE
WILLOW ST
W BROADWAY
W BROADWAY
3RD ST
2ND ST
1ST ST
LINDE AVE
HIGHLAND AVE
MONTROSE AVE
POLICE
CEDAR AVE
LOCUST ST
MAIN ST
BICKFORD ST
STATE ST
3
3
West Fork Cedar River
Hartgrave Creek
CEDAR AVE
T16
N
W
E
S
0 500 1,000 2,000 Feet
Aerial Photograph: 2017
INRCOG
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LEGEND
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Anhydrous Storage
Bridge
Child Care
City Hall
Communication Tower
Courthouse
County Sherriff
Clinic
Dam
Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
Nat. Gas Reg. Station
Nursing Home
Police
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well


Greene, Iowa
Critical Sites
FLOYD COUNTY
BUTLER COUNTY
FLOYD LINE ST
SANDHILL RD
HIGHLAND DR
LAVONNE ST
WILLOW DR
MAPLE ST
LODGE AVE
IOWA AVE
RIVERSIDE RD
CLEVELAND AVE
E BUTLER AVE
5TH ST
4TH ST
1ST ST
JACKSON ST
Shell Rock River
HIGH SCHOOL BLVD
105TH ST
RIVERVIEW ST
IOWA AVE
E ELY ST
E DOW ST
3RD ST
COURTLAND ST
BLUFF ST
E ROWLEY ST
INDUSTRIAL PKWY
PARK ST
HIGH ST
IOWA ST
W ELY ST
DOW ST
2ND ST
GROVE ST
ROWLEY ST
NASSAU ST
STORM SHELTER
TRAER ST
SOUTH ST
GREENE ST
MAIN ST
E SOUTH ST
C13
S 2ND ST
KIPLING AVE
14
N
W
E
S
INRCOG
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0 500 1,000 2,000
Feet
Aerial Photograph: 2017
LEGEND
Airport
Ambulance
Anhydrous Storage
Bridge
Child Care
City Hall
Communication Tower
Courthouse
County Sherriff
Clinic
Dam
Elec. Substation
Fire Station
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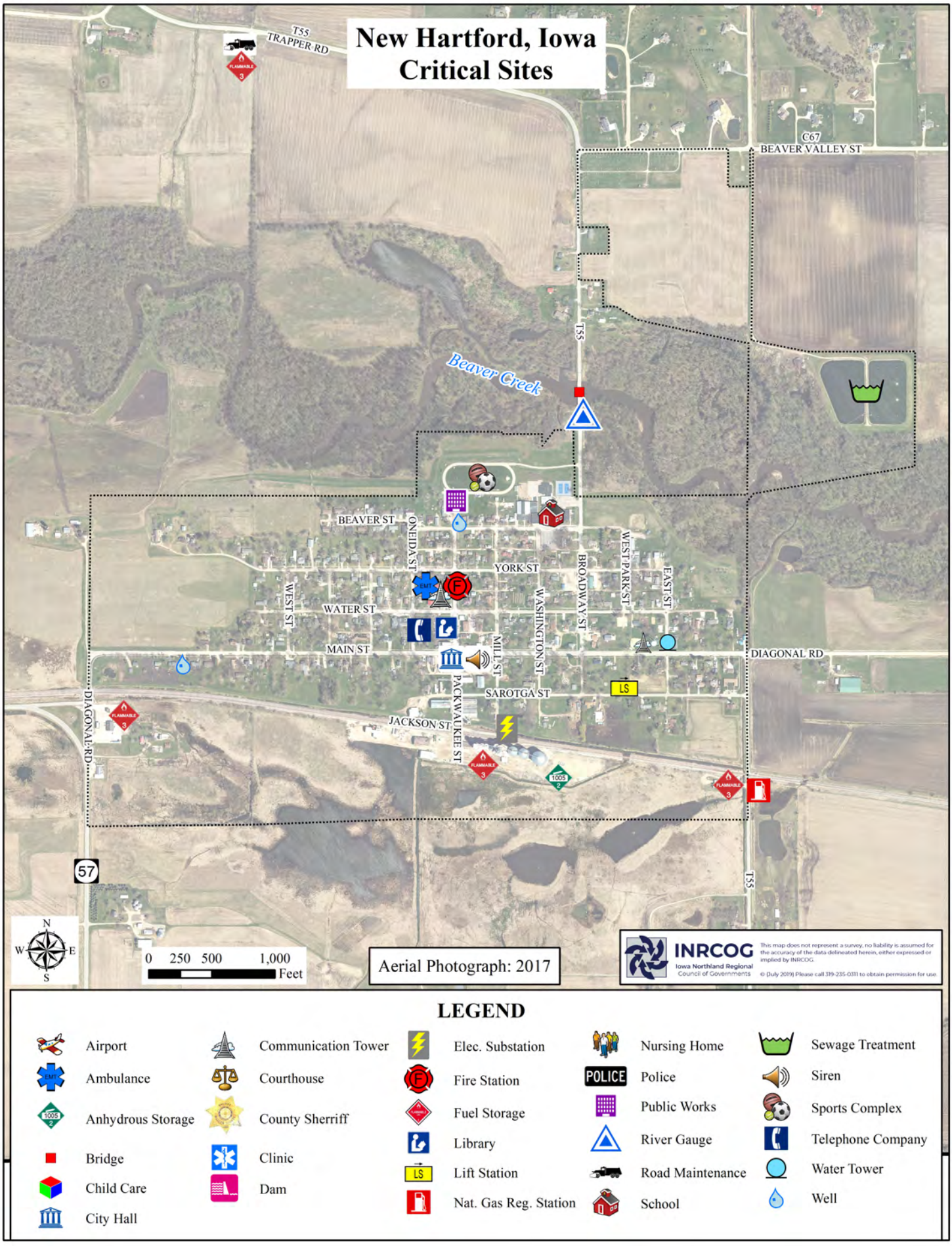
Nursing Home
Police
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well


New Hartford, Iowa
Critical Sites
T55
TRAPPER RD
C67
BEAVER VALLEY ST
Beaver Creek
T55
BEAVER ST
ONEIDA ST
YORK ST
WEST ST
WATER ST
MAIN ST
MILL ST
WASHINGTON ST
BROADWAY ST
WEST PARK ST
EAST ST
DIAGONAL RD
SAROTGA ST
JACKSON ST
PACKWAUKEE ST
DIAGONAL RD
LS
57
T55
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Aerial Photograph: 2017
INRCOG
Iowa Northland Regional Council of Governments
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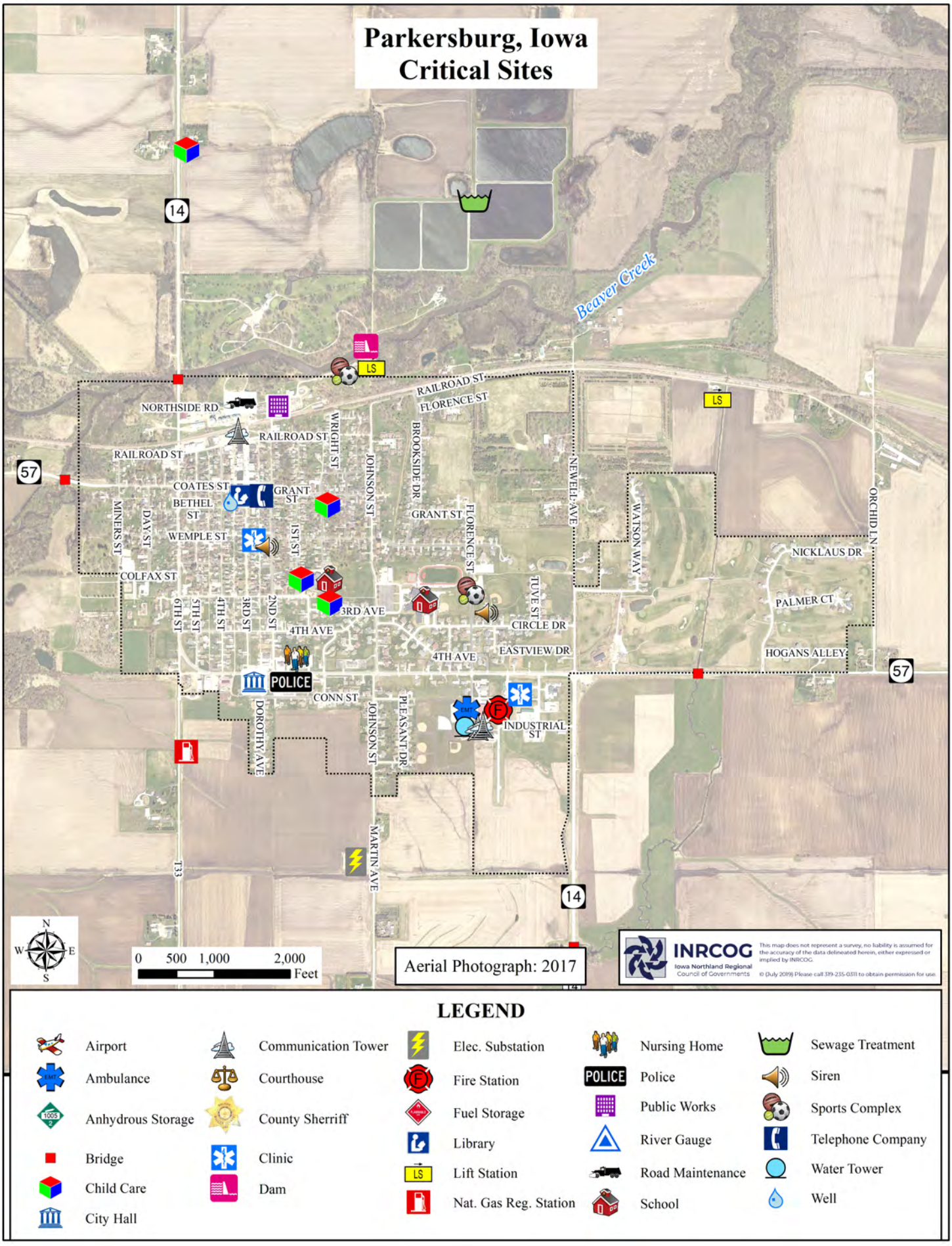
LEGEND
Airport
Ambulance
Anhydrous Storage
Bridge
Child Care
City Hall
Communication Tower
Courthouse
County Sherriff
Clinic
Dam
Elec. Substation
Fire Station
Fuel Storage
Library
Lift Station
Nat. Gas Reg. Station
Nursing Home
Police
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well


Parkersburg, Iowa
Critical Sites
Beaver Creek
14
57
LS
RAILROAD ST
FLORENCE ST
NORTHSIDE RD
WRIGHT ST
BROOKSIDE DR
NEWELL AVE
WATSON WAY
ORCHID LN
NICKLAUS DR
PALMER CT
HOGANS ALLEY
COATES ST
BETHEL ST
GRANT ST
MINERS ST
DAY ST
WEMPLE ST
1ST ST
COLFAX ST
6TH ST
5TH ST
4TH ST
3RD ST
2ND ST
3RD AVE
4TH AVE
CIRCLE DR
EASTVIEW DR
TUVE ST
POLICE
CONN ST
DOROTHY AVE
JOHNSON ST
PLEASANT DR
INDUSTRIAL ST
MARTIN AVE
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Aerial Photograph: 2017
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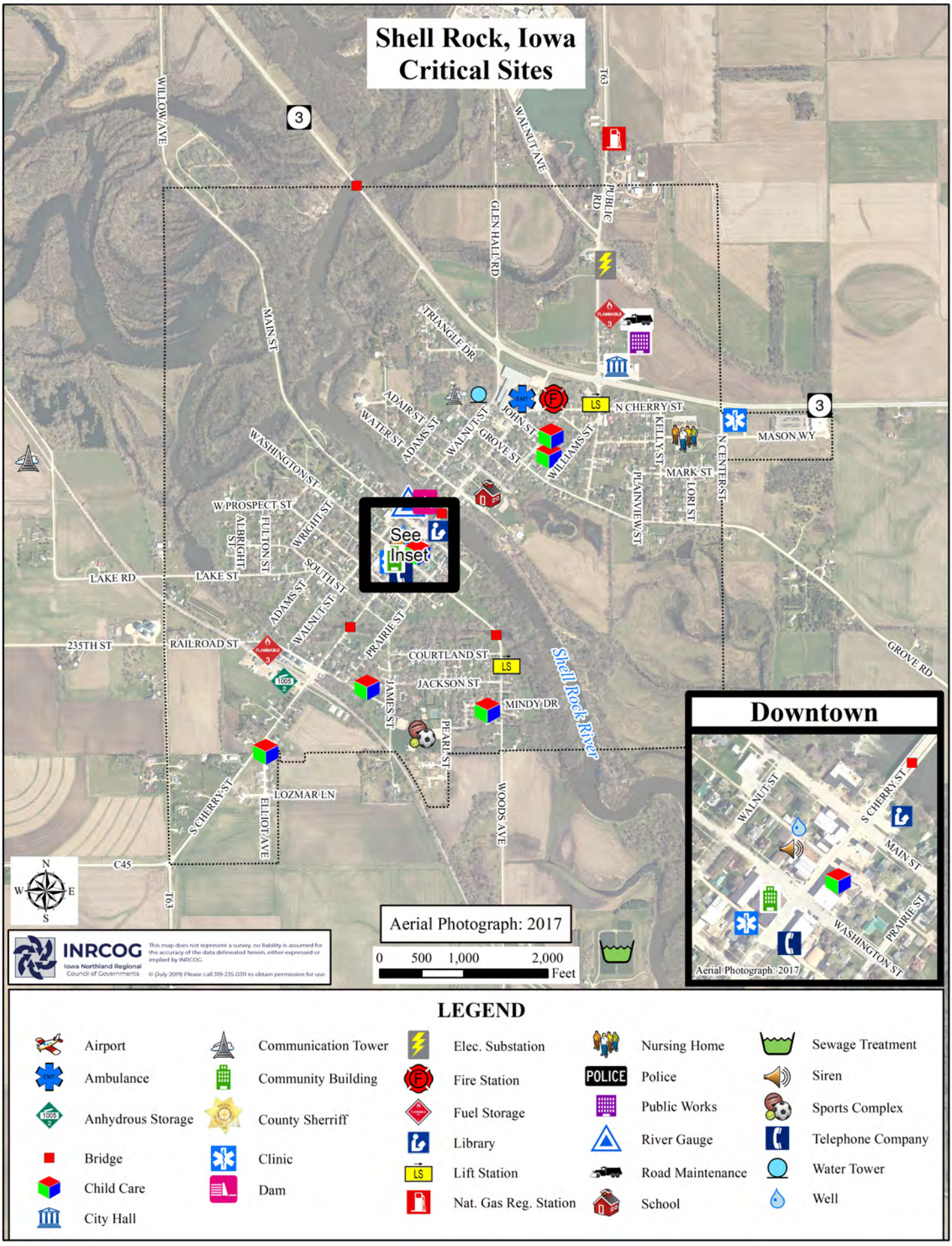
Telephone Company
Water Tower
Well


Shell Rock, Iowa
Critical Sites
WILLOW AVE
MAIN ST
WALNUT AVE
GLEN HALL RD
PUBLIC RD
T63
TRIANGLE DR
ADAIR ST
WATER ST
ADAMS ST
WALNUT ST
GROVE ST
JOHN ST
WILLIAMS ST
N CHERRY ST
KELLY ST
MARK ST
LORI ST
PLAINVIEW ST
N CENTER ST
MASON WY
WASHINGTON ST
W PROSPECT ST
ALBRIGHT ST
FULTON ST
WRIGHT ST
See Inset
LAKE RD
LAKE ST
SOUTH ST
ADAMS ST
WALNUT ST
PRAIRIE ST
235TH ST
RAILROAD ST
COURTLAND ST
JACKSON ST
MINDY DR
JAMES ST
PEARL ST
Shell Rock River
GROVE RD
S CHERRY ST
LOZMAR LN
ELLIOT AVE
WOODS AVE
C45
Downtown
WALNUT ST
S CHERRY ST
MAIN ST
PRAIRIE ST
WASHINGTON ST
Aerial Photograph: 2017
Aerial Photograph: 2017
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Feet
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Nat. Gas Reg. Station
Nursing Home
Police
Public Works
River Gauge
Road Maintenance
School
Sewage Treatment
Siren
Sports Complex
Telephone Company
Water Tower
Well

ATTACHMENT 8: Plan Adoption Resolutions

RESOLUTION # 956

A RESOLUTION OF THE BOARD OF SUPERVISORS, OF BUTLER COUNTY, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY.

WHEREAS, the Board of Supervisors of Butler County, Iowa has authorized the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, Butler County, Iowa has contracted with the Iowa Northland Regional Council of Governments for the development of said Plan; and,

WHEREAS, the Multi-Jurisdictional Hazard Mitigation Planning Committee of Butler County has participated in the formulation of said Plan; and has recommended the adoption of said Multi-Jurisdictional Hazard Mitigation Plan; and

WHEREAS, a Public Hearing has been held in the County Courthouse for the purpose of obtaining citizen input on the Multi-Jurisdictional Hazard Mitigation Plan; and

NOW THEREFORE BE IT RESOLVED THAT the Board of Supervisors of Butler County, Iowa herewith adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comment and future FEMA and IHSEMD recommendations.

Passed and adopted this 3rd day of March 2020.

Tom E. Heidenreich
Chair

ATTEST:

County Auditor

RESOLUTION # 953

A RESOLUTION SETTING A DATE FOR A PUBLIC HEARING ON THE ADOPTION OF THE MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY, IOWA.

WHEREAS, the Board of Supervisors of Butler County, Iowa has authorized the Iowa Northland Regional Council of Governments to develop a Multi-Jurisdictional Hazard Mitigation Plan in cooperation with the Multi-Jurisdictional Hazard Mitigation Planning Committee for the County; and,

WHEREAS, the Board of Supervisors of Butler County Iowa desires citizen input on the establishment and adoption of a Multi-Jurisdictional Hazard Mitigation Plan, and,

NOW THEREFORE BE IT RESOLVED THAT, a public hearing be held on the adoption of a Multi-Jurisdictional Hazard Mitigation Plan for Butler County, Iowa. Said Public Hearing to be held on the 3rd Day of March, 2020 at 9:05 a.m. at the Butler County Courthouse in Allison, Iowa.

Passed and adopted this 28th day of January 2020.

Tom E Niedenwirth
Chair

ATTEST:

County Auditor

PUBLIC NOTICE
Butler County

NOTICE OF PUBLIC HEARING

Notice is hereby given that on the 3rd day of March, 2020 at 9:05 a.m. in the Supervisor's Boardroom, Butler County Courthouse, 428 Sixth St., Allison, Iowa, a public hearing will be held to accept input regarding the Multi-Jurisdictional Hazard Mitigation Plan recently undertaken by the County.

Anyone interested may appear at the above stated time and place for the public hearing and be heard or may file written comments in person or mail to Lizbeth Williams, County Auditor, Butler County Courthouse, P.O. Box 325, Allison, IA 50602. Written comments must be received in the County Auditor's office before 9:00 AM on the date set for said hearing. Copies of the plan will be available for review at the Butler County Auditor's Office or online at www.inrcog.org/pub.

Published in the Eclipse News-Review on Wednesday, February 26, 2020

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Eclipse News-Review, a weekly newspaper printed in the English language, published at Parkersburg in Butler County, State of Iowa, and that the annexed Butler County Notice of Public Hearing to Accept Input Regarding the Multi-Jurisdictional Hazard Mitigation Plan March 3, 2020

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 26th day of February, 2020, the second on the _____ day of _____, 20___, the third on the _____ day of _____, 20___, the fourth on the _____ day of _____, 20___,

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 26th day of February, 2020,

Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA
MADISON T CRAIGHTON
Commission Number 813886
My Commission Exp NOV. 20, 2021

Printer's Fees, $ 10.69

Affidavit of Publication

• • •

STATE OF IOWA
Butler County | ss: Butler County Auditor

I, ROSS HAWKER, being first duly sworn on oath say that I am the publisher of THE GREENE RECORDER, a weekly newspaper, printed and published in the English language at Greene, in Butler County, Iowa, and of general circulation, at the said town of Greene, and that the annexed is a true copy of

Notice of Public Hearing
March 3, 2020 – 24 lines

was published in said newspaper for 1 consecutive weeks, and that the date of the first publication was in the issue of said paper, dated:

February 26, 2020

and that date of the last publication was in the issue of said paper, dated:

February 26, 2020

Ross Hawker, Publisher

• • •

Publication fee $ 4.61

• • •

subscribed in my presence and sworn to before me by the said Ross Hawker

this 28th day of February 2020

Sarah E Hawker
Notary Public in and for said county

SARAH E HAWKER
COMMISSION NO. 730457
MY COMMISSION EXPIRES
SEPTEMBER 10, 2022

PUBLIC NOTICE

NOTICE OF PUBLIC HEARING

Notice is hereby given that on the 3rd day of March, 2020 at 9:05 a.m. in the Supervisor's Boardroom, Butler County Courthouse, 428 Sixth St., Allison, Iowa, a public hearing will be held to accept input regarding the Multi-Jurisdictional Hazard Mitigation Plan recently undertaken by the County.

Anyone interested may appear at the above stated time and place for the public hearing and be heard or may file written comments in person or mail to Lizbeth Williams, County Auditor, Butler County Courthouse, P.O. Box 325, Allison, IA 50602. Written comments must be received in the County Auditor's office before 9:00 AM on the date set for said hearing. Copies of the plan will be available for review at the Butler County Auditor's Office or online at www.inrcog.org/pub.

PUBLIC NOTICE

NOTICE OF PUBLIC HEARING

Notice is hereby given that on the 3rd day of March, 2020 at 9:05 a.m. in the Supervisor's Boardroom, Butler County Courthouse, 428 Sixth St., Allison, Iowa, a public hearing will be held to accept input regarding the Multi-Jurisdictional Hazard Mitigation Plan recently undertaken by the County.

Anyone interested may appear at the above stated time and place for the public hearing and be heard or may file written comments in person or mail to Lizbeth Williams, County Auditor, Butler County Courthouse, P.O. Box 325, Allison, IA 50602. Written comments must be received in the County Auditor's office before 9:00 AM on the date set for said hearing. Copies of the plan will be available for review at the Butler County Auditor's Office or online at www.inrcog.org/pub.

TJ-9

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Butler County Tribune-Journal, a weekly newspaper printed in the English language, published at Allison in Butler County, State of Iowa, and that the annexed Butler County Notice of Public Hearing to Accept Input Regarding the Multi-Jurisdictional Hazard Mitigation Plan March 3, 2020

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 27th day of February, 2020,
the second on the ____ day of _____, 20___,
the third on the ____ day of _____, 20___,
the fourth on the ____ day of _____, 20___,

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 27th day of February, 2020,

Lynnette Richardson
Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA
LYNNETTE RICHARDSON
Commission Number 771667
My Commission Exp FEB. 14, 2021

Printer's Fees, $ 5.35

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Clarksville Star, a weekly newspaper printed in the English language, published at Clarksville in Butler County, State of Iowa, and that the annexed Butler County Notice of Public Hearing on Input Regarding the Multi-Jurisdictional Hazard Mitigation Plan March 3, 2020

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 27th day of February, 2020, the second on the _____ day of _____, 20___, the third on the _____ day of _____, 20___, the fourth on the _____ day of _____, 20___,

Pamela J. DeVries

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 27th day of February, 2020,

Lynnette Richardson

Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA

LYNNETTE RICHARDSON
Commission Number 771667
My Commission Exp FEB. 14, 2021

Printer's Fees, $ 5.34

PUBLIC NOTICE

NOTICE OF PUBLIC HEARING

Notice is hereby given that on the 3rd day of March, 2020 at 9:05 a.m. in the Supervisor's Boardroom, Butler County Courthouse, 428 Sixth St., Allison, Iowa, a public hearing will be held to accept input regarding the Multi-Jurisdictional Hazard Mitigation Plan recently undertaken by the County.

Anyone interested may appear at the above stated time and place for the public hearing and be heard or may file written comments in person or mail to Lizbeth Williams, County Auditor, Butler County Courthouse, P.O. Box 325, Allison, IA 50602. Written comments must be received in the County Auditor's office before 9:00 AM on the date set for said hearing. Copies of the plan will be available for review at the Butler County Auditor's Office or online at www.inrcog.org/pub.

CS-9

RESOLUTION # 20-03.1

A RESOLUTION OF THE CITY COUNCIL OF ALISON, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY.

WHEREAS, the City Council of the City of Allison, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, Butler County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Butler County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Allison, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Butler County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Allison Iowa herewith adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 9th day of March 2020.

Scot Henrichs, Mayor

ATTEST:

Glenda Miller, City Clerk

Motion to adopt: Henning
and motion : Bangasser
Ayes: Bangasser, Carlson, Davis, Henning, Heuer
Nays: NONE

RESOLUTION #1

A RESOLUTION OF THE APLINGTON PARKERSBURG CSD ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY, IOWA.

WHEREAS, the Community School District of Aplington Parkersburg, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, the Plan has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and,

WHEREAS, the Aplington Parkersburg CSD participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Plan; and,

WHEREAS, a Public Hearing has been held in the Aplington Parkersburg Elementary/Middle School for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT, the Board of Directors of the Aplington Parkersburg CSD, hereby adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan the citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 20th day of April 2020.

School Board President

ATTEST:

School Board Secretary

PUBLIC NOTICE
Aplington-Parkersburg CSD

NOTICE OF PUBLIC HEARING

Notice is hereby given that on April 20, 2020 at 7:00, p.m. at the Aplington Parkersburg Elementary/Middle School, a public hearing will be held to accept input regarding the Multi-Jurisdictional Hazard Mitigation Plan, recently undertaken by the County.

Anyone interested may appear at the above stated time and place for the public hearing and be heard or may file written comments in person or mail to : Superintendent Robert Hughes, 610 N. Johnson St. Parkersburg, Iowa 50665.

Written comments must be received at the Superintendent's office before noon on the date set for said hearing. Copies of the plan can be made available for review online at www.inrcog.org/pub.

Published in the Eclipse News-Review on Wednesday, April 8, 2020

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Eclipse News-Review, a weekly newspaper printed in the English language, published at Parkersburg in Butler County, State of Iowa, and that the annexed Aplington-Parkersburg CSD Notice of Public Hearing to Accept Input Regarding the Multi-Jurisdictional Hazard Mitigation Plan April 20, 2020

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 8th day of April, 2020,
the second on the _____ day of _____, 20___,
the third on the _____ day of _____, 20___,
the fourth on the _____ day of _____, 20___,

Pamela J. DeVries

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 8th day of April, 2020,

Amanda J Mast

Notary Public; In and for the State of Iowa

AMANDA J MAST
Commission Number 823582
My Commission Exp FEB. 05, 2023

Printer's Fees, $ 9.67

RESOLUTION # 503-20

A RESOLUTION SETTING A DATE FOR A PUBLIC HEARING ON THE ADOPTION OF THE MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY, IOWA.

WHEREAS, the City Council of Aplington, Iowa has authorized the Iowa Northland Regional Council of Governments to develop a Multi-Jurisdictional Hazard Mitigation Plan in cooperation with the Multi-Jurisdictional Hazard Mitigation Planning Committee for the County; and,

WHEREAS, the City Council of Aplington desires citizen input on the establishment and adoption of a Multi-Jurisdictional Hazard Mitigation Plan, and,

NOW THEREFORE BE IT RESOLVED THAT, a public hearing be held on the adoption of a Multi-Jurisdictional Hazard Mitigation Plan for Butler County, Iowa. Said Public Hearing to be held on the 8th day of July 2020 at 6 P.M. at the City of Aplington City Hall.

Passed and adopted this 29th day of June, 2020.

Mayor

ATTEST:

City Clerk

Passed and adopted this 29th day of June 2020.

RESOLUTION #504-20

A RESOLUTION OF THE CITY COUNCIL OF Aplington, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY.

WHEREAS, the City Council of the City of Aplington, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, Butler County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Butler County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Aplington_, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Butler County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Aplington, Iowa herewith adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 8th day of July 2020.

Mayor

ATTEST:

City Clerk

RESOLUTION # 2020-14

A RESOLUTION OF THE CITY COUNCIL OF Aredale, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY.

WHEREAS, the City Council of the City of Aredale, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, Butler County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Butler County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Aredale, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Butler County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Aredale Iowa herewith adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 13 day of July 2020.

Mardee Motion
Deb second
All in favor

Mayor

ATTEST:

City Clerk

RESOLUTION NO. 20-5

The City Council of Bristow in Butler County, Iowa on this date April 14, 2020 accepting input regarding the Multi-Jurisdictional Hazard Mitigation Plan for Butler County

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF BRISTOW, IOWA ON THIS 14th DAY OF APRIL 2020.

Roll Call Vote Ayes: 5 Nayes: 0

Dennis Peterson, Mayor

ATTEST: Trisha Boos
Trisha Boos, city clerk

"I hereby certify that the foregoing constitutes a true and complete copy of a resolution duly adopted by the City Council of the City of Bristow, at regular meeting held on April 14, 2020 at which all council members, Kevin Snyder, Dennis Palmer, Brad Lewis, Carter Lewis, Curt Lewis were present. Mayor Dennis Peterson also present."

"I further certify that Snyder moved for adoption of said resolution and that Carter Lewis seconded said motion."

Trisha Boos
Trisha Boos, city clerk

NOTARIAL SEAL IOWA
JOYCE FENNEMAN
Commission Number 814187
My Commission Expires
December 12, 2021

RESOLUTION
20-715

A RESOLUTION OF THE CITY COUNCIL OF CLARKSVILLE, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY.

WHEREAS, the City Council of the City of Clarksville, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, Butler County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Butler County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Clarksville, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Butler County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Clarksville, Iowa herewith adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 6 day of April 2020.

Kenneth A. Smith
Mayor

ATTEST:

Lori A. Peterson
City Clerk/Treasurer

TOWN OF CLARKSVILLE IOWA SEAL

PUBLIC NOTICE

NOTICE OF PUBLIC HEARING

Notice is hereby given that on March 16, 2020 at 5:00 p.m. at the DNH High School Library, a public hearing will be held to accept input regarding the Multi-Jurisdictional Hazard Mitigation Plan, recently undertaken by the County.

Anyone interested may appear at the above stated time and place for the public hearing and be heard or may file written comments in person or mail to Dike-New Hartford CSD, Justin Stockdale, Superintendent, 330 Main Street, Dike IA 50624. Written comments must be received at the DNH Central Office before noon on the date set for said hearing. Copies of the plan can be made available for review online at www.inrcog.org/pub. GR10-1

PROOF OF PUBLICATION

STATE OF IOWA } **ss.**
Grundy County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Grundy Register, a weekly newspaper printed in the English language, published at Grundy Center in Grundy County, State of Iowa, and that the annexed Grundy County Multi-Jurisdictional Hazard Mitigation Plan Public Hearing March 16, 2020

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 5th day of March, 2020, the second on the _____ day of _____, 20___, the third on the _____ day of _____, 20___, the fourth on the _____ day of _____, 20___,

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 5th day of March, 2020,

Amanda J Mast
Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA

AMANDA J MAST
Commission Number 823582
My Commission Exp FEB. 05, 2023

Printer's Fees, $ 9.16

RESOLUTION

A RESOLUTION OF THE DIKE-NEW HARTFORD CSD ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY, IOWA.

WHEREAS, the Community School District of Dike-New Hartford, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, the Plan has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and,

WHEREAS, the Dike-New Hartford CSD participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Plan; and,

WHEREAS, a Public Hearing has been held in the Dike-New Hartford's High School Library for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT, the Board of Directors of the Dike-New Hartford CSD hereby adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan the citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 16th day of March 2020.

ATTEST:

Passed and adopted this 16th day of March 2020.

RESOLUTION #2020-4

A RESOLUTION OF THE CITY COUNCIL OF DUMONT, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY.

WHEREAS, the City Council of the City of Dumont, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, Butler County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Butler County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Dumont, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Butler County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Dumont, Iowa herewith adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 12th day of March 2020.

Mayor

ATTEST:

City Clerk

RESOLUTION NO. 2020-04

A RESOLUTION OF THE CITY COUNCIL OF GREENE, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY.

WHEREAS, the City Council of the City of Greene, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, Butler County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Butler County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Greene, IA, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Butler County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall, 202 West South Street, for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Greene, Iowa herewith adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 9th day of March 2020.

William Christensen, Mayor

ATTEST:

Jayne Knapp, City Clerk

Affidavit of Publication

• • •

STATE OF IOWA
Butler County | ss:

City of Greene

I, ROSS HAWKER, being first duly sworn on oath say that I am the publisher of THE GREENE RECORDER, a weekly newspaper, printed and published in the English language at Greene, in Butler County, Iowa, and of general circulation, at the said town of Greene, and that the annexed is a true copy of

Notice of Public Hearing
March 9, 2020 – 24 lines

was published in said newspaper for 1 consecutive weeks, and that the date of the first publication was in the issue of said paper, dated:

February 26, 2020

and that date of the last publication was in the issue of said paper, dated:

February 26, 2020

Ross Hawker, Publisher

• • •

Publication fee $ 12.28

• • •

subscribed in my presence and sworn to before me by the said Ross Hawker

this 28th day of February 2020

Sarah E Hawker
Notary Public in and for said county

SARAH E HAWKER
COMMISSION NO. 730457
MY COMMISSION EXPIRES
SEPTEMBER 10, 2022

PUBLIC NOTICE

NOTICE OF PUBLIC HEARING

Notice is hereby given that on March 9, 2020 at 5:00 pm. at the Greene Community Center, 202 W South Street, Greene, IA, a public hearing will be held to accept input regarding the Multi-Jurisdictional County.

Hazard Mitigation Plan, recently undertaken by the County.

Anyone interested may appear at the above stated time and place for the public hearm'g and be heard or may file written comments in person or mail to Jayne Knapp, Greene City Clerk at 202 W. South Street, PO Box 471, Greene, IA 50636-0471.

Written comments must be received at 202 W. South Street office before 12:00 pm. on the date set for said hearing. Copies of the plan can be made available for review at Butler County Auditor's Office or online at www.inrcog.org/pub.

RESOLUTION #714AF2020

A RESOLUTION OF THE CITY COUNCIL OF CITY OF NEW HARTFORD, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY.

WHEREAS, the City Council of the City of New Hartford, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, Butler County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Butler County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of New Hartford, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Butler County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of New Hartford, Iowa herewith adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 4th day of March 2020.

John M. Ordon
Mayor

ATTEST:

Shauna Hagen
City Clerk

RESOLUTION #1027

A RESOLUTION OF THE CITY COUNCIL OF PARKERSBURG, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY.

WHEREAS, the City Council of the City of Parkersburg, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, Butler County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Butler County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Parkersburg, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Butler County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Parkersburg, Iowa herewith adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 6th day of April, 2020.

Mayor Perry Bernard

ATTEST:

City Administrator/Clerk

PUBLIC NOTIICE
City of Parkersburg

PUBLIC NOTICE

Notice is hereby given that on April 6, 2020 at 7:00 p.m. at the City Council Chambers at the Parkersburg Civic Center at 502 3rd Street, a public hearing will be held to accept input regarding the Multi-Jurisdictional Hazard Mitigation Plan, recently undertaken by Butler County.

Anyone interested may appear at the above stated time and place for the public hearing and be heard or may file written comments in person or mail to City Administrator Chris Luhring, 608 Highway 57; P.O. Box 489; Parkersburg, Iowa 50665.

Written comments must be received at Parkersburg City Hall before 4:00 p.m. on the date set for said hearing. Copies of the plan can be made available for review at Butler County Auditor's Office or online at www.inrcog.org/pub.

Published in the Eclipse News-Review on Wednesday, March 25, 2020

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Eclipse News-Review, a weekly newspaper printed in the English language, published at Parkersburg in Butler County, State of Iowa, and that the annexed City of Parkersburg Public Hearing to Accept Input Regarding the Multi-Jurisdictional Hazard Mitigation Plan April 6, 2020

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 25th day of March, 2020,

the second on the _____ day of _____, 20___,

the third on the _____ day of _____, 20___,

the fourth on the _____ day of _____, 20___,

Pamela J. DeVries

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 25th day of March, 2020,

Amanda J Mast

Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA

AMANDA J MAST
Commission Number 823582
My Commission Exp FEB. 05, 2023

Printer's Fees, $ 10.64

RESOLUTION # 0010-2020

A RESOLUTION OF THE CITY COUNCIL OF SHELL ROCK, IOWA, ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY.

WHEREAS, the City Council of the City of Shell Rock, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, Butler County, Iowa has received funding through the Hazard Mitigation Grant Program for the development of said Plan; and,

WHEREAS, the Butler County Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Shell Rock, participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Butler County Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing has been held in the City Hall for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT the City Council of the City of Shell Rock, Iowa herewith adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 3rd day of March, 2020.

Mayor

ATTEST:

City Clerk

RESOLUTION # 042020

A RESOLUTION OF THE WAVERLY-SHELL ROCK CSD ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR BUTLER COUNTY, IOWA.

WHEREAS, the Community School District of Waverly-Shell Rock, Iowa has agreed to participate in the development of a Multi-Jurisdictional Hazard Mitigation Plan ("Plan") for Butler County; and,

WHEREAS, the Plan has been prepared in accordance with FEMA requirements at 44 CFR 201.6; and,

WHEREAS, the Waverly-Shell Rock CSD participated in the formulation of said Plan through community representation on the Hazard Mitigation Planning Committee ("Committee"); and said Committee has recommended the adoption of said Plan; and,

WHEREAS, a Public Hearing has been held in the Waverly-Shell Rock CSD'S Administrative Office for the purpose of obtaining citizen input on said Plan; and,

NOW THEREFORE BE IT RESOLVED THAT, the Board of Directors of the Waverly-Shell Rock CSD hereby adopts the Butler County Multi-Jurisdictional Hazard Mitigation Plan, incorporating into the Plan the citizen comments and future FEMA and IHSEMD recommendations.

Passed and adopted this 13th day of April 2020.

Kelly Flege
____

ATTEST:

Jean Boeve
____

Passed and adopted this 13th day of April 2020.

ATTACHMENT 9: Previous Hazard Mitigation Plan Updates

As part of this MJ-HMP Update, the Committee analyzed their previous mitigation activities from the 2015 plan. The Committee reviewed each activity during the MJ-HMP Update planning session and determined those that had been completed, those that had not been implemented but remained relevant, those that are still active, and those that were no longer applicable. Below is the status of Butler County and each city's previous hazard mitigation activities.

Butler County 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Active: Provide Butler County residents weather updates on social media; distribute brochures at public events for awareness.
Establish an Emergency Notification System and Conduct Drills	Active: Use ALERT IOWA (WENS) system for public emergency notifications. Maintained monthly and conduct drills annually.
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Active: Mutual aid agreements and IMAC in place and maintained annually.
Complete and Maintain Secondary Off-Site Dispatch Center	Complete: Butler County has 2 (two) back-up dispatch centers. Active: Equipment is maintained for each site.
Develop and Maintain an Emergency Response Plan	Complete/Active: The ERP is updated annually.
Develop and Maintain Continuity of Operations Plan (COOP)	Active: Plan development in progress.
Develop and Maintain Command Procedures & Center	Active: Plan development in progress.
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	Complete / Active: Agreements maintained annually with transportation carriers in the event they are needed. Public health conducts home visits as needed.
Maintain Well-Trained Personnel (Fire, First Responders Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	Active / Repetitive: First responders (FIRE / EMS) train monthly. Provide 2 exercises per year for Multijurisdictional training.
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Complete / Active: School's completed EOP plans will be maintained on an annual basis.

Butler County 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Provide Off-Site Backup of Essential Data	Complete / Active / Repetitive: Software system is backed up off site and can be accessed from another location in the event of a disaster. Maintained and backed up on a monthly basis.
NOAA Weather Radio Awareness Program	Active / Repetitive: Have drawings for NOAA Weather Radios at public events. Participate in Kids Fest, Severe Weather Awareness week, etc.
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	Active / Repetitive: DNR Tier II Reports updated annually.
Continue Agreement with NE Iowa Response Group	Active / Repetitive: Agreement renewed, annually, with NE Iowa Response Group.
Ensure Tier II Reports are Completed and Reported per Applicable Laws	Active / Repetitive: Reports completed each year.
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Not completed: Lack of Funding.
Maintain Membership of National Flood Insurance Program	Active: Maintain NFIP yearly.
Maintain Wellness Clinics and Public Health Department	Active / Repetitive: annual wellness days, blood draws, blood pressure checks.
Develop a Clean Up/Recovery Procedure / Plan	Active: Review and update plan each year.
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	Active: Signs added / replaced as needed.
Maintain a Community-Wide Household Hazardous Waste Disposal Site or Event	Active: Maintain Disposal Site on a monthly basis.

Butler County 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Active: Planning in progress for Groundwater and Drinking Water plans.
Maintain and Update Bioterrorism Response Plan	Active / Repetitive: Plan updated yearly.
Identify and Improve Security at Critical Facilities	Active: Security System is maintained yearly.
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	Not completed: Lack of funding and storage space.
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both	Active: Properties are purchased as funding allows.
Flood Proof Critical Facilities	Incomplete: County does not have Critical Facilities that are prone to flood.
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Active: All bridges are inspected on a 2-year rotational basis.
Develop a Water Rationing Plan	Incomplete: Cities are adopting water plans. No need for County plan.
Maintain Roadside Vegetation Management Program	Active: ongoing every year.
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in need (i.e., Ridge Road, T55 Bridge, etc.)	As Needed.

Allison 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Establish and Conduct A Public Awareness and Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Info, Importance of Vaccinations, Hazard Info, At-Home Improvements)	Active: Education programs are coordinated between the city, Fire, EMS, Sheriff, County EMA and Public Health.
Maintain Mutual Aid Agreements with Surrounding Communities And IMAC	Active: Aid agreements in place with surrounding communities.
Develop and Maintain an Emergency Response Plan	In Place and maintained: Follow Butler County Emergency Response Plan.
Maintain, Purchase and Update (As Needed) Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, Etc. (Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, Etc.)	Active: City purchases and updates equipment as needed.
Develop Plan/Procedures to Assist At-Risk Populations During an Event (Transport to Shelters, Home Visits, Etc.)	Active: Plan in place.
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, And Other Critical Services; Includes Multi-Jurisdictional Training and Cooperation for All Hazards	Active: Annual training.
Ensure Schools and Other Buildings/Structures with Large Populations Have Evacuation Plans	Active: The school and City have plans in place.
Develop, Enforce and Update (As Needed) Local Ordinances and Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Sewer/Water, Storm Water)	Active: Local ordinances and regulations in place, reviewed and updated as necessary.
Develop A Clean-Up/Recovery Procedure/Plan	Active: City has a recovery plan in place.
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, Etc.) A	Active: Reviewed quarterly.
Purchase Natural Gas Generators for Critical Facilities and Shelters	Active: purchased as needed and as funding allows.

Allison 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Identify and Establish Facilities to Use as Shelters and Cooling/Heating Sites	Active: shelter locations identified.
Purchase Additional Warning Sirens for Underserved Areas of Community	Active: city will continue to purchase new or replace sirens as needed.
Update Local Ordinances to Require Installation of Warning Sirens in New Developments Over a Certain Size	Active.
Identify and Maintain Relationships with Users of Hazardous Materials/Chemicals and Radiological/Nuclear Substances	Active: Relationship with County EMA and NE IA Response Group.
Continue Agreement with NE Iowa Response Group	Active: Agreement has and will be continued.
Ensure Tier II Reports Are Completed and Reported Per Applicable Laws	Active: Coordinated with County EMA.
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Active: Continue to pursue safe rooms as opportunity arises.
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (Inspections, Testing, Security, Etc.)	Active: Daily Testing.
Conduct Annual Fire Inspections of Industries and Businesses	Active: Fire Department conducts annual inspections.
Maintain Wellness Clinics and Public Health Department	Active: Unity Point Family Medicine Clinic maintained and county maintains Public Health Nurses program.
Maintain Mosquito Spraying Program	Active: Implemented seasonally.

Allison 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Establish an Emergency Notification System and Conduct Drills	Active: The City and County recently implemented the statewide AlertIowa system.
Complete and Maintain Secondary Off-Site Dispatch Center	Completed: Butler County has Dispatch Office.
Develop and Maintain Continuity of Operations Plan	Active.
Develop and Maintain Command Procedures Center	Active: Plan in place and maintained.
Develop and Maintain an Internal Procedural/Communication Plan with Contact Info (Local, State, Regional), Local Suppliers, Backup Plan/Equipment, Etc.	Active: Routine Monitoring.
Place GPS Units in All Critical Service Vehicles	Drop.
Provide Off-Site Backup of Essential Data	Active: Essential data is backed up daily.
Establish a Tree-Trimming Program/Ordinance (Inspections, Trimming, Disposal, Etc.)	Active: Trees trimmed in the fall each year.
Install Signage at Critical Transportation Sites (Railroad, Dangerous Intersections, Etc.)	Active: Installed, maintained and updated as needed.
Establish, Adopt and Enforce Building Codes	Active: code in place and enforced.
NOAA Weather Radio Awareness Program	Active: EMA holds programs.

Allison 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Encourage Installation of Surge Protectors on Electrical Lines	Active: city and Mid-American Energy.
Establish A Community-Wide Household Hazardous Waste Disposal Site or Event	Active: available daily at Transfer Station.
Install Dry Hydrants in Rural Areas and Underserved Areas	Installed as needed, coordinated with EMA and City.
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Active: as needed and when funding is available.
Develop an Evacuation Plan for Community and Necessary Signage (Evacuation Route, Detour Signs, Etc.)	Active: As needed.
Establish Best Management Practices for Storm Water Management (Detention Ponds, Retention Ponds, Buffer Strips, Etc.)	Implement as needed an as funding is available.
Maintain and Update Bioterrorism Response Plan	Active: Reviewed annually between city and EMA.
Identify and Improve Security at Critical Facilities	Active: Implemented as security improvements identified.
Develop A Water Rationing Plan	Implement as Needed.
Bury Overhead Powerlines	Not completed, as needed and available. MidAmerican Energy responsible for.
Upgrade Sanitary Sewer Collection Lines (Including the Removal of Inflow and Infiltration) and Upgrade Wastewater Plant and Treatment Process	Completed.

Aplington 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Install Signage at Critical Transportation Sites (Railroad, Dangerous Intersections, Etc.)	Active: As needed.
Establish, Adopt, & Enforce Building Codes	Active, building code in place and enforced as needed.
Purchase Additional Warning Sirens for Underserved Areas of Community	To be implemented, as needed.
Update Local Ordinances to Require Installation of Warning Sirens in New Developments Over a Certain Size	Active.
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	Active.
Continue Agreement with NE Iowa Response Group	Active: Repetitive.
Ensure Tier II Reports are Completed and Reported Per Applicable Laws	To be implemented, as needed.
Conduct Annual Fire Inspections of Industries and Businesses	Active, conducted annually by Fire Department.
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, Etc.)	To be implemented, as needed.
Flood Proof Critical Facilities	To be implemented, as needed.
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Active.

Aplington 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Identify and Improve Security at Critical Facilities	Active.
Maintain Wellness Clinics and Public Health Department	Active: Clinic located 5 miles to east.
Maintain Mosquito Spraying Program	Active: Implemented seasonally.
Establish an Emergency Notification System and Conduct Drills	Active: Member of Alert Iowa.
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Active.
Purchase Natural Gas Generators for Critical Facilities & Shelters	Completed, will be continued.
Establish a Tree Trimming Program/Ordinance (Inspections, Trimming, Disposal, Etc.)	Active.
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Active.
NOAA Weather Radio Awareness Program	Active.
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	In progress.
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (Inspections, Testing, Security, Etc.)	Active.

Aplington 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Install Dry Hydrants on Rural Areas and In Underserved Areas	Active.
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Active.
Join or Maintain Membership of National Flood Insurance Program	DROP. The City does no participate in the NFIP. Not in a flood plain.
Maintain and Update Bioterrorism Response Plan	In progress.
Conduct Necessary Studies, Engineering, Construction, Etc. On Existing Infrastructure That Are in Need (I.E., Ridge Road, T55 Bridge, Etc.)	N/A
Complete and Maintain Secondary Off-Site Dispatch Center	In progress.
Develop A Clean Up/Recovery Procedure / Plan	Active.
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, Etc.)	Active.
Place GPS Units in All Critical Service Vehicles	In progress.
Provide Off-Site Backup of Essential Data	Active.
Bury Overhead Power Lines	In progress.

Aplington 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Encourage Installation of Surge Protector on Electrical Lines	Active.
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Active.
Either Purchase & Remove Structures In 100-YR Floodplain or Elevate Structures To At Least 1-FT Above 100-YR Floodplain, Or Both	NA
Establish Best Management Practices for Storm Water Management (I.E., Detention Ponds, Retention Ponds, Buffer Strips, Etc.)	Completed: Will be continued.
Develop a Water Rationing Plan	To be implemented, as needed.
Maintain Roadside Vegetation Management Program	NA
Establish a Drainage District	Not completed.
Acquire and/or Annex Land for Relocation of Community	NA

Aplington-Parkersburg Community School District 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Maintain procedures for severe weather events	Active: District reviewed and updated the Emergency Operations Plan (EOP). Active and consistent review for Preparedness.
Maintain and evaluate existing terrorism mitigation procedures.	Active: District reviewed and updated EOP Plan.
Systematically Review and Update, as needed, Hazard Reponses Policies and Procedures.	Active: District reviewed and updated EOP Plan.
Research, secure grant dollars for, and build shelters and safe rooms.	Actively seeking support: Not completed due to lack of funds.

Aredale 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc.)	Active: Repetitive.
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Completed: Green, Dumont, Dougherty.
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	Active: Repetitive.
Maintain Membership of National Flood Insurance Program	Active: Repetitive.
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both	Dropped: Not financially feasible.
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Not completed.
Establish an Emergency Notification System and Conduct Drills	Not completed: 50%. City implemented Alert Iowa notification system. Efforts to educate community still needed.
Develop and Maintain an Emergency Response Plan	Active.
Maintain Mosquito Spraying Program	Active: Seasonal.
Purchase Additional Warning Sirens for Underserved Areas of Community as needed	Completed: Continue as needed. Siren in place.
Continue Agreement with NE Iowa Response Group	Active: Annual agreement maintained.

Aredale 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Complete and Maintain Secondary Off-Site Dispatch Center	Active: Repetitive with Fire Station.
Maintain Command Procedures & Center	Active: Repetitive with Fire Station.
Develop and Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, Etc.	Active: Fire Department Managers.
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	Dropped from Plan.
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, etc.)	Active: Completed as needed.
Place GPS Units in all critical service vehicles	Drop from Plan.
Provide off-site Backup of Essential Data	Drop from Plan.
Maintain Clean Up/Recovery Procedure / Plan	Active.
Purchase Natural Gas Generators for Critical Facilities & Shelters	Not completed. One generator available.
Maintain tree trimming program	Drop from Plan.
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Active. Drop from Plan.

Aredale 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size	N/A No new developments planned. Drop.
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	Active: Repetitive.
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	Completed / Repetitive: County Transfer Station.
Ensure Tier II Reports are Completed and Reported per Applicable Laws	Active: Implemented as Needed. Drop from the Plan
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Drop from Plan.
Install Dry Hydrants in Rural Areas and in Underserved Ares	Drop from Plan.
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	Completed. Drop from next plan.
Conduct Annual Fire Inspections of Industries and Businesses	Active. Annual.
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Not Completed.
Maintain and Update Bioterrorism Response Plan	Completed.
Identify and Improve Security at Critical Facilities	Completed. Drop from Plan.

Aredale 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Maintain Wellness Clinics and Public Health Department	Active: Partnership with Butler County Public Health.
Develop a Water Rationing Plan	Implemented as Needed. City does not provide water. Residents have private wells.
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	Active, Repetitive with County as needs are identified.

Bristow 2015-2020 Implementation Strategy Update	
Mitigation Action / Program Project	**Committee Determination / Comments**
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc.)	Active: City purchases new equipment as needed and makes needed repairs. New siren in past 5 years.
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Active: Fire department works with surrounding communities.
Develop and Maintain an Emergency Response Plan	Active: Annual.
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	Active: Volunteer members of Fire Department are adequately trained.
Continue Agreement with NE Iowa Response Group	Active: Repetitive.
Purchase Additional Warning Sirens for Underserved Areas of Community	Active: Siren adequately serves the community.
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Active: Updates made as needed.
Maintain Mosquito Spraying Program	Active: Seasonal.
Establish an Emergency Notification System and Conduct Drills	Active: Alert Iowa emergency notification system.
Develop and Maintain Continuity of Operations Plan (COOP)	Active.
Develop and Maintain Command Procedures & Center	Active: Review annually.

Bristow 2015-2020 Implementation Strategy Update	
Mitigation Action / Program Project	**Committee Determination / Comments**
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	Active.
Purchase Natural Gas Generators for Critical Facilities & Shelters	Completed: Continue as needed.
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Active: Disposal site available for community.
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Active: City hall and fire station.
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	Active.
Conduct Annual Fire Inspections of Industries and Businesses	Active: Fire department conducts annual inspections.
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Active: Annual.
Identify and Improve Security at Critical Facilities	Completed.

Clarksville 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Active: City includes information in bi-annual newsletter that is mailed to residents. Content includes seasonal disaster preparation and how information will be made available in event of disaster.
Establish an Emergency Notification System and Conduct Drills	Active: County has this in place. City participates in drills, including city's outdoor warning system.
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Active: 29E Agreements with surrounding cities continue to be in place.
Develop and Maintain an Emergency Response Plan	Completed: Updated as needed.
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc.)	Active: Various equipment for all City departments, including public works, fire, EMS and police are replaced and updated as needed to keep them in good working order. Recently, a new ambulance and new public works pay loader were put into service.
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	Active: Regular well-established training programs in place for fire, EMS, police and public works staff. Training policies meet state and national certification standards as set for the appropriate agency.
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	Active: City code of ordinances are presently being reviewed and updated, and will be completed in Q4 of 2019.
Purchase Natural Gas Generators for Critical Facilities & Shelters – need backup generators	Completed: New natural gas generator purchased and installed September 2019. This will power all critical city facilities including city hall, fire station, EMS facility, and city well pumps.
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	Completed: Iowa Northern Railway has completed new signage at rail crossings in the community.

Clarksville 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Establish, Adopt, & Enforce Building Codes	Active: City has contracted with a building official to oversee new construction projects on an as needed basis, when building permits are issued for new structures.
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	Active: Fire Department annually conducts reviews with Haz-Mat related users and those who store such materials in the community.
Continue Agreement with NE Iowa Response Group	Active.
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Active: Hydrants tested annually and repaired or upgraded as needed.
Conduct Annual Fire Inspections of Industries and Businesses	Active: Annual.
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Active.
Maintain Mosquito Spraying Program	Active: Contractor spraying entire community every other week during summer months.
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Active.
Purchase Additional Warning Sirens for Underserved Areas of Community as needed	Completed: Warning siren installed in recent years serves entire community. Back up batters installed in 2018.
Maintain an Internal Procedural/Communications Plan with Contact Information (local, state, regional)	Active.
Develop a Clean Up/Recovery Procedure / Plan	Completed.

Clarksville 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	Active.
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Active: Update as needed. Presently have program in place to remove dangerous trees in city right-of-way and public spaces.
Provide Off-Site Backup for Essential Data	Completed: Cloud based back-ups completed daily.
Maintain Facilities to Use as Shelters & Cooling/Heating Sites as needed	Active: sites available in partnership with churches in community.
Identify and Improve Security at Critical Facilities	Completed: New security cameras installed as well as fencing and lighting for identified locations such as city hall, fire station, EMS facility, city well facility and others.
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	Completed.
Maintain Membership of National Flood Insurance Program	Active.
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Active.
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Active.
Maintain Continuity of Operations Plan (COOP)	Active.
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	Active.

Clarksville 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Ensure Tier II Reports are Completed and Reported per Applicable Laws	Active.
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	Active.
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or both as needed	Active: Nearing completing. Eight private residential properties acquired after 2016 flood. All structures have been removed and the close-out process is underway on the project.
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.)	Active: Storm water intakes are maintained and cleaned as needed to ensure proper operation during a storm water event.

Dike-New Hartford Community School District 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Educate the Student Population/Public through: continued cooperation with local service organizations (American Red Cross, County EMA, etc.) to educate residents on how to prepare for and respond to various hazards	Active: Continues through EM updates and government partnerships with local EMS / Fire / Councils.
Consider the Construction of Community Tornado Shelters and Safe Rooms	Active: Applied for FEMA Safe Room grant. Not funded. Long range facility planning commission has included safe rooms in part of plan.
Identify Locations (all school facilities, shelter locations) where it would be beneficial to have Backup Power Generation or maintain backup power generation	Not completed at this time.
Continue to Work to Safeguard against Potential Fire and Explosion Hazards throughout the Community	Dropped.
Maintain and Update as Needed, 28E Agreements with Surrounding Entities	Active Agreements.
Continue Participation in the National Flood Insurance Program (NFIP)	Actively participate.
Systematically Review and Update, as needed, Hazard Reponses Policies and Procedures	Active: Emergency response procedures were reviewed and board approved spring 2019. Will be reviewed annually.
Identify and Evaluate Critical Facilities for Accessibility, Vulnerability, and Risk	Completed and ongoing. Included in annual Emergency Operations Review.
Continue to Test and Chlorinate Drinking Water	Active: Continues in each community. Drop from CSD Plan.
Continue to Cooperate with Local Medical Facilities and Health Department to increase likelihood of detection and proper response to outbreaks	Active: School nurse facilitates these cooperative agreements at the local, county and state level.
Place Air Conditioning in Schools	Active: Included in the long-range planning upgrades to be considered in bond referendum in the future.

Dike-New Hartford Community School District 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Develop and Maintain Tree-Trimming Program in Order to Reduce the Chances of Falling Branches on Infrastructure and Property	Completed: 2018-2019 school year.
Develop and Maintain a List of Interpreters in order to Enhance Communication Barriers within the community	Not completed.
Restrict Water Usage, as necessary, to Maintain Water Supply	Active: As Needed.
Construct New or Retrofit Current Facilities to Include Tornado Safe Rooms	Active: included in long range facility planning.
Maintain and evaluate existing terrorism mitigation Procedures	Completed / Active: School has maintained a sequence of drills and procedural reviews throughout each school year.

Dumont 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Active: ongoing.
Develop and Maintain an Emergency Response Plan	Active: Butler County Emergency Management.
Develop and Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, etc.	To be implemented as needed.
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc.(i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc.)	Active: Fire Department and Public Works department update, purchase and apply for grants for needed equipment.
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters,Home Visits, etc.)	To be implemented as needed.
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	Active: Routine Training.
Ensure Structures with Large Populations have Evacuation Plans	Active: Nursing home keeps plans updated.
Develop, Enforce, and Update, as needed, Local Ordinances and Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water/Storm Water, etc.	Active: Ordinances in place, enforced, updated as needed.
Develop a Clean Up/Recovery Procedure / Plan	Implemented as needed based on needs of each hazard event.
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	Not completed: to be implemented.
Place GPS Units in all Critical Service Vehicles	Not completed: lack of funding.

Dumont 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Provide Off-Site Backup of Essential Data	Active: at City Hall.
Purchase Natural Gas Generators for Critical Facilities & Shelters	Active: One located at City Hall. One located at Lift Station. Need one for EMS Building.
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Active: ordinance in place. City staff trims trees as needed or hires outside services. Letters sent to homeowners.
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Active: Sites include Emergency Building, Dumont Reformed Church, New Hope Methodist Church and Dumont Community Library.
Establish, Adopt, & Enforce Building Codes	Active.
NOAA Weather Radio Awareness Program	Not Completed.
Bury Overhead Power Lines	Not Completed. Lack of Funding.
Purchase Additional Warning Sirens for Underserved Areas of Community	Completed: Town is small enough to be served sufficiently with current siren.
Encourage Installation of Surge Protector on Electrical Lines	Not completed.
Continue Agreement with NE Iowa Response Group	Active.
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	Not Completed.

Dumont 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Not Completed; Lack of funding.
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Active: 2014, 2015, 2017 new water mains on North Elm, Grand and McManus. Installed two new water hydrants.
Conduct Annual Fire Inspections of Industries and Businesses	Need to establish. Have done this in the past.
Join or Maintain Membership of National Flood Insurance Program	Active; the city has maintained NFIP membership, a floodplain management ordinance is in place. Will continue membership.
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	Not completed; to be implemented.
Maintain Mosquito Spraying Program	Active, applied seasonally as needed.
Either Purchase & Remove Structures In 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-Yr floodplain, or Both	Active, as funding is available.
Establish an Emergency Notification System and Conduct Drills	Active through Butler County.
Develop and Maintain Command Procedures & Center	Active through EMS Department and Butler County.
Ensure Tier II Reports are Completed and Reported per Applicable Laws	Active.
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Active.

Dumont 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Maintain Wellness Clinics and Public Health Department	Active through Butler County.
Develop a Water Rationing Plan	Not completed.
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Not completed.
Flood Proof Critical Facilities	Constructed 5-foot cement wall around lift station.
Complete and Maintain Secondary Off-Site Dispatch Center	To be implemented, as needed.
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	Active; signs installed on city roads when appropriate.
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size	The City does not foresee any new developments in the city limits which would cause the need for additional sirens.
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	Active.
Identify and Improve Security at Critical Facilities	Need to establish.

Greene 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Completed and will continue.
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Completed in 2012.
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both	Active: Removed 20 homes between 2009 and 2019.
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc.)	Active: Purchase as needed or replace. In process of installing new gauge on Highway 14 Bridge.
Join or Maintain Membership of National Flood Insurance Program	Active: maintain membership with NFIP.
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Completed, shelters and heating and cooling sites identified.
Complete and Maintain Secondary Off-Site Dispatch Center	Completed and maintained at new Emergency Services building.
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	Active: ongoing as needed.
Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, etc.	In process of completing plan.
Maintain an Emergency Response Plan	In process.
Provide Off-Site Backup of Essential Data	Active: City software backed up off site. Need to establish back up for Public Works information.

Greene 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	Active: Streets are marked as prone to flood. Need to have additional signage stating where storm shelter is located.
Maintain Mosquito Spraying Program	Active: Seasonal.
Establish, Adopt, & Enforce Building Codes	Active: To be implemented as needed.
Encourage Installation of Surge Protector on Electrical Lines	Active: Promoted by Electric Company.
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	Active with Butler County.
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	Active: Improved signage is needed to show locations of safe room. Need a written plan in place.
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Active: Still developing.
NOAA Weather Radio Awareness Program	Active: Radios installed at pool, community center and schools.
Continue Agreement with NE Iowa Response Group	Active; Repetitive.
Develop and Maintain Continuity of Operations Plan (COOP)	Maintained: to be implemented as needed.
Develop and Maintain Command Procedures & Center	Completed. Will be continued.

Greene 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	Completed. Will be continued.
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	Completed. Will be continued.
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Completed. Part of Emergency Response Plan.
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	Active, developed, enforced and updated as needed. City has floodplain management, tree-trimming, storm water and snow removal ordinances in place.
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	To be implemented as needed. Develop plan to move bulk fuel storage.
Place GPS Units in all Critical Service Vehicles	Dropped.
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Active: repeated seasonally.
Purchase Additional Warning Sirens for Underserved areas of Community	Completed. Existing warning sirens in place.
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size	Consider addition of 3rd Unit
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Active.

Greene 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Establish an Emergency Notification System and Conduct Drills	Active. Butler County Emergency Management. Alert Iowa.
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	Active. Repeats annually.
Ensure Tier II Reports are Completed and Reported per Applicable Laws	Active: Completed as needed.
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.)	Active.
Install Dry Hydrants in Rural Areas and in Underserved Ares	Completed.
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Active: updated as needed.
Conduct Annual Fire Inspections of Industries and Businesses	Active: Fire inspections conducted annually.
Establish a Drainage District	Not completed.
Acquire and/or Annex Land for Relocation of Community	Active: To be Implemented as needed.
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.)	As Needed.
Maintain and Update Bioterrorism Response Plan	Plan in place. Implemented and updated as needed.

Greene 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Identify and Improve Security at Critical Facilities	Completed.
Maintain Wellness Clinics and Public Health Department	Drop. Completed by other agencies.
Develop a Water Rationing Plan	As needed.
Maintain Roadside Vegetation Management Program	Active

New Hartford 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, County Sheriff. First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc.)	Active: Purchased new Tanker truck in 2019.
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.)	Active: as need is identified.
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards)	Active: Routine planning and training conducted monthly.
Join or Maintain Membership of National Flood Insurance Program	Active: membership maintained.
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both	Active, ordinance in place to comply with 100 year flood plain requirements. 50 new homes to be built in area that is outside of the flood plain.
Establish a Drainage District	Active: Butler County responsible. Reverse engineering T55 Bridge.
Flood Proof Critical Facilities	Active: Berm constructed around City will be completed with a recent round of funding.
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.)	Not complete.
Maintain Mosquito Spraying Program	Active, repetitive, seasonal.
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.)	Active: Utilize City social media and Channel 7 to share information.
Complete and Maintain Secondary Off-Site Dispatch Center	Completed in 2015 at Fire Station.

New Hartford 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Develop and Maintain an Emergency Response Plan	Active
Develop and Maintain Continuity of Operations Plan (COOP)	Active
Develop and Maintain an Internal Procedural/ Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, etc.	Active
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.)	Active
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans	Completed, to be continued: schools have evacuation plans in place that are regularly practiced.
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.)	Ordinances in place, enforced as needed.
Develop a Clean Up/Recovery Procedure / Plan	Active
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites	Shelters identified, including school, community center, churches.
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use	Active.
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services	Active.
Develop & Enforce an Inspection & Repair Program for Public Infrastructure	Active. New road being constructed by the Park on Main Street. 5 additional blocks being repaved.

New Hartford 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Acquire and/or Annex Land for Relocation of Community	Active: 50 new homes being added outside of flood plain on annexed land.
Develop and Maintain Command Procedures &Center	Active: Emergency plans in place.
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC	Active: Agreements in place for Fire and EMS support.
Purchase Natural Gas Generators for Critical Facilities & Shelters	Completed. Generators located at fire station and sewer station. Also access to portable generators. Rural water also serves as back up when pump is inactive.
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.)	Active, as needed.
Establish, Adopt, & Enforce Building Codes	Codes in place and enforced as needed.
NOAA Weather Radio Awareness Program	Active: County NOAA radio program.
Purchase Additional Warning Sirens for Underserved Areas of Community	Active: Two sirens in place with battery backups.
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size	Active.
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances	Identified and maintained.

New Hartford 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Continue Agreement with NE Iowa Response Group	Agreements are maintained and will continue.
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event	Active: Clean-up dan is held annually. City encourages residents to use the County Transfer Station.
Ensure Tier II Reports are Completed and Reported per Applicable Laws	Active: Completed as applicable.
Conduct Annual Fire Inspections of Industries and Businesses	Active: completed annually and as required.
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.)	Active.
Place GPS Units in all Critical Service Vehicles	Active.
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.)	Active. Ordinance in place and city employees identify, trim and remove trees as needed.
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.)	Not completed. In process.
Install Dry Hydrants in Rural Areas and in Underserved Ares	As needed. Tanker Truck purchased in 2019.
Maintain and Update Bioterrorism Response Plan	Active with Butler County Emergency Management.
Identify and Improve Security at Critical Facilities	Active with Butler County Emergency Management.

New Hartford 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Establish an Emergency Notification System and Conduct Drills	Active: AlertIowa system. Sirens tested once per month.
Develop a Water Rationing Plan	Not completed. In process.
Maintain Roadside Vegetation Management Program	Active: City controls as needed.
Widen T-55 Bridge to increase flow under bridge to 400 ft. wide	Not completed. Funding required.
Develop plan to add culverts to relieve emergency flows to protect city from flooding	Not completed. In process.

Parkersburg 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determinations / Comments**
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.).	Active: Ongoing. Tornado sirens are tested monthly. City uses social media to keep public informed. Alert IA used for imminent situations.
Establish an Emergency Notification System and Conduct Drills.	Active: Alert Iowa.
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC.	Active: Reviewed annually and updated as necessary.
Develop and Maintain an Emergency Response Plan.	Active: Reviewed annually and updated as necessary.
Develop and Maintain Command Procedures & Center.	Active: in place and practiced regularly. Updated as necessary.
Develop and Maintain an Internal Procedural /Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan/Equipment, etc.	Active: Reviewed annually and updated as necessary.
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc.).	Active: City maintains, purchases and updates equipment when necessary.
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards).	Active: Departments conduct monthly or annual drills and training.
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans.	Active: Schools have plans in place and practice drills on a regular basis.
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.).	Active: In place and enforced as needed.
Provide Off-Site Backup of Essential Data.	Active: Essential data is backed up daily at an off-site data center.

Parkersburg 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determinations / Comments**
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use.	Not completed: A safe room exists at Aplington-Parkersburg High School. Additional sites not available, due to lack of funding.
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.).	Active.
Maintain Mosquito Spraying Program.	Active: City equipment updated in 2018. Implemented seasonally.
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.).	Plan implemented as needed.
Develop and Maintain Continuity of Operations Plan (COOP).	Not completed.
Develop a Clean Up/Recovery Procedure / Plan.	Plan implemented as needed.
Place GPS Units in all Critical Service Vehicles.	Not completed: Lack of funding.
Purchase Natural Gas Generators for Critical Facilities & Shelters.	Active: All critical facilities have generators in place and are tested regularly.
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.).	Active: Ordinance in place and enforced.
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites.	Active: Established as needed.
Continue Agreement with NE Iowa Response Group.	Active: Agreement maintained.

Parkersburg 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determinations / Comments**
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services.	Active: Ongoing. City invested in replacement and installation of critical infrastructure components. Seeking all available funding options.
Develop & Enforce an Inspection & Repair Program for Public Infrastructure.	Active: Inspection and repair program implemented.
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.).	Active: Practices implemented and reviewed annually.
Maintain and Update Bioterrorism Response Plan.	Not completed due to lack of funding.
Identify and Improve Security at Critical Facilities.	Active: Critical facilities secured and reviewed regularly with changes implemented as needed.
Maintain Wellness Clinics and Public Health Department.	Active: City held wellness fair in 2017 and works with Butler County Public Health.
Complete and Maintain Secondary Off-Site Dispatch Center.	Active: Completed. Off-site dispatch center infrastructure equipment purchased in 2015.
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.).	Active: To be implemented as needed.
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.).	Active: Railroad crossing system to be installed at intersection of Highway 14.
Flood Proof Critical Facilities.	Completed: All critical facilities have flood protection.
Develop a Water Rationing Plan.	To be implemented as needed.

Parkersburg 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determinations / Comments**
Maintain Roadside Vegetation Management Program.	Active: Maintained and performed regularly.
Establish, Adopt, & Enforce Building Codes.	Active: Codes in place and enforced regularly.
NOAA Weather Radio Awareness Program.	Active: Weather radios are promoted.
Bury Overhead Power Lines.	Drop: Utility company controls.
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size.	To be implemented as needed.
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances.	Active: Locations identified and relationships maintained.
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event.	Active: City encourages and promotes use of County's Transfer Station.
Ensure Tier II Reports are Completed and Reported per Applicable Laws.	Active: Reporting Maintained.
Conduct Annual Fire Inspections of Industries and Businesses.	Active: Annual inspections by fire department as requested.
Maintain Membership of National Flood Insurance Program.	Active: City maintains membership.
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.).	Active: Routes in place.

Parkersburg 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determinations / Comments**
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both.	Active.
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.).	Active: Updates and review existing infrastructure on a regular basis.

Shell Rock 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Establish an Emergency Notification System and Conduct Drills.	Active: Alert Iowa notification system. Fire Department and First Responders conduct regular drills.
Maintain Mutual Aid Agreement with Surrounding Communities and IMAC.	Active: Renewed annually.
Develop and Maintain Continuity of Operations Plan (COOP).	Active: In place, reviewed regularly.
Develop and Maintain Command Procedures & Center.	Active: Working on Procedures.
Maintain, Purchase, and Update, as needed, Essential Equipment and Supplies for Fire, Police, First Responders, Public Works, Streets, EMS, etc. (i.e., Radios, Trucks, River Gauges, Sandbags, Boats, Pumps, Signs, Barricades, Foam, etc.).	Active: New Fire Rescue boat purchased in 2018; Additional AED's purchased for churches, schools and community center.
Maintain Well-Trained Personnel (Fire, First Responders, Police, EMS, Weather Spotters, and other Critical Services – includes Multi-Jurisdictional Training and Cooperation for all Hazards).	Active: All departments maintain regular training.
Ensure Schools and Other Buildings / Structures with Large Populations have Evacuation Plans.	Active.
Provide Off-Site Backup of Essential Data.	Active: Computers are backed up daily and stored off-site. Maps need to be copied or GPS all systems.
Purchase Natural Gas Generators for Critical Facilities & Shelters.	Purchased as Needed: Generator for Emergency Services building purchased and installed. Can serve as an Emergency Shelter if needed.
Purchase Additional Warning Sirens for Underserved Areas of Community.	Active: All areas of the community are served by the original siren.
Continue Agreement with NE Iowa Response Group.	Active.

Shell Rock 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Establish a Community-Wide Household Hazardous Waste Disposal Site or Event.	Yet to be implemented. Residents can utilize the County Transfer Station.
Provide an Adequate Number of Safe Rooms/Tornado Rooms for General Public Use.	Not completed: Lack of funding.
Acquire and/or Annex Land for Relocation of Community.	Dropped.
Maintain Wellness Clinics and Public Health Department.	Dropped: County provides and maintains this service.
Establish & Conduct a Public Awareness & Education Program (Notices, Newsletters, Brochures, Website, Warnings, Shelter Information, Importance of Vaccinations, Hazard Information, At-Home Improvements - plant trees, rain barrels, etc.).	Completed: Website and Newsletters provide this information.
Complete and Maintain Secondary Off-Site Dispatch Center.	Drop. Provided by County.
Develop and Maintain an Emergency Response Plan.	Completed: Plan in place and reviewed annually.
Develop and Maintain an Internal Procedural / Communication Plan with Contact Information (local, state, regional), Local Suppliers, Backup Plan / Equipment, etc.	Active: In process.
Develop Plan / Procedures to Assist At-Risk Populations during an Event (Transport to Shelters, Home Visits, etc.).	Active: In Process.
Develop, Enforce, and Update, as needed, Local Ordinances & Regulations (Snow Removal, Zoning, Subdivision, Open Burning, Floodplain, Sewer/Water, Storm water, etc.).	Active: Codes in Place, enforced and reviewed as needed.
Develop a Clean Up/Recovery Procedure / Plan.	Active: Plan being developed by Public Works Department.

Shell Rock 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Maintain Bulk Supply and Storage of Critical Elements (Fuels, Water, Nonperishable Food, etc.).	To be implemented as needed. Bulk fuel is available and supplies are maintained.
Identify and Establish Facilities to Use as Shelters & Cooling/Heating Sites.	Active.
NOAA Weather Radio Awareness Program.	As needed. County provides program.
Bury Overhead Power Lines.	Drop. Utility Company determines which lines are buried and when.
Identify & Maintain Relationships with Users of Hazardous Materials/Chemicals & Radiological or Nuclear Substances.	Completed.
Ensure Tier II Reports are Completed and Reported per Applicable Laws.	Reporting standards are maintained.
Develop Groundwater Protection Plan or Drinkable Water Distribution Plan (inspections, testing, security, etc.).	Completed.
Update Existing Water Mains and Hydrants for Improved Potable Water Service and Emergency Services.	Active: Replaced or updated as needs are identified. Emergency hook-up agreement with IA Rural Water.
Conduct Annual Fire Inspections of Industries and Businesses.	Active: Completed annually.
Maintain Membership of National Flood Insurance Program.	Active: City has maintained membership in NFIP.
Develop an Evacuation Plan for Community and Necessary Signage (Evac Route, Detour Signs, etc.).	Not completed.

Shell Rock 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Either Purchase & Remove Structures in 100-YR Floodplain or Elevate Structures to at Least 1-FT Above 100-YR Floodplain, or Both.	Active: Many structures have been removed. Implemented as property owners are interested.
Establish Best Management Practices for Storm Water Management (i.e., detention ponds, retention ponds, buffer strips, etc.).	Active: New structures are required to have detention ponds.
Maintain and Update Bioterrorism Response Plan.	Not completed: to be updated as in future as funding is available.
Identify and Improve Security at Critical Facilities.	Active: Security cameras installed at several locations.
Conduct necessary Studies, Engineering, Construction, etc. on Existing Infrastructure that are in Need (i.e., Ridge Road, T55 Bridge, etc.).	Active: Studies authorized when needed.
Place GPS Units in all Critical Service Vehicles.	Not completed: Pending available funding.
Establish a Tree Trimming Program/Ordinance (inspections, trimming, disposal, etc.).	Active: Ordinance in place and enforced.
Install Signage at Critical Transportation Sites (i.e., RR, Dangerous Intersections, etc.).	Active.
Establish, Adopt, & Enforce Building Codes.	Active: Codes in place and enforced.
Update Local Ordinances to Require Installation of Warning Sirens in New Developments over a Certain Size.	Completed: Siren is sized correctly for the community.
Encourage Installation of Surge Protector on Electrical Lines.	Completed.

Shell Rock 2015-2020 Implementation Strategy Update	
Mitigation Action / Program / Project	**Committee Determination / Comments**
Install Dry Hydrants in Rural Areas and in Underserved Areas.	Drop.
Flood Proof Critical Facilities.	Not completed: City Hall and Sanitary Sewer facilities have had flood mitigation measures taken.
Develop & Enforce an Inspection & Repair Program for Public Infrastructure.	Active: Public infrastructure inspected and repaired as needed.
Maintain Mosquito Spraying Program.	Active: Implemented seasonally.
Develop a Water Rationing Plan.	Not completed: Develop as needed in the future.
Maintain Roadside Vegetation Management Program.	Active: Implemented and Maintained.

Waverly-Shell Rock Community School District 2015-2020 Implementation Strategy Update	
Mitigation Action	**Project/Program Status** *Please indicate status of action and commentary on its progress or lack of progress.*
Develop a "Tornado Safe Room" Awareness Program.	Active: Plan is to address this with building upgrades.
Research and Secure Grant Dollars for Shelter and Safe Room Construction.	Active: Due to increasing enrollment, District considering building needs with possibility of a single elementary school.
Retrofit Current Facilities to Include Tornado Safe Rooms.	Active: District is considering building needs.
Encourage the Inclusion of Tornado Safe Rooms in Newly Constructed Public Facilities.	Active: District is considering building needs.
Evaluate Current Terrorism Mitigation Efforts.	Completed: A new emergency response plan has been created.
Construct Storm Shelters and Tornado Safe Rooms.	Active: District is considering building needs.
Maintain Procedures for Severe Weather Events.	Active: Drills are conducted in accordance with requirements; Emergency response plan has been created.
Maintain and Evaluate ExistingTerrorism Mitigation Procedures.	Completed: A new emergency response plan has been created.

ATTACHMENT 10:
Planning Committee & Public Involvement

The planning process included three public meetings and additional follow up was conducted by INRCOG to each participating jurisdiction. Attached, for each of these meetings, are: the agenda, public notice sent to county newspapers, meeting sign-in sheet, meeting minutes, and public notice proof of publication.

Overview of Planning Process

Planning Meetings

Meeting	Date	Topic
1	June 27, 2019	Introduction to Hazard Mitigation Planning; Update Community Profiles; Identify Status of 2015 Mitigation Action Steps
2	July 25, 2019	Define Hazards; Review Historical Data; Assess/Score Hazards; Review Community Profile Updates and 2015 Action Steps
3	August 29, 2019	Review/Refine Hazard Data and Scores; Identify 2020 Mitigation Action Steps
4	February 2020 (TBD)	Finalize and Prioritize Mitigation Actions; Finalize Community Profiles

All meetings will be held at the Butler County Courthouse (EOC).

Plan Adoption and Review

March 2020	Draft Plan posted for public comment
April 2020	Butler County Public Hearing and Adoption of Plan
May 2020	Submit Plan to IHSEMD and FEMA for review; City Public Hearings and Adoption of Plan
May/June 2020	Incorporate any changes identified by IHSEMD and FEMA
June/July 2020	Receive Plan Approval from FEMA
July 23, 2020	2015 Butler County MJ-HMP Expires

Brian Schoon, AICP | Director of Development
Iowa Northland Regional Council of Governments
229 East Park Avenue | Waterloo, IA 50703
(319) 235-0311 | bschoon@inrcog.org

Butler County Multi-Jurisdictional Hazard Mitigation Plan
2020 Plan Update | Task Force Meeting #1

Date: June 27, 2019

Time: 6:00 P.M. – 7:10 pm

Location: Butler County Courthouse
Emergency Operations Center (Basement)
428 Sixth Street
Allison, IA 50602

Agenda:

1. Welcome and Introductions
2. Overview of the planning process
3. Provide updates on existing mitigation actions
4. Review and update community profiles
5. Adjourn

Note: This is a public meeting. Members of the community are invited to attend and participate in this meeting.

Brian Schoon, AICP | Director of Development
Iowa Northland Regional Council of Governments
229 East Park Avenue | Waterloo, IA 50703
(319) 235-0311 | bschoon@inrcog.org

2020 MULTI-JOURISDICTIONAL HAZARD MITIGATION PLAN

NAME	ORGANIZATION	EMAIL
Marilyn Harder	City of Shell Rock	cityofsr@butler-bremer.com
Justin Stockdale	Dike-New Hartford Schools	justin.stockdale@dnhcsd.org
Bethany Carson	Clarksville Star	tjstarnews@midamericapub.com
Jill Christensen	City of Greene	bb chris@myomnitel.com
Rhonda Schmidt	City of Dumont	citydumont@netins.net
Tammy Fleshner	Butler Co Public Health	tfleshner@butlercoiowa.org
Larry Young	Shell Rock	[illegible]@Yahoo.com
Mike Vollenhusen	Shell Rock	srmr@butler-bremer.com
Jayne Knapp	Greene	greeneia@myomnitel.com
Cory Wiegmann	Greene	greenepwd@gmail.com
Rodney McKinney	Aredale	McKinney Farm2@Gmail.com
Lori Peterson	Clarksville	clarksville@butler-bremer.com
Robert Hughes	A-Parkersburg ESD	robert.hughes@a-psd.net
Chris Showalter	Butler Co. EMA	c.showalter@butlercoiowa.org
David Scanlan	Butler Co. Engineer	dscanlan@butlercoiowa.org
Chris Luhring	Parkersburg	celuhring@aol.com

PUBLIC NOTICE

BUTLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION KICK-OFF PLANNING SESSION MEETING

Butler County is beginning the process of updating its 2015 Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by the Federal Emergency Management Agency (FEMA). FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This first meeting will review the purpose and benefits of a multi-jurisdictional hazard mitigation plan, project budget, planning process/scope of work, updating information from the existing plan, and the dates and locations of future meetings. The meeting will take place on Thursday, June 27, 2019, at 6 p.m., at the Butler County Courthouse, Emergency Operation Center, Allison, Iowa 50602.

If you have any questions, please feel free to contact Chris Showalter, 319-267-9968.

CS-25

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Clarksville Star, a weekly newspaper printed in the English language, published at Clarksville in Butler County, State of Iowa, and that the annexed

Butler County Multi-Jurisdictional Hazard Mitigation Kick-Off Planning Session Meeting June 27, 2019

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 20th day of June, 2019, the second on the ____ day of ____, 20__, the third on the ____ day of ____, 20__, the fourth on the ____ day of ____, 20__,

Pamela J. DeVries

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 20th day of June, 2019.

Kathleen E. Fisher

Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA

KATHLEEN E FISHER
Commission Number 171758
My Commission Exp NOV. 4, 2021

Printer's Fees, $ 14.94

PUBLIC NOTICE

BUTLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION KICK-OFF PLANNING SESSION MEETING

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If you have any questions, please feel free to contact Chris Showalter, 319-267-9968.

TJ-25

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County }

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Butler County Tribune-Journal, a weekly newspaper printed in the English language, published at Allison in Butler County, State of Iowa, and that the annexed Butler County Multi-Jurisdictional Hazard Mitigation Kick-off Planning Session Meeting June 27, 2019

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 20th day of June, 2019, the second on the ____ day of ____, 20___, the third on the ____ day of ____, 20___, the fourth on the ____ day of ____, 20___,

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 20th day of June, 2019.

Kathleen E. Fisher
Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA
KATHLEEN E FISHER
Commission Number 171758
My Commission Exp NOV. 4, 2021

Printer's Fees, $ 14.94

PUBLIC NOTICE
Butler County

BUTLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION KICK-OFF PLANNING SESSION MEETING

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This first meeting will review the purpose and benefits of a multi-jurisdictional hazard mitigation plan, project budget, planning process/scope of work, updating information from the existing plan, and the dates and locations of future meetings. The meeting will take place on Thursday, June 27, 2019 at 6:00 PM at the Butler County Courthouse, Emergency Operation Center, Allison, Iowa 50602.

If you have any questions, please feel free to contact Chris Showalter, (319) 267-9968.

Published in the Eclipse News-Review on Wednesday, June 19, 2019

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Eclipse News-Review, a weekly newspaper printed in the English language, published at Parkersburg in Butler County, State of Iowa, and that the annexed Butler County Multi-Jurisdictional Hazard Mitigation Kick-off Planning Session Meeting June 27, 2019

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 19th day of June, 2019, the second on the ____ day of ____, 20__, the third on the ____ day of ____, 20__, the fourth on the ____ day of ____, 20__,

Pamela J. DeVries

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 19th day of June, 2019.

Kathleen E. Fisher

Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA

KATHLEEN E FISHER
Commission Number 171758
My Commission Exp NOV. 4, 2021

Printer's Fees, $ 14.94

TO: (List Newspapers)

FROM: Chris Showalter
Butler County EMA Coordinator
(319) 267-9968

(Note: Please publish this press release in the next edition of your newspaper. Thank you.)

BUTLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION KICK-OFF PLANNING SESSION MEETING

Butler County is beginning the process of updating its 2015 Hazard Mitigation Plan. The purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by the Federal Emergency Management Agency (FEMA). FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This first meeting will review the purpose and benefits of a multi-jurisdictional hazard mitigation plan, project budget, planning process/scope of work, updating information from the existing plan, and the dates and locations of future meetings. The meeting will take place on Thursday, June 27, 2019 at 6:00 PM at the Butler County Courthouse, Emergency Operation Center, Allison, Iowa 50602.

If you have any questions, please feel free to contact Chris Showalter, (319) 267-9968.

Butler County Multi-Jurisdictional Hazard Mitigation Plan
2020 Plan Update | Task Force Meeting #2

Date: July 25, 2019

Time: 6:00 P.M.

Location: Allison Community Center (Allison Public Library)
412 Third Street
Allison, IA 50602

Agenda:

1. Welcome and Introductions
2. Overview of previous planning meeting
3. Community profile information
4. Complete hazard risk assessments
5. Review and amend hazard mitigation goals
6. Identify potential mitigation actions and concerns of top hazards
7. Adjourn

Note: This is a public meeting. Members of the community are invited to attend and participate in this meeting.

1

Brian Schoon, AICP | Director of Development
Iowa Northland Regional Council of Governments
229 East Park Avenue | Waterloo, IA 50703
(319) 235-0311 | bschoon@inrcog.org

July 25th 2019

2020 MULTI-JOURISDICTIONAL HAZARD MITIGATION PLAN

NAME	ORGANIZATION	EMAIL
Jennifer Becker	Butler Co PH	jebecker@butlercoiowa.org
Rodney McKinney	Aredale mayor	McKinney
Deanna Hanson	Aredale clerk	cityofaredale@netins.net
Rhonda Schmidt	Dumont Clerk	
[illegible]	A-P CSD	
Justin Stockdale	DNH CSD	
Jim Blockhus	City Allison	jimbus@netins.net
Larry Young	Shell Rock	
Lori Peterson	City of Clarksville	clarksville@butler-bremer.com
Mike Tellinghuisen	City Shell Rock	srmt@butler-bremer.com
Jeff Kolb	City of Clarksville	
Gordy Ballhagen	City of New Hartford	[illegible]
Hanna Schuck	Parkersburg	hannah.schuck@[illegible]
Jayme Knapp	City of Greene	greeneia@[illegible].com
Chris Showalter	Butler EMA	cshowalter@butlercoiowa.org
Brian [illegible]	INRCOG	

Affidavit of Publication

• • •

STATE OF IOWA | ss: Butler County Emergency Mgmt.
Butler County

I, ROSS HAWKER, being first duly sworn on oath say that I am the publisher of THE GREENE RECORDER, a weekly newspaper, printed and published in the English language at Greene, in Butler County, Iowa, and of general circulation, at the said town of Greene, and that the annexed is a true copy of

Second Planning Meeting – 46 lines

was published in said newspaper for 1 consecutive weeks, and that the date of the first publication was in the issue of said paper, dated:

July 24, 2019

and that date of the last publication was in the issue of said paper, dated:

July 24, 2019

Ross Hawker, Publisher

• • •

Publication fee $ 8.84

• • •

subscribed in my presence and sworn to before me by the said Ross Hawker

this 1st day of August 2019

Sarah E Hawker

Notary Public in and for said county

SARAH E. HAWKER
Commission Number 730457
My Commission Exp. Sept. 10, 2019

PUBLIC NOTICE

BUTLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN SECOND PLANNING SESSION MEETING

Butler County is continuing its process of updating its 2015 Hazard Mitigation Plan by conducting a second planning meeting. As was stated in prior notices and the first meeting, the purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by the Federal Emergency Management Agency (FEMA). FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This second meeting will include assessing hazard risks, updating information from the existing plan, including goals and action steps, and the dates and locations of future meetings. The meeting will take place on Thursday, July 25, 2019 at 6:00 PM in the Allison Community Center (Allison Public Library), 412 Third Street, Allison, Iowa 50602.

If you have any questions, please feel free to contact Chris Showalter, (319) 267-9968.

Agenda:

1. Welcome and Introductions
2. Overview of previous planning meeting
3. Complete hazard risk assessments
4. Review and amend hazard mitigation goals
5. Identify potential mitigation actions and concerns of top hazards
6. Adjourn

PUBLIC NOTICE
Butler County

BUTLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN SECOND PLANNING SESSION MEETING

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If you have any questions, please feel free to contact Chris Showalter, (319) 267-9968.

Published in the Eclipse News-Review on Wednesday, July 24, 2019

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Eclipse News-Review, a weekly newspaper printed in the English language, published at Parkersburg in Butler County, State of Iowa, and that the annexed Butler County Multi-Jurisdictional Hazard Mitigation Plan Second Planning Session July 25, 2019 Meeting notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 24th day of July, 2019, the second on the ____ day of ____, 20___, the third on the ____ day of ____, 20___, the fourth on the ____ day of ____, 20___,

Pamela J. DeVries

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 24th day of July, 2019.

Kathleen E. Fisher

Notary Public: In and for the State of Iowa

KATHLEEN E FISHER
Commission Number 171758
My Commission Exp NOV. 4, 2021

Printer's Fees, $ 15.78

PUBLIC NOTICE

BUTLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN SECOND PLANNING SESSION MEETING

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If you have any questions, please feel free to contact Chris Showalter, 319-267-9968.

TJ-30

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County }

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Butler County Tribune-Journal, a weekly newspaper printed in the English language, published at Allison in Butler County, State of Iowa, and that the annexed _____

Butler County Multi-Jurisdictional Hazard Mitigation Plan Second Planning Session July 25, 2019 Meeting

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 25th day of July, 2019, the second on the _____ day of _____, 20___, the third on the _____ day of _____, 20___, the fourth on the _____ day of _____, 20___.

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 25th day of July, 2019.

Kathleen E. Fisher
Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA
KATHLEEN E FISHER
Commission Number 171758
My Commission Exp NOV. 4, 2021

Printer's Fees, $ 15.78

PUBLIC NOTICE

BUTLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN SECOND PLANNING SESSION MEETING

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If you have any questions, please feel free to contact Chris Showalter, 319-267-9968.

CS-30

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Clarksville Star, a weekly newspaper printed in the English language, published at Clarksville in Butler County, State of Iowa, and that the annexed _____

Butler County Multi-Jurisdictional Hazard Mitigation Plan Second Planning Session July 25, 2019 Meeting

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 25th day of July, 2019,
the second on the _____ day of _____, 20___,
the third on the _____ day of _____, 20___,
the fourth on the _____ day of _____, 20___,

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 25th day of July, 2019.

Kathleen E Fisher
Notary Public: In and for the State of Iowa

NOTARIAL SEAL IOWA
KATHLEEN E FISHER
Commission Number 171758
My Commission Exp NOV. 4, 2021

Printer's Fees, $ 15.78

Butler County Multi-Jurisdictional Hazard Mitigation Plan
2020 Plan Update | Final Planning Meeting

Date: January 23, 2020

Time: 6:00 P.M.

Location: Butler County Courthouse
428 Sixth Street
Allison, IA 50602

Agenda:

1. Welcome and Introductions
2. Overview of previous meeting
3. Review and make necessary changes to draft plan
4. Address any missing information needed for plan
5. Discuss next steps of planning process
   a. Plan development
   b. Plan adoption (Butler County & cities)
   c. Submittal to IHSEM & FEMA
6. Adjourn

Note: This is a public meeting. Members of the community are invited to attend and participate in this meeting.

Lisa Ahern, Community Development Specialist
Iowa Northland Regional Council of Governments
229 East Park Avenue | Waterloo, IA 50703
(319) 235-0311 LAhern@inrcog.org

BUTLER COUNTY MJ HMP TIMELINE

January 23, 2020

January 23, 2020	**FINAL MEETING – 6:00 p.m.**
	As is possible, review and amend the provided information. If you're not comfortable doing so, please take the information back with you and return any corrections or updates to INRCOG by January 31st.
January 31, 2020	**CHANGES / EDITS ARE DUE**
	All changes to INRCOG (see contact information below).
February 10, 2020	**PUBLIC COMMENT PERIOD**
	Plan posted for Public Comment. The draft plan will be posted on INRCOG's website. A public hearing notice example and resolution template will be provided to the County. A notice for this public hearing must be published not less than 4, nor more than 20, days prior to the hearing.
March 3, 2020	**BOARD OF SUPERVISORS PUBLIC HEARING TO ADOPT THE PLAN - 9:00 a.m.**
	Butler County Board of Supervisors Public Hearing will be held, along with a resolution to adopt the draft Plan.
March 10, 2020	**PLAN SENT TO HSEMD AND FEMA**
	The adopted plan is posted on the INRCOG website. An email will be sent to HSEMD (state) requesting review. Adjustments will be made thereafter, and resubmitted. HSEMD will send the draft on to FEMA for their review and approval. While we wait on FEMA (this may take several months), we will work with the cities and schools to complete the adoption processes.
March – April 2020	**CITIES AND SCHOOL DISTRICTS ADOPT PLAN**
	INRCOG will provide the example public hearing notice and template resolution to each entity. Once complete, please send INRCOG a copy of your affidavit of publication as proof of the hearing and copy of your signed resolution. PDF's (scans) of each, by email, are acceptable. If you need assistance with any part of the plan, please contact us.
May – June 2020	**FINAL EDITS INCORPORATED**
	INRCOG will make any final adjustments or edits to the plan, as recommended by FEMA.
JULY 23, 2020	Current MJ HMP Plan Expires

Lisa Ahern, Community Development Specialist
Iowa Northland Regional Council of Governments
229 East Park Avenue | Waterloo, IA 50703
(319) 235-0311 JLahern@inrcog.org

PUBLIC NOTICE

BUTLER COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FINAL PLANNING SESSION AND REVIEW MEETING

Butler County is continuing its process of updating its 2015 Hazard Mitigation Plan by conducting its final planning and review meeting. As was stated in prior notices and the first meeting, the purpose of the plan is two-fold. The plan is a federal requisite to remain eligible for other mitigation grant programs offered by the Federal Emergency Management Agency (FEMA). FEMA mandates the plan be updated every five (5) years. Second, the plan is designed to create hazard mitigation strategies which can reduce negative impacts caused by natural and man-made hazards within the county and the incorporated jurisdictions.

This final meeting will include finalizing and prioritizing mitigation actions, and finalizing community profiles. The meeting will take place on Jan. 23, 2020 at 6 p.m., in the Butler County Courthouse basement meeting room, located at 428 Sixth St., Allison, IA.

If you have any questions, please feel free to contact Chris Showalter, 319-267-9968.

CS-2

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Clarksville Star, a weekly newspaper printed in the English language, published at Clarksville in Butler County, State of Iowa, and that the annexed Multi-Jurisdictional Hazard Mitigation Plan Final Planning Session and Review Meeting January 23rd, 2020

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 9th day of January, 2020, the second on the ____ day of _____, 20___, the third on the ____ day of _____, 20___, the fourth on the ____ day of _____, 20___,

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 9th day of January, 2020,

Kathleen E. Fisher
Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA
KATHLEEN E FISHER
Commission Number 171758
My Commission Exp NOV. 4, 2021

Printer's Fees, $ 15.27

PUBLIC NOTICE

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If you have any questions, please feel free to contact Chris Showalter, 319-267-9968.

TJ-2

PROOF OF PUBLICATION

STATE OF IOWA }
Butler County } ss.

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Butler County Tribune-Journal, a weekly newspaper printed in the English language, published at Allison in Butler County, State of Iowa, and that the annexed Multi-Jurisdictional Hazard Mitigation Plan Final Planning Session and Review Meeting January 23rd, 2020

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 9th day of January, 2020, the second on the _____ day of _____, 20___, the third on the _____ day of _____, 20___, the fourth on the _____ day of _____, 20___,

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 9th day of January, 2020,

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PUBLIC NOTICE
Butler County

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If you have any questions, please feel free to contact Chris Showalter, (319) 267-9968.

Published in the Eclipse News-Review on Wednesday, January 8, 2020

PROOF OF PUBLICATION

STATE OF IOWA } ss.
Butler County

I, the undersigned, being duly sworn, depose and say, that I am Pamela J. DeVries, President of the Eclipse News-Review, a weekly newspaper printed in the English language, published at Parkersburg in Butler County, State of Iowa, and that the annexed Multi-Jurisdictional Hazard Mitigation Plan Final Planning Session and Review Meeting January 23rd, 2020

notice was published in said paper once each week for 1 consecutive weeks, the first publication thereof was on the 8th day of January, 2020, the second on the _____ day of _____, 20___, the third on the _____ day of _____, 20___, the fourth on the _____ day of _____, 20___

Pamela J. DeVries, President

Subscribed and sworn to before me and in my presence the 8th day of January, 2020,

Kathleen E. Fisher
Notary Public; In and for the State of Iowa

NOTARIAL SEAL IOWA
KATHLEEN E FISHER
Commission Number 171758
My Commission Exp NOV. 4, 2021

Printer's Fees, $ 15.27

ATTENDANCE RECORD

Meeting: Butler County Multi-Jurisdictional Hazard Mitigation Plan

Date: 1/23/20 **Time:** 6:00 p.m. **Location:** Butler County Courthouse

Name	Representing
Lisa Ahern	INRCOG
John Andersin	New Hartford
Justin Stockdale	Dike-New Hartford Schools
Dennis Peterson	City of Bristow
Mike Pelling Geisen	City of Shell Rock
Scot Henricks	City of Allison
Jeff Kolb	City of Clarksville
Rhonda Schmidt	City of Dumont
Chris Luhring	City of Parkersburg
Lori Peterson	City of Clarksville
Chris Showalter	Butler EMA

ATTACHMENT 11: Plan Evaluation Forms

Jurisdiction: Butler County; Cities of Allison, Aplington, Aredale, Bristow, Clarksville, Dumont, Greene, New Hartford, Parkersburg, Shell Rock, Aplington-Parkersburg Community School District, Dike-New Hartford Community School District, Waverly-Shell Rock Community School District.	**Title of Plan:** 2020 Updated Butler County Multi-Jurisdictional Hazard Mitigation Plan	**Date of Plan:** 3/3/2020
Local Point of Contact: Lisa Ahern	**Address:**	
Title: Community Development Specialist		
Agency: Iowa Northland Regional Council of Governments	229 E. Park Avenue Waterloo, IA 50703	
Phone Number: 319-235-0311	**E-Mail:** Lahern@inrcog.org	
Funding Source: Local		
State Reviewer: Mat Noble	**Title:** Planner	**Date:** 5/8/2020
FEMA Reviewer: Justin Sorg	**Title:** HM Community Planner	**Date:** June 1, 2020
Date Received in FEMA Region VII	11 May 2020	
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved	June 1, 2020	

Jurisdiction:	NFIP Status*	
	Y	**NP**
1. Butler County *(Adopted 3/3/20)*	Y	
2. Allison		NP
3. Aplington	Y	
4. Aredale	Y	
5. Bristow		NP
6. Clarksville	Y	
7. Dumont	Y	
8. Greene	Y	
9. New Hartford	Y	
10. Parkersburg	Y	

11. Shell Rock	Y	
12. Aplington-Parkersburg Community School District	Y	
13. Dike-New Hartford Community School District	Y	
14. Waverly-Shell Rock Community School District	Y	

*** Notes: Y = Participating NP = Not Participating in NFIP S- Sanctioned R-Rescinded**

SECTION 1: REGULATION CHECKLIST

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	p. 8-12 / Table 1	✓	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	p. 7-12	✓	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	p. 8-12	✓	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	p. 11; p. 112	✓	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	p. 111-112	✓	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	p. 111-112	✓	

ELEMENT A: REQUIRED REVISIONS

None.

Plan Strengths:

- Use of a variety of technical resources and documents to inform the plan.

Opportunities for Improvement:

- Future plans could be improved by identifying, what if any, public feedback was provided and describing how it was addressed in the plan.

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	P. 24-94 Appendices A-M	✓	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	p. 24 - 94 Appendices A-M	✓	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	P 24-94 Appendices A-M	✓	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	P. 99 / Table 47 & 48 Appendices A-M	✓	

ELEMENT B: REQUIRED REVISIONS

None.

Plan Strengths:

- Flood risk assessment does an excellent job of differentiating flood risk and vulnerability unique to each jurisdiction.
- Consideration of impacts across all 6 tornado magnitudes for each jurisdiction to present a wholistic range of risk.
- Community hazard and critical infrastructure maps are excellent visual representations of risk. Overlaying hazard maps (e.g., flood maps) with critical infrastructure and land use maps would help strengthen connections between risk and vulnerability and assist with the development of potential mitigation actions.

Opportunities for Improvement:

- Including the types and amounts of public assistance awards for past disaster declarations may help identify potential mitigation opportunities.
- The 2018 Iowa State Hazard Mitigation Plan eliminated the use of Hazard Analysis Scores to compare and rank hazards. Future county plan updates should consider doing likewise, as use of the Hazard Analysis Scores may skew hazard significance, because the scales are inherently subjective.
- The NCEI provides limited information on drought; www.drought.gov is a better resource.
- There is a typo in the Repetitive Loss Properties narrative on pg. 98 that indicates there are 4 repetitive loss properties in the unincorporated county. This conflicts with Table 48 that identify 9 RL properties in the unincorporated county.

ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	P. 101-106 Appendices A-M	✓	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	P. 99 / Table 47 Appendices A-M	✓	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	P. 101 Appendices A-M	✓	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	P. 101-110 Appendices A-M	✓	

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	P. 108-110 Appendices A-M	✓	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	P. 111	✓	

ELEMENT C: REQUIRED REVISIONS

None.

Plan Strengths:

- Great discussion on each communities progress on mitigation actions.

Opportunities for Improvement:

- FEMA's latest *Local Mitigation Planning Handbook* (March 2013) consolidated the 6 mitigation action categories in previous guidance (listed on page 101 in the Plan) into 4 categories: 1) local plans and regulations, 2) structure and infrastructure projects, 3) natural systems protection, and 4) education and awareness programs. Using the current categories would discourage including preparedness actions in the mitigation plan, and result in more substantive, actionable strategies.
- Mitigation actions should only support one goal. If an action supports more than one goal, then either the action is not well-developed or goals are not sufficiently unique and should be combined or re-developed.
- Many of the actions identified are routine maintenance, operational preparedness or emergency response in nature. While these need not be removed, they are generally not eligible activities for FEMA mitigation funding. In future plan updates, the planning team is encouraged to focus efforts on developing mitigation strategies that reduce long-term vulnerability and are eligible for FEMA mitigation grants. While actions should not be reliant solely on federal funds to implement, jurisdictions are encouraged to use the mitigation planning process to develop actions/projects with enough information to allow them to be able to take advantage of a variety of funding streams as they become available.

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Appendices A-M Attachment 9	✓	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Attachment 9	✓	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Table 52 / Page 104-107 Appendices A-M	✓	

ELEMENT D: REQUIRED REVISIONS

None.

Plan Strengths:

- Great discussion on each community's progress on mitigation actions.
- Community profiles do a generally good job of discussing development trends. If land use plans/maps are available, including these would further help describe development trends and identify potential vulnerabilities.

ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Appendix 8 - page 407	✓	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	Appendix 8 - page 407 (Resolutions to Adopt are underway)	pending	

ELEMENT E: REQUIRED REVISIONS

E2: Written proof that all jurisdictions' governing bodies have formally adopted the plan (usually a resolution) must be submitted to FEMA.

SECTION 2: PLAN ASSESSMENT

A. Overall Plan Strengths and Opportunities for Improvement

Overall Plan Strengths:

- Individual community profiles provide an excellent snapshot of each participating jurisdictions' capabilities, unique vulnerabilities and community risks of greatest concern.

B. Resources for Implementing Your Approved Plan

Various funding programs are available from several state and federal agencies to assist local jurisdictions in accomplishing their mitigation activities and goals. A detailed listing of programs, information on each program, and contact information is also available from the 2018 State Hazard Mitigation Plan.

FEMA

- The FEMA Hazard mitigation planning site contains the official guidance to meet the requirements of the Stafford Act, as well as other resources and procedures for the development of hazard mitigation plans.
- FEMA Hazard Mitigation Planning Online Webliography: This compilation of government and private online sites is a useful source of information for developing and implementing hazard mitigation programs and plans.
- FEMA Climate Change: Provides resources that address climate change.
- FEMA Library: FEMA publications can be downloaded from the library website. These resources may be especially useful in public information and outreach programs. Topics include building and construction techniques, NFIP policies, and integrating historic preservation and cultural resource protection with mitigation.
- FEMA RiskMAP: Technical assistance is available through RiskMAP to assist communities in identifying, selecting, and implementing activities to support mitigation planning and risk reduction. Attend RiskMAP discovery meetings that may be scheduled in the state, especially any in neighboring communities with shared watersheds boundaries.

Other Federal

- EPA Drinking Water and Wastewater Resilience: Provides a comprehensive list of accessible materials for managing emergency plans, trainings, and response and recovery efforts
- EPA Soak Up the Rain: Soak Up the Rain is a public outreach campaign focused on stormwater quality and flooding. The website contains helpful resources for public outreach and easy implementation projects for individuals and communities.

State

- Iowa Homeland Security and Emergency Management: The Iowa State Hazard Mitigation Officer (SHMO) and State Mitigation Planner(s) can provide guidance regarding grants, technical assistance, available publications, and training opportunities.
- HSEMD's training website provides information on upcoming training opportunities within the State.
- Iowa Department of Natural Resources can provide technical assistance and resources to communities seeking to implement their hazard mitigation plans.
- Iowa DNR Mapping and GIS Portal: Interactive mapping tool with downloadable data

Not for Profit

- Kresge Foundation Online Library: Reports and documents on increasing urban resilience, among other topics.
- Naturally Resilient Communities: A collaboration of organizations put together this guide to nature-based solutions and case studies so that communities can learn which nature-based solutions can work for them.
- Rockefeller Foundation Resilient Cities: Helping cities, organizations, and communities better prepare for, respond to, and transform from disruption.

Funding Sources:

- Review of the FEMA HMA guidance is also encouraged as guidance provides information about application and eligibility requirements. This guidance is available from http://www.iowahomelandsecurity.org/grants/HMA.html or through FEMA's grant applicant resources page at http://www.fema.gov/government/grant/hma/grant_resources.shtm.
- Various funding programs are available from several state and federal agencies to assist local jurisdictions in accomplishing their mitigation activities and goals. A detailed listing of programs, information on each program, and contact information is also available from the 2018 State Hazard Mitigation Plan.
- Iowa DNR Low Head Dams Grants: Intended to reduce accidents at dams through cost-share funds that are available to all dam owners on navigable streams
- Iowa Watershed Resources: Clean water grants that can be used for river restoration or other kinds of hazard mitigation implementation projects.
- Federal Grants Resource Center and Grants.gov: Lists of grant opportunities from federal agencies (HUD, DOT/FHWA, EPA, etc.) to support rural development, sustainable communities and smart growth, climate change and adaptation, historic preservation, risk analyses, wildfire mitigation, conservation, Federal Highways pilot projects, etc.
- FEMA Hazard Mitigation Assistance (HMA): FEMA's Hazard Mitigation Assistance provides funding for projects under the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA). States, federally recognized tribes, local governments, and some not for profit organizations are eligible applicants.
- High Hazard Potential Dam Grant Program: The President signed the "Water Infrastructure Improvements for the Nation Act" or the "WIIN Act," on December 16, 2016, which adds a new grant program under FEMA's National Dam Safety Program (33 U.S.C. 467f). Section 5006 of the Act, Rehabilitation of High Hazard Potential Dams, provides technical, planning, design, and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams.
- GrantWatch: The website posts current foundation, local, state, and federal grants on one website, making it easy to consider a variety of sources for grants, guidance, and partnerships. Grants listed include The Partnership for Resilient Communities, the Institute for Sustainable Communities, the Rockefeller Foundation Resilience, The Nature Conservancy, The Kresge Climate-Resilient Initiative, the Threshold Foundation's Thriving Resilient Communities funding, the RAND Corporation, and ICLEI Local Governments for Sustainability.
- USDA Natural Resource Conservation Service (NRCS) and Rural Development Grants: NRCS provides conservation technical assistance, financial assistance, and conservation innovation grants. USDA Rural Development operates over fifty financial assistance programs for a variety of rural applications.