TABLE OF CONTENTS

Warren County 2
City of Carlisle 29
City of Cumming 53
City of Hartford 71
City of Indianola 89
City of Lacona 111
City of Martensdale 129
City of Milo 145
City of New Virginia 163
City of Norwalk 181
City of St. Marys 205
Indianola Community School District 217
Martensdale-St. Marys Community School District 229
Norwalk Community School District 243
Simpson College 257
Warren Water District 271

County Profile

Warren County

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table WNC.1: Warren County Local Planning Team

Name	Title	Jurisdiction
Crystal McIntyre	County Supervisor	Warren County
David Carrol	Engineer	Warren County
Joe Carico	Sheriff	Warren County
Joe Thompson	IT Enginer I	Warren County
Jodene DeVault	Administrator	Warren County Health Services
Kate Honer	Environmental Health Coordinator	Warren County Health Services
Mark Wilson	Conservation Board	Warren County
Troy Bass	Emergency Management Coordinator	Warren County

Location and Climate

Warren County is located in southcentral Iowa and is bordered by Dallas, Polk, Jasper, Madison, Marion, Clarke, and Lucas Counties. The total area of Warren County is 573 square miles. Major waterways within the County include the Des Moines River, Middle Creek, Camp Creek, Mud Creek, North River, Otter Creek, South River, and White Breast Creek. Most of Warren County lies in the southern Iowa drift plain topographic region, with the vast majority of the county's land characterized by agricultural fields.

Climate

The average high temperature in Warren County for the month of July is 84.7 degrees and the average low temperature for the month of January is 11.9 degrees. On average, Warren County receives over 36 inches of rain and 30.8 inches of snowfall per year. The table below compares climate indicators with those of the entire state. Climate data is helpful in determining if certain events are higher or lower than normal. For example, if the high temperatures in the month of July are running well into the 90s, high heat events may be more likely which could impact vulnerable populations.

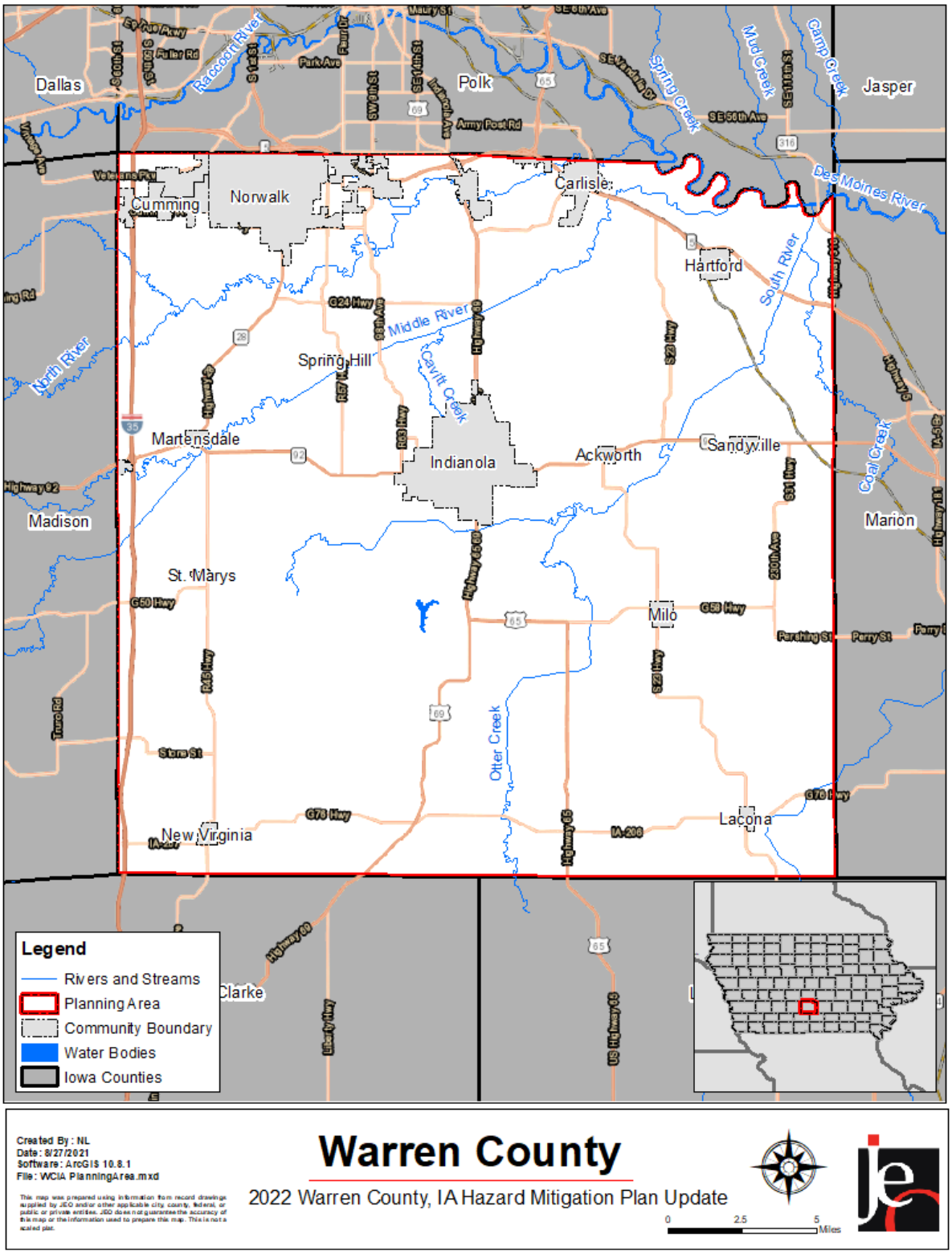
Table WNC.2: Warren County Climate

	Warren County	State of Iowa
July Normal High Temp[1]	84.7°F	85.5°F
January Normal Low Temp[1]	11.9°F	8.4°F
Annual Normal Precipitation[2]	36.0"	32.2"
Annual Normal Snowfall[2]	30.8"	N/A

Source: NCEI 1981-2010 Climate Normals[1], High Plains Regional Climate Center, 1981-2010[2]
Precipitation includes all rain and melted snow and ice.

1 National Centers for Environmental Information. "1981-2010 U.S. Climate Normals." Accessed July 2021. https://www.ncdc.noaa.gov/cdo-web/datatools.
2 High Plains Regional Climate Center. "Monthly Climate Normals 1981-2010 – Indianola 2 W, IA." Accessed July 2021. http://climod.unl.edu/.

Figure WNC.1: Warren County

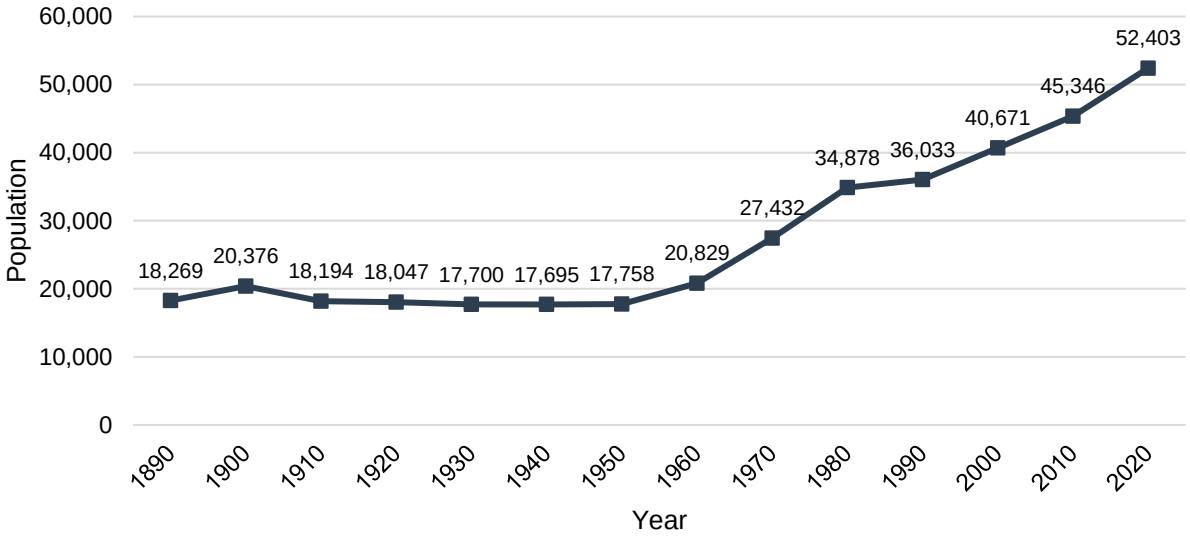


Demographics, Economics, Housing, and Employment

Demographics

The following figure displays the historical population trend from 1890 to 2020. This figure indicates that the population of Warren County has been increasing since 1940 to 52,403 people in 2020.[3] Increasing populations are associated with increased hazard mitigation and emergency planning requirements for development. Increasing populations can also contribute to increasing tax revenues, allowing communities to pursue additional mitigation projects. Warren County's population accounted for 1.6% of Iowa's population in 2020.

Figure WNC.2: Population 1890 - 2020



Source: U.S. Census Bureau

The following table indicates Warren County has a higher percentage of people between the ages of five and 64. This is relevant to hazard mitigation because the very young and elderly populations may be at greater risk from certain hazards than others. For a more elaborate discussion of this vulnerability, please see *Section Four* | *Risk Assessment*.

Table WNC.3: Population by Age

Age	Warren County	State of Iowa
<5	6%	6.3%
5-64	78.5%	77.1%
>64	15.5%	16.7%
Median	38.3	38.2

Source: U.S. Census Bureau[4]

3 United States Census Bureau. "2020 Decennial Census: P1: DEC Redistricting Data." https://data.census.gov/cedsci/.

4 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Economics and Housing

The following table indicates that median household income, per capita income, median home value, and median rent for the county are all higher than the State of Iowa. These economic indicators are relevant to hazard mitigation because they indicate the relative economic strength compared to the state as a whole. Areas with economic indicators which are relatively low may influence a county's level of resilience during hazardous events.

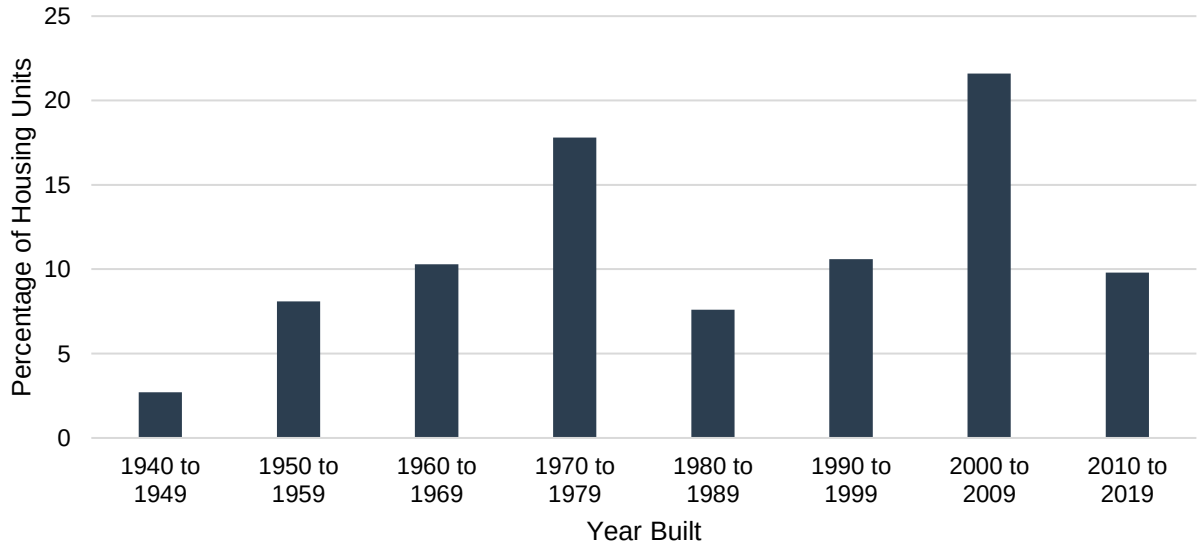
Table WNC.4: Housing and Income

	Warren County	State of Iowa
Median Household Income	$77,048	$60,523
Per Capita Income	$36,496	$32,176
Median Home Value	$187,200	$147,800
Median Rent	$807	$789

Source: U.S. Census Bureau[5,6]

The following figure indicates that most of the housing in Warren County was built between 2000 and 2009 (21.6%). Housing age can serve as an indicator of risk, as structures built prior to the development of state building codes may be at greater risk. The State of Iowa first adopted building codes in 1978, with the International Building Code adopted in 2015. The current edition of the IBC was last updated in 2015. According to the 2019 American Community Survey, the county has 20,004 housing units with 96.3 percent of those units occupied. There are approximately 758 mobile homes in the county. Counties with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. The local planning team identified a mobile home park in the county located off of R63 by the City of Norwalk. This mobile home park has its own lagoon system that is managed by Iowa DNR, and does not have a safe room.

Figure WNC.3: Housing Units by Year Built



Source: U.S Census Bureau[5]

5 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

6 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

Table WNC.5: Housing Units

Jurisdiction	Total Housing Units				Occupied Housing Units			
	Occupied		Vacant		Owner		Renter	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Warren County	19,258	96.3%	746	3.7%	15,215	79%	4,043	21%
Iowa	1,265,473	90.6%	131,614	3.4%	899,223	71.1%	366,250	28.9%

Source: U.S. Census Bureau[5]

Employment

According to 2019 Business Patterns Census Data, Warren County had 917 business establishments. The following table presents the number of establishments, number of paid employees, and the annual payroll in thousands of dollars.

Table WNC.6: Business in Warren County

	Total Businesses	Number of Paid Employees	Annual Payroll (In Thousands)
Total for All Sectors	917	8,997	331,619

Source: U.S Census Bureau [7]

Agriculture is important to the economic fabric of the State of Iowa. Warren County's 1,214 farms cover 247,153 acres of land, about 67% of the county's total area. Crop and livestock production are the visible parts of the agricultural economy, but many related businesses contribute to agriculture by producing, processing and marketing farm products. These businesses generate income, employment and economic activity throughout the region.

Table WNC.3: Agricultural Inventory

	Agricultural Inventory
Number of Farms with Harvested Cropland	916
Acres of Harvested Cropland	152,454

Source: USDA Census of Agriculture, 2017 [8]

Governance

The county's governmental structure impacts its capability to implement mitigation actions. Warren County is governed by a three member board of supervisors. The county also has the following offices and departments:

- County Clerk
- County Treasurer
- County Assessor
- County Engineer
- Conservation Board
- Emergency Management
- Environmental Health
- Floodplain Administrator
- Health Services
- Information Technology
- Maintenance
- Planning and Zoning
- Road Superintendent
- Assistant Road Superintendent
- Sheriff's Department
- Surveyor

7 United States Census Bureau. 2019. "County Business Patterns and 2019 Nonemployer Statistics" [database file]. https://factfinder.census.gov.

8 U.S. Department of Agriculture. "2017 Census of Agriculture." https://www.nass.usda.gov/Publications/AgCensus/2017/.

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

County funds are limited to maintaining current facilities and systems. New facilities for the county must come from bonding or general obligation fund loans. Funds have stayed the same over recent years.

Table WNC.4: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	No
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	State Codes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	No
	Civil Engineering	Yes
	Local Staff Who Can Assess County's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	No
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to levy taxes for specific purposes such as mitigation projects	No
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	No
	Development Impact Fees	No

Survey Components/Subcomponents		Yes/No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	Yes
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Moderate
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Limited

Plan Integration

Warren County has several planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Capital Improvements Plan (2021)

The capital improvements plan annually outlines projects the county would like to pursue and provides a planning schedule and financing options. Projects include stormwater projects, upsizing of culverts and drainage structures, storm sewer system upgrades, improving transportation routes for drainage, and bridge improvements.

Comprehensive Plan (2002)

The comprehensive plan is designed to guide the future actions and growth of the city. It incorporates some of the goals and objectives included in the HMP. The plan directs development away from the floodplain, chemical storage facilities, and from dam inundation areas. It also encourages infill develop, clustering of development in sensitive areas, and elevation of structures in the floodplain. Furthermore, the plan limits density in areas adjacent to known hazardous areas, encourages preservation of open space in hazard-prone areas, and allows for emergency access to all areas of town. The goal for updating the Comprehensive Plan is every five years and the County will be working to update it soon. The Planning Commission will consider integrating additional information from the HMP into the updated Comprehensive Plan.

Floodplain Ordinance, Zoning Ordinance, and Subdivision Regulations

The Zoning Ordinances, first adopted in 1980 are updated as needed in the county, and were most recently updated in May 2022. The Ordinances discourage development in the floodplain, identify floodplain areas as parks of open space, and require at least one foot of elevation above base flood elevation in the floodplain. Additionally, they prohibit development within the floodways, prohibit filling of wetlands, and discourage development near chemical storage sites. Furthermore, they limit development in the extraterritorial jurisdiction and takes into consideration the wildland urban interface.

The County's Subdivision Regulations were last updated in 2022. The regulations do not encourage development in conservation areas, nor do they allow subdivisions in hazard areas. This includes restricting subdivisions in the floodplain.

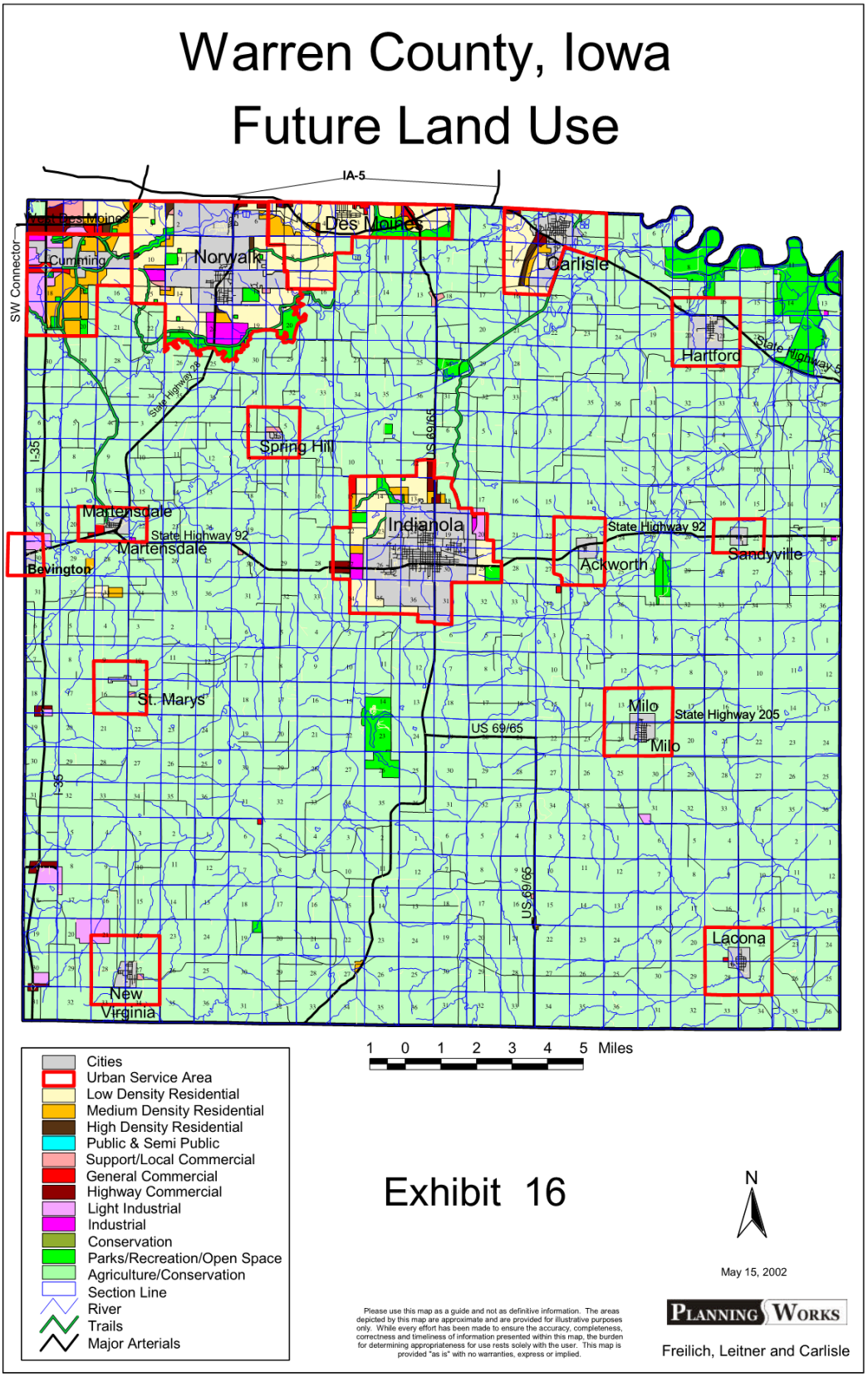
Future Development Trends

There's been a mixture of growth and development in both residential and industries across the county over the past few years. There have been several residential housing developments located across the county but are particularly located on the northern half of the county. The Zoning Department works with the developer on any properties over two acres.

Microsoft constructed a large data center off of Interstate 35 near Cumming in northwest Warren County covering 160 acres. Michael Foods also built a manufacturing facility on the south side of Norwalk

Several event venues have opened in the past few years, and more are anticipated in the next five years. These venues typically offer wedding services. Also in the next five years, a new residential facility is expected on G24 Highway. All new growth and development will follow the county's floodplain ordinance.

Figure WNC.4: Future Land Use Map



Community Lifelines

Transportation

Warren County's major transportation Warren County's major transportation corridors include Interstate 35, U.S. Highways 65 and 69, and State Highways 5, 28, and 92. The most traveled route is Interstate 35 with an average of 22,400 vehicles daily, 5,600 of which are trucks.[9] The planning team noted that farm chemicals such as anhydrous ammonia are transported along local routes. The Union Pacific Railroad has a rail line that travels through the northeastern portion of the county. There is a small airport south of Indianola called Nash Field Indianola Airport. Otherwise, the primary airport for the region, Des Moines International Airport, is located just north of the county. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are a total of 47 chemical storage sites throughout Warren County which house hazardous materials. In the event of a chemical spill, the local fire departments and emergency response may be the first to respond to the incident.

Table WNC.5: Chemical Storage Sites

Name	Address	Located in Floodplain?
AEC Enterprises Inc.	21305 20th Avenue New Virginia, IA 50210	No
Agriland FS Inc - Indianola	2616 W 2nd Avenue Highway, Indianola, IA 50125	No
Agri-Tech Aviation Inc	12871 W Geneva Street, Hangar, Indianola, IA 50125	No
Buckley Powder-Indianola	1506 N 14th Street, Indianola, IA 80112	No
Cemen Tech Inc	1700 N. 14th St, Indianola, IA 50125	No
CenturyLink - Carlisle CO	155 Garfield Avenue Carlisle, IA 50047	No
CenturyLink - Indianola CO	112 S Howard Street, Indianola, IA 50125	No
CTI Plant 3	1822 Adams St, Cumming, IA 50061	No
Downtown Power Plant	111 S Buxton Street, Indianola, IA 50125	No
East Iowa Substation	1300 E Iowa Avenue, Indianola, IA 50125	No
Ferrellgas-Wilshire Trailer Park	2765 R63 Highway, Norwalk, IA 50211	
General Mills Operations Inc.	6101 SE 52nd Street, Carlisle, IA 50047	No
Harvest Innovations/ADM	1210 N 14th Street, Indianola, IA 50125	No
Heartland Co-op Evansville NH3	5855 Highway 65-69 North, Indianola, IA 50125	No
Heartland Co-op Goodhue NH3	5650 E Army Post Road, Carlisle, IA 50047	No
Heartland Co-op Hunerdose NH3	12732 Pershing Street, Indianola, IA 50125	No
Heartland Co-op, Indianola Main Location	505 E Girard Street, Indianola, IA 50125	No

9 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

Name	Address	Located in Floodplain?
Heartland Co-op Poverty Hollow NH3	18836 Hayes Street, Ackworth, IA 50001	No
Heartland Co-op Ruble NH3	20594 G 24 Highway, Hartford, IA 50118	No
Herschel Parts Inc.	1200 N 14th St, Indianola, IA 50125	No
Iowa DOT Carlisle Maintenance Garage	5020 SE 64th Ave, Carlisle, IA 50047	No
James Oil Co LLC	110 Garfield Street, Carlisle, IA 50047	No
MFI Norwalk Plant	101 Delaware Street, Norwalk, IA 50211	No
MidAmerican Energy – Norwalk Substation	1060 South Sunset Drive, Norwalk, IA 50211	No
Norwalk CO	721 North Avenue, Norwalk, IA 50211	No
Norwalk Ready Mixed Concrete Inc	1535 North Avenue, Norwalk, IA 50211	No
Norwalk--Indianola South Ready Mix	700 E. Clinton Avenue, Indianola, IA 50125	No
Rexcon Model S Mobile Plant	1822 Adams St, Cumming, IA 50061	No
Simplot- Indianola (IA)	1800 N 9th Street, Indianola, IA 50021	No
Smith Feed & Green	101 1st Street, Milo, IA 50166	No
South Central Coop	118 S. Meyers Ave, Lacona, IA 50139	No
South Central Coop	118 N Meyers Avenue, Lacona, IA 50139	No
South Central Coop	200 E. Mill St, Lacona, IA 50139	No
United Farmers Cooperative - Lacona	118 N Meyers Avenue, Lacona, IA 50139	No
United Farmers Cooperative - Lacona E Mill	20 E Mill Street, Lacona, IA 50139	No
United Farmers Cooperative - Lacona Fuels	118 S Meyers Avenue, Lacona, IA 64486	No
US Cellular - Hartford	3772 215th Avenue, Carlisle, IA 50118	No
US Cellular - Indianola	957 Nevada Street, Indianola, IA 50125	No
US Cellular - Indianola DT	1203 N 15th Street, Indianola, IA 50125	No
US Cellular - Lacona	21097 Highway G77, Lacona, IA 50139	No
US Cellular - Liberty Center	21427 Highway 65, Milo, IA 50166	No
US Cellular - New Virginia	23432 18th Avenue, New Virginia, IA 50210	No
US Cellular - Norwalk	830 Carpenter Street, Norwalk, IA 50211	No
Warren County Oil Coop Assn	606 North 6th Street, Indianola, IA 50125	No
Warren County Oil Coop Assn	506 North Jefferson Street, Indianola, IA 50125	No
West Iowa Substation	903 W Iowa Avenue, Indianola, IA 50125	No
West Side Substation	11634 R-63 Highway, Indianola, IA 50125	No

Source: Iowa Department of Natural Resources[10]

10 Iowa Department of Natural Resources. "Emergency Response - Tier II Chemical Storage." [datafile]. Accessed September 2021. https://facilityexplorer.iowadnr.gov/facilityexplorer/.

Health and Medical Facilities

The following medical and health facilities are located within the county.

Table WNC.6: Health and Medical Facilities

Name	Type of Facility	Address	Number of Beds
Edencrest at the Legacy	Assisted Living Facility	2901 Cedar Street, Norwalk, IA	80
Good Samaritan Society – Indianola	Assisted Living Facility	708 S Jefferson Way, Indianola, IA	131
Holland Farms Senior Living	Assisted Living Facility	2800 Sunset Drive, Norwalk, IA	120
Homesteaders at Holland Farms	Assisted Living Facility	2800 Sunset Drive, Norwalk, IA	80
MercyOne Carlisle Family Medicine	Medical Clinic	2755 Gateway Dr, Carlisle, IA	NA
MercyOne Indianola Family Medicine	Medical Clinic	307 E Scenic Valley Ave, Indianola, IA	NA
MercyOne Norwalk Family Medicine	Medical Clinic	9421 Market Place Dr, Norwalk, IA	NA
Norwalk Nursing and Rehab Center	Long Term Care Facility	921 Sunset Drive, Norwalk	42
Regency Assisted Living	Assisted Living Facility	815 West High Road, Norwalk, IA	101
The Iowa Clinic	Medical Clinic	1504 N 1st Street, Indianola	N/A
Unity Point Clinic Family Medicine	Medical Clinic	301 E. Hillcrest Ave, Indianola	N/A
Unity Point Clinic Family Medicine	Medical Clinic	801 Colonial Circle, Norwalk	N/A
Via Care Center	Long Term Care Facility	690 Cole Street, Carlisle, IA	44
Via Care Center for Assisted Living	Assisted Living	685 Cole Street, Carlisle, IA	80
Vintage Hills Retirement Community	Assisted Living Facility	604 E. Hillcrest Avenue, Norwalk, IA	122
Wesley Life the Village	Assisted Living Facility	1203 North E Street. Indianola, IA	54
Westview of Indianola Care Center	Long Term Care Facility	1900 W 3rd Place, Indianola	71
Windsor Manor Indianola	Assisted Living Facility	608 South 15th Street, Indianola, IA	74

Source: Iowa Department of Inspections and Appeals[11], Warren County Health Services

11 Iowa Department of Inspections and Appeals. 2021. "Direct Care Worker Registry & Health Facility Database." https://dia-hfd.iowa.gov/

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

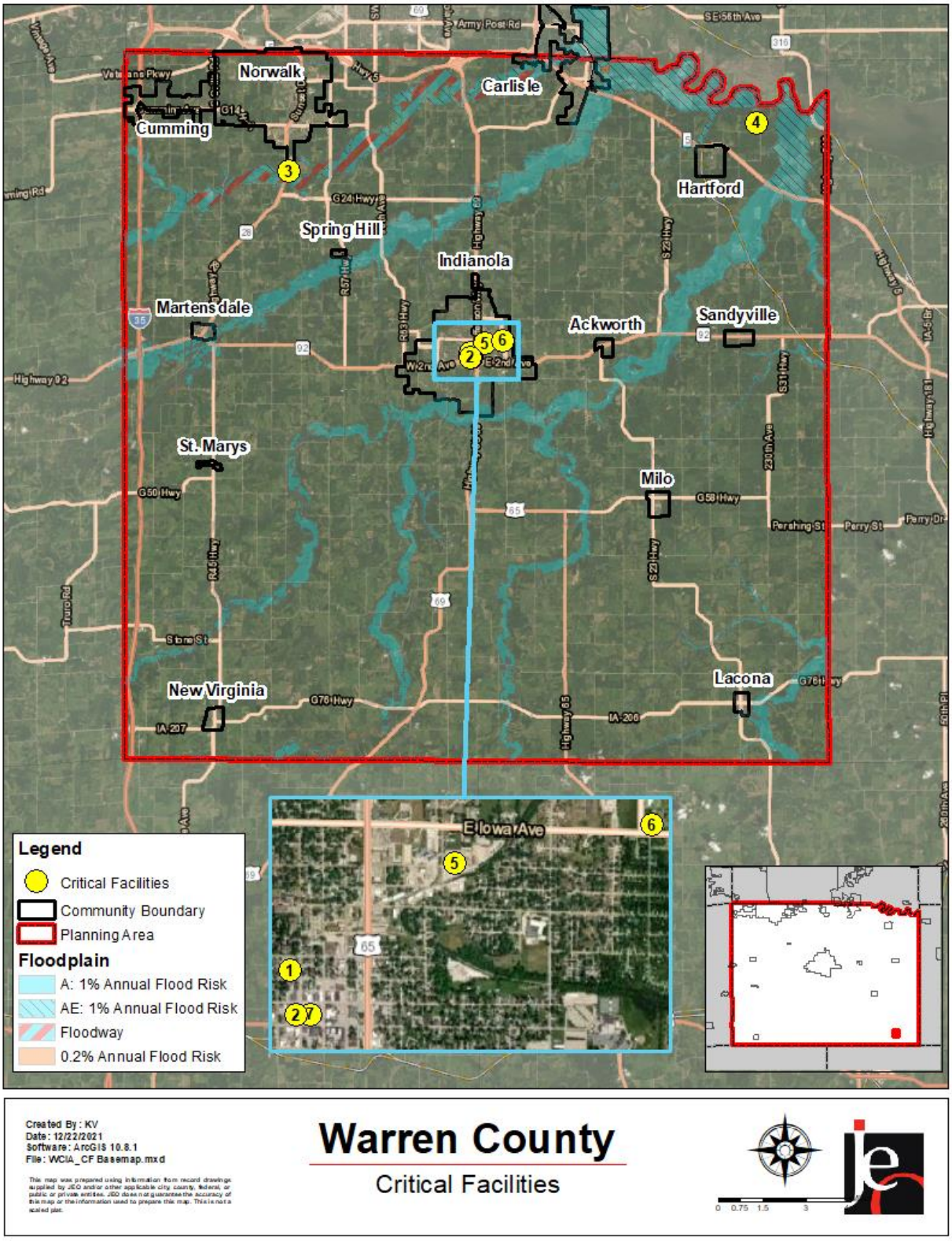
Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table WNC.7: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	**Administration Building**	Y*	Y	N
2	**EMA Office**	N	N	N
3	**KWKY Radio Tower**	N	N	Y (Floodway)
4	**Radio KIOA-KRNT-KAZR-KLIT-KPSS2-KST2**	N	N	N
5	**Secondary Road Shop**	N	Y	N
6	**Secondary Road Shop**	N	N	N
7	**Warren County Sheriff's Office and Courthouse**	N	N	N

***Serves as the Health Department's primary site for dispensing vaccinations.*

Figure WNC.4: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table WNC.8: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
3,435	$41,198,730,905	461	$42,455,500	13.4%

Source: Warren County Assessor, 2022

Table WNC.9: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
3,435	$41,198,730,905	484	$44,416,700	14.1%

Source: Warren County Assessor, 2022

Historical Occurrences

The following table provides a statistical summary for hazards that have occurred in the county. The property damages from the NCEI Storm Events Database (January 1996 – July 2021) should be considered only as broad estimates. Crop damages reports come from the USDA Risk Management Agency for Warren County between 2000 and 2020.

Table WNC.9: County Hazard Loss History

Hazard Type		Count	Property Damage	Crop Damage[2]
Animal & Plant Disease	Animal Disease	Unknown	N/A	N/A
	Plant Disease[1]	8	N/A	$75,115
*Dam Failure[2]		Unknown	N/A	N/A
Drought[3]		484 of 1,513 months	$0	$17,814,741
Earthquakes[4]		0	N/A	N/A
Expansive Soils		Unknown	N/A	N/A
Extreme Temperatures[5]	Cold (≤ 10°F)	Avg. 4 Days a Year	$0	$31,581
	Heat (≥ 100°F)	Avg. 3 Days a Year	N/A	$949,447
Flooding[6]	Flash Flood	38	$2,550,000	$6,072,395
	Flood	100	$6,766,500	
Grass/Wildfires[7]		82	655 acres	N/A
Hazardous Materials Release	Fixed Site[8]	34	$350,000	N/A
	Transportation[9]	17	$203,635	N/A
Infrastructure Failure		Unknown	N/A	N/A
Levee Failure[10]		0	N/A	N/A
Pandemic Disease		~12,069 cases	N/A	N/A
Severe Thunderstorms[6]	Thunderstorm Wind	178	$3,146,000	$25,506,941

Hazard Type		Count	Property Damage	Crop Damage[2]
	Range (mph): 55-109 Average (mph): 67			
	Hail Range (in): 0.75-3.5 Average (in): 1.16	228	$1,488,000	
	Heavy Rain	106	$12,000	
	Lightning	5	$191,500	
Severe Winter Storms[6]	Blizzard	11	$360,000	$632,591
	Heavy Snow	20	$3,855,000	
	Ice Storm	11	$393,330	
	Winter Storm	25	$499,900	
	Winter Weather	1	$0	
Sinkholes		Unknown	N/A	N/A
Terrorism[11]		0	$0	N/A
Tornadoes and Windstorms[6]	Tornadoes Range: EF0-EF3 Average: EF0	22	$815,110	$709,391
	Windstorms Range (mph): 40-70 Average(mph): 55	28	$3,077,500	$0
Transportation Incidents	Auto[12]	7,521	N/A	N/A
	Aviation[13]	7	N/A	N/A
	Highway Rail[14]	11	$43,500	N/A
Total		**8,453**	**$23,751,975**	**$51,792,203**

Data Request has been made
N/A: Data not available
1 – USDA RMA, 2000-2020
2 - IDNR Communication, 2021
3 - NOAA, 1895 - October 2021
4 - USGS, 1900 - August 2021
5 – NOAA Regional Climate Center, 1893 - July 2021
6 - NCEI, 1996 - July 2021
7 - IDNR Communication, 2021
8 - NRC, 1990 - August 2021
9 - PHSMA, 1971 - August 2021
10 - USACE NLN, 1900 - July 2020
11 – University of Maryland, 1970 – 2018
12 – IDOT, 2011-2021
13 - NTSB, 1962 – 2019
14 - FRA, 1975- August 2021

The following table provides a summary of hazards that have or have the potential to affect each participating jurisdiction in Warren County. Each jurisdiction was evaluated for previous hazard occurrence and the probability of future hazard events on each of the 18 hazards profiled in this plan. The evaluation process was based on data collected and summarized in Table WNC.9; previous impacts or the potential for impacts to infrastructure, critical facilities, people, and the economy; and the proximity to certain hazards such as dams and levees.

Table WNC.10: Warren County and Community Hazard Matrix

Hazard	Warren County	City of Carlisle	City of Cumming	City of Hartford	City of Indianola	City of Lacona	City of Martensdale	City of Milo	City of New Virginia	City of Norwalk	Indianola Schools	Martensdale-St Marys CSD	Norwalk CSD	Southeast Warren CSD	Simpson College
Animal & Plant Disease	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dam Failure															
Drought	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Earthquakes	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Expansive Soils	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Extreme Temperatures (Cold/Heat)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Flooding	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Grass/Wildfire	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hazardous Materials Release	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Infrastructure Failure	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Levee Failure	X	X													
Pandemic Disease	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Severe Thunderstorms (Includes Hail & Lightning)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Severe Winter Storms	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sinkholes	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Terrorism	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tornadoes & Windstorms	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Transportation Incidents	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the county. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four* | *Risk Assessment*.

Extreme Temperatures

Top concerns related to extreme temperatures includes impacts on vulnerable populations and disruption of services. Heat and cold have the potential to disrupt services and effect daily living tasks. The county also has concerns regarding injuries in extreme temperatures. The county has had several summers with heat waves and many winters with cold snaps. While some years these events are not record breaking, they still affect our communities. Earlier in 2021, the county had a cold snap that lasted several days. The county has looked into the possibility of opening warming and cooling centers in the past. The county posts information about severe weather on social media and provides safety tips for the public. Projects needed in the future to mitigate against extreme temperatures include working with faith-based organizations to coordinate shelters and need during events. The county primarily has the ability to offer warming and cooling centers in Indianola but would benefit from the assistance of faith-based organizations in other communities in the county to provide shelter when needed.

Flooding

Flooding often moves into Warren County from Red Rock and Sailorville, shutting down traffic and transportation. Flash floods and ice jams in the spring affect agriculture, bridges, and secondary roads. The Martensdale-St. Marys Community School District is often affected by rural roads flooding because it interferes with their busing routes. According to NCEI, flooding and flash flooding occurs in Warren County more than twice almost every year. The most property damage from a flood to date occurred in June of 2015. Heavy rain caused $1,000,000 in damages when three bridges, numerous culverts, and rural roads across the County were washed out. The Department of Natural Resources is currently conducting a study to see how to improve waterways to prevent flooding. The planning team noted that when bridges are replaced in the county, they are upsized to reduce backwater.

Hazardous Materials Release

Agricultural chemicals, particularly anhydrous ammonia, are a hazard in Warren County. A tier II chemical storage facility affected all of the north side of Indianola with an anhydrous gas cloud. The county is at risk from an oil substance that is sprayed on gravel roads, and dynamite that is trucked through to Madison and Marion Counties. PHMSA has record of 17 chemical spills during transportation. The most notable hazardous spill event was in Hartford in January of 2007, when 30,000 gallons of gasoline was leaked after a tanker truck overturned during a vehicular accident. There is also a large natural gas storage facility in nearby Polk County that could impact northern Warren County. The planning team noted that a secondary road facility is proposed to be built in 2022 and will be located along Nevada Street close to major transportation routes State Highway 65 and 69.The county collaborates with surrounding emergency managers to plan for chemical release events, and GIS maps of tier II chemical storage facilities are updated yearly. Furthermore, the county works to provide awareness and education on potential hazardous household chemicals and their associated risks.

Levee Failure

There have been no previous levee failures in Warren County. The county has identified developing a training and exercise plan for community officials and other stakeholders to complete and conducting a levee failure tabletop exercise would be beneficial to the City of Carlisle and the county. The county would also like to develop an evacuation plan in cooperation with cities.

Pandemic Disease

Top concerns for the planning team include fatalities, false information being shared, isolation, not being able to enforce mandates, shortage of medical supplies/vaccine, and communication issues between state and local entities. The county had their first positive case of Covid-19 in March 2020 and have continued to see positive cases throughout the pandemic. At the end of 2020 and into early 2021, the focus on positive cases switched to number of people full vaccinated. Businesses in the county suffered economic impacts due to closures. The county has updated planning documents to include pandemic response. Projects needed in the future to address pandemic disease includes exercises focusing on communication, better messaging and training, and better communication tools and information technology equipment.

Severe Winter Storms

Injuries, fatalities, and impacts on vulnerable populations are top concerns for severe winter storms. There are often power outages from winter storms in rural Warren County. Winter storms have even interrupted power service to the COOP in Clark for several weeks. Loss of power threatens residents, especially those who rely on medical equipment. The local planning teams indicated that ice storms are becoming more frequent recently, occurring nearly every year. The worst of these ice storms, as recorded by NCEI, was in January of 2010 and resulted in $150,000 in property damage from inch-thick deposits to tree branches and power lines. Urban areas including Indianola are taking the initiative of burying overhead power lines. The county has developed a recovery plan for power failure for their critical assets and also continues to collaborate with utility providers in burying power lines where possible and installing redundancies. During past extreme cold events, snow removal was difficult due to diesel equipment stored outside not starting up in cold weather. Snow removal resources include 20 dump trucks equipped with plows and salt/sand spreaders, three ¾-ton pickups with plows, one 1-ton pickup with plow and salt/sand spreader, and 13 motor graders with blades and scarifies.

Terrorism

Cyber security is a concern in Warren County. The local planning team is worried about compromised employee records, the shutdown of computers to stop workflow, and ransom or key stroke trading. In the past, some county emails have been targeted with spam that required new email accounts to be created as a work around. The deletion of old email accounts disrupted workflow and services for some county staff. Mitigation for terrorism includes protecting and planning for cyber security by providing increased security on employee computers, additional surveillance systems, and continuity planning that includes backing up systems. Marshall County and Warren County have an agreement to back up each other’s critical records. In the future the county would like to provide employees with training on cyberterrorism.

Mitigation Strategy

Completed Actions

Mitigation Action	Emergency Guidebooks in All Emergency Vehicles
Description	Provide emergency guidebooks and protocols for all emergency vehicles (including engineer, other departments)
Hazard(s) Addressed	All Hazards
Status	Completed

Mitigation Action	Install New and Upgraded Communication Technology for First Responders
Description	Update first responder and interagency communications protocols and equipment to meet national/state interoperability standards; install repeaters in first responder vehicles; install computers and modern surveillance equipment in applicable response vehicles; establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies; install GPS units.
Hazard(s) Addressed	All Hazards
Status	Equipment was replaced in recent years.

Mitigation Action	Map Chemical Storage Fixed Sites
Description	Use GIS to map the location of chemical storage facilities in the County
Hazard(s) Addressed	Hazardous Materials Release
Status	Updated annually.

Mitigation Action	Promote Private Mitigation and Disaster Preparedness
Description	Promote NOAA weather radio purchase and use; remove unused chemical containers (mostly household HAZMAT), encourage property owner private insurance purchase; support business and residential preparedness programs
Hazard(s) Addressed	All Hazards
Status	Conducted regularly by various departments.

Mitigation Action	Vulnerable Population Registration Program
Description	Implement a special needs/oxygen-user registration program
Hazard(s) Addressed	All Hazards
Status	Updated annually.

New Mitigation Actions

Mitigation Action	Purchase Weather Radios
Description	Purchase weather radios to distribute to communities in need.
Hazard(s) Addressed	All Hazards
Estimated Cost	$500-$1,000
Local Funding	Emergency Management Funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Emergency Management
Status	In progress.

Continued Actions

Mitigation Action	Community Education and Awareness
Description	Establish a community education program to increase awareness related to household level mitigation actions. Utilize outreach projects and the distribution of maps. Purchasing equipment such as projectors and laptops to facilitate presentation of information.
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000/year
Local Funding	Emergency Management Funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Emergency Management; Public Health; Sheriff's Office
Status	Emergency Management, Sheriff's Office, and Public Health provide education outreach throughout the year.

Mitigation Action	Disaster and Continuity Planning
Description	Develop continuity of operations and succession plan; develop a mass casualty plan; institute efforts to increase supply and morale of volunteers; designate/create backup EOC and/or communications center; purchase backup laptops to allow employees to work outside of the office if necessary
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000+
Local Funding	Emergency Management and Health Services funds
Timeline	Ongoing
Priority	Low
Lead Agency	Health Services/Human Resources, Information Technology
Status	Emergency Management and Public Health continually maintain and update disaster and response plans. Continuity of Planning and other specialized plans like evacuation planning have not started.

Mitigation Action	Fire Preparedness
Description	Determine the level of fire suppression needed; encourage citizen purchase and use of smoke detectors
Hazard(s) Addressed	Grass and Wildfire
Estimated Cost	$1,000/year
Local Funding	General funds and local funds
Timeline	Ongoing
Priority	Low
Lead Agency	Emergency Management
Status	In progress. Education and training is provided regularly.

Mitigation Action	First Responder and Public Works Equipment Upgrade
Description	Equipment and facilities upgrade and acquisition plan (police, fire, EMS, public works – both individual and vehicle); install GPS units and laptops in applicable response vehicles; purchase and install emergency response guidebooks in all Public Works vehicles
Hazard(s) Addressed	All Hazards
Estimated Cost	$4,000,000
Local Funding	General Funds, Available Grants
Timeline	2-5 Years
Priority	Medium
Lead Agency	Public Health, Conservation, Engineering
Status	Public Health continues to work with EMS on training opportunities. Funding for training and equipment can sometimes be secured through the Public Health Emergency Preparedness Grant.

Mitigation Action	Improve Bridges and Culverts
Description	Replace existing bridges and culverts; increase bridge capacity
Hazard(s) Addressed	Transportation Incidents
Estimated Cost	$25,000+
Local Funding	Engineering Dept; Conservation Board Funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Engineering, Conservation Board
Status	Ongoing

Mitigation Action	Improve Facility Security
Description	Install vehicular barriers, fences, lights, and/or security cameras to protect critical facilities and key infrastructure where possible; develop restricted access procedures
Hazard(s) Addressed	Terrorism
Estimated Cost	$10,000+
Local Funding	General Funds, Homeland Security Grants
Timeline	Ongoing
Priority	Medium
Lead Agency	Each Department.
Status	Security tools like cameras have been installed in some facilities. Additional needs are being assessed.

Mitigation Action	Improve Sewer System
Description	Conduct a sewer lagoon and sanitary sewer system study; upgrade, replace, and expand sewer lines; clean sewer lagoons and install riprap where needed; install backflow devices to sewer lines; remove dead vegetation around lagoon
Hazard(s) Addressed	Flooding
Estimated Cost	$50,000+
Local Funding	General Funds, Local Funds, Available Grants
Timeline	Ongoing
Priority	Medium
Lead Agency	Maintenance Department, Conservation Board
Status	In progress.

Mitigation Action	Improve Stormwater System
Description	Conduct drainage studies; construct storm water drainage infrastructure (underground, culverts, curb & gutter); develop Stormwater Master Plan; clear drainage ditches and culverts; identify and replace/repair inadequate storm sewers; replace culverts; install water impervious manhole covers; establish multi-jurisdictional partnership to reduce storm water runoff (county/city); develop stream modification projects; maintain sandbags in dry storage; develop soil erosion stabilization projects; purchase standby pumps for stormwater control; upgrade/replace/expand sewer lines; maintain ditch inspection plan; implement sustainable stormwater control options (such as rain gardens); install backflow devises to sewer lines
Hazard(s) Addressed	Flooding
Estimated Cost	$500,000+
Local Funding	General Funds, Available Grants
Timeline	2-5 Years
Priority	Low
Lead Agency	Engineering, Conservation Board
Status	Ongoing. The city upsizes and replaces stormwater systems as funds allow.

Mitigation Action	Increase Landscaping Efforts
Description	Enforce burning restrictions (increase consistency); promote landscaping practices; remove dead vegetation; establish tree-planting initiatives, public tree trimming and landscaping efforts
Hazard(s) Addressed	Grass/Wildfire, Severe Thunderstorms, Severe Winter Storms, Tornadoes and Windstorms
Estimated Cost	$5,000
Local Funding	General Funds, Available Grants
Timeline	2-5 Years
Priority	Medium
Lead Agency	Conservation Board
Status	In progress. Providing education outreach for citizens.

Mitigation Action	Install Hazard Signs
Description	Install hazard signs in local campgrounds
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000 each
Local Funding	General Funds
Timeline	2-5 Years
Priority	High
Lead Agency	Conservation Board

Mitigation Action	Property Acquisition
Description	Acquire property through purchase for demolition, relocation, or elevation
Hazard(s) Addressed	Flooding
Estimated Cost	$100,000
Local Funding	General Funds, FMA
Timeline	2-5 Years
Priority	High
Lead Agency	Flood Administrator
Status	Not started.

Mitigation Action	Protect Power at Critical Facilities
Description	Provide a portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations and other critical facilities and shelters; purchase and install surge protectors on sensitive equipment in critical facilities
Hazard(s) Addressed	All Hazards
Estimated Cost	$50,000+
Local Funding	General funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Maintenance
Status	Backup generators are still needed at several critical facilities.

Mitigation Action	Purchase Trailers
Description	Purchase trailers to haul signs for Conservation Trail Closures at trail crossings and roads during flood events
Hazard(s) Addressed	Flooding
Estimated Cost	$5,000 each
Local Funding	General funds
Timeline	2-5 Years
Priority	Low
Lead Agency	Conservation Board, Emergency Management
Status	Not stated.

Mitigation Action	Road Barricades and Signage
Description	Purchase road closure barricades and traffic control signage
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000 - $10,000 each
Local Funding	General funds
Timeline	2-5 Years
Priority	Low
Lead Agency	Emergency Management, Sheriff's Department
Status	Not started.

Mitigation Action	Storm Shelters and Safe Rooms
Description	Formally designate and stock storm shelters; construct shelters in or near existing and future critical assets; support legislation increasing standards for emergency shelters; publicly identify and list public storm shelters
Hazard(s) Addressed	All Hazards
Estimated Cost	$100,000+
Local Funding	General funds
Timeline	5+ Years
Priority	Medium
Lead Agency	Conservation, and Emergency Management
Status	Not started.

Mitigation Action	Training and Exercise Plan
Description	Develop a training and exercise plan to establish trainings and exercises to be completed by community officials and staff over a defined period of time; conduct/complete training exercises
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000/year
Local Funding	Emergency Management Funds, Available Grants
Timeline	Ongoing
Priority	Low
Lead Agency	Emergency Management, Public Health
Status	Emergency Management and Public Health continually look for opportunities to develop and/or participate in training and exercises. The county would like to develop another exercise in partnership with Simpson College and Fire/EMS in the next few years.

Mitigation Action	Well Rehabilitation and Testing
Description	Check and test wells: continue to inspect and permit new wells
Hazard(s) Addressed	Pandemic Disease
Estimated Cost	$1,000/year
Local Funding	Environmental Health Funds
Timeline	Ongoing
Priority	Low
Lead Agency	Environmental Health
Status	Well water testing, plugging, and rehabilitation is done regularly and funded regularly through Environmental Health.

Removed Actions

Mitigation Action	Signage for Bridges
Description	Install signage for critical bridges; during flooding, certain bridges need to be closed until they are inspected: these signs would provide closure information to the public
Hazard(s) Addressed	Flooding
Status	This project is no longer a priority for the county.

Mitigation Action	Windbreaks
Description	Install windbreaks to prevent erosion
Hazard(s) Addressed	Drought, Severe Winter Storms
Status	This project is no longer a priority for the county.

Mitigation Action	Transportation Safety
Description	Rail and highway safety education programs
Hazard(s) Addressed	Transportation Incidents
Status	Transportation safety education programs will be covered under the Community Education and Awareness action.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

Warren County Emergency Management will be responsible for reviewing and updating the plan on an annual basis. Emergency Management may reach out to the members of the local planning team such as County Engineer and Public Health for feedback on particular mitigation strategies as needed. Further solicitation for feedback and a report of updates will be shared at county board and emergency management commission meetings.

Community Profile

City of Carlisle

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table CRL.1: Carlisle Local Planning Team

Name	Title	Jurisdiction
Cory Glover	Fire Chief	City of Carlisle
Deven Markley	City Administrator	City of Carlisle
Matt Koch	Police Chief	City of Carlisle
Tony Rinehart	Water/Sewer Foreman	City of Carlisle
Tommy Thompson	Water Superintendent	City of Carlisle

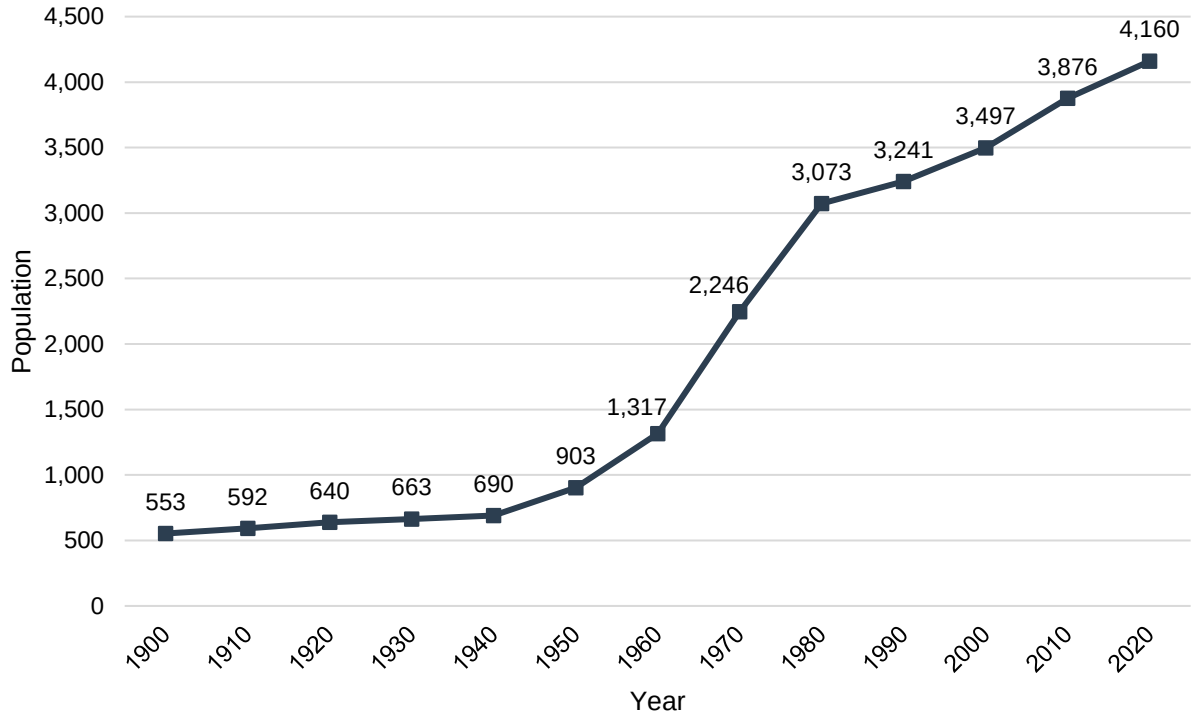
Location and Geography

The City of Carlisle is located in the north central portion of Warren County and covers an area of 5.56 square miles. Major waterways in the area include the North River, the Middle River, and the Des Moines River.

Demographics

The following figure displays the historical population trend for the City of Carlisle. This figure indicates that the population of Carlisle has been steadily increasing since the early 1900's to 4,160 people in 2020. Increasing populations are associated with increased hazard mitigation and emergency planning requirements for development. Increasing populations can also contribute to increasing tax revenues, allowing communities to pursue additional mitigation projects. Carlisle's population accounted for 7.9% of Warren County's population in 2020.[12]

Figure CRL.1: Population 1900 - 2020



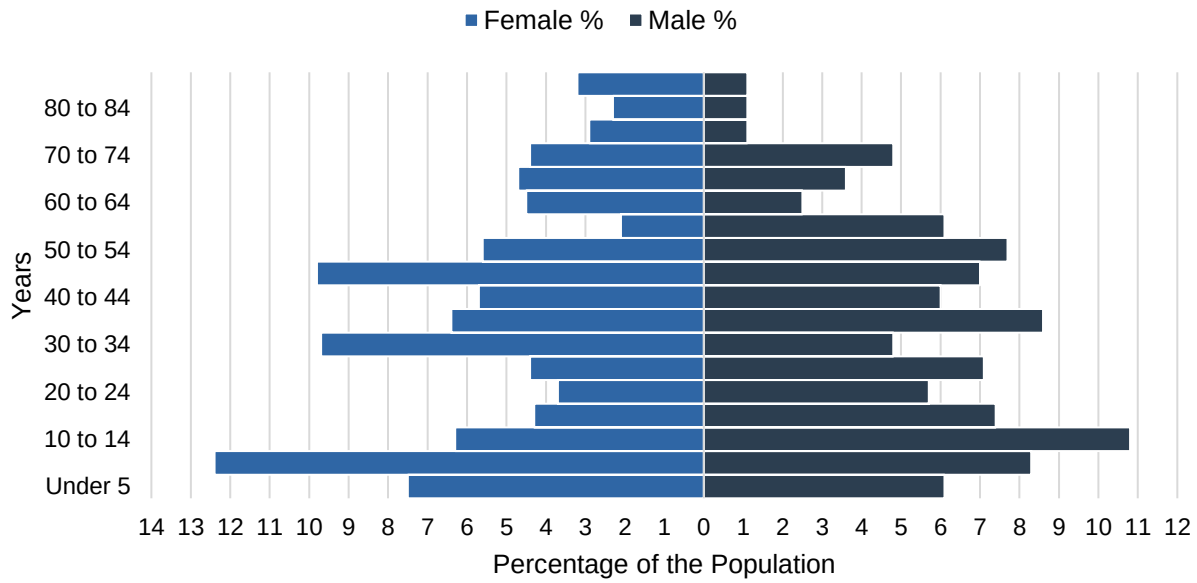
Source: U.S. Census Bureau

[12] United States Census Bureau. "2020 Census Redistricting Data (Public Law 94-171): P1: Race." https://data.census.gov.

The young, elderly, minority, and low-income populations may be more vulnerable to certain hazards than other groups. Looking at Carlisle's population:

- **4% is non-white.** Since 2010, Carlisle grew less racially diverse. In 2010, 5% of Carlisle's population was non-white. By 2019, 4% was non-white.[13]
- **36.3 median age.** The median age of Carlisle was 36.3 years in old 2019. The population grew younger since 2010, when the median age was 37.5.[14]

Figure CRL.2: Carlisle's Population by Age Cohort and Sex

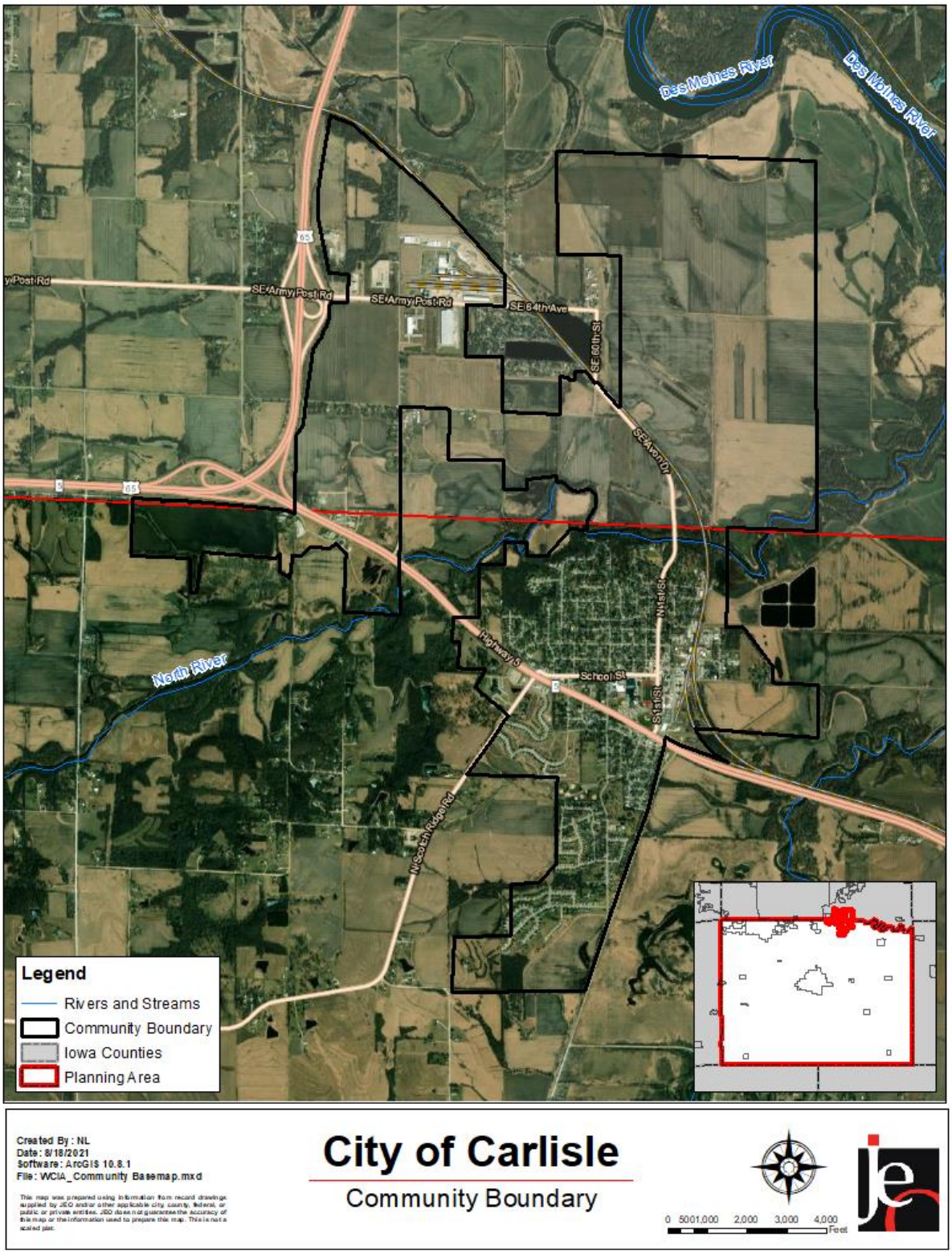


The figure above shows Carlisle's population percentage broken down by sex and five-year age groups. Carlisle's population is younger with a higher percentage of the population below 50 years of age. This likely indicates a growing population in the years to come.

13 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.

14 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Figure CRL.3: City of Carlisle



Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Carlisle's population has:

- **7.7% of people living below the poverty line.** The poverty rate (7.7%) in the City of Carlisle was higher than the state's poverty rate (7.2%) in 2019.[15]
- **$73,380 median household income.** Carlisle's median household income in 2019 ($73,380) was $13,000 higher than the state ($60,523).[4]
- **4.6% unemployment rate.** In 2019 Carlisle had a higher unemployment rate (4.6%) compared to the state (3.7%).[4]
- **29.1% of workers commuted 30 minutes or more to work.** More workers in Carlisle commuted 30 minutes or more to work compared to workers commuting less than 15 minutes (29.1% compared to 17.1%).[16]

Major Employers

Major employers within the City of Carlisle include the Carlisle Community School District, Fareway Grocery, General Mills, PDM Precast Concrete, and Wyckoff Heating and Cooling.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. The local planning team noted that there are three mobile home parks, Western Acres, located in southeast Carlisle. There is no storm shelter available at the mobile home parks, and in the past the school has been opened to provide shelter for residents. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

- **73.5% of housing built prior to 1970.** Carlisle has a larger share of housing built prior to 1970 than the state (73.5% compared to 50.9%).[17]
- **3.2% of housing units vacant.** Since 2010, Carlisle's vacancy rate increased. In 2010 the vacancy rate was 3.0%. By 2019, 3.2% of housing units were vacant.[6]
- **6.1% mobile and manufacture housing.** The City of Carlisle had a larger share of mobile and manufactured housing (6.1%) compared to the state (3.7%).[6]
- **25.9% renter-occupied.** The rental rate of Carlisle was 25.9% in 2019. The percentage went up since 2010, when renter occupied housing was at 19.5%.[6]

15 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.
16 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.
17 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of Carlisle is governed by a mayor and a five-member city council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Clerk
- City Administrator
- Police Department
- Fire and EMS Department
- Public Works Department
- Electric Superintendent
- Parks and Recreation
- Planning and Zoning Commission
- Zoning Board of Adjustment
- Parks Board
- Library Board

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are sufficient to pursue new capital projects, with a large portion of funds already dedicated to several renovations and add-ons to municipal buildings, street projects, and water main extension projects throughout the community. Funding was used through a combination of bonding and SRF loans. General fund reserves have stayed the same over recent years, but proprietary funds such as electric, water, and sewer have increased due to continued population growth in the city.

Table CRL.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	Yes
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Local Codes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	

Survey Components/Subcomponents		Yes/No
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	Yes
	Civil Engineering	Yes
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	Yes
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Moderate
Staff/expertise to implement projects	Moderate
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Limited

Plan Integration

The City of Carlisle has several planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates. In addition to local plans, the city is also a part of the County Emergency Operations Plan and the Warren County Economic Development Corporation.

Building Codes (2018)
Building Codes for Carlisle have recently been updated to the 2018 International Building Code standards. They require elevation of structures along with mechanical systems to be elevated in the floodplain. They also outline proper sump pump installation, require onsite storm water detention for commercial structures, and allow for raingardens in residential areas. Furthermore, the Codes encourage the use of hail resistant building materials and requires the use of fire-resistant building materials.

Capital Improvements Plan (2016)
The Capital Improvement Program was last updated in 2016 and is being prioritized by the City Council to be updated again soon. The city plans to include projects identified as part of the hazard mitigation plan in the CIP update. The current plan includes bridge improvements, installing new municipal wells, and installing new water meters in residential structures. For electrical systems, the plan includes updating the electrical distribution system, burying of power lines, looping electrical distribution to critical facilities, and installing emergency generators for critical facilities. Lastly, it includes the improvement of the following existing critical facilities: police station, water treatment facility, and the other existing community-owned structures.

Comprehensive Plan (2021)
The comprehensive plan is designed to guide the future actions and growth of the city. It incorporates some of the goals and objectives included in the HMP. The Comprehensive Plan directs development away from the floodplain and wetlands, contains goals and objectives aimed at safe growth, and encourages clustering of development in sensitive areas. The plan also encourages the following: preservation of open/green space in hazard-prone areas; protecting and enhancing tree cover; enhancing pedestrian safety at key intersections, provide a safe an efficient transportation and mobility system, trail expansion, streetscape improvements, and downtown connection and enhancement. There are no current strategies to further incorporate the HMP into the Comprehensive Plan.

Floodplain Ordinance, Zoning Ordinance, and Subdivision Regulations (2018)

The Zoning Ordinances are updated as needed. The corresponding floodplain regulations were updated in 2018. The Zoning Ordinance for the community discourages development in the floodplain, identifies floodplain areas as parks of open space, and requires more than at least one foot of elevation above base flood elevation in the floodplain. Furthermore, it prohibits development within the floodway, accounts for current population trends, and limits population density in the floodplain.

Future Development Trends

In the past five years the City of Carlisle has made renovations to the City Hall and Police Department. Renovations at the police department included the construction of a training room that also serves as an EOC and has a backup generator. A partial addition was made to the Fire Department in 2017, which also has a backup generator. There has also been commercial development by the bypass. The city has grown about 100 building permits/houses per year over the last 3 or 4 years and housing is also growing in the southwest portion of the community along Scotch Ridge. The city has added some new staff positions which includes a parks director, a full-time fire chief and two fire/emt/medics. In the next five years, the city plans to renovate the rec center into a library, which is estimated to be completed in 2027. In the northwest portion of the city, there is an area in the process of being annexed with the potential for housing developments in this area of the city as well. There is also a mixed use/office development anticipated along the bypass.

Figure CRL.4: Future Land Use Map

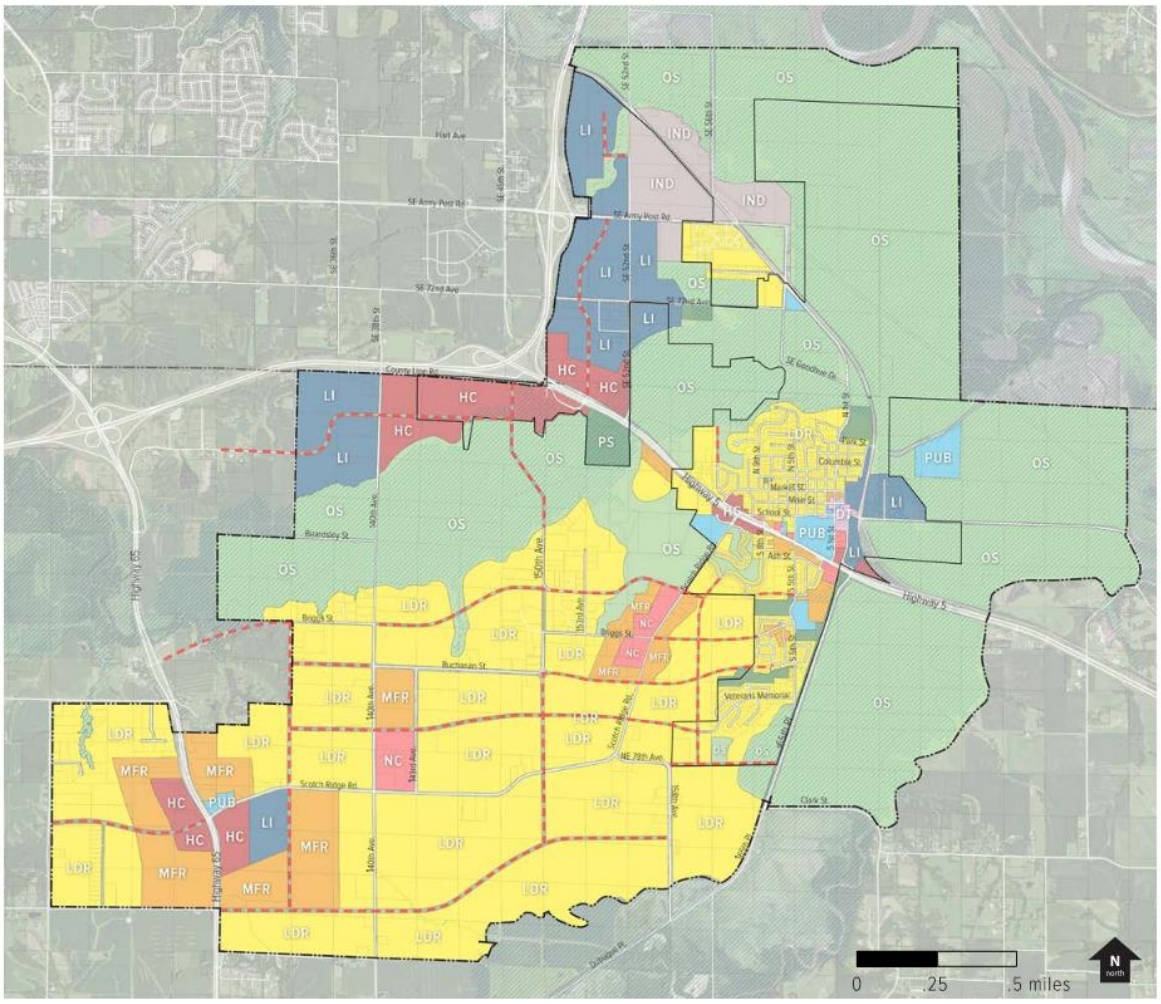
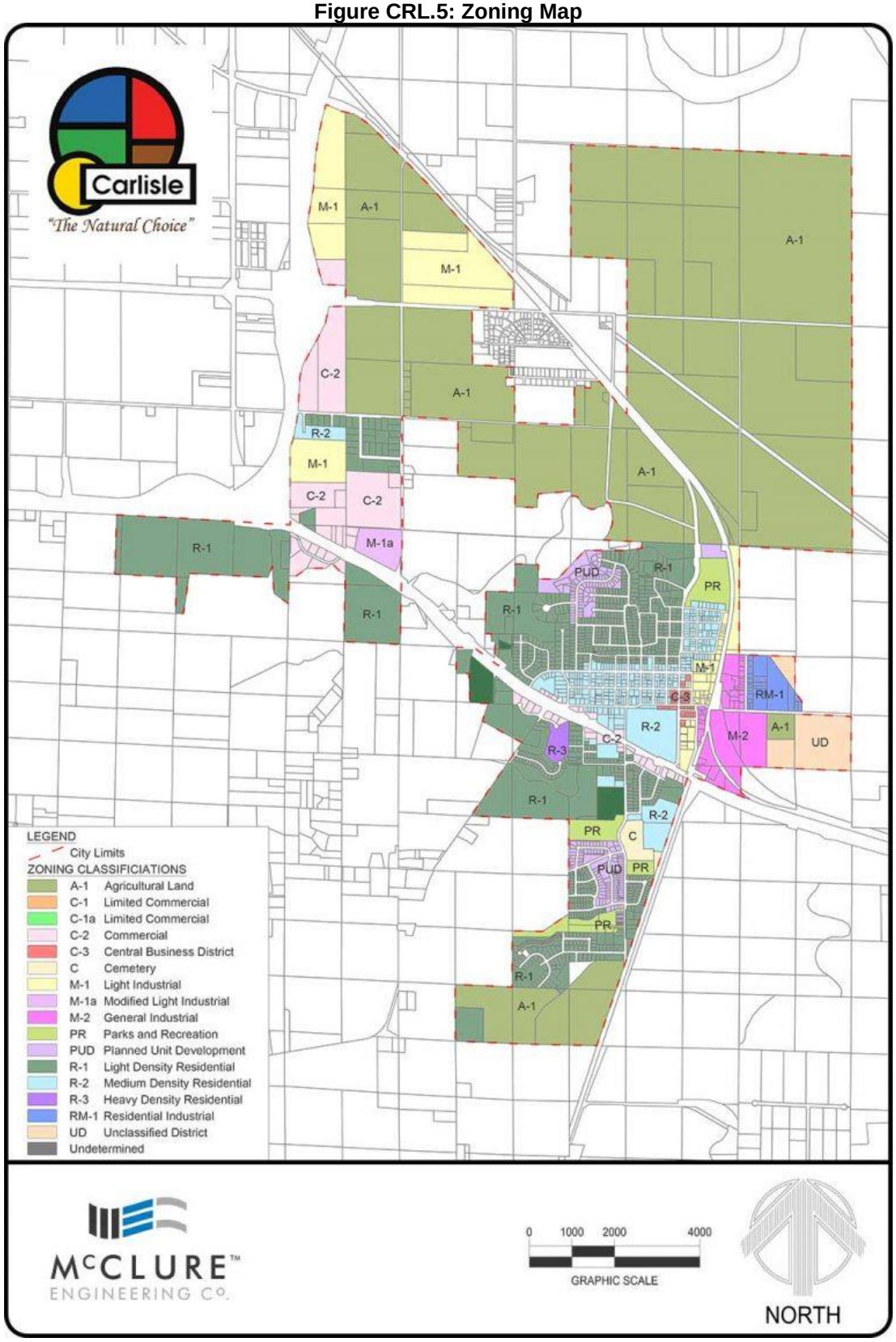


Figure CRL.5: Zoning Map



Community Lifelines

Transportation

Carlisle's major transportation corridors include State Highway 5 and U.S. Highway 65, which is just west of the city. The most traveled route is Highway 65 with an average of 21,300 vehicles daily, 2,650 of which are trucks.[18] The local planning team noted that Scotch Ridge Road and SE 64th/Army Post Road are additional routes of concern. Hazardous materials such as coal, gas, diesel, and anhydrous ammonia are regularly transported along local routes. A Pleasantville pipeline runs along the bypass in Carlisle to Pleasanton. Carlisle has one rail line, the Union Pacific Railroad traveling through the community. On the north side of town, the rail line runs along the south of Avon Lake with trains occasionally blocking traffic to residents in that area. This is a concern to the local planning team as access to residents in that area could potentially be blocked by the rail line, or depending on the time of year, muddy roads. In 2021, a train derailment occurred and spilled lumber which resulted in rerouting traffic, but no damages. The nearest airport, the Des Moines International Airport, is located about 10 miles northwest of Carlisle. Critical facilities located along major transportation routes include a DOT maintenance facility on Army Post Road, an electric substation located off of Highway 5, with access off of 8th street, schools located along Highway 5 and Scotch Ridge, and Mercy Clinic located along Highway 5. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are six chemical storage sites within or near Carlisle which house hazardous materials. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident. Additional facilities of concern include the school bus barn which has a diesel/gas containment underground and an above ground diesel tank located at PDM metals.

Table CRL.3: Chemical Storage Sites

Name	Address	Located in Floodplain?
CenturyLink - Carlisle CO	155 Garfield Avenue	No
General Mills Operations Inc.	6101 SE 52nd Street	No
Heartland Co-op Goodhue Nh3	5650 E Army Post Road	No
Iowa DOT Carlisle Maintenance Garage	5020 SE 64th Ave	No
James Oil Co LLC	110 Garfield Street	No
US Cellular - Hartford	3772 215th Avenue	No

Source: Iowa Department of Natural Resources[19]

Health and Medical Facilities

The following medical and health facilities are located within the community.

18 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

19 Iowa Department of Natural Resources. 2021. "Emergency Response - Tier II Chemical Storage." [datafile]. https://facilityexplorer.iowadnr.gov/facilityexplorer/.

Table CRL.4: Health and Medical Facilities

Name	Type of Facility	Address	Number of Beds
Via Care Center	Long Term Care Facility	685 Cole Street Carlisle, IA 50047	80
Via Care Center for Assisted Living	Assisted Living Facility	690 Cole Street Carlisle, IA 50047	44
MercyOne Carlisle Family Medicine	Medical Clinic	2755 S. Gateway Dr Carlisle, IA 50047	N/A

Source: Iowa Department of Inspections and Appeals[20]

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

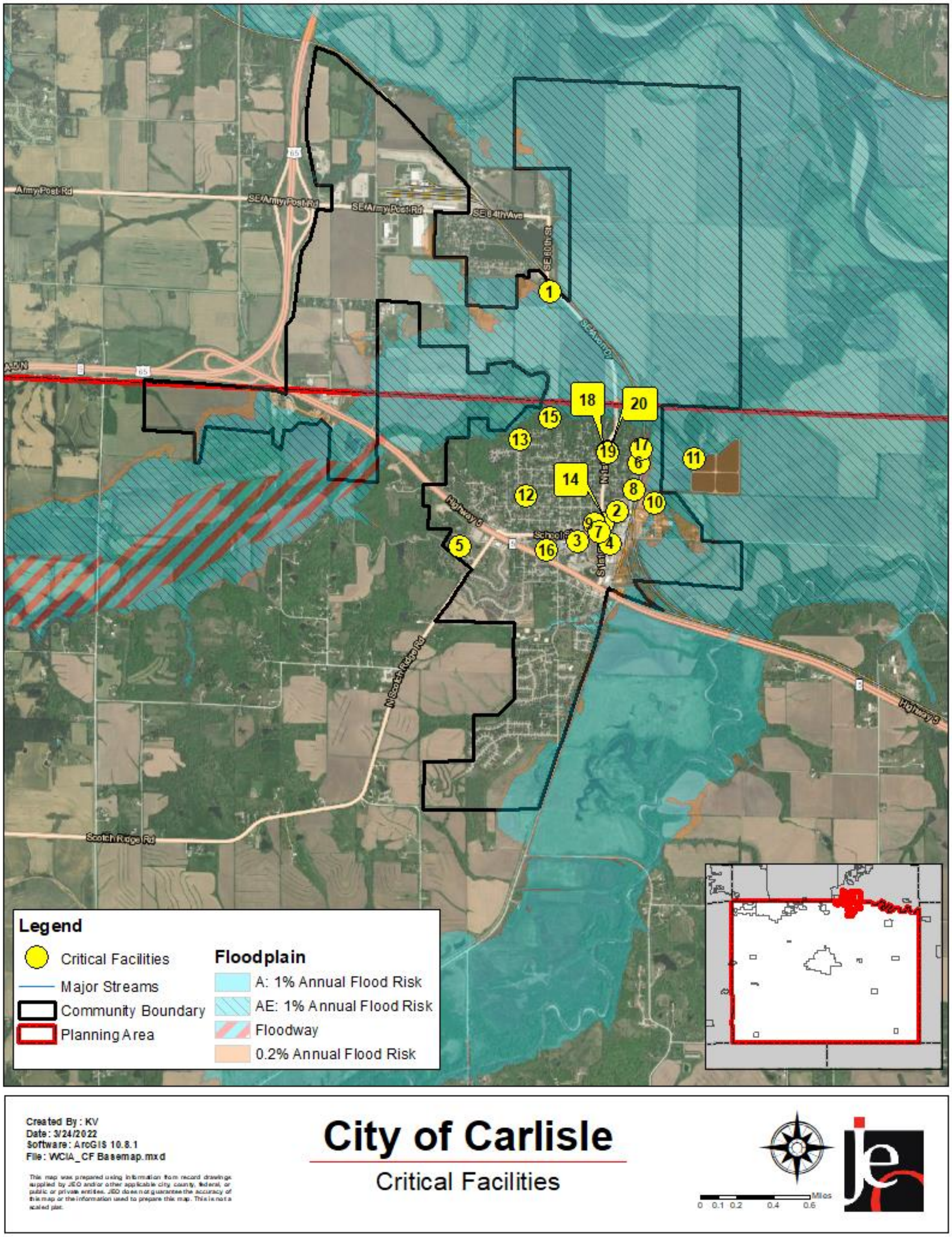
Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table CRL.5: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Avon Lift Station	N	Y- Portable	Y (1%)
2	Bus Barn	N	Y- Portable	N
3	Carlisle School Administration Office/High School/Elementary School	Y	N	N
4	Carlisle Community Center	N	Y – Portable	N
5	Carlisle Middle School	N	N	N
6	City Garage	N	N	N
7	City Hall	N	N	N
8	City Shop	N	Y	N
9	Fire Station	N	Y	N
10	Jefferson Street Lift Station	N	Y – Portable	Y (0.2%)
11	Lagoons/Wastewater Plant	N	N	N
12	Main & Secondary Water Towers	N	N	N
13	North Lift Station	N	Y – Portable	N
14	Police Department	N	Y	N
15	Ridge Road Lift Station	N	Y – Portable	N
16	Substation	N	N	N
17	Water Plant	N	Y	N
18	Well 2	N	Y	N
19	Well 4 and 5	N	Y	N
20	Well 6	N	Y	N

Figure CRL.6: Critical Facilities

20 Iowa Department of Inspections and Appeals. 2021. "Direct Care Worker Registry & Health Facility Database." https://dia-hfd.iowa.gov/


Army Post Rd
SE Army Post Rd
SE Army Post Rd
SE 84th Ave
SE 80th St
Highway 5
N 1st St
School St
S 1st St
N Scotch Ridge Rd
Scotch Ridge Rd
Highway 5
1
2
3
4
5
6
7
8
10
11
12
13
14
15
16
17
18
19
20
Legend
Critical Facilities
Major Streams
Community Boundary
Planning Area
Floodplain
A: 1% Annual Flood Risk
AE: 1% Annual Flood Risk
Floodway
0.2% Annual Flood Risk
Created By: KV
Date: 3/24/2022
Software: ArcGIS 10.8.1
File: WCIA_CF Basemap.mxd
This map was prepared using information from record drawings supplied by JEO and/or other applicable city, county, federal, or public or private entities. JEO does not guarantee the accuracy of this map or the information used to prepare this map. This is not a scaled plat.
City of Carlisle
Critical Facilities
0 0.1 0.2 0.4 0.6
Miles

Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table CRL.6: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
186	$102,209,340	25	$4,360,600	13%

Source: County Assessor, 2022

Table CRL.7: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
186	$102,209,340	11	$2,920,400	6%

Source: County Assessor, 2022

Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Flooding

River flooding is a top concern for the city. Carlisle has a floodplain on three sides of the community and relies on levees for flood reductions. Some areas of the city have experienced repeated impacts from localized flooding. Specific areas of concern include S. 5th Street, Avon Drive, Patterson Street at 4th Street, Park Street, and East School Street. The city is concerned with East School Street because it takes most of the water for downtown and it ultimately ends up at the levee, creating a bottleneck. There is a USACE pump at the levee to help with bottlenecks, that the city jointly oversees to pump water over the levee when needed. The pump hasn't been needed in the past five years though. Some improvements have been made to Patterson Street to increase stormwater capacity, but the city is unsure of how much this has mitigated the issue so far.

Much of the flooding in these areas is a result of increased development that has resulted in a greater amount of runoff during storm events. The local planning team reports that during rain events of three inches or greater or during events that deposit large amounts of rain in a short period of time (one inch of rain in less than one hour), ponding and overtopping of roadways can occur. The city also has a trailer park that experiences flooding almost annually. In 2015, the city issued a recommendation for voluntary evacuation of the trailer park. Some residents did evacuate to other areas while many opted to remain in their home. In addition to the street and

trailer park flooding, the city has also experienced flooding of the pump station located at Jefferson Street.

In 2010, the downtown area of Carlisle flooded, but the city has worked to mitigate future flooding events in this area. To eliminate flooding in the downtown area, the city undertook projects to improve the stormwater system, which included relocating existing intake structures and adding additional intakes, upsizing piping, and redirecting flows; these projects had a total project cost of approximately $665,000 funded through the city's capital budget. To further mitigate flooding the city has plans to install backflow devices on sewer lines, conduct a study on sump pump use, implement a ditch maintenance plan, and potentially upsize culverts on South 5th Street and Patterson Street.

Infrastructure Failure

Concerns related to infrastructure failure include failure of bridges restricting access to and from the community. There is a city owned bridge on First Street along Avon Drive, and two state owned bridges on Highway 5 on the west and east sides of town. If any of these bridges were to fail, there are concerns that local evacuation routes will be blocked. Additional concerns related to infrastructure failure include interruptions to water and electrical infrastructure. Carlisle has their own water plant that serves the city, but they have no back up water source. If something happened to the water plant, there would likely be water shortages in the community within a day. To mitigate against this hazard, the city is starting a Water Master Plan which includes coordinating efforts with Des Moines Water Works for a backup water source. The Water Master Plan will be completed at the end of 2022. Additionally, the city has a risk and resiliency plan for the water system that will be published in April 2022.

Levee Failure

Although levee failure was not identified as a hazard of top concern for Carlisle, there is residual risk associated with the levee in the event of a failure. There are homes and businesses located in the leveed areas. The levees are owned and maintained by the US Army Corp of Engineers. The city is not involved in the planning process related to levee maintenance or improvements. In the future, the city would benefit from being engaged as a stakeholder in issues and planning related to the levee system. There have been no failures or overtopping of the levee according to the local planning team.

The city has plans for a water infrastructure project, which is a joint project with Polk County. The city portion of the project will form a loop of water lines by General Mills and create additional water lines running to Avon Lake (an unincorporated area in Polk County). There will also be an addition made to the levee, including a water line running over the top of the north levee, which has been approved by USACE.

The following table identifies the levee that is in Carlisle, and the following map provides the location of the leveed area. Mitigation plans for levee failure include developing public disaster response plans such as evacuation routes and mass casualty plans and instituting a disaster training and exercise plan for first responders and local leaders.

Table CRL.8: Carlisle Levee

Name	Sponsor	Location	Length (Miles)	Risk Level	Population in Leveed Area	Structures in Leveed Area	Property Value in Leveed Area
Carlisle, IA - Red Rock Remedial Works	City of Hannibal, MO	Carlisle (Warren County)	1.34	Low	55	38	$11,300,000

Source: USACE Levee Database

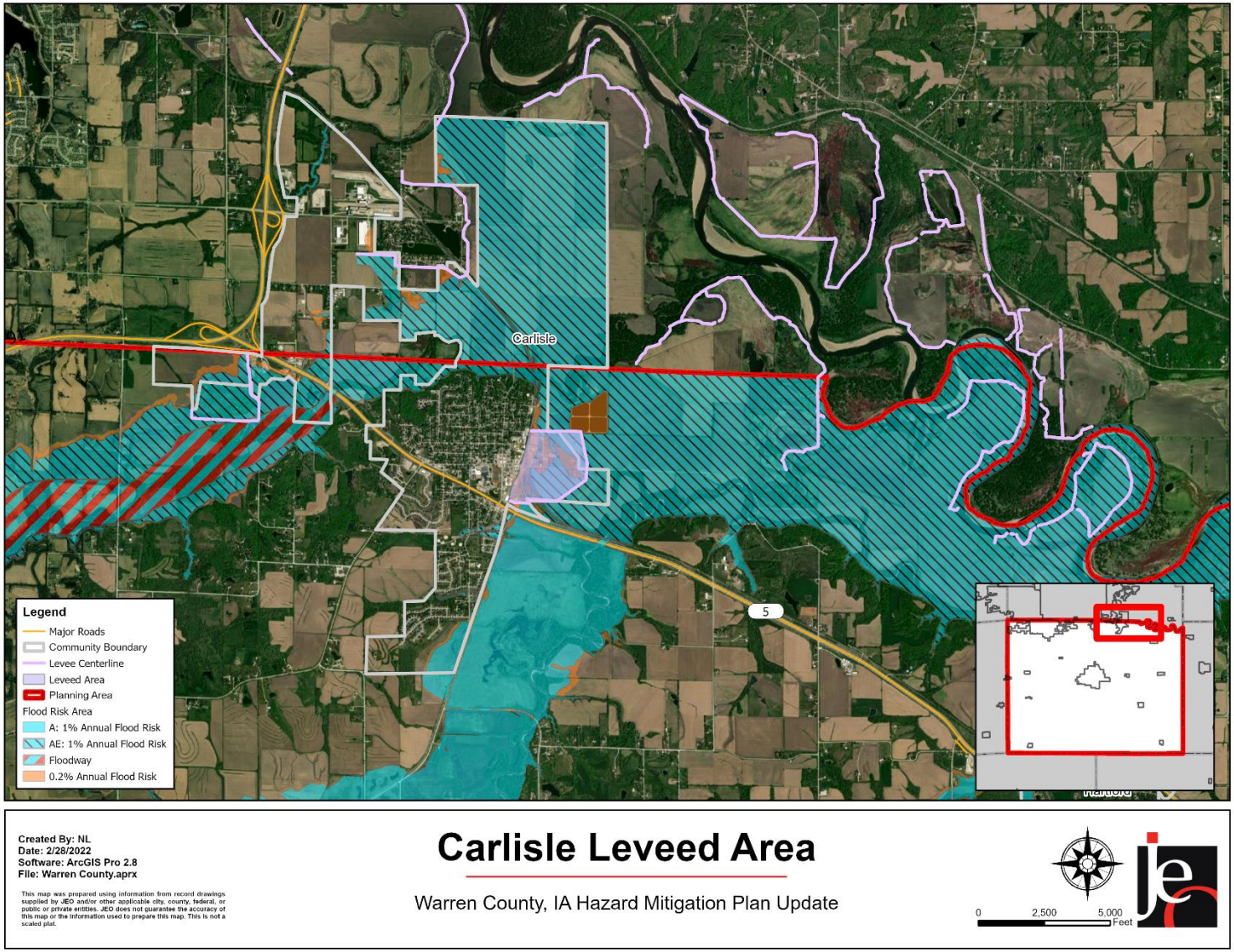
Transportation Incidents

The city has two major transportation routes that pass through town and create concern for residents and responders. Highway 5 passes through the southern portion of town. According to the Iowa Department of Transportation, this section of Highway 5 has a volume of more than 14,700 vehicles passing through daily (reported in 2012). Additionally, there is an average of 630 heavy commercial trucks daily on this Highway. It is not documented how much or what types of materials are transported along this route. Carlisle has an agreement with the Des Moines HAZMAT Response Team to aid in the case of a large chemical spill. The public school facilities are located in close proximity to Highway 5, as are residential dwellings. Should a chemical spill occur during transport, there could be disruptions, roadway closures, and possibly evacuation or sheltering in place, depending on the material released and at-risk populations. The local planning team did report that truck traffic is greater during the overnight hours, reducing the vulnerabilities associated with the public schools, but increasing the difficulty of making residents in the area aware of the situation and appropriate responses. A portion of this hazard it mitigated by AlertIowa, which offers text notifications and Reverse 911 as secondary emergency alert systems.

In addition to the concerns expressed by the local planning team regarding Highway 5, the city has a Union Pacific rail line that passes along the eastern and northern boundaries of the city. The concerns related to the rail line are consistent with those identified previously. In addition to chemical transportation concerns, the local planning team expressed concerns related to a derailment, should that event result in the closure of the only rail crossing in the city. If this route were closed for a period of time, first responders would either have to pass through railroad-owned roadways that are closed to the public and city vehicles or re-route several miles out of town. This could result in life safety issues if emergency response was delayed. A helipad was installed in 2012 to partially address this issue.

The city has an infrastructure project at the intersection of Highway 5 and Scotch Ridge Road which will update lights, turning lanes and sidewalk crossings. This project is anticipated to be complete at end of 2022 and is being partially paid by NPO funding. There is a push for Highway 5 to be designated as an interstate, which could increase speeds around the city. Currently speed limits within city limits are 40 mph and the bypass is 65 mph. The local planning team is concerned that this could lead to an increase in traffic and accidents. Additionally, the intersection by the bypass at Hwy 5 and Gateway Drive does not have any traffic safety signals, so the city has discussed addressing traffic flow and high traffic accidents in this area. To mitigate against this hazard in the future, the city is looking into additional improvements and safety upgrades for Scotch Ridge Road in general and South 5th Street near the elementary school.

Figure CRL.7: Carlisle Levee



Tornadoes and Windstorms

Like many communities throughout the Midwest, the threat of tornado is a top concern for the City of Carlisle. In March 2022, a large EF-4 tornado moved across Madison, Warren, Polk, and Jasper counties for nearly 70 miles and produced winds of nearly 170 mph at its peak. The tornado tracked north of Carlisle but there were no major impacts in the city. On December 15, 2021, the city was impacted by a December Derecho where an estimated 61 tornadoes occurred in the state in a single day. Altogether, 71 tornado and 118 severe thunderstorm warnings were issued across the state. Carlisle had major tree loss in the north part of town at private residences during the event. Some trees fell on houses causing damage and powerlines were downed.

The city has five outdoor warning sirens in place but would benefit from the addition of more sirens in the next few years for areas currently being developed. As of March 2022, the city is in the process of conducting a warning siren study to identify areas where more sirens are needed. The sirens are activated by both the Carlisle Fire Department and Warren County Dispatch. In addition to the outdoor sirens, the County Emergency Management Agency utilizes the AlertIowa program to disseminate emergency related information to residents throughout the county. Carlisle has upgraded radios, installed repeaters, and is also a part of the Civic Ready Emergency Alert System. The city currently utilizes the basement at the school for a storm shelter and makes this location available to all residents (including the residents of the approximate 100 mobile homes located in the community). Carlisle plans to construct more community safe rooms and promote private safe room construction as a part of the hazard mitigation process. Carlisle is also working to update building codes to require higher building requirements. The city will be updating buildings codes to the 2018 IBC by April 2022.The city also has a Local Emergency Operations Plan in place that will help facilitate a more effective response should an event occur.

The primary areas of vulnerability identified by the local planning team include the power substation, above ground powerlines, communication systems, and lack of backup power at some critical facilities. The primary power substation (located along Highway 5) is above ground and, if damaged, could result in the loss of power for much of the community. The city is served by two different power companies, which are Carlisle Municipal Electric Utility and MidAmerican Energy; half of the community has powerlines underground while the other half has powerlines above ground. Carlisle Municipal Electric Utility is owned by the city and has the most underground cables in the community. Carlisle will continue to bury powerlines where possible. To address the potential for power failure, the city has installed backup generators at the police station, fire station, lift stations, and plans to install one at city hall. A major issue currently being reviewed is the ability for responders to effectively communicate with each other as well as others within the county that might assist during events. The city will examine the potential of installing signal repeaters in response vehicles as well as installing a new communication and radio system. Hazardous trees in the community include one large tree by the fire station that is not in great shape. The planning team is concerned that if the tree fell, it would cause damage to the fire station and private residences and block a vital intersection in front of the station.

To mitigate against this hazard, the city is involved in a coordinated effort with the school to obtain a tornado shelter. The city is also involved in efforts with Mid-American energy to improve electrical feed at their joint substation with Carlisle Municipal Electric Utility. This will help address concern with electric service coming into the community from Mid-American. In the past when Mid-American has had service interrupted, the city has fed Mid-American through their own electric utility substation. The community would also like to improve redundancy for internet service with Century Link. Presently there is only one fiber line feeding services to the entire city and this line has been disrupted several times in the past.

Mitigation Strategy

Completed Actions

Mitigation Action	Building Codes
Description	Prohibit the installation of flat roofs in new construction; update subdivision ordinances to include special mitigation measures, including requiring mitigation before occupancy of all residential and business properties; update codes to IBC 2018.
Hazard(s) Addressed	All Hazards
Status	Completed

Mitigation Action	Install New and Upgraded Communication Technology for First Responders
Description	Update first responder and interagency communications protocols and equipment to meet national/state interoperability standards; install repeaters in first responder vehicles; install computers and modern surveillance equipment in applicable response vehicles; establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Radios upgraded and repeaters installed. Became a part of the Civic Ready Emergency Alert System.
Hazard(s) Addressed	All Hazards
Status	Completed

Mitigation Action	Promote Private Mitigation and Disaster Preparedness
Description	Promote NOAA weather radio purchase and use; remove unused chemical containers (mostly household HAZMAT); encourage property owner private insurance purchase; support business and residential preparedness programs.
Hazard(s) Addressed	All Hazards
Status	Completed

New Mitigation Actions

Mitigation Action	Tornado Sirens
Description	Evaluate current warning systems (defined as alert sirens, weather radios, and television, telephone, and radio warning systems, etc.); improve warning systems/develop new warning system; obtain/upgrade warning system equipment and methods; conduct evaluation of existing alert sirens for replacement or placement of new sirens
Hazard(s) Addressed	Tornadoes and Windstorms
Estimated Cost	$10,000+
Local Funding	General Funds
Timeline	5+ Years
Priority	Medium
Lead Agency	Fire Department
Status	Siren study underway to identify community needs. Expand on study as development proceeds. As growth continues add more sirens.

Mitigation Action	Water Infrastructure Upgrades
Description	Coordinating efforts to hook up water infrastructure with Des Moines Water Works for redundant water supply.
Hazard(s) Addressed	Infrastructure Failure
Estimated Cost	$150,000
Local Funding	Water Funds, ARPA
Timeline	2-5 Years
Priority	High
Lead Agency	Public Works, City Administrator
Status	Currently working with engineer regarding water master plan development.

Mitigation Action	Emergency Communications
Description	Further develop emergency communications and fully implement a emergency mass notification system.
Hazard(s) Addressed	All Hazards
Estimated Cost	Staff Time
Local Funding	Staff Time
Timeline	1 Year
Priority	High
Lead Agency	City Administrator
Status	Develop templates and standard practices for notifications. Include departments and add users as needed.

Continued Actions

Mitigation Action	Community Shelter Rooms
Description	Formally designate and stock community shelters; construct community shelters in or near existing and future critical assets; support legislation increasing standards for emergency shelters; publicly identify and list public storm shelters
Hazard(s) Addressed	All Hazards
Estimated Cost	$100,000+
Local Funding	General funds
Timeline	5+ Years
Priority	Low
Lead Agency	City Administrator, County Emergency Management
Status	City is working on options to identify currently available facilities. Presently, the Wildcat Center at the school is used as a public emergency shelter.

Mitigation Action	County GIS Participation
Description	Improve participation with County GIS – including zoning and floodplain maps on GIS
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000
Local Funding	Unknown
Timeline	Ongoing
Priority	Medium
Lead Agency	City Administrator, Public Works Department
Status	Currently in the implementation process. Floodplain and zoning maps have been updated. Identification of critical infrastructure map needed.

Mitigation Action	Disaster and Continuity Planning
Description	Develop continuity of operations and succession plan; develop a mass casualty plan; institute efforts to increase supply and morale of volunteers
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000+
Local Funding	Staff time
Timeline	1-2 years
Priority	High
Lead Agency	City Administrator
Status	EOC at the police department. Several depts have a COOP but some still need to develop one.

Mitigation Action	Guard Vulnerable Facilities
Description	Install fences and security cameras at vulnerable critical facilities such as the WWTP, well fields, and others as identified; put restricted access procedures in place
Hazard(s) Addressed	Terrorism
Estimated Cost	Fencing: $25/ linear foot, Camera: $500/camera
Local Funding	Public Works Budget
Timeline	5+ Years
Priority	Medium
Lead Agency	Carlisle Police Department, Facility Staff
Status	Security cameras have been added to several facilities. Fencing still needed at the well and wastewater treatment plant.

Mitigation Action	Improve Police and Fire Department Infrastructure and Equipment
Description	Purchase any needed police and fire vehicles and police and fire equipment; expand and upgrade fire station to meet modern needs for vehicles, training and equipment
Hazard(s) Addressed	All Hazards
Estimated Cost	$2,000,000+
Local Funding	Local sales tax, Fire Department funds, Bonding
Timeline	5+ Years
Priority	High
Lead Agency	Police Department, Fire Department
Status	Some renovations made to buildings. Plan development.

Mitigation Action	Improve Stormwater System
Description	Conduct drainage studies; construct storm water drainage infrastructure (underground, culverts, curb & gutter); develop Stormwater Master Plan; clear drainage ditches and culverts; identify and replace/repair inadequate storm sewers; replace culverts; install water impervious manhole covers; Establish multi-jurisdictional partnership to reduce storm water runoff (city/school); develop stream modification projects, maintain sandbags in dry storage, develop soil erosion stabilization projects; Purchase standby pumps for stormwater control; upgrade/replace/expand sewer lines; maintain ditch inspection plan; implement sustainable stormwater control options (such as rain gardens); install backflow devises to sewer lines
Hazard(s) Addressed	Flooding
Estimated Cost	$1,000,000+
Local Funding	Sewer rates, Staff time, Bonding
Timeline	Ongoing
Priority	High
Lead Agency	Public Works Department
Status	South 10th street culvert, improvements to Patterson, improvements along east school street.

Mitigation Action	Increase Landscaping Efforts
Description	Enforce burning restrictions (increase consistency); promote landscaping practices; remove dead vegetation, establish tree-planting initiatives; public tree trimming and landscaping efforts
Hazard(s) Addressed	Grass/Wildfire, Severe Thunderstorms, Severe Winter Storms, Tornadoes and Windstorms
Estimated Cost	Varies
Local Funding	General funds, landscaping practices are part of the Site Plan Review
Timeline	Ongoing
Priority	Medium
Lead Agency	Public Works Department
Status	Ongoing. Parks Department developing a campaign to become a Tree City USA.

Mitigation Action	Protect Power at Critical Facilities
Description	Provide a portable or stationary source of backup power to redundant power supplies; municipal wells, lift stations and other critical facilities and shelters; purchase and install surge protectors on sensitive equipment in critical facilities
Hazard(s) Addressed	All Hazards
Estimated Cost	$100,000
Local Funding	Grants, General funds
Timeline	2-5 Years
Priority	High
Lead Agency	Public Works Department
Status	Generator needed at Public Works shop. Coordinating with MidAmerican on power redundancy.

Mitigation Action	Training and Exercise Plan
Description	Develop a training and exercise plan to establish trainings and exercises to be completed by community officials and staff over a defined period of time
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000 - $5,000
Local Funding	General funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Carlisle Police and Fire Departments
Status	Training conducted in EOC annually

Removed Actions

Mitigation Action	Hazard Mitigation Plans and Legislation
Description	Assure the plan is annually reviewed and is updated in five years; develop continuity plans for critical community services; improve street and alley plan; promote the result of the hazard mitigation plan; research government and non-government grant funding options and have pre-planned projects; full review of policy, procedure, and codes for mitigation inclusion; annually train community leaders on hazard mitigation issues
Hazard(s) Addressed	All Hazards
Status	The city would like to focus on other projects.

Mitigation Action	Prevent Flooding in Main Floodway
Description	Implement plan for control of the North River between main part of Carlisle and Avon Lake
Hazard(s) Addressed	Flooding
Status	The city would like to focus on other projects.

Mitigation Action	Vulnerable Population Registration Program
Description	Implement a special needs/oxygen-user registration program
Hazard(s) Addressed	All Hazards
Status	The city would like to focus on other projects.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The community profile was last reviewed by the local planning team in 2017. The city administrator, police chief, fire chief, electric superintendent, and public works superintendent will be responsible for reviewing and updating the plan in the future. These individuals will review the plan annually. The public will be notified at council meetings and using social media.

Community Profile

City of Cumming

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table CMG.1: Cumming Local Planning Team

Name	Title	Jurisdiction
Angie Ritchie	City Clerk	City of Cumming
Bob Fagen	City Administrator	City of Cumming
Jessica Smith	Deputy Clerk	City of Cumming

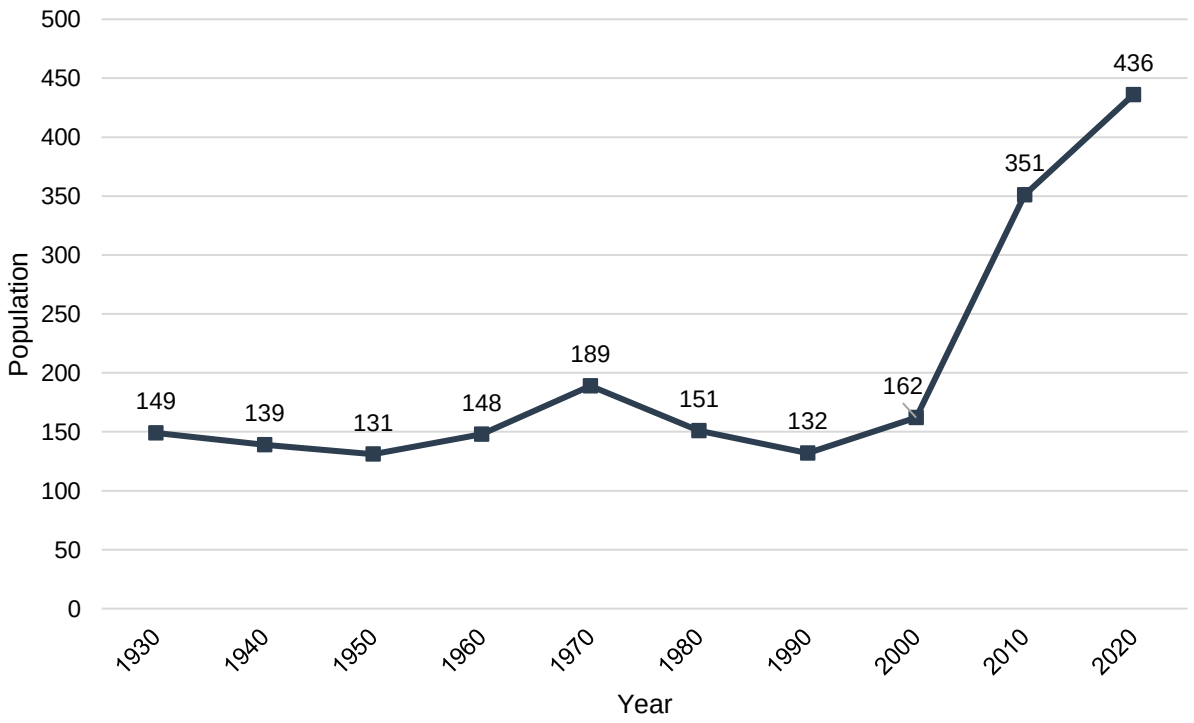
Location and Geography

The City of Cumming is in northwestern Warren County and covers an area of 2.57 square miles. Major waterways in the area include the Raccoon River off to the north and Badger Creek to the south of the community.

Demographics

The following figure displays the historical population trend for the City of Cumming. This figure indicates that the population of Cumming has been increasing since 2000 to 436 people in 2020. Increasing populations are associated with increased hazard mitigation and emergency planning requirements for development. Increasing populations can also contribute to increasing tax revenues, allowing communities to pursue additional mitigation projects. Cumming's population accounted for 0.8% of Warren County's population in 2020.[21]

Figure CMG.1: Population 1930 – 2020



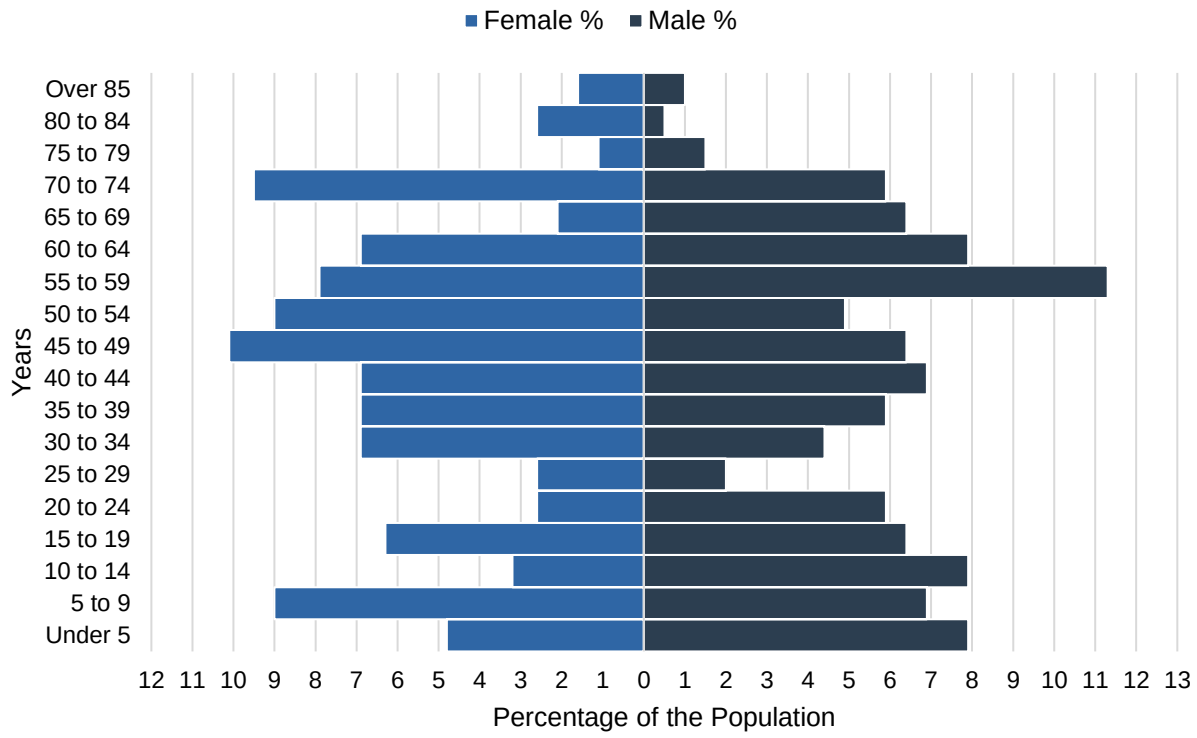
Source: U.S. Census Bureau

[21] United States Census Bureau. "2020 Census Redistricting Data (Public Law 94-171): P1: Race." https://data.census.gov.

The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Cumming's population:

- **2% is non-white.** Since 2010, Cumming grew more racially diverse. In 2010, 0% of Cumming's population was non-white. By 2019, 2% was non-white.[22]
- **Older median age.** The median age of Cumming was 43.4 years in old 2019. The population grew older since 2010, when the median age was 35.8.[23]

Figure CMG.2: Cumming's Population by Age Cohort and Sex

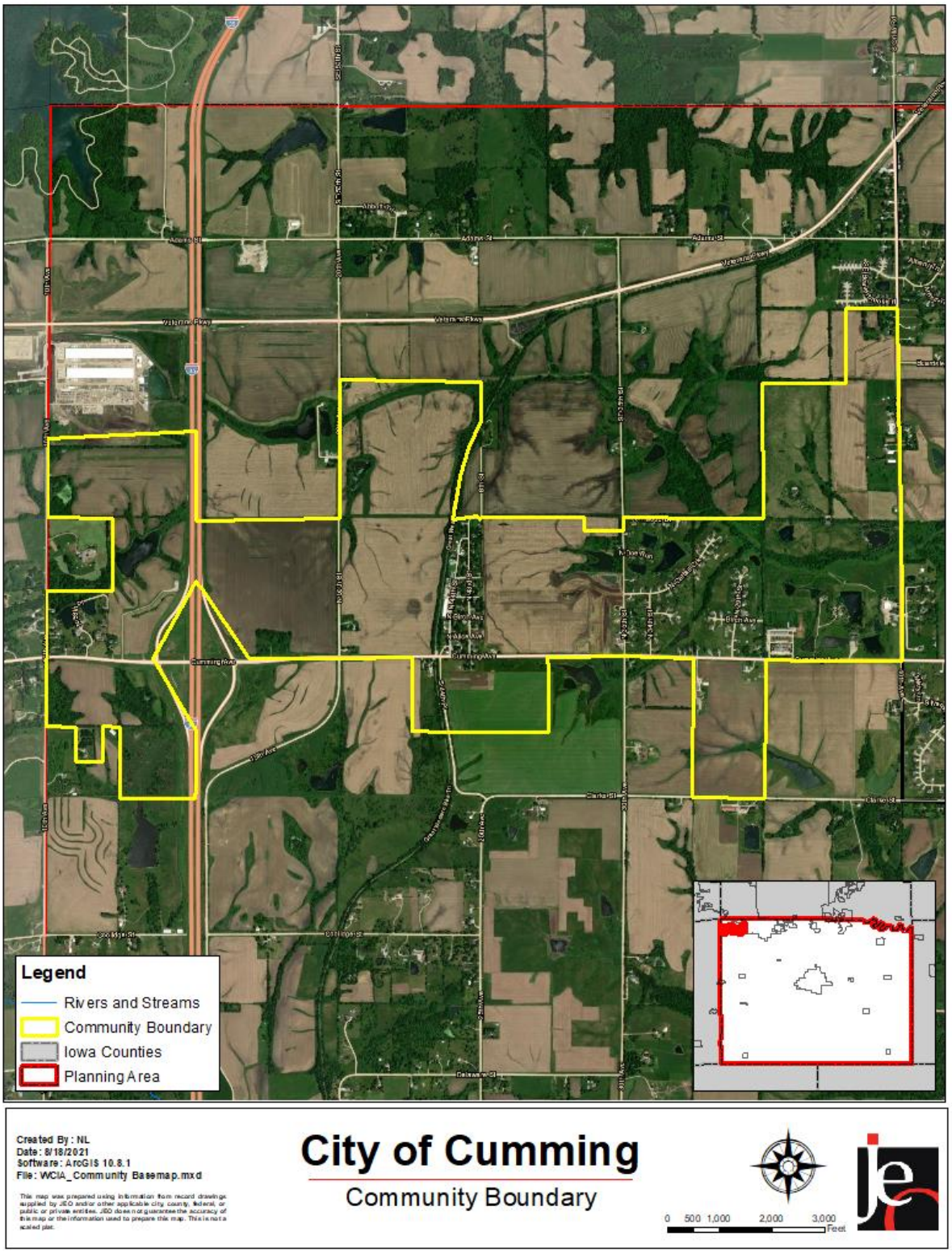


The figure above shows Cumming's population percentage broken down by sex and five-year age groups. Cumming's population is likely to decline in the coming years with a higher percentage of the population above 40.

22 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.

23 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Figure CMG.3: City of Cumming



Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Cumming's population has:

- **0.8% of people living below the poverty line.** The poverty rate (0.8%) in the City of Cumming was lower than the state's poverty rate (7.2%) in 2019.[24]
- **Higher median household income.** Cumming's median household income in 2019 ($103,750) was $43,000 higher than the state ($60,523).[4]
- **3.1% unemployment rate.** In 2019 Cumming had a lower unemployment rate (3.1%) when compared to the state (3.7%).[4]
- **21.4% of workers commuted 30 minutes or more to work.** Fewer workers in Cumming commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (21.4% compared to 25.3%).[25]

Major Employers

Cumming functions as a bedroom city rather than having any major employers. A large percentage of residents commute to Des Moines for work.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

- **34.6% of housing built prior to 1970.** Cumming has a smaller share of housing built prior to 1970 than the state (34.6% compared to 50.9%).[26]
- **5.6% of housing units vacant.** Since 2010, Cumming's vacancy rate grew. In 2010 the vacancy rate was 1.7%. By 2019, 5.6% of housing units were vacant.[6]
- **2.5% mobile and manufacture housing.** The City of Cumming had a smaller share of mobile and manufactured housing (2.5%) compared to the state (3.7%).[6]
- **13.1% renter-occupied.** The rental rate of Cumming was 13.1% in 2019. The percentage went up since 2010, when renter occupied housing was at 9.8%.[6]

Governance

24 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

25 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

26 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of Cumming is governed by a mayor and a five-member city council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Board of Adjustment
- Clerk/Treasurer
- Park & Recreation Board
- Planning Commission

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are sufficient for maintaining current facilities and systems. Funds have stayed the same over recent years, with the potential to increase in the coming years.

Table CMG.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	No
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	Yes
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	State Codes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	No
	Chief Building Official	Yes
	Civil Engineering	Yes
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	No
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes

Survey Components/Subcomponents		Yes/No
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Moderate
Staff/expertise to implement projects	Limited
Public support to implement projects	Limited
Time to devote to hazard mitigation	Moderate

Plan Integration

Cumming has multiple planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Building Code (2018)

The building code sets standards for constructed buildings and structures. The city has adopted the 2018 International Building Codes with one amendment made in 2021. Building codes for the city require the onsite stormwater detention for commercial structures and encourages the use of permeable surfaces. The codes also require the following: hurricane clips during construction, the

use of fire-resistant building materials, and defensible space around structures. Lastly, it encourages the use of native and drought resistant plantings.

Capital Improvements Plan (2018)

The capital improvements plan annually outlines projects the city would like to pursue and provides a planning schedule and financing options. Projects include stormwater projects, storm sewer system upgrades, widening roadways to improve evacuation routes, construction of a new community center, and community storm shelter. A future update of the plan will include upsizing of culverts and drainage structures, improving transportation routes for drainage, burying powerlines, installing emergency generators in critical facilities, and construction of a new fire hall.

Comprehensive Plan (2016)

The comprehensive plan is designed to guide the future actions and growth of the city. It incorporates some of the goals and objectives included in the HMP. The plan encourages elevation of structures located in the floodplain and contains goals, encourages clustering of development in sensitive areas, use of drought tolerant plants, strengthening retrofits to historic structures and allows for emergency access to all areas of town, and objectives aimed at Safe Growth. In a future update the plan will direct development away from the floodplain, identify areas that need emergency shelters, and encourage preservation of open space in hazard-prone areas. The comprehensive plan will be updated again in the summer of 2022. There are no current strategies to further incorporate the HMP into the Comprehensive Plan.

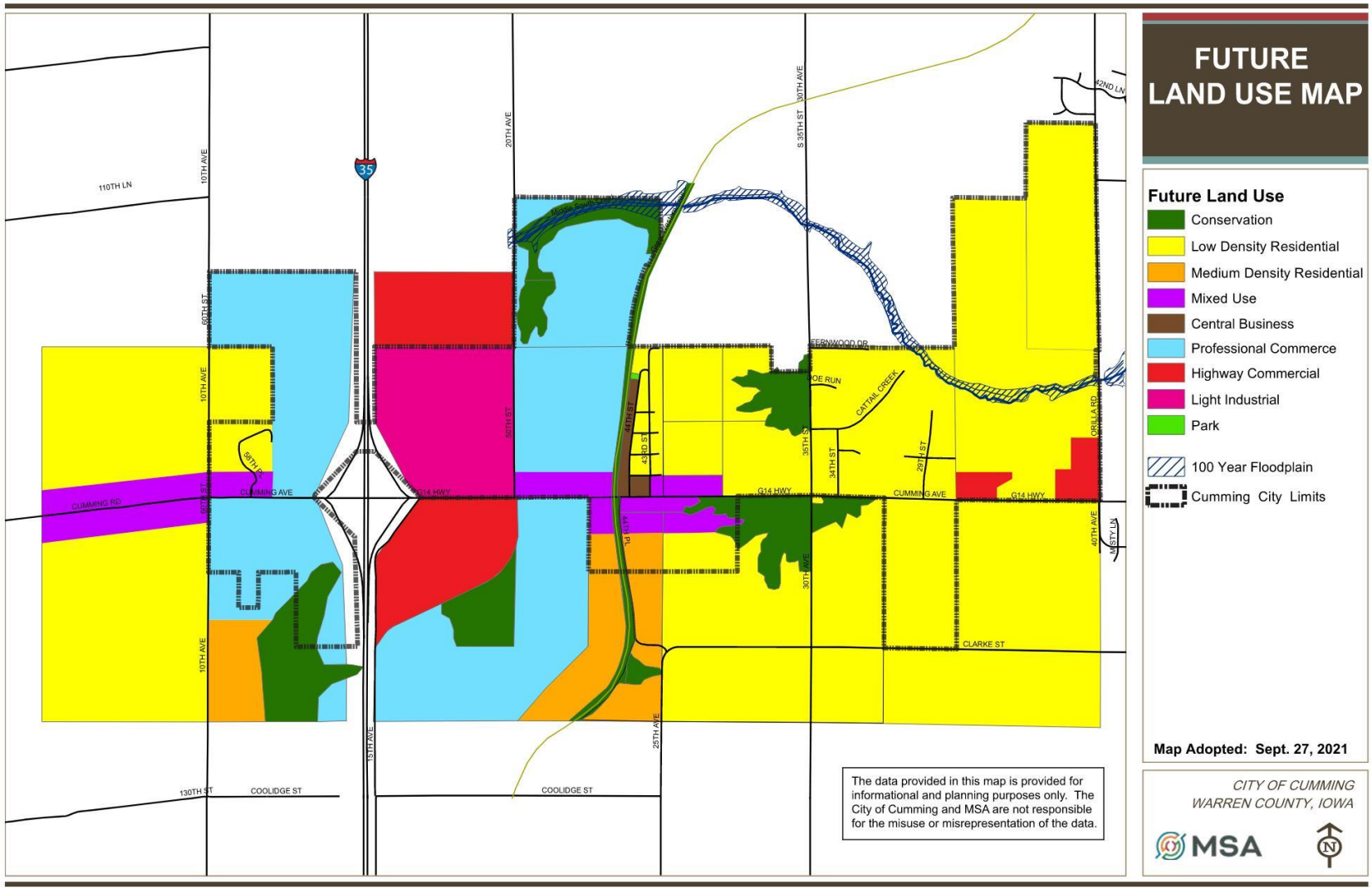
Floodplain Ordinance (2018), Zoning Ordinance (2020), and Subdivision Regulations (2020)

The City's zoning ordinance discourages development in the floodplain, identifies floodplain areas as parks of open space, and prohibits development within the floodway. It also discourages development along major transportation routes, and it accounts for current population trends.

Future Development Trends

Over the past five years, the city has had several new housing developments, new roads, and demolished three houses. No new structures were developed in the floodplain. In the next five years, the city has a Hy-Vee Distribution Center coming to the community and also has plans for the development of an Agri hood and Great Western Crossing, a residential and commercial area.

Figure CMG.4: Future Land Use Map



Community Lifelines

Transportation

Cumming's major transportation corridors include Interstate 35 and County Road G14. The most traveled route is Interstate 35 with an average of 22,400 vehicles daily, 6,100 of which are trucks.[27] The local planning team noted that Orilla Road and 50th Avenue are additional routes of concern once a Hy-Vee distribution center is built and brings in more traffic. Cumming does not have any rail lines in the community, and the nearest airport is the Des Moines International Airport, which is located about ten miles northeast of the city. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are two chemical storage sites within or near Cumming which house hazardous materials. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Table CMG.3: Chemical Storage Sites

Name	Address	Located in Floodplain?
CTI Plant 3	1822 Adams St	No
Rexcon Model S Mobile Plant	1822 Adams St	No

Source: Iowa Department of Natural Resources[28]

Health and Medical Facilities

There are no medical and health facilities located within the community.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

27 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

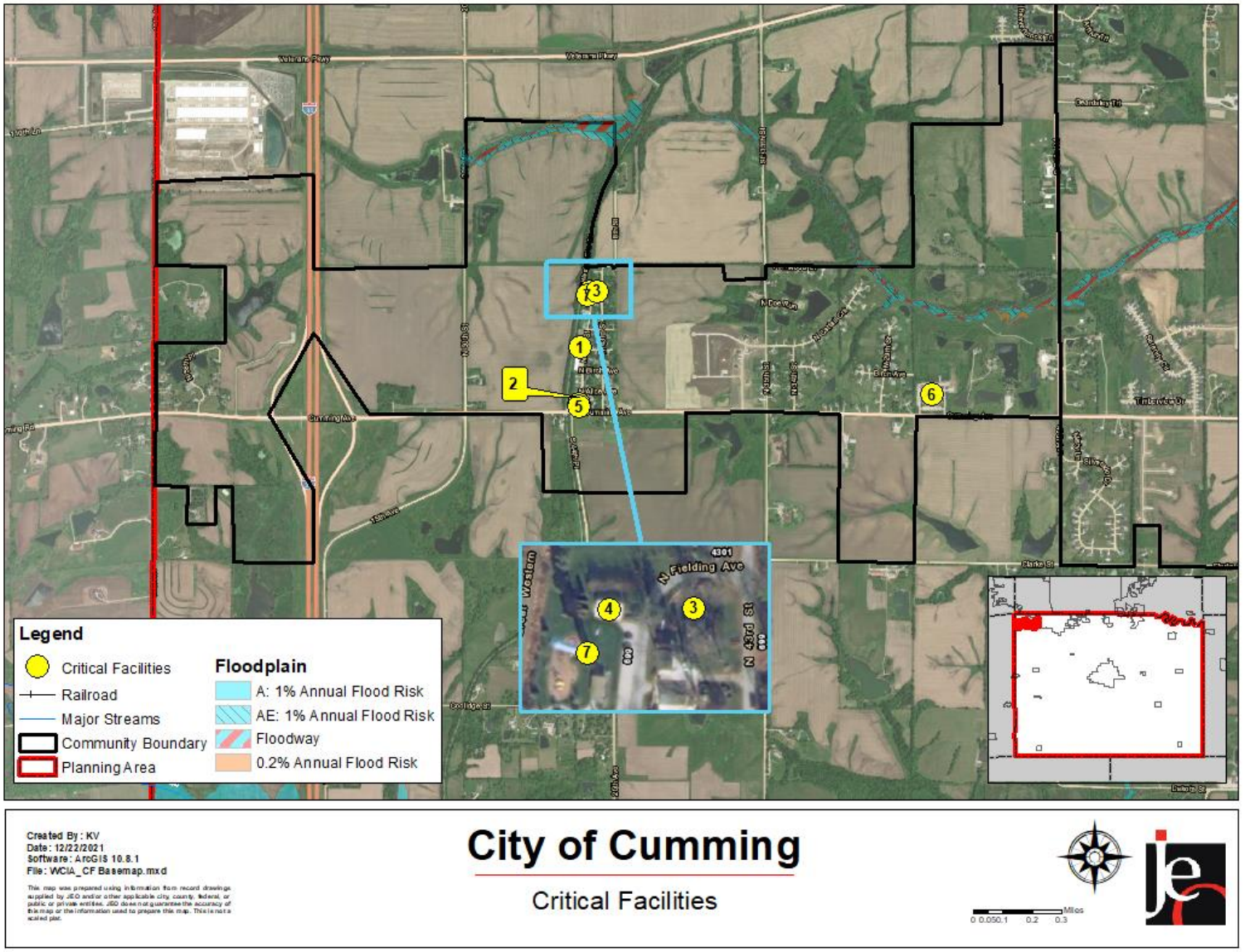
28 Iowa Department of Natural Resources. 2021. "Emergency Response - Tier II Chemical Storage." [datafile]. https://facilityexplorer.iowadnr.gov/facilityexplorer/.

Table CMG.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Absolute Transportation Company	N	N	N
2	American Legion	N	N	N
3	Auto Body – Paint/Fire Concern	N	N	N
4	City Hall	N	N	N
5	Iowa Distilling*	N	N	N
6	Landscaping – Fertilizer Concern	N	N	N
7	Water Tower	N	N	N

**Local planning team considers this facility to be at greater risk of fire*

Figure CMG.5: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table CMG.5: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
34	$4,039,700	1	$8400	3%

Source: County Assessor, 2022

Table CMG.6: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
34	$4,039,700	0	$0	0%

Source: County Assessor, 2022

Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Dam Failure

There are six dams in City of Cumming. Of these, one dam is identified as a high hazard dam. If the high hazard dam, Twin Ponds West Dam, was to fail, homes immediately downstream of the dam would be inundated with flood waters. There is no record that any of the dams in Cumming have failed in the past and the dams are regularly inspected and maintained by the private owner. Hazard mitigation for dam failure in Cumming centers on public education and emergency drills. The City plans to institute an education program for the public and local leaders, a community drill program, and community preparedness programs.

Flooding

According to NCEI data there have been ten floods and five flash floods in the city since 2008 that have caused $1,250,000 in property damage. The City of Cumming has an identified Special Flood Hazard Area in portions of eastern and northern Cumming. Flooding mitigation actions include improving water, sewer, and stormwater infrastructure, installing riprap where needed, and conducting a watershed study.

Severe Winter Storms

Severe winter storms are a regular part of the climate for Cumming (and the planning area as a whole). As noted by the local planning team, the concerns associated with winter storms are the impacts on transportation, emergency response, and prolonged power outages would all greatly

affect the community and its operations. Snow removal and rescue capabilities have already been addressed with completed projects that improved the snow removal program and equipment. The city plans to mitigate the hazards associated with power loss during severe winter storms by installing backup generators at all critical facilities and implementing alternative energy sources. A large percentage, about 90 percent, of power lines remain above ground in the city, which are at risk of failing during winter storms. There have not been any known damages to critical facilities in the past from heavy snow or ice. Currently, the city contracts out for snow removal resources and County resources are utilized on County highways. The local planning team noted that these snow removal resources are sufficient at this time. To mitigate against winter storms the city plans to install backup generators in critical facilities, bury powerlines, work on snow routes, and implement community preparedness programs.

Terrorism

There have not been terrorist acts carried out in the City of Cumming. However, the local planning team noted that City Hall and the city's water and power supply are vulnerable to terrorist acts. The City's law enforcement is provided by the Warren County Sheriff's Office. County Emergency Management also regularly works with the community to discuss plans and ways to be prepared for such events. Terrorism mitigation plans include holding community drills, developing restricted access procedures, installing vehicular barriers and fences, and monitoring facilities with security cameras. Landscape improvements and installation of critical facility locks have already been completed. To mitigate against this hazard, the city plans to install security cameras at all city parks.

Tornadoes and Windstorms

In June 2007, an EF-2 tornado touched down in the community causing an approximate $700,000 in damages between Cumming and the City of Norwalk. The local planning team noted that other tornadoes have occurred nearby, but specific dates are not available. Damage from the tornado included a roof torn off a house, several buildings sustained minor damage, and numerous trees and power lines were downed. Cumming's concerns related to tornadoes is directly linked to the devastation they can wreak on both human life and structures and the unpredictability associated with these events. Additionally, the city is concerned with the ability and time it would take to clean up following a significant event. To mitigate these hazards the city plans to educate contractors on the construction of safe rooms, provide and publicize community safe rooms, harden public buildings, and develop a debris disposal site.

The County offers AlertIowa text alerts to community members that voluntarily sign up for the service. Most residents use their own basements or interior rooms on the lowest level to seek refuge from a tornadic event. The city does regularly back up digital records. The community is a part of a mutual aid agreement with the Warren County Sheriff, Norwalk Fire and Rescue, and Warren County Maintenance. To mitigate against this hazard, the city is in the process of getting another warning siren that will cover the whole community that will be activated by a third-party emergency company. Iowa DNR will also be mapping trees for the city in Spring 2022 to help determine if any hazardous trees need to be removed.

Transportation Incidents

Interstate 35 transects the community on the west side. During accidents, occasionally traffic will have to be rerouted and detoured through the community on Cumming Avenue. Chemicals are regularly transported along this interstate, but it is unknown of the types or quantities that are transported. A chemical release during an accident could impact the community, causing residents to be evacuated or to shelter in place. However, there have not been any chemical

releases known to date. The local planning team also noted a concern with a likely increase in traffic that could take place in the coming years due to a new Microsoft data center being built just north of Cumming off the interstate. Cumming plans to mitigate the hazards associated with transportation incidents with community preparedness programs.

Pandemic Disease

In response to the Covid-19 pandemic, the city has implemented virtual meetings, a mask policy to enter city hall, and provided more hand sanitizer and sanitation at public events. No other policy changes or mitigation measures are currently planned.

Mitigation Strategy

Continued Mitigation Actions

Mitigation Action	Animal Control
Description	Animal controls and kennels for use during short term sheltering
Hazard(s) Addressed	All Hazards
Estimated Cost	$25,000+
Local Funding	General funds
Timeline	2-5 Years
Priority	Low
Lead Agency	City Council
Status	Not started

Mitigation Action	Community Shelter Rooms
Description	Formally designate and stock community shelters, construct community shelters in or near existing and future critical assets, install a storm shelter at the fire station; support legislation increasing standards for emergency shelters; publicly identify and list public storm shelters
Hazard(s) Addressed	All Hazards
Estimated Cost	$500,000
Local Funding	General funds, staff time
Timeline	5+ Years
Priority	Low
Lead Agency	City Council
Status	Not started

Mitigation Action	Debris Disposal
Description	Develop debris disposal site(s)
Hazard(s) Addressed	All Hazards
Estimated Cost	$50,000
Local Funding	General funds
Timeline	5+ Years
Priority	Low
Lead Agency	City Council
Status	Not started

Mitigation Action	Disaster and Continuity Planning
Description	Develop continuity of operations and succession plan; develop a mass casualty plan; institute efforts to increase supply and morale of volunteers; designate/create backup EOC and/or communications center
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000
Local Funding	General funds, CDBG
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Council
Status	Not started

Mitigation Action	Harden Infrastructure
Description	Use roofing materials that are resistant to hail impacts for new buildings; retrofit existing building with hail resistant roofing; identify aging infrastructure and replace and/or repair them, (including bridges, roads, and tunnels)
Hazard(s) Addressed	All Hazards
Estimated Cost	$100,000+
Local Funding	General funds
Timeline	5+ Years
Priority	Low
Lead Agency	City Council
Status	Not started

Mitigation Action	Community Education and Awareness
Description	Establish a community education program to increase awareness related to household level mitigation actions. Utilize outreach projects and the distribution of maps. Purchasing equipment such as projectors and laptops to facilitate presentation of information.
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000/yr
Local Funding	General funds
Timeline	Ongoing
Priority	Medium
Lead Agency	City Council
Status	This is an ongoing project. Education and awareness campaigns take place annually.

Mitigation Action	Comprehensive Disaster/Emergency Response Plan
Description	Develop and/or update a comprehensive disaster and emergency response plan. Additional plans that can be considered are continuity of operations plans and evacuation plans.
Hazard(s) Addressed	All Hazards
Estimated Cost	$500
Local Funding	General funds, staff time
Timeline	Ongoing
Priority	High
Lead Agency	City Council, Planning Commission
Status	Not started

Mitigation Action	Improve Electrical System
Description	Purchase and install fixed backup power generators and pumping systems for un-served assets, investigate and implement alternative energy sources; bury utility lines in future development
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000 to $1M+
Local Funding	HMGP, General funds
Timeline	5+ Years
Priority	Low
Lead Agency	City Council
Status	Not started

Mitigation Action	Improve Facility Security
Description	Install vehicular barriers, fences, lights and security cameras to protect critical facilities and key infrastructure where possible, develop restricted access procedures
Hazard(s) Addressed	Terrorism and Civil Disorder
Estimated Cost	$500/concrete barrier $20/linear foot of chain linked fence $100/camera
Local Funding	General funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Mayor, City Council
Status	Not started

Mitigation Action	Stormwater Control
Description	Develop/expand/improve watershed studies (ditches, culverts, etc.) and plans for possible flood prone areas, upgrade/replace/expand water and sewer lines, construct storm water drainage (underground, culverts, curb, and gutter), install riprap where needed, implement sustainable stormwater control options (such as rain gardens)
Hazard(s) Addressed	Flooding
Estimated Cost	$100,000+
Local Funding	Water/Sewer funds, General funds
Timeline	2-5 Years
Priority	High
Lead Agency	City Council
Status	Stormwater control activities are currently in progress.

Mitigation Action	Vulnerable Populations Registration Program
Description	Implement a special needs/oxygen-user registration program
Hazard(s) Addressed	All Hazards
Estimated Cost	$500
Local Funding	General funds, staff time
Timeline	5+ Years
Priority	Low
Lead Agency	City Council
Status	Not started

Mitigation Action	Tornado Sirens and Warning Systems Installation
Description	Install siren warning systems and sirens for annexed areas
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000
Local Funding	General funds, HMGP
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Council
Status	This project is currently in progress.

Removed Mitigation Actions

Mitigation Action	Improve Water Supply
Description	Increase elevated water supplies and pressure; construct municipal waterworks flood control projects
Hazard(s) Addressed	Drought
Reason for Removal	This project is no longer a priority for the city.

Mitigation Action	Remove Chemicals
Description	Remove unused chemical containers (mostly household HAZMAT)
Hazard(s) Addressed	Chemical Spills
Reason for Removal	This project is no longer a priority for the city.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this community profile as changes occur or after a major event. The local planning team will include the City Clerk, Deputy City Clerk, and the City Administrator. The plan will be reviewed bi-annually. The public will be included in the review and revision process via social media.

Community Profile

City of Hartford

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table HFD.1: Hartford Local Planning Team

Name	Title	Jurisdiction
Jason Loots	ISG	City of Hartford
Kandi Petry	Mayor	City of Hartford
Zack Prickett	Fire Chief	City of Hartford

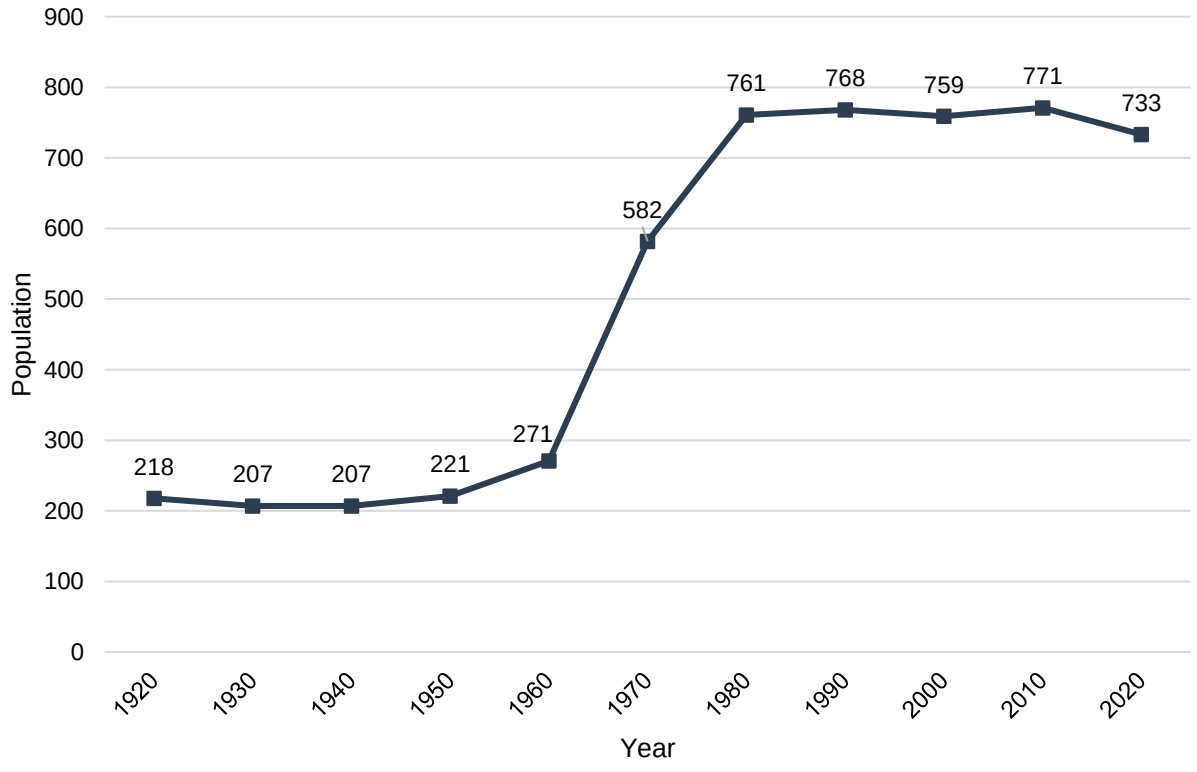
Location and Geography

The City of Hartford is located in the northeastern portion of Warren County and covers an area of 1.03 square miles. Major waterways in the area include Butcher Creek, which is located northwest of the community, and the Des Moines River, which is located several miles north of the city.

Demographics

The following figure displays the historical population trend for the City of Hartford. This figure indicates that the population of Hartford has been declining since 2010 to 733 people in 2020. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which could make implementation of mitigation projects more fiscally challenging. Hartford's population accounted for 1.4% of Warren County's population in 2020.[29]

Figure HFD.1: Population 1920 - 2020



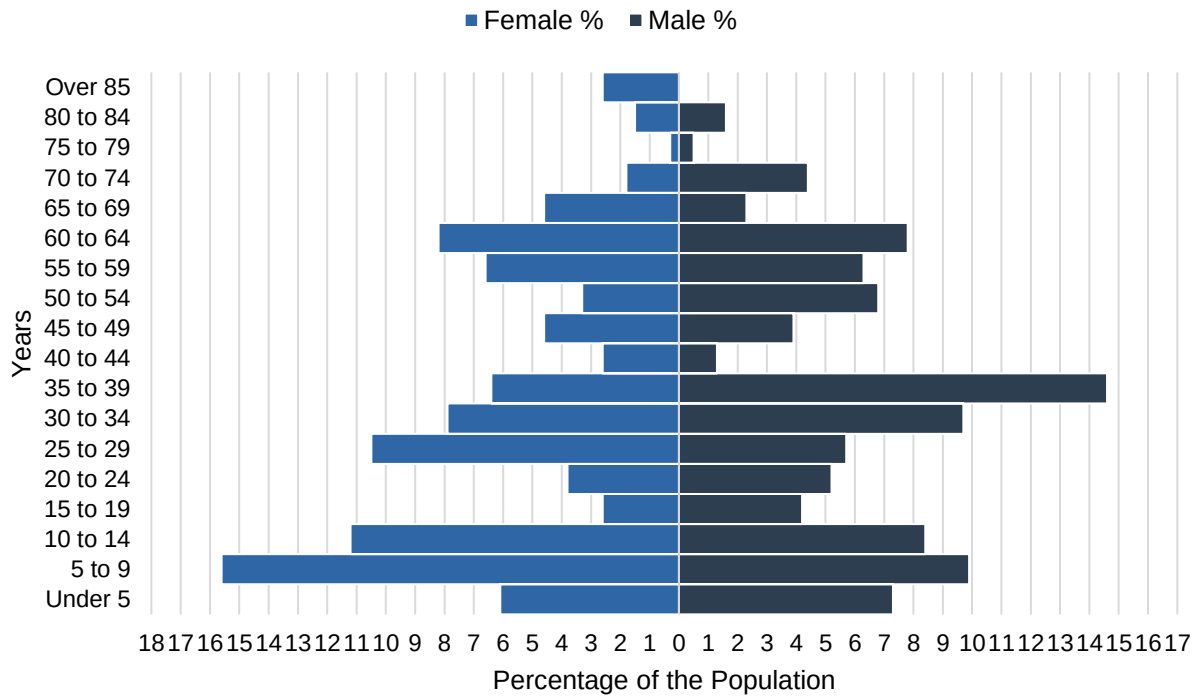
Source: U.S. Census Bureau

[29] United States Census Bureau. "2020 Census Redistricting Data (Public Law 94-171): P1: Race." https://data.census.gov.

The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Hartford's population:

- **8% is non-white.** Since 2010, Hartford grew more ethnically diverse. In 2010, 0% of Hartford's population was non-white. By 2019, 8% was non-white.[30]
- **Younger median age.** The median age of Hartford was 33.3 years in old 2019. The population grew younger since 2010, when the median age was 39.4.[31]

Figure HFD.2: Hartford's Population by Age Cohort and Sex



The figure above shows Hartford's population percentage broken down by sex and five-year age groups. Hartford's population is younger with a much higher percentage of the population below 40 years of age.

30 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.

31 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Figure HFD.3: City of Hartford

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Hartford's population has:

- **4% of people living below the poverty line.** The poverty rate (4%) in the City of Hartford was lower than the state's poverty rate (7.2%) in 2019.[32]
- **$64,688 median household income.** Hartford's median household income in 2019 ($64,688) was $4,000 higher than the state ($60,523).[4]
- **3.5% unemployment rate.** In 2019 Hartford had a lower unemployment rate (3.5%) when compared to the state (3.7%).[4]
- **58.1% of workers commuted 30 minutes or more to work.** More workers in Hartford commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (58.1% compared to 20.5%).[33]

Major Employers

The largest employer in Harford City is public education. The nearest major employer is the Carlisle Community School District. A large percentage of Hartford residents commute to Des Moines.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. According to the local planning team there are 72 mobile homes located on the south end of town on the east side of Vine Street. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

- **69.3% of housing built prior to 1970.** Hartford has a larger share of housing built prior to 1970 than the state (69.3% compared to 50.9%).[34]
- **4.4% of housing units vacant.** Since 2010, Hartford's vacancy rate declined. In 2010 the vacancy rate was 8.8%. By 2019, 4.4% of housing units were vacant.[6]
- **21.5% mobile and manufacture housing.** The City of Hartford had a larger share of mobile and manufactured housing (21.5%) compared to the state (3.7%).[6]
- **7% renter-occupied.** The rental rate of Hartford was 7% in 2019. The percentage went up since 2010, when renter occupied housing was at 2.3%.[6]

32 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

33 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

34 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of Hartford is governed by a Mayor and five-member city council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Clerk/Treasurer
- Public Works
- Local Law Enforcement/Contract County Sherriff
- Volunteer Fire Department

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are sufficient to pursue new capital projects with a large portion of funds dedicated to the implementation of a new wastewater treatment facility. Funds have slightly decreased over recent years.

Table HFD.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No (In Process)
	Economic Development Plan	No
	Local Emergency Operations Plan	No
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Local Codes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	No
	Chief Building Official	Yes – Contract
	Civil Engineering	Yes – Contract
	Local Staff Who Can Assess Community's Vulnerability to Hazards	County Emergency Manger
	Grant Manager	No
	Mutual Aid Agreement	Yes

Survey Components/Subcomponents		Yes/No
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	No (In Process)
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	Yes
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Limited
Time to devote to hazard mitigation	Limited

Plan Integration

Hartford has several planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Building Code (2010)

The building code sets standards for constructed buildings and structures. The city has adopted the 2006 International Building Codes with plans to adopt the 2018 Codes during an update in 2022.

Comprehensive Plan (2006)

The comprehensive plan is designed to guide the future actions and growth of the city. It incorporates some of the goals and objectives included in the HMP. The plan encourages development away from the floodplain, chemical storage facilities, and major transportation routes. The plan also Encourages infill development, clustering of development in sensitive areas, elevation of structures in the floodplain, encourage preservation of open space in hazard-prone areas, and identifies areas that need emergency shelters. The comprehensive plan will be updated again in the summer of 2022.

Floodplain Ordinance (2022), Zoning Ordinance (2022), and Subdivision Regulations (2022)

The city's floodplain ordinance, zoning ordinance, and subdivision regulations outline where and how development should occur in the future. These documents contain floodplain maps, discourage development and limit density in the floodplain, identify floodplain areas as parks or open spaces, requires new development in the floodplain to be more than one foot above base flood elevation, discourage vulnerable populations and housing near chemical storage sites and major transportation routes, restrict subdivision of land within or adjacent to the floodplain, and includes the ability to implement water restrictions.

Future Development Trends

In the past five years the City of Hartford has had several improvements made to the city park and one new restaurant established downtown. Currently there are two new housing developments in process. One housing development on the north end of town and another on the southeast side of town. No new structures were developed in the floodplain. In the next five years, the city plans to upgrade their sanitary sewer system and lagoon.

Community Lifelines

Transportation

Hartford's major transportation corridor includes State Highway 5, which has an average of 9,600 vehicles daily, 760 of which are trucks.[35] The local planning team indicated other routes of concern include Vine Street, which runs north and south through the center of Hartford. The Union Pacific Railroad has a rail line that travels through the western portion of the community. The local planning team indicated that approximately 500,000 gallons of hazardous materials are transported via the railroad daily through Hartford. In October 2021, a Union Pacific train derailed and resulted in over $20 million in lost goods. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there is one chemical storage site within or near Hartford which houses hazardous materials. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

35 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

Table HFD.3: Chemical Storage Sites

Name	Address	Located in Floodplain?
Heartland Co-op Ruble NH3	20594 G 24 Highway	No

Source: Iowa Department of Natural Resources[36]

Health and Medical Facilities

There are no medical and health facilities located within the community.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

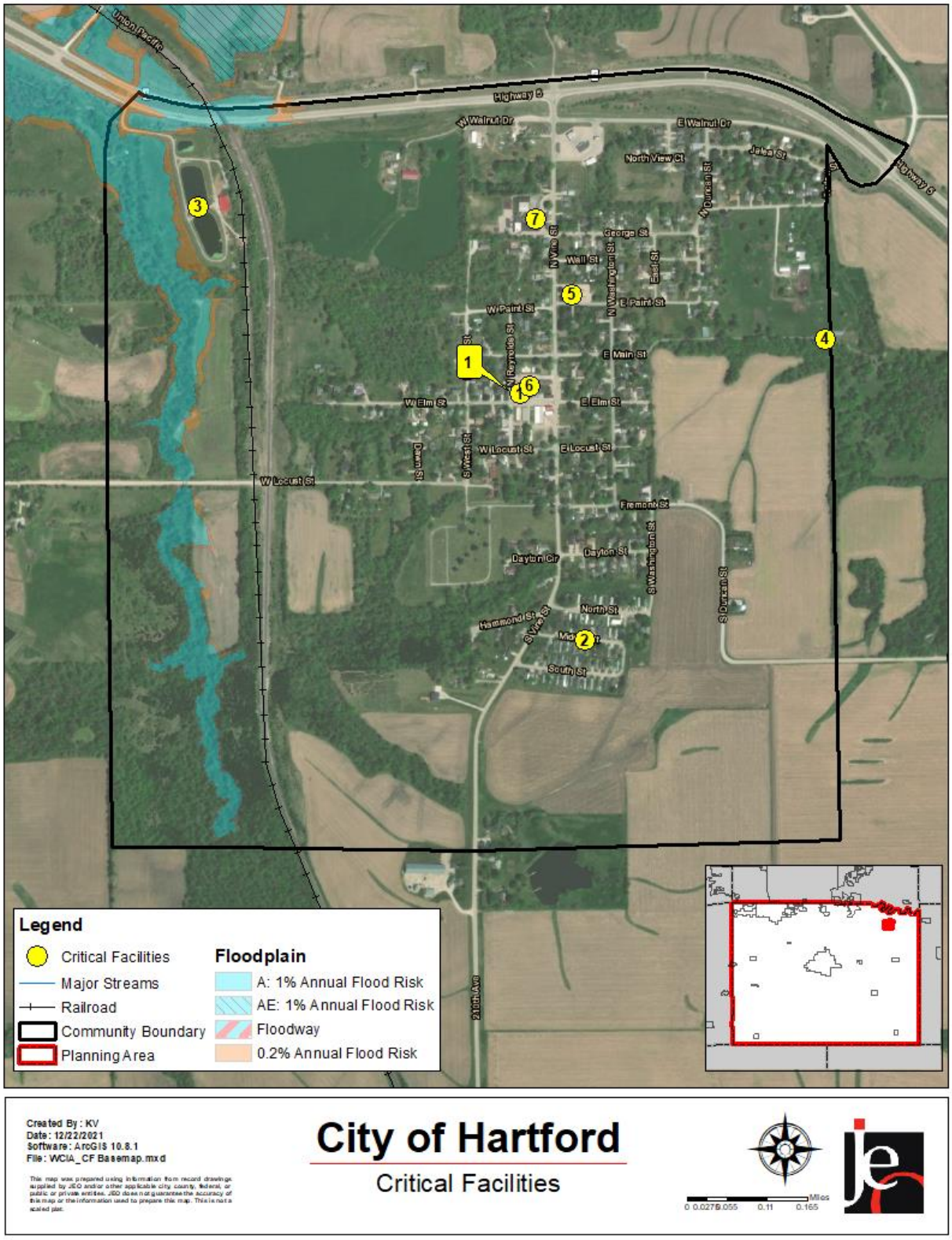
Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table HFD.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	City Hall and Fire Hall	N	N	N
2	Hartford Mobile Home Park	N	N	N
3	Lagoon	N	N	N (Directly adjacent to floodplain)
4	Lift Station	N	Y	N
5	Presbyterian Community Church	Y	N	N
6	Public Works	N	N	N
7	Upper Elementary School	Y	Y	N
Not mapped	Outdoor Warning System*	N	N (Redundant battery backup)	N

36 Iowa Department of Natural Resources. 2021. "Emergency Response - Tier II Chemical Storage." [datafile]. https://facilityexplorer.iowadnr.gov/facilityexplorer/.

Figure HFD.4: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table HFD.5: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
33	$3,953,100	20	$2,858,200	61%

Source: County Assessor, 2022

Table HFD.6: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
33	$3,953,100	0	$0	0%

Source: County Assessor, 2022

Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Drought

The local planning team is concerned about limited water supplies and rationing during drought events. The summer of 2012 was marked with Secretarial Primary Drought Designations across central Iowa, including Warren County. High temperatures and low rainfall caused the loss of 15 percent of the soybean crop and 20 percent of the corn crop that summer. The RMA shows $10,160,256 in crop losses in 2012 from drought and heat. Hartford does not have a drought monitoring board, a drought response plan, or a water conservation program. Hartford's water is provided by Warren Water District, which in turn purchases water from Des Moines Water Works. The supply is currently sufficient. The city is working to upgrade their sanitary sewer system and lagoon to meet DNR requirements. Planned drought mitigation actions for drought include hazard education for local leaders and the general public and improving collaboration with Des Moines Water Works.

Extreme Heat

Hartford's concerns about extreme heat center around the possible loss of power, the lack of cooling facilities, and the large elderly population. Hartford has no protocol or designated community organizations in place to assist the public and maintain operations in case of extreme heat events resulting in power loss. Recent extreme heat events have caused power loss, and buckled pavement resulting in road closures and emergency replacement. The fire department has one portable cooling fan and backup generator available to serve the community. The local

church also has a backup generator and could be put to use to assist the community Extreme heat mitigation plans include developing a formal heat recovery plan, offering public and leadership hazard education, and supporting community preparedness programs like a Good Neighbor program. The local church and the Upper Elementary School have a joint cooperation agreement that can be utilized to respond to hazards. Local event cancellation procedures involve posting notices on the city website, City Hall, post office, and other critical facilities.

Flooding

The City of Hartford has an identified Special Flood Hazard Area in the along the western side of the community. NCEI reports two significant flooding events in Overton since 2008. The first of these was in June of 2008 when heavy rain fell over northeast Iowa and overwhelmed rivers already close to flood stage and caused $100,000 in property damages throughout the area. The second was in June of 2011, when over five inches of rain fell causing flash flooding in the area and resulting in $500,000 in property damage. During the event, water covered Highway 5 over a 1.5 mile stretch between County Roads 231 and 223.

Severe Winter Storms

In October of 1997 heavy snow caused $3,640,000 in property damage when ten inches of snow fell trees, damaged crops, and damaged power lines across central Iowa causing widespread power outages. Warren county was declared a Federal Disaster Area. The planning team noted that in 2020, a snowstorm created ice buildup on local powerlines which resulted in a power outage. The city relies on Mid-American Power for electricity which is often overwhelmed in these instances.

There are no snow routes or snow fences in use. The city has one public works employee and three seasonal helpers who are responsible for snow removal. Snow removal resources include a large plow truck, a city truck with a blade, a bobcat and UTV. Resources are sufficient. To mitigate against this hazard in the future, the city plans to bury or harden remaining overhead lines and purchase a backup generator.

Tornadoes and Windstorms

Old, mature trees, and a lack of storm shelters have made tornadoes and windstorms a top concern for Hartford. There has been no direct damage to critical facilities from tornadoes, but there have been power outages caused by windstorms. There are no public safe rooms in Hartford, but the local planning team identified safe rooms as a mitigation project for the community. In the meantime, residents have the option to seek shelter in the Upper Elementary School, local church, city hall, or the fire station. Critical municipal data is backed up. The city has one warning siren that is activated by the county. Hazardous trees in the community were removed in 2021.

Other hazard mitigation alternatives include providing an alert system for vulnerable populations, installing backup generators at critical facilities, installing a windbreak and continuing to bury power lines. In case of a disaster, there are mutual aid agreements in place with Carlisle and North Warren County. The city also has plans to develop a debris disposal site.

Mitigation Strategy

Completed Mitigation Actions

Mitigation Action	County GIS Participation
Description	Improve participation with County GIS – including zoning and hazard mitigation maps on GIS
Hazard(s) Addressed	All Hazards
Status	County GIS continually updates maps.

Continued Mitigation Actions

Mitigation Action	Accessible Public Facilities
Description	Make all applicable public facilities handicap accessible
Hazard(s) Addressed	All Hazards
Estimated Cost	$100,000+
Local Funding	Property Tax revenue, grants
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Council, Mayor
Status	In progress.

Mitigation Action	Aid Agreements and Community Drills
Description	Train, test, and exercise agreements; community drills
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000/yr
Local Funding	General funds, grants
Timeline	2-5 Years
Priority	Low
Lead Agency	Fire and Rescue
Status	Not started.

Mitigation Action	Community Education and Awareness
Description	Establish a community education program to increase awareness related to household level mitigation actions. Utilize outreach projects and the distribution of maps. Purchasing equipment such as projectors and laptops to facilitate presentation of information.
Hazard(s) Addressed	All Hazards
Estimated Cost	$500
Local Funding	Property Tax revenue
Timeline	2-5 Years
Priority	Low
Lead Agency	City Council, Mayor
Status	Educational outreach is provided on a regular basis.

Mitigation Action	Debris Disposal
Description	Develop debris disposal site(s)
Hazard(s) Addressed	All Hazards
Estimated Cost	$250,000+
Local Funding	Property Tax revenue, grants
Timeline	5+ Years
Priority	Low
Lead Agency	Public Works
Status	Locations to be identified.

Mitigation Action	Develop Secondary Alert Systems
Description	Promote NOAA weather radio purchase and use; install siren warning systems where necessary; countywide AlertIowa/Code Red participation
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000
Local Funding	General funds, grants
Timeline	Ongoing
Priority	Medium
Lead Agency	Fire and Rescue
Status	New weather radios are needed regularly.

Mitigation Action	Electronic Resource Directory
Description	Develop an electronic resource directory of local resources
Hazard(s) Addressed	All Hazards
Estimated Cost	Staff Time
Local Funding	Staff Time
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Clerk
Status	Not started.

Mitigation Action	Evaluate Alert Systems
Description	Perform an evaluation of existing alert sirens to determine which should be replaced or where new sirens should be located; establish alert systems for vulnerable populations
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000+
Local Funding	General funds
Timeline	5+ Years
Priority	High
Lead Agency	Fire and Rescue
Status	Not started.

Mitigation Action	First Responder and Public Works Equipment Upgrade
Description	Equipment and facilities upgrade and acquisition plan (police, fire, EMS, public works – both individual and vehicle); install GPS units and laptops in applicable response vehicles; purchase and install emergency response guidebooks in all Public Works vehicles;
Hazard(s) Addressed	All Hazards
Estimated Cost	$100,000+
Local Funding	General funds, User fees
Timeline	Ongoing
Priority	Medium
Lead Agency	City Council, Mayor
Status	New equipment is needed but equipment priorities to be determined.

Mitigation Action	Harden Infrastructure
Description	Use roofing materials that are resistant to hail impacts for new buildings; retrofit existing building with hail resistant roofing; identify aging infrastructure and replace and/or repair them (including bridges, roads, and tunnels)
Hazard(s) Addressed	All Hazards
Estimated Cost	$100,000+
Local Funding	General funds, Grants, USDA funding
Timeline	2-5 Years
Priority	Medium
Lead Agency	Public Works, City Council
Status	Opportunities to harden infrastructure are identified as facilities are updated or constructed.

Mitigation Action	HAZMAT Response
Description	Designate/enforce HAZMAT transportation routes, map the locations of past chemical contamination spills and sites, establish HAZMAT decontamination sites
Hazard(s) Addressed	Chemical Spills
Estimated Cost	$100,000
Local Funding	Property Tax revenue, grants
Timeline	2-5 Years
Priority	Medium
Lead Agency	Fire and Rescue
Status	Not started.

Mitigation Action	Improve Facility Security
Description	Install vehicular barriers, fences, lights, and/or security cameras to protect critical facilities and key infrastructure where possible, develop restricted access procedures
Hazard(s) Addressed	Terrorism, Transportation Incidents
Estimated Cost	$50,000
Local Funding	Property Tax revenue, grants
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Council, Mayor
Status	Not started.

Mitigation Action	Improve Reliability of Electrical System
Description	Construct redundant electrical systems and modernize generators; purchase and install fixed backup power generators and/or standby pumps for all critical assets; replace fixed backup generators at certain critical assets; bury existing power lines in current development areas
Hazard(s) Addressed	All Hazards
Estimated Cost	$25,000 each
Local Funding	Operations Budgets, Grants
Timeline	2-5 Years
Priority	High
Lead Agency	Mayor, City Council, Fire and Rescue Department
Status	Not started.

Mitigation Action	Improve Sewer System
Description	Sanitary sewer system/lagoon study; install water impervious manhole covers; install backflow devices on vulnerable properties; clean sewer lagoons and install rock; construct and/or elevate the City's lift station(s), berms, dikes and/or levees
Hazard(s) Addressed	Flooding
Estimated Cost	$50,000
Local Funding	User Fees, IRF Loans
Timeline	5+ Years
Priority	High
Lead Agency	Wastewater Utility
Status	In progress.

Mitigation Action	Improve Stormwater System
Description	Conduct drainage studies; construct storm water drainage infrastructure (underground, culverts, curb & gutter); develop Stormwater Master Plan; clear drainage ditches and culverts; identify and replace/repair inadequate storm sewers; replace culverts; install water impervious manhole covers; establish multi-jurisdictional partnership to reduce storm water runoff (city/school); develop stream modification projects; maintain sandbags in dry storage; develop soil erosion stabilization projects; purchase standby pumps for stormwater control; upgrade/replace/expand sewer lines; maintain ditch inspection plan; implement sustainable stormwater control options (such as rain gardens); install backflow devises to sewer lines
Hazard(s) Addressed	Flooding
Estimated Cost	$100,000,000
Local Funding	User Fees
Timeline	Ongoing
Priority	Medium
Lead Agency	Wastewater Utility
Status	Stormwater upgrades are completed as needed and feasible.

Mitigation Action	Overhead Utility Lines
Description	Create regulations that require utilities in new development to be buried; retrofit or harden overhead utility lines
Hazard(s) Addressed	Tornadoes, Severe Thunderstorms, Severe Winter Storms
Estimated Cost	$100,000+
Local Funding	Utilities
Timeline	5+ Years
Priority	Low
Lead Agency	Public Works, City Council
Status	Power lines are buried when possible.

Mitigation Action	Prepare for Extreme Heat and Power Failure Events
Description	Develop heat recovery plan and provide medical equipment for extreme heat events; develop recovery plan for power failure
Hazard(s) Addressed	Extreme Heat
Estimated Cost	$1,000
Local Funding	General funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Fire and Rescue, City Council
Status	Not started.

Mitigation Action	Purchase Snow Trucks, Plows, and Sanders
Description	Purchase snow trucks, plows, and sanders to improve capabilities to remove snow during and following winter events; have a place to store them
Hazard(s) Addressed	Severe Winter Storms
Estimated Cost	$100,000
Local Funding	To be determined
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Council, Mayor
Status	New equipment is purchased when possible.

Mitigation Action	Storm Shelters and Safe Rooms
Description	Develop and implement and public safe room plan; design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, and other areas; construct community safe rooms in or near existing and future critical assets; integrate safe room retrofits into occupied community assets; promote the construction of reinforced in-residence tornado safe rooms; promote/provide safe room education for builders and developers
Hazard(s) Addressed	Tornadoes, Severe Thunderstorms, Hailstorms, High Winds
Estimated Cost	$100,000+
Local Funding	General funds, grants
Timeline	5+ Years
Priority	Medium
Lead Agency	City Council, Mayor
Status	Not started.

Mitigation Action	Windbreaks
Description	Install windbreaks
Hazard(s) Addressed	Tornadoes, Severe Thunderstorms, Severe Winter Storms
Estimated Cost	$10,000
Local Funding	General funds, grants
Timeline	5+ Years
Priority	Low
Lead Agency	Public Works
Status	In progress.

Removed Mitigation Actions

Mitigation Action	Improve Private Residences
Description	Repair structurally weak homes, weatherization efforts, encourage property owner private insurance purchase, update subdivision ordinances to include special mitigation measures
Hazard(s) Addressed	All Hazards
Reason for Removal	This project is no longer a priority for the city.

Mitigation Action	Vulnerable Population Registration Program
Description	Implement a special needs/oxygen-user registration program
Hazard(s) Addressed	All Hazards
Reason for Removal	Database will be managed by County Emergency Management.

Mitigation Action	Transportation Safety
Description	Rail and highway safety education programs
Hazard(s) Addressed	All Hazards
Reason for Removal	This education program will be covered under the Community Outreach and Awareness project.

Mitigation Action	Vegetation Maintenance
Description	Promote tree and vegetation maintenance on private properties, establish tree planting initiative; remove dead vegetation - public and nuisance issues; promote landscaping practices and proper vegetation management on private properties
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Hailstorms
Status	This is considered a current capability and will be maintained.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team, which includes the Mayor, Fire Chief, and ISG, is responsible for reviewing and updating this community profile as changes occur or after a major event. The public will be notified and included in the review process via the council meetings.

Community Profile

City of Indianola

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table IDL.1: Indianola Local Planning Team

Name	Title	Jurisdiction
Aaron Hurt	Fire Captain	Indianola Fire Department

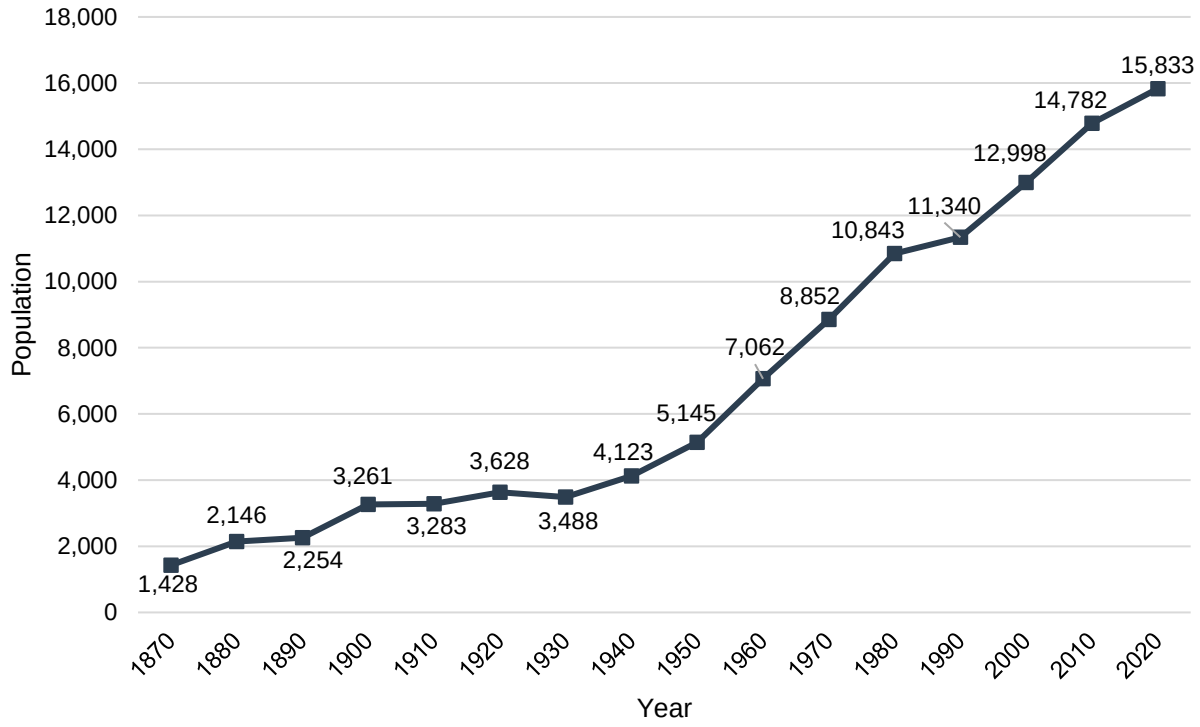
Location and Geography

The City of Indianola is located in the central portion of Warren County and covers an area of 11.25 square miles. Major waterways in the area include Cavitt Creek, Steels Branch, and South River. Indianola is the county seat and largest community in the county.

Demographics

The following figure displays the historical population trend for the City of Indianola. This figure indicates that the population of Indianola has been increasing since 1870 to 15,833 people in 2020. Increasing populations are associated with increased hazard mitigation and emergency planning requirements for development. Increasing populations can also contribute to increasing tax revenues, allowing communities to pursue additional mitigation projects. Indianola's population accounted for 30.2% of Warren County's population in 2020.[37]

Figure IDL.1: Population 1870 - 2020



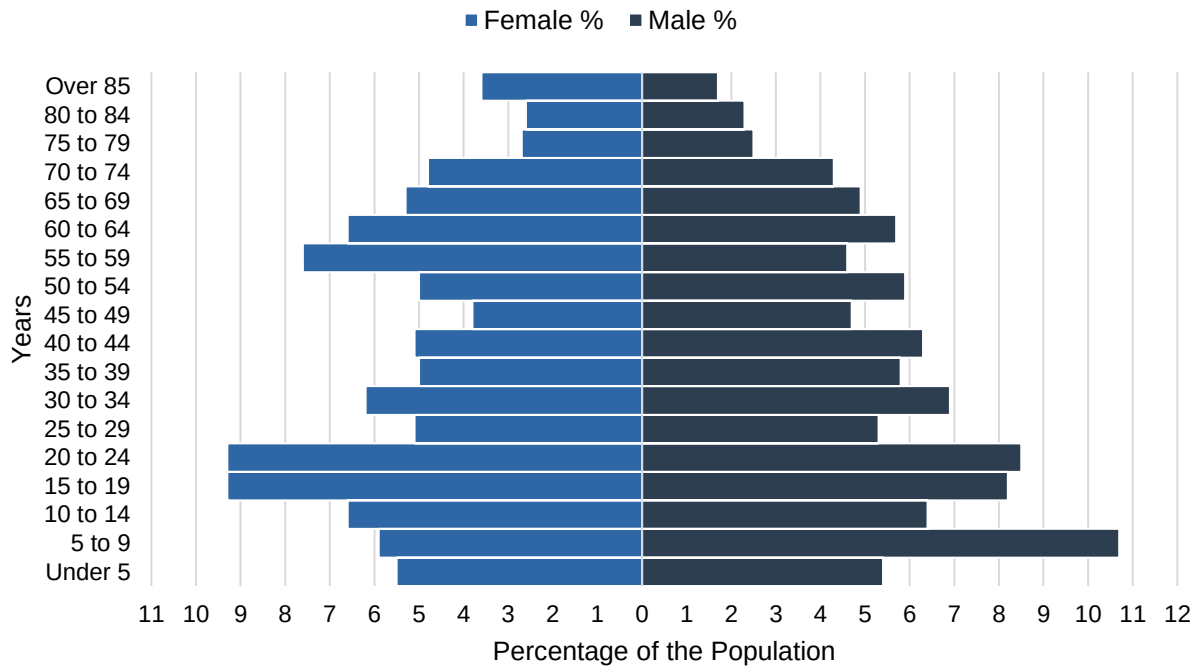
Source: U.S. Census Bureau

[37] United States Census Bureau. "2020 Census Redistricting Data (Public Law 94-171): P1: Race." https://data.census.gov.

The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Indianola's population:

- **4% is non-white.** Since 2010, Indianola grew more racially diverse. In 2010, 2% of Indianola's population was non-white. By 2019, 4% was non-white.[38]
- **35.4 median age.** The median age of Indianola was 35.4 years in old 2019. The population grew older since 2010, when the median age was 33.3.[39]

Figure IDL.2: Indianola's Population by Age Cohort and Sex

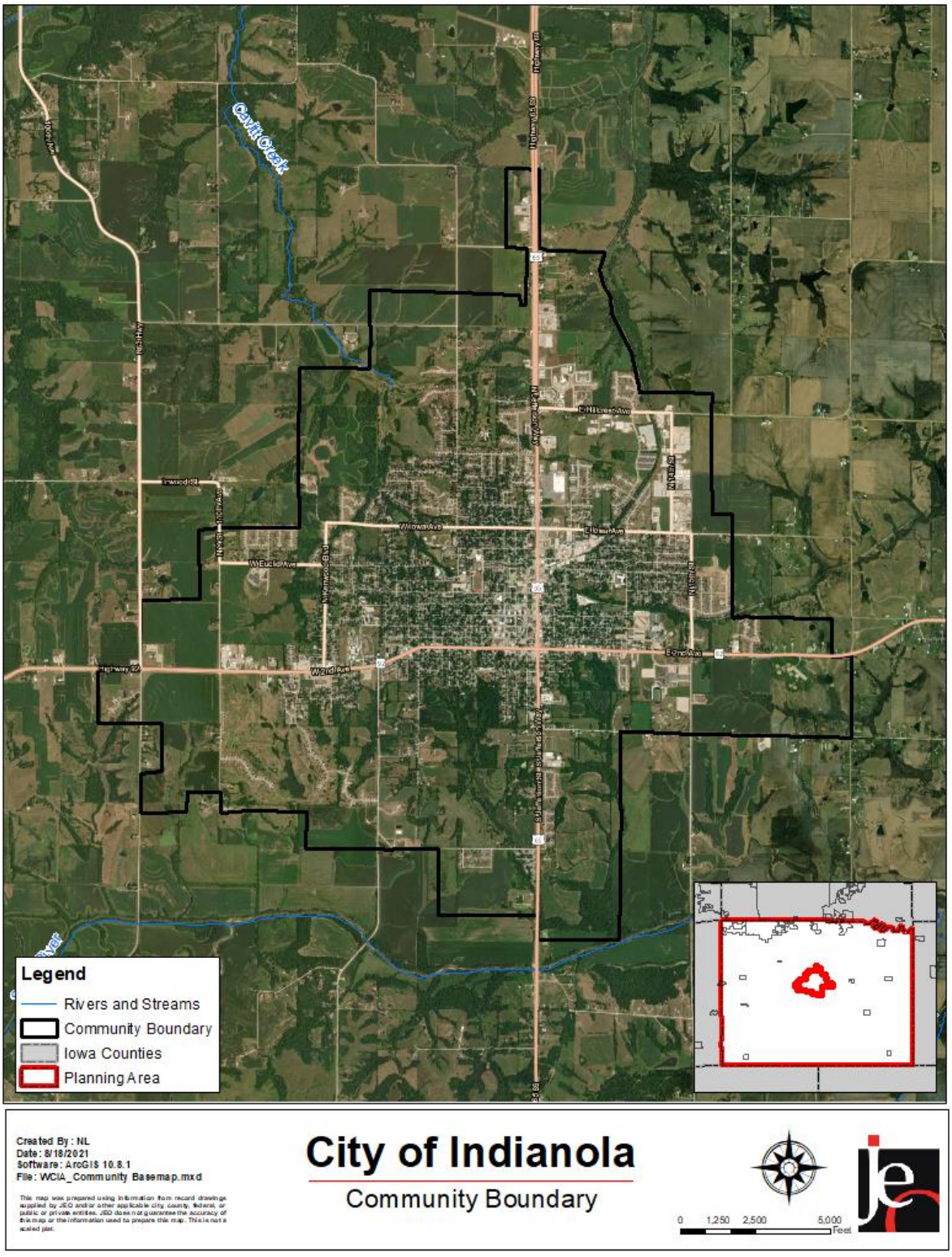


The figure above shows Indianola's population percentage broken down by sex and five-year age groups. Indianola's population is younger with a much higher percentage of the population below 25 years of age. This likely indicates a growing population in the years to come.

38 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.

39 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Figure IDL.3: City of Indianola



Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Indianola's population has:

- **10.4% of people living below the poverty line.** The poverty rate (10.4%) in the City of Indianola was higher than the state's poverty rate (7.2%) in 2019.[40]
- **$60,854 median household income.** Indianola's median household income in 2019 ($60,854) was $300 higher than the state ($60,523).[4]
- **3.8% unemployment rate.** In 2019 Indianola had a higher unemployment rate (3.8%) when compared to the state (3.7%).[4]
- **42.1% of workers commuted 30 minutes or more to work.** Fewer workers in Indianola commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (42.1% compared to 45.1%).[41]

Major Employers

The major industries in retail, manufacturing, food processing, agriculture supply, construction, senior care services, education, and government. Major employers in Indianola include Hy-vee, Walmart, Fareway, Circle B Home Center, Theisen's, Herschel Parts, Cemen Tech, Vetter Equipment, Van Wall Equipment, DeYarman Ford, Route 65 Harley-Davidson, Harvest Innovations, Vanderpool Construction, Cambron & Thacker Construction, Sternquist Construction, Heartland Cooperative, Agriland FS, Wesley Life Services (Village Retirement), Good Samaritan Society, ABCM Corporation (Westview), Indianola Community Schools, Simpson College, Missouri Valley Line Constructors and Training, Warren County and City of Indianola. A significant percentage of the population make the short commute to the Des Metropolitan Area for work.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. The local planning team indicated that the city has three mobile home parks located within the city. The North American/Parkside mobile home park is located at south end of the city at 1801 S Jefferson Way. The site has been subject to prior flooding disasters. As a result, the city has not permitted new housing units to be placed on vacated lots. Indian Ridge Mobile Home Community, situated in the west central residential neighborhood of Indianola at 307 W second Ave, is the largest mobile home community in the city. Sunfield Mobile Home Park is a small community located in the east central residential neighborhood located at 800 E Iowa Avenue. As of 2021 the City of Indianola has implemented residential rental inspections as part of the Community Development Department. This service is staffed by a fulltime employee, tasked with safety inspections of rental facilities effectively reducing the number of abandoned and dilapidated properties that lend to hazard risks. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

40 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

41 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

- **40% of housing built prior to 1970.** Indianola has a smaller share of housing built prior to 1970 than the state (40% compared to 50.9%).[42]
- **4% of housing units vacant.** Since 2010, Indianola's vacancy rate decreased. In 2010 the vacancy rate was 4.6%. By 2019, 4% of housing units were vacant.[6]
- **2.3% mobile and manufacture housing.** The City of Indianola had a smaller share of mobile and manufactured housing (2.3%) compared to the state (3.7%).[6]
- **34.1% renter-occupied.** The rental rate of Indianola was 34.1% in 2019. The percentage went up since 2010, when renter occupied housing was at 31.9%.[6]

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of Indianola is governed by a mayor and six-member city council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Board of Adjustment
- Clerk/Treasurer
- City Clerk
- City Manager
- Civil Service Commission
- Community Development Department
- Director of Finance
- Fire Department
- IMU Board of Trustees
- Information Technology (IT) Department
- Parks and Recreation Board
- Parks and Recreation Department
- Planning & Zoning Commission
- Police Department
- Public Works Department
- Water Resource Recovery Department

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are limited to maintaining current facilities and systems with a large portion already dedicated to the construction of a water resource recovery facility and updating water, sewar and storm water runoff in the business district through the Square Streetscape project. Funds have stayed the same over recent years.

42 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Table IDL.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	Yes
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	Yes
	Storm Water Management Plan	Yes
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	State Codes (2020)
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	Yes
	Civil Engineering	Yes – Contractor/Staff
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	Yes
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	Yes

Survey Components/Subcomponents		Yes/No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	Yes
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Limited

Plan Integration

Indianola has several planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Building Code (2020)

The building code sets standards for constructed buildings and structures. The city has adopted the 2020 International Building Codes with multiple amendments made. These Codes require the elevation of structures and mechanical systems in the floodplain as well as the installation sewer backflow valves for structures in the floodplain. They also outline proper sump pump installation and require onsite stormwater detention for commercial structures. They allow for raingardens in residential areas, encourage the use of hail resistant building materials, and require hurricane clips during construction. Lastly, the Codes require the use of fire-resistant building materials and the use of defensible space around structures built in the extraterritorial jurisdiction.

Capital Improvements Plan (2021)

The capital improvements plan annually outlines projects the city would like to pursue and provides a planning schedule and financing options. Projects include stormwater projects, upsizing of culverts and drainage structures, regular maintenance for drainage structures and stormwater systems, and the upgrading of the stormwater systems. It also includes the following for electrical systems: updating electrical distribution system, burying of powerlines, looping electrical distribution to critical facilities, and installing emergency generators in critical facilities.

Comprehensive Plan (2020)

The comprehensive plan is designed to guide the future actions and growth of the city. It incorporates some of the goals and objectives included in the HMP. The Comprehensive Plan directs development away from the floodplain, chemical storage facilities, and major transportation routes. It also limits density in areas adjacent to known hazardous areas,

encourages infill development, and clustering of development in sensitive areas. It goes further to encourage elevation of structures located in the floodplain and has a goal to identify areas that need emergency shelters. The plan also encourages the following: preservation of open space in hazard-prone areas; the use of drought tolerant plants; and strengthening retrofits to historic structures. The Comprehensive Plan will be reviewed for relevance annually and evaluated every five years to reflect changes in growth and the current vision for the City's future. There are no current strategies to further incorporate the HMP into the Comprehensive Plan.

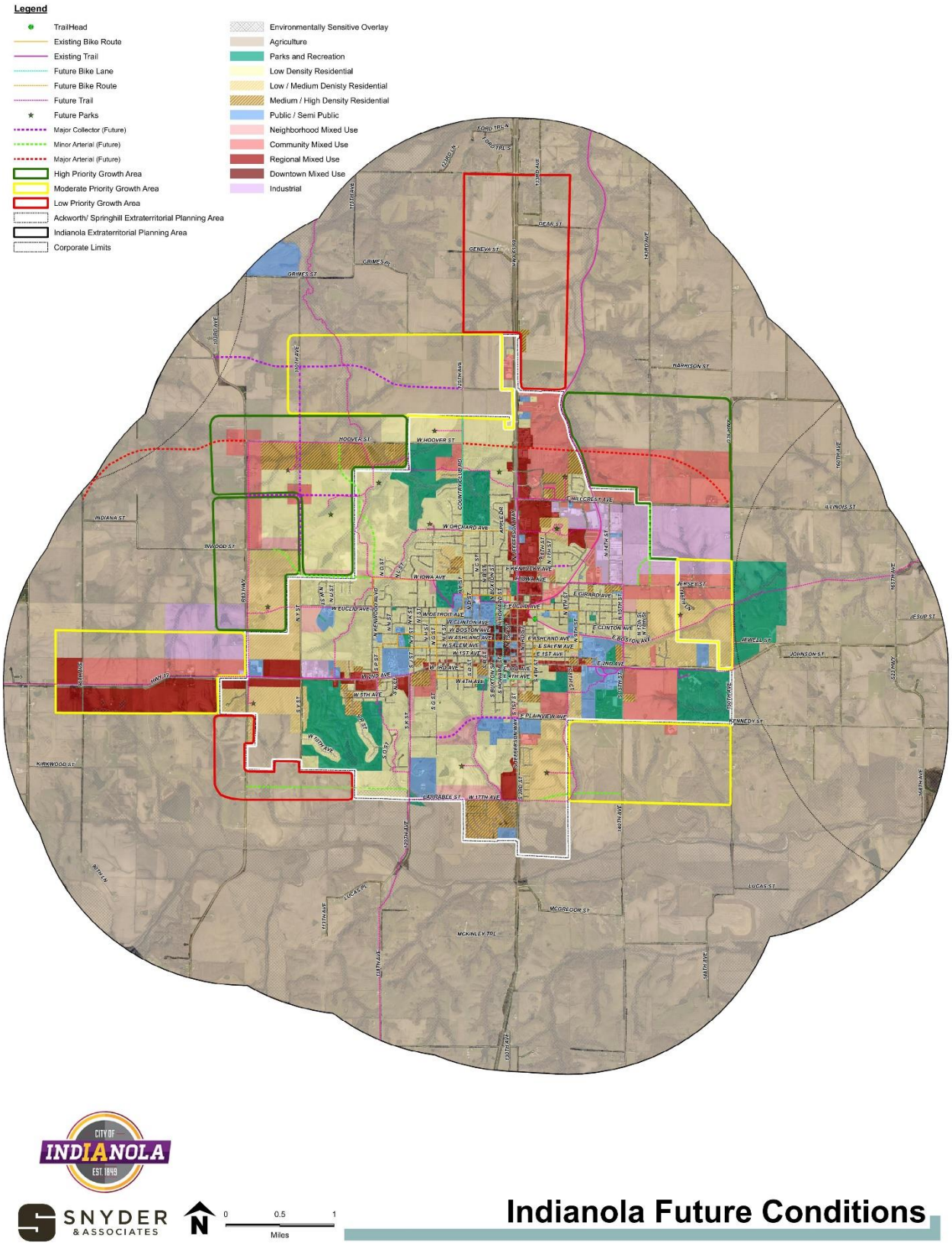
Floodplain Ordinance (2018), Zoning Ordinance (2021), and Subdivision Regulations (2009)

The Zoning Ordinances are continually updated as needed. The corresponding floodplain regulations were updated in 2018. The Ordinances discourage development in the floodplain and identify floodplain areas as parks of open space. They also require at least one foot of elevation above base flood elevation in the floodplain, prohibit development in the floodway, and prohibit filling of wetlands. Furthermore, they discourage development near chemical storage facilities and along major transportation routes, and limit development in the extraterritorial jurisdiction. They account for current population trends and limit population density in the floodplain. The city plans to update the Subdivision Regulations in 2022.

Future Development Trends

In the past five years the City of Indianola has enhanced the economic infrastructure with the development Summer Crest Hills accommodating industry in medical services, hospitality, and retail. The residential growth has been steady with the addition of senior living facilities and single-family homes in Northeast and Southwest corridors, away from flood zones and other hazardous areas. Plans for future developments have been planned and are identified by low, medium, and high priority. The planned developments allow for balanced growth and are positioned strategically on the edges of the city.

Figure IDL.4: Future Land Use Map



Community Lifelines

Transportation

Indianola's major transportation corridors include US Highway 65 and State Highway 92. The most traveled route is Highway 65 with an average of 18,800 vehicles daily, 960 of which are trucks.[43] There are no rail lines in the community. The local planning team noted that additional routes of concern include Hillcrest and 14th Street, which are critical supply routes for industrial and commercial truck traffic. The Critical facilities that are near the Highway 65 corridor include the IMU electrical distribution, Simpson College, Warren County Annex, Warren County Courthouse, Indianola City Hall Fire and Police. Critical Facilities that are located near the Highway 92 corridor include the Indianola High School, Indianola Middle School, USDA office, Warren Water District office, and IMU Communications. The planning team also noted that chemicals are regularly transported along the US Highway 65 corridor running north and south through the city and the State Highway 92 running east and west through the city. The common hazardous materials include agriculture pesticides, liquid nitrogen gas, petroleum gas, propane, ammonium nitrate and anhydrous ammonia. There is a small airport, Nash Field Indianola Airport, about four miles south of the city. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources and the local planning team, there are 25 chemical storage sites within or near Indianola which house hazardous materials. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Table IDL.3: Chemical Storage Sites

Name	Address	Located in Floodplain?
Agri-Tech Aviation Inc	12871 W Geneva Street, Hangar Indianola, IA 50125	No
Agriland FS Inc - Indianola	2616 W 2nd Avenue Highway Indianola, IA 50125	No
Alamo Group IA Inc	1301 N 14th Street Indianola, IA 50125	No
American Concrete Indianola Plant	1205 Hillcrest Avenue Indianola, IA 50125	No
Buckley Powder - Indianola	1506 N 14th Street Indianola, IA 80112	No
Cemen Tech Inc.	1700 N. 14th St Indianola, IA 50125	No
CenturyLink - Indianola CO	112 S Howard Street Indianola, IA 50125	No
Downtown Power Plant	111 S Buxton Street Indianola, IA 50125	No
East Iowa Substation	1300 E Iowa Avenue Indianola, IA 50125	No
Harvest Innovations/ADM	1210 N 14th street Indianola, IA 50125	No
Heartland Co-op Evansville NH3	5855 Highway 65-69 North Indianola, IA 50125	No

43 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

Name	Address	Located in Floodplain?
Heartland Co-op Hunerdose NH3	12732 Pershing Street Indianola, IA 50125	No
Heartland Co-op Indianola Main Location	505 E Girard Street Indianola, IA 50125	No
Herschel Parts Inc.	1200 N 14th St Indianola, IA 50125	No
Intrepid Ag Solutions	1800 N 9th Street Indianola, IA 50125	No
Norwalk--Indianola South Ready Mix	700 E. Clinton Avenue Indianola, IA 50125	No
Quest – Indianola	112 S Howard Street Indianola, IA 50125	No
Simplot- Indianola (IA)	1800 N 9th Street Indianola, IA 50021	No
US Cellular - Indianola	957 Nevada Street Indianola, IA 50125	No
US Cellular - Indianola DT	1203 N 15th Street Indianola, IA 50125	No
Veterans Memorial Aquatic Center	714 W Detroit Avenue Indianola, IA 50125	No
Warren County Oil Coop Assn	606 North 6th Street Indianola, IA 50125	No
Warren County Oil Coop Assn	506 North Jefferson Street Indianola, IA 50125	No
West Iowa Substation	903 W Iowa Avenue Indianola, IA 50125	No
West Side Substation	11634 R-63 Highway Indianola, IA 50125	No

Source: Iowa Department of Natural Resources[44], Local Planning Team

Health and Medical Facilities

The following medical and health facilities are located within the community.

Table IDL.4: Health and Medical Facilities

Name	Type of Facility	Address	Number of Beds
Good Samaritan Society - Indianola	Long Term Care Facility	708 S Jefferson Way Indianola, IA 50125	131
Mercy One Specialty Clinic	Medical Clinic	2006 N 4th Street Indianola, IA 50125	N/A
MercyOne Indianola Family Medicine	Medical Clinic	307 E Scenic Valley Ave Indianola, IA 50125	NA
The Iowa Clinic	Medical Clinic	1504 N 1st Street Indianola, IA 50125	N/A
Unity Point Clinic	Medical Clinic	301 E Hillcrest Ave Indianola, IA 50125	N/A
The Village Wesley Life	Long Term Care Facility	1203 North E St. Indianola, IA 50125	54
Vintage Hills Retirement Community	Assisted Living Facility	604 East Hillcrest Avenue Indianola, Iowa, 50125	122

44 Iowa Department of Natural Resources. 2021. "Emergency Response - Tier II Chemical Storage." [datafile]. https://facilityexplorer.iowadnr.gov/facilityexplorer/.

Westview Of Indianola Care Center	Long Term Care Facility	1900 West 3rd Place Indianola, Iowa, 50125	71
Windsor Manor Indianola	Assisted Living Facility	608 South 15th Street Indianola, Iowa, 50125	74

Source: Iowa Department of Inspections and Appeals[45]

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

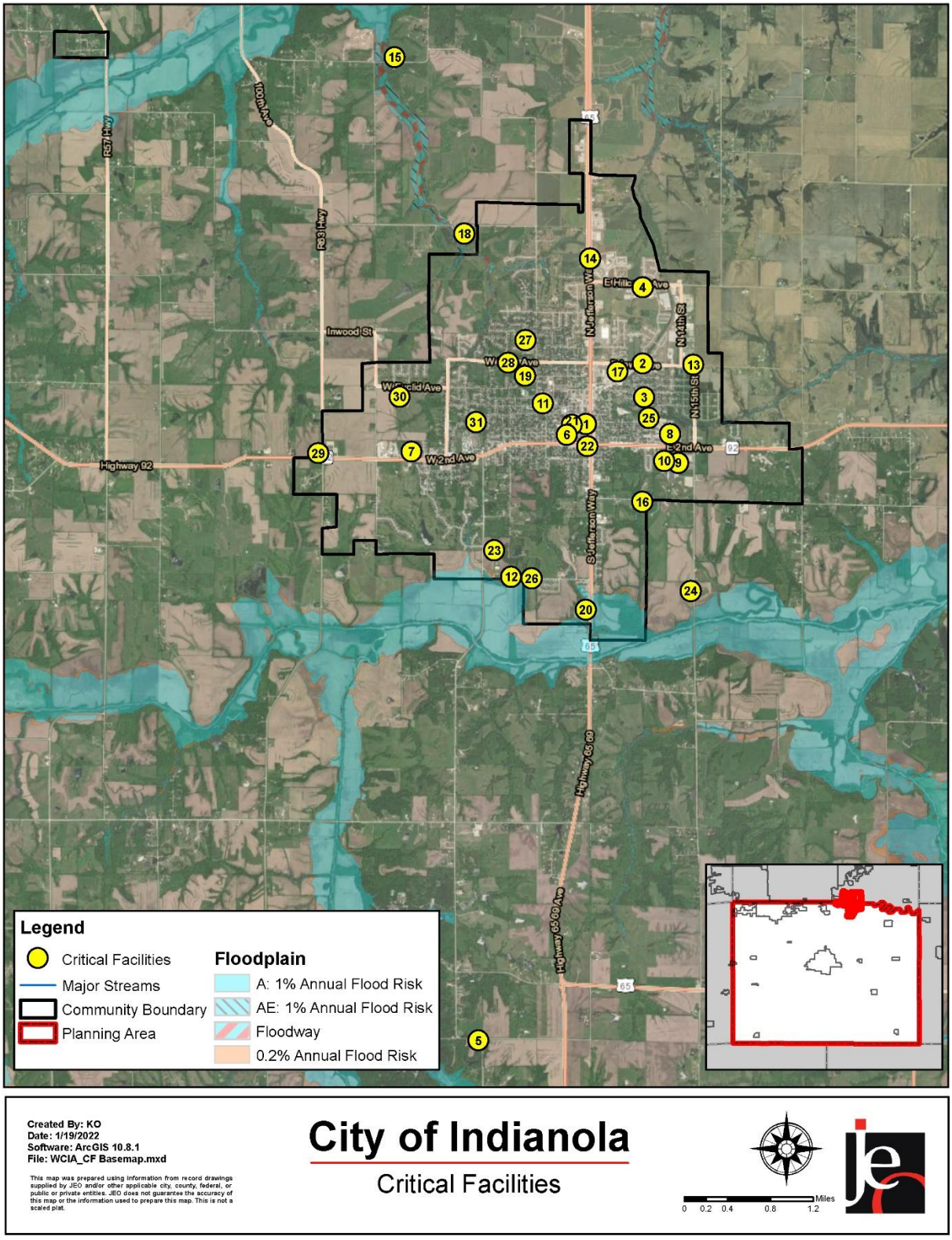
Table IDL.5: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	City, Police, and Fire Hall	N	Y	N
2	East Iowa Substation 1 & 2	N	N	N
3	Emerson Elementary School	N	N	N
4	Hillcrest Water Tower/Radio Communications	N	Y	N
5	Hooper Radio Communication Tower	N	Y	N
6	IMU Power Plant	N	Y	N
7	Indianola Activity Center	N	N	N
8	Indianola High School	N	N	N
9	Indianola Middle School	N	N	N
10	Indianola School Administration	N	N	N
11	Irving Elementary School	N	N	N
12	McCord Lift Station	N	Y	N
13	Morlock Lift Station	N	Y	N
14	N65-N69 Lift Station	N	Y	N
15	New Sewage Plant (2022)	N	N	N
16	Plainview Lift Station	N	Y	N
17	Public Works/Street Department	N	N	N
18	Sewage Plant	N	Y	N
19	Simpson Water Tower/Radio Communication	N	N	N
20	South Plant Lift Station	N	Y	N
21	Warren County 911 Communication Tower	N	Y	N
22	Water Treatment Plant	N	Y	N

45 Iowa Department of Inspections and Appeals. 2021. "Direct Care Worker Registry & Health Facility Database." https://dia-hfd.iowa.gov/

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
23	Water Treatment Plant/Pumping Station 12	N	Y	N
24	Well Head / Pumping Station 11	N	N	N
25	Well House / Pumping Station 10	N	N	N
26	Well House / Pumping Station 9	N	N	N
27	Wesley Lift Station	N	Y	N
28	West Iowa Substation	N	N	N
29	West Side Substation (R63)	N	N	N
30	Wilder Elementary School	N	N	N
31	Witter Elementary School	N	N	N

Figure IDL.5: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table IDL.6: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
530	$296,054,103	14	$16,480,700	3%

Source: County Assessor, 2022

Table IDL.7: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
530	$296,054,103	0	$0	0%

Source: County Assessor, 2022

Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Flooding

The City of Indianola has identified Special Flood Hazard Areas in the northwestern, eastern, and southern portions of the community. Flood areas in the city originate in the south from South River, in the Northwest from Cavitt Creek, and to the east from Short Creek The mobile home court on South Jefferson Way has flooded four times since 2008, resulting in an estimated $145,000 in property damage. These occasions have left mobile home residents stranded and have precipitated evacuations. Each of these flooding events was caused by heavy rain flooding the South River. The city has taken mitigation measures that include restrictions in the heavy flood plain areas and has added infrastructure to manage water runoff such as pervious surfaces and raingardens in infrastructure enhancements around the downtown business area. The city has mitigated against this hazard with storm water management through infrastructure and environmental improvements identified in the strategic and comprehensive plan which were funded through grants and fees. The city has also improved storm water runoff and retention through the upsizing of drainage culverts at the whitter crossing and the installation of pervious surfaces and raingardens. Flood hazard areas identified in the south have been mitigated through building restrictions.

Hazardous Materials Release

Highway 92 and Highway 65/69 travel perpendicularly through Indianola. These major transportation routes, along with the Heartland Co-op is located in central Indianola, put the city at risk for chemical spills. The local planning team is especially concerned about spills during transportation after two separate anhydrous leaks, one on the western edge of the city, the other in central Indianola. Both leaks involved anhydrous ammonia, and one resulted in the short-term displacement of residents. Almost all critical facilities in Indianola are located within half a mile of a chemical storage facility of major chemical transportation route. This includes Indianola's retirement homes and schools, putting vulnerable populations at risk.

Local first responders receive training in flammable liquid hazardous material response and have access to the appropriate protective gear and other resources. Plans to address the risk of hazardous material spills include further upgrading available HAZMAT equipment and providing education to residents on the risks and appropriate responses to chemical spills. The Fire Department continues to enhance the ability to respond to hazardous materials release incidents by equipping Fire Department employees with the skill by participating in FEMA funded training at the Technician level and HAZAMT IQ training. The Department has upgraded equipment and has purchased additional monitoring equipment to respond to events.

The local response resources include photo ionization detection equipment, Toxirae NH3 Detector, four gas detectors, radiation detector, chemical paper, Level B suits, ventilation equipment, respiratory protection equipment decontamination equipment, and training at the technician level for fulltime responders. A contract is maintained with the Des Moines Fire Department to provide a full HAZMAT response should events occur outside the ability of the department to respond. The community continues to mitigate against this hazard through facility inspections, upgrading response equipment, training, and public education.

Infrastructure Failure

The local planning team identified the following threats to the community regarding infrastructure failure: building collapse, fires, Hazmat Release (natural gas), water contamination, fire spread, flooding, and damage to emergency response resources. Aging infrastructure continues to be an issue in Indianola following the 2010 building collapse on the north side of the town square. Other buildings on the town square have also suffered damage, including Pickard Park's washout in 2014. The municipal and public safety building is failing and does not adequately house front line public safety staff and equipment. Structural deficiencies have been identified and front-line resources are dispersed among different facilities creating accessibility, security and response issues. Most of the other structures of concern are privately owned. Local first responders are trained to handle infrastructure failure events. Downtown buildings were hardened in 2016 with an upgrade of the building stock. Further mitigation plans for infrastructure failure include implementing a demolition and destruction program and upgrading city facilities.

The city has focused on mitigation through an inspection and code enforcement program conducted by the City's Building Inspector. Buildings with structural integrity issues are identified an abated or remedied through an active enforcement program. The city identified infrastructure issues specifically around the City Square and began a revitalization project known to the City as "Street Scape". The project targets the replacement of undersized and deteriorating water mains and undersized sewar infrastructure under the roadway surfaces. The undersized mains prevented old buildings from being updated to current building codes. In addition to the renewed water and sewar infrastructure the project is replacing hard surfaces with pervious paving that allows for surface absorption of rainwater. This "Street Scape is scheduled to be completed by the end of Summer 2022. The city is currently planning and exploring solutions for addressing the

outdated city hall, fire, and police stations. The city has identified an architectural firm and has started the planning process to update the municipal and public safety facilities,

Severe Winter Storms

Concerns about long-term power outages, long-term critical road closures, the need for large-scale emergency shelters, and the lack of excess snow dumping sites make severe winter storm mitigation a priority for the local planning team. Radio transmission towers have been damaged by heavy snow in the past. NCEI has recorded two particularly severe winter storms in Warren County since 1996. The first was in October of 1997. The State of Iowa declared Warren and the surrounding counties disaster areas. Power outages were widespread and an estimated 75 percent of trees in the area were damaged. Between repair and clean-up, the cost of this storm was reported to be $3,640,000. A second storm in February of 2007 caused an estimated $250,000 in property damage when ice buildup damaged tree and power lines. The Middle River in Indianola flooded one foot.

The majority of the local power grid is underground in Indianola. The Street Department clears designated snow routes and residential streets with trucks with plows, dump trucks, and snow blowers. Warren County Roads Department removes snow from county roads. While snow removal equipment is sufficient at this time, there can be a shortage of drivers in extended snowstorm events. Future mitigation efforts will focus on creating a more reliable electrical system by making the supply redundant with backup generators at critical facilities. The snow removal equipment is not sufficient and has been identified as an immediate need in the City's strategic plans. The city currently has 8 plow and sanding trucks, 1 wheel loader, 1 truck with plow blade, 1 motor grader, and one snow blower. The staff is limited to seven personnel that have work limitations for safety reasons.

To mitigate this hazard the city has prioritized staffing and equipment in the strategic and capital improvement plan. The city contracts with the DOT for 400 tons of salt and sand annually. Assistance with snow removal by can be accomplished upon request with local contractors in town that maintain heavy excavation equipment. Emergency Operations plans have been exercised through a joint participation of elected official and city departments to respond to a disaster event.

Tornadoes and Windstorms

Since the plan there have been two disaster declarations for Warren County. On June 14, 2018, Indianola experienced a severe thunderstorm with damaging winds, heavy rains and flash flooding. On August 20th of 2019 Indianola experienced straight line winds, heavy rains, and flash flooding. Within the damage was limited to large limbs and a few fallen trees that created a prolonged interruption of power in some areas around the city and blocked roadways. Indianola has suffered damage from two tornadic events since 1996. The most damage was done in August of 2010 when two EF1 tornadoes tore through town. The first hit the west side of town. It damaged the walls of homes, collapsed garages, and tore roofs and decks away from their structures. In total, 27 structures were damaged. The second tornado went through the center of town, causing additional damage to garages and outbuildings. This storm caused an estimated total of $500,000 in property damage, power outages, and displaced residents. Indianola plans to partially mitigate future events by making their electrical system redundant with looping and backup generators for critical facilities. Hazardous trees are the responsibility of property owners, trees that are deemed to be a nuisance are identified and managed through the cities hazard abatement process. Hazardous trees in the right of way are managed and removed by the city.

City Hall has a safe room that is available for public use, but its presence is not well advertised by the city. A project is planned to provide more public safe rooms for the community. Secondary weather alerts are offered through various social media sites and Alertlowa, and Indianola plans to begin promoting the use of NOAA weather radios. Storm hazard education is offered annually by the Iowa Emergency Management Association at the County Fair, and the city plans to incorporate more hazard education into events. Further hazard mitigation plans include updating first responder and fire fighter assets and establishing a Mutual Aid Agreement file for disaster response. The Community has an outdoor warning system with 5 AST-C -128 sirens and one Whelen Vortex R4 siren that have been strategically placed in accordance with a study completed in 2019. The Storm Sirens are tested and verified weekly for operation and functionality. The storm sirens have been included in the capital improvements plan for future replacement. The city has improved its outdoor public warning system through an independent study and evaluation to determine effectiveness and relocate newly purchased sirens. Sirens have been purchased and installed as recommended by the study.

Mitigation Strategy

Completed Actions

Mitigation Action	Demolition and Destruction Program
Description	Implement a structural demolition program for dilapidated or abandoned properties/structures
Hazard(s) Addressed	All Hazards
Status	The city adopted chapter 163 related to abandoned and unsafe building ordinance in February of 2018.

Mitigation Action	Harden Fiber Communications Lines
Description	Bury fiber communications lines to all of city
Hazard(s) Addressed	All Hazards
Status	Project completed.

Mitigation Action	Promote Mitigation Plan
Description	Promote the results of this hazard mitigation plan, ensure annually maintains and updates in mitigation plan after five years
Hazard(s) Addressed	All Hazards
Status	Ongoing effort in the community to educate on hazards.

Continued Actions

Mitigation Action	Aid Agreements
Description	Establish aid agreement file; support other local governmental entities, such as fire departments, schools, and townships in the identification and pursuit of mitigation actions
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000/Year
Local Funding	Staff time
Timeline	Ongoing
Priority	Medium
Lead Agency	Fire Department
Status	The city is in the process of updating the EOP. This should be complete in June 2022.

Mitigation Action	Community Education and Awareness
Description	Establish a community education program to increase awareness related to household level mitigation actions. Utilize outreach projects and the distribution of maps. Purchasing equipment such as projectors and laptops to facilitate presentation of information.
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000
Local Funding	General funds, Staff time
Timeline	Ongoing
Priority	Medium
Lead Agency	Fire Department
Status	Surface Pros have been purchased for access to GIS in the field.

Mitigation Action	Community Shelter Rooms
Description	Formally designate and stock community shelters; construct community shelters in or near existing and future critical assets; install a storm shelter at the fire station; support legislation increasing standards for emergency shelters; publicly identify and list public storm shelters
Hazard(s) Addressed	Tornadoes and Windstorms, Severe Thunderstorms
Estimated Cost	$250,000
Local Funding	Grants, General funds, Staff time
Timeline	2-5 Years
Priority	Medium
Lead Agency	Parks and Recreation Department, City Administration, Zoning Administration
Status	The city is proposing a bond referendum fall of 2022 for a new public safety building, library, and city hall.

Mitigation Action	Disaster and Continuity Planning
Description	Develop continuity of operations and succession plan; develop a mass casualty plan; institute efforts to increase supply and morale of volunteers; designate/create backup EOC and/or communications center
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000
Local Funding	General funds, Staff time
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Administration
Status	Ongoing writing of the COOP to be addressed after EOP is updated. The fire station has HAM radio capabilities.

Mitigation Action	Equipment and Facilities Upgrade
Description	Acquisition and upgrade of City equipment and facilities as part of the Capital Improvement Plan
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000+
Local Funding	General funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Administration
Status	This is an ongoing project. New facilities will look at including tornado shelters.

Mitigation Action	Improve Facility Security
Description	Install vehicular barriers, fences, lights, and/or security cameras to protect critical facilities and key infrastructure where possible; develop restricted access procedures
Hazard(s) Addressed	Terrorism
Estimated Cost	$500,000
Local Funding	Grants, General funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Police Department, Fire Department, Indianola Municipal Utilities
Status	Indianola Municipal Utilities is continuing to add security cameras to their facilities. The Indianola Police Department has updated their door locks and added camera to important areas.

Mitigation Action	Improve Reliability of Electrical System
Description	Construct redundant electrical systems and modernize generators; purchase and install fixed backup power generators and/or standby pumps for all critical assets; replace fixed backup generators at certain critical assets; bury existing power lines in current development areas
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000,000+
Local Funding	Grants
Timeline	Ongoing
Priority	Medium
Lead Agency	Utilities Department
Status	Indianola Municipal Utilities is continuing to work towards an underground electrical system. The city is also upgrading two lift station generators to diesel generators.

Mitigation Action	Increase Water Capacity
Description	Increase water main size
Hazard(s) Addressed	Drought
Estimated Cost	$10,000,000
Local Funding	General funds
Timeline	5+ Years
Priority	Medium
Lead Agency	Iowa Municipal Utilities
Status	This project is in progress.

Mitigation Action	Sewer System Upgrade
Description	Comprehensive sewer system upgrade/expansion to meet city growth (follow up with televising); purchase and install backflow devises on vulnerable properties
Hazard(s) Addressed	Flooding
Estimated Cost	$35,000,000
Local Funding	General funds, Wastewater rates
Timeline	2-5 Years
Priority	High
Lead Agency	Wastewater Department
Status	The city continues to line, replace, and repair sewer mains and manholes to reduce inflow and infiltration.

Mitigation Action	Stormwater System Improvement and Upkeep
Description	Clear and deepen ditches; construct/repair storm water drainage infrastructure (underground, culverts, curb, and gutter); identify inadequate storm sewers and replace and/or repair them; replace and repair culverts; develop/expand/improve watershed studies (ditches, culverts, etc.) and plans for possible flood prone areas
Hazard(s) Addressed	Flooding
Estimated Cost	$25,000+
Local Funding	General funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Streets Department, Parks and Recreation Department
Status	The city has recently completed a storm water master plan, which recommended a long-term plan to re-mediate or upgrade failing/failed storm water infrastructure. As a part of this master plan, the city is currently surveying storm water infrastructure to identify failed infrastructure and prioritize improvements based on funding.

Mitigation Action	Update Fire Fighting and First Responder Assets
Description	Update first responder and interagency communications protocols and equipment to meet national/state interoperability standards; modernize/rehabilitate fire station to meet modern needs
Hazard(s) Addressed	All Hazards
Estimated Cost	$50,000+
Local Funding	Bonds
Timeline	2-5 Years
Priority	High
Lead Agency	Fire Department, Police Department
Status	Warren County recently updated their ISICS system. Better coverage has been achieved. Training of dispatchers in is progress to work towards current code.

Removed Actions

Mitigation Action	Develop Secondary Alert Systems
Description	Promote NOAA weather radio purchase and use; install siren warning systems where necessary; countywide AlertIowa/Code Red participation
Hazard(s) Addressed	All Hazards
Status	The city received grant funding to update four outdoor warning sirens.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The Fire Captain, Fire Chief, Community Development Department, Indianola Municipal Utilities Department, and Streets Department will be responsible for reviewing and updating the plan in the future. These individuals will review the plan bi-annually. The public will be notified through city council meeting minutes.

Community Profile

City of Lacona

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table LCA.1: Lacona Local Planning Team

Name	Title	Jurisdiction
Dave Judd	Public Works Supervisor	City of Lacona
Eric Wallace	Fire Chief	City of Lacona
Jo Schurman	City Council Member	City of Lacona

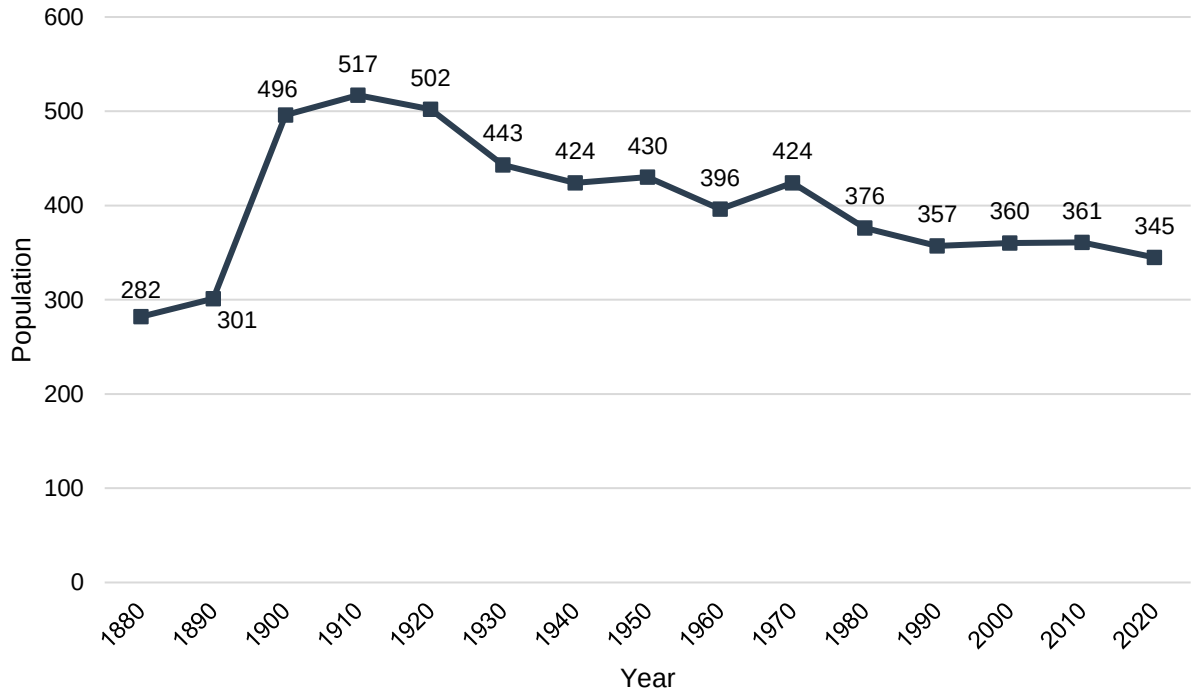
Location and Geography

The City of Lacona is located in the southeastern portion of Warren County and covers an area of 0.36 square miles. Major waterways in the area include Cotton Creek to the south of the community and White Breast Creek to the east.

Demographics

The following figure displays the historical population trend for the City of Lacona. This figure indicates that the population of Lacona has been declining since 2010 to 345 people in 2020. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which could make implementation of mitigation projects more fiscally challenging. Lacona's population accounted for 0.7% of Warren County's population in 2020.[46]

Figure LCA.1: Population 1880 – 2020



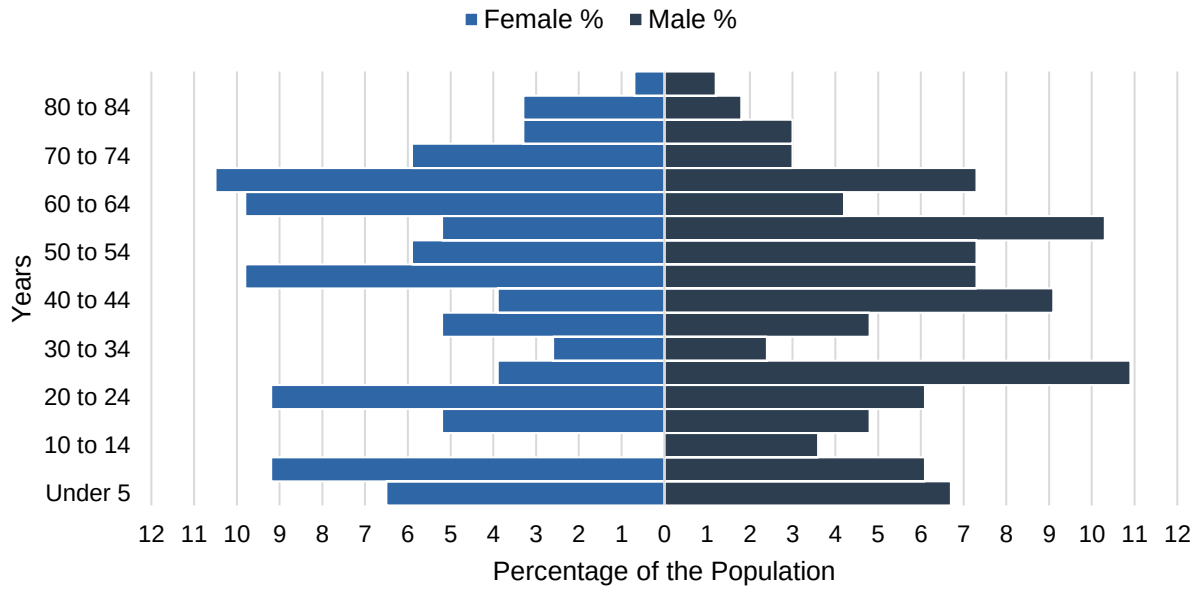
Source: U.S. Census Bureau

[46] United States Census Bureau. "2020 Census Redistricting Data (Public Law 94-171): P1: Race." https://data.census.gov.

The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Lacona's population:

- **2% is non-white.** Since 2010, Lacona grew less racially diverse. In 2010, 31% of the Lacona's population was non-white. By 2019, 2% was non-white.[47]
- **Older median age.** The median age of Lacona was 44 years in old 2019. The population grew older since 2010, when the median age was 40.5.[48]

Figure LCA.2: Lacona's Population by Age Cohort and Sex

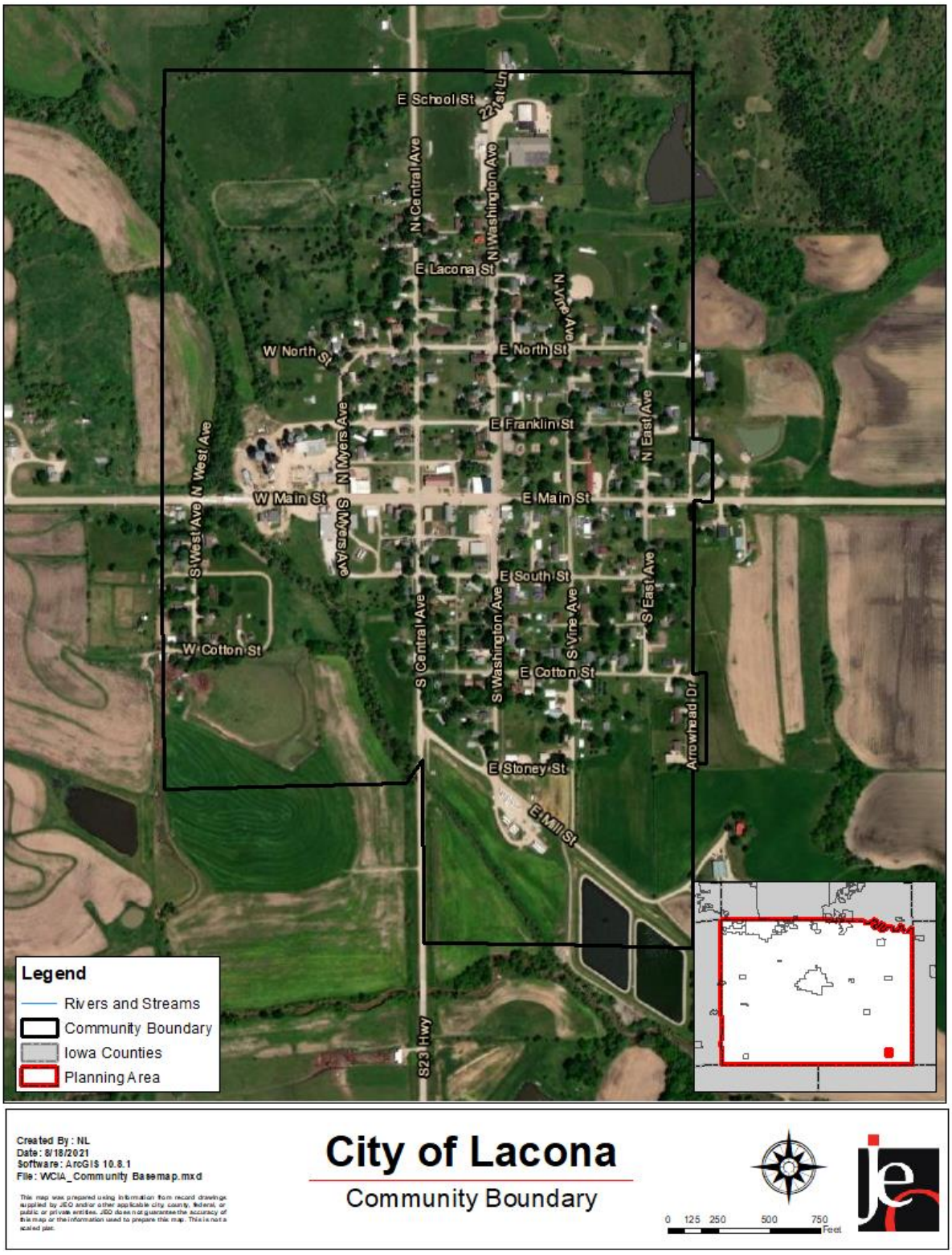


The figure above shows Lacona's population percentage broken down by sex and five-year age groups. Lacona's population is likely to decline in the coming years with a higher percentage of the population above 50.

47 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.

48 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Figure LCA.3: City of Lacona



Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Lacona's population has:

- **15.6% of people living below the poverty line.** The poverty rate (15.6%) in the City of Lacona was higher than the state's poverty rate (7.2%) in 2019.[49]
- **$52,500 median household income.** Lacona's median household income in 2019 ($52,500) was $8,000 lower than the state ($60,523).[4]
- **11.7% unemployment rate.** In 2019 Lacona had a higher unemployment rate (11.7%) when compared to the state (3.7%).[4]
- **65.5% of workers commuted 30 minutes or more to work.** More workers in Lacona commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (65.5% compared to 12.9%).[50]

Major Employers

The major employers in Lacona are Winn & Sons Pizza and Steakhouse, Backroads Bar and Grill, and Heartland Co-Op and United Farmer's Co-op. A large percentage of Lacona's residents commute to Indianola and Des Moines.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. The local planning team noted that there are a couple of mobile homes located in the city. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

- **59.8% of housing built prior to 1970.** Lacona has a larger share of housing built prior to 1970 than the state (59.8% compared to 50.9%).[51]
- **7.7% of housing units vacant.** Since 2010, Lacona's vacancy rate grew. In 2010 the vacancy rate was 3%. By 2019, 7.7% of housing units were vacant.[6]
- **4.7% mobile and manufacture housing.** The City of Lacona had a larger share of mobile and manufactured housing (4.7%) compared to the state (3.7%).[6]
- **23.7% renter-occupied.** The rental rate of Lacona was 23.7% in 2019. The percentage went up since 2010, when renter occupied housing was at 21.4%.[6]

49 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

50 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

51 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of Lacona is governed by a mayor and five-member city council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Board of Adjustments
- Clerk/Treasurer
- Fire Department
- Public Works

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are limited to maintaining current facilities and systems with a large portion already dedicated to sewer, water, and street maintenance. Funds have stayed the same over recent years.

Table LCA.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	No
	Economic Development Plan	No
	Local Emergency Operations Plan	County
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	State Codes
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	No
	GIS Capabilities	Contractor
	Chief Building Official	No
	Civil Engineering	Yes
	Local Staff Who Can Assess Community's Vulnerability to Hazards	County
	Grant Manager	Yes
	Mutual Aid Agreement	Yes

Survey Components/Subcomponents		Yes/No
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Limited
Time to devote to hazard mitigation	Limited

Plan Integration

The City of Lacona has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Zoning Ordinances (2022)

The City of Lacona's Zoning Ordinances were last updated in 2022. These Ordinances limit development in the floodplain, identify floodplain areas as parks of open space, require structures to be at least one foot above base flood elevation in the floodplain, prohibit development within the floodway, limited development in the wildland urban interface, limit development in the ETJ, and discourage development near chemical storage sites and along major transportation routes. Lastly, they account for current population trends and limit population density in the floodplain.

No other examples of plan integration were identified, and there are currently no plans to further integrate planning mechanisms.

Future Development Trends

In the past five years there have been no new developments in the community. There are no plans for new developments or businesses in the next five years.

Community Lifelines

Transportation

Lacona's major transportation corridors include County Route G76 and County Route S23. The most traveled route is County Route S23 with an average of 890 vehicles daily.[52] There are no rail lines that travel through the community. The local planning team noted that critical facilities such as the city hall, fire department, library, lift station, and community center are located along main transportation routes. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are seven chemical storage sites within or near Lacona which house hazardous materials. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Table LCA.3: Chemical Storage Sites

Name	Address	Located in Floodplain?
Heartland Cooperative - Lacona	118 N Meyers Avenue	No
United Farmers Cooperative - Lacona E Mill	200 E Mill Street	No
United Farmers Cooperative - Lacona Fuels	118 S Meyers Avenue	No
US Cellular - Lacona	21097 Highway G77	No
***Warren County E911 Communication Tower**	23493 S23 Hwy	No

Source: Iowa Department of Natural Resources[53]

Health and Medical Facilities

There are no medical and health facilities located within the community.

52 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

53 Iowa Department of Natural Resources. 2021. "Emergency Response - Tier II Chemical Storage." [datafile]. https://facilityexplorer.iowadnr.gov/facilityexplorer/.

Critical Facilities

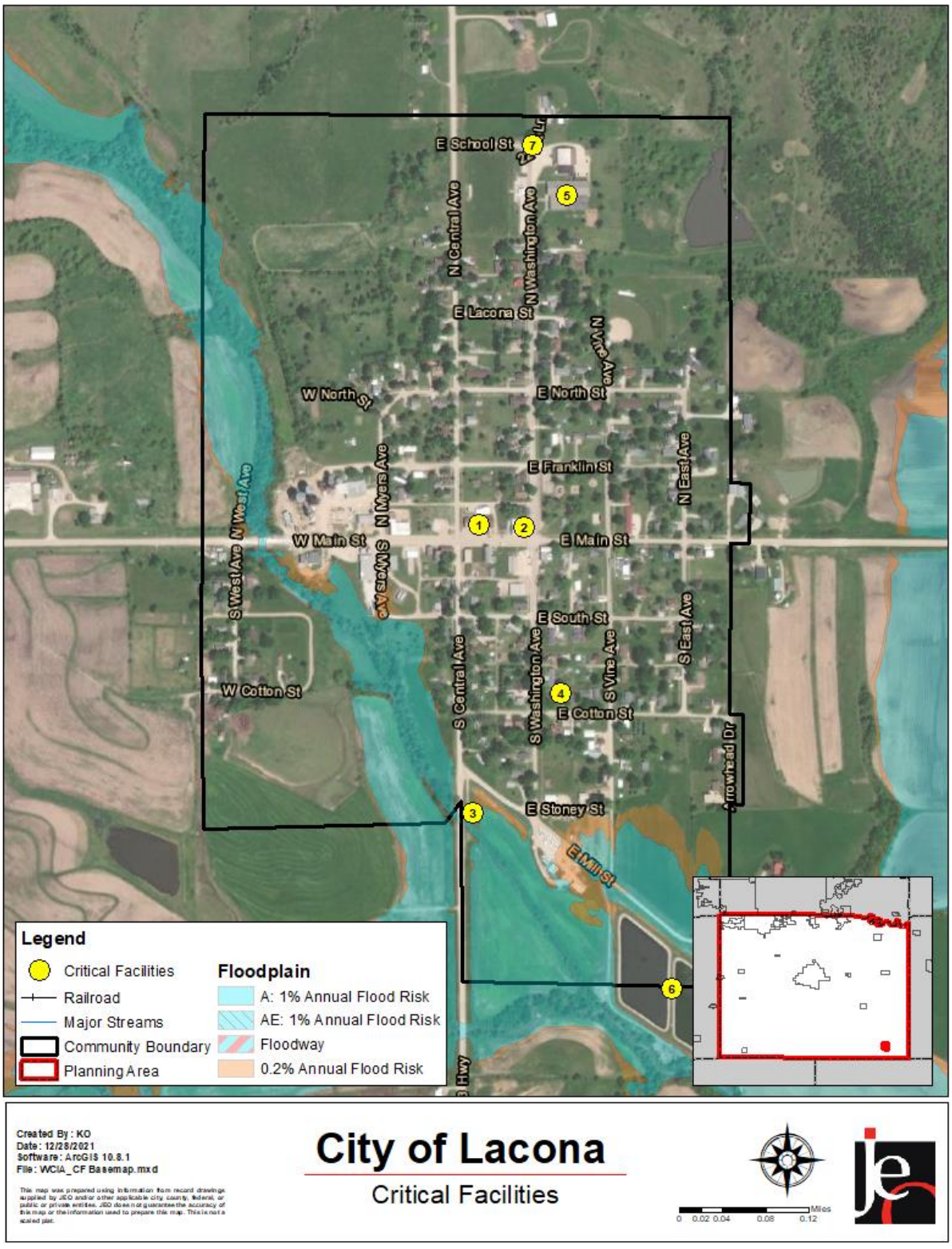
Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table LCA.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	City Hall, Fire Station, and Library	Y	N	N
2	Community Center	Y	N	N
3	Lift Station	N	Portable	N
4	Maintenance Building	N	N	N
5	Southeast Warren Intermediate School	Y	N	N
6	Wastewater Lagoons	N	N	N
7	Water Tower	N	N	N

Figure LCA.4: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table LCA.5: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
41	$3,191,000	4	$352,600	10%

Source: County Assessor, 2022

Table LCA.6: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
41	$3,191,000	1	$12,100	2%

Source: County Assessor, 2022

Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Flooding

The City of Lacona has identified Special Flood Hazard Areas on the southern and western sides of the community. A 2015 severe thunderstorm washed out roads throughout Lacona, slowing transportation. FEMA funds were used to repair the damage. Flooding such as this is usually caused by heavy rain events. Erosion around Cotton Creek exacerbates the issue, even while ditches and culverts are cleaned out regularly.

The community currently does not participate in the NFIP and was sanctioned on November 19, 2018. The community has not been able to garner the support to participate in the NFIP. However, the local planning team recognizes the importance of NFIP participation and compliance, and will work on building community support through education over the coming years.

Flood mitigation measures include projects to improve the stormwater system, upgrade the sewer system, raise the grade along critical infrastructure, and repair and improve roads. The city has also limited construction in the floodplain.

Hazardous Materials Release

Lacona is home to the Heartland Coop, a facility that stores anhydrous ammonia. There have been two recent leaks associated with this facility – a severe leak in August of 2010, and a minor leak in 2000. The 2010 leak resulted in a community-wide evacuation. Lacona residents were

forced to vacate for 24 hours, briefly taking up residence with friends and family while the ammonia leak was controlled. Residents were notified using the local news outlets and fire and sheriff announcements.

A HAZMAT Response team is available to respond to chemical leaks. The HAZMAT team operates with the Lacona Fire Department along with nearby fire departments who are members of the Mutual Aid Agreement. The Intermediate School has formal response procedures in their HAZMAT/gas leak binder. The Fire Department offers public hazard education opportunities to prepare the general public for hazardous material leaks. To mitigate against this hazard the Co-op facility has also updated company policies.

Severe Winter Storms

Beginning in February of 2007 and stretching to February of 2008, seven severe winter storms hit Warren County, causing a total of $375,000 in property damage. Three of these storms caused power outages because of heavy ice and snow build up on trees and power lines. In December 2015, a snowstorm affected Lacona when 6 inches of snow fell in one night.

Winter storms are a concern for the local planning team because of the history of power outages caused by snow and ice and their limited snow removal resources. Lacona has one employee responsible for snow removal. They have at their disposal a 35-year-old plow truck, a recently repaired sander, and a tractor with loader that frequently needs maintenance. To mitigate these vulnerabilities, the city has added an additional employee to help with snow removal and plans to update equipment and provide backup power generators to all critical facilities.

Tornadoes and Windstorms

The last tornado to blow through Lacona hit in May of 2008. Over $30,000 in damages to trees, farm buildings, and power lines were incurred from this EF1 tornado. According to the local planning team an EF2 tornado when through the western and southern portions of Lacona on August 20, 2019. In May of 2016 high winds caused $5,000 property damages. Many trees were felled in the park, and the roof of the Community Center had to be replaced. The local planning team estimates that windstorms damage trees in the city a few times every year.

About half of the homes in Lacona have basements that can be used as storm shelters. The Community Center has been designated and advertised as a public storm shelter. Tornado mitigation actions include improving the community shelter by stocking it with supplies in case of a disaster event and promoting the construction of in-home storm shelters. The community is alerted to tornadoes with a siren run by the Fire Department. AlertIowa is also an option for residents, and the city plans to begin promoting NOAA weather radio use for further emergency alert coverage. Critical municipal records are backed up and protected by surge protectors. Alliant Energy is responsible for maintaining tree limbs around power lines, but the city plans to further protect Lacona’s power supply by providing backup power generators to all critical facilities.

Mitigation Strategy

Completed Mitigation Actions

Mitigation Action	Community Shelter Rooms
Description	Formally designate and stock community shelters; construct community shelters in or near existing and future critical assets; install a storm shelter at the fire station; support legislation increasing standards for emergency shelters; publicly identify and list public storm shelters
Hazard(s) Addressed	All Hazards
Status	The Community Center serves as a community shelter, cooling station, and storm shelter in event of severe weather incident. The City Hall/FD/Library will only serve as cooling station and meeting place when deemed appropriate.

Mitigation Action	Purchase Snow Trucks, Plows, and Sanders
Description	Purchase snow trucks, plows, and sanders to improve capabilities to remove snow during and following winter events; have a place to store them
Hazard(s) Addressed	Severe Winter Storms
Status	New equipment has been purchased and implemented for winter events. Equipment being stored in city shop building. An equipment replacement plan has been made for the continuous upgrade or replacement of older equipment.

Mitigation Action	Raise Grade
Description	Raise grade to eliminate backup flooding – construct and elevate lift stations, etc.; construct/improve berms, dikes, and/or levees
Hazard(s) Addressed	Flooding
Status	Due to current location of lift station, no further modification or action is needed for preventing flooding.

Continued Actions

Mitigation Action	Aid Agreements and Community Drills
Description	Train, test, and exercise agreements; community drills
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000
Local Funding	Fire Department budget
Timeline	Ongoing
Priority	High
Lead Agency	Fire Department
Status	This is an ongoing project and is reviewed bi-annually.

Mitigation Action	Community Education and Awareness
Description	Establish a community education program to increase awareness related to household level mitigation actions. Utilize outreach projects and the distribution of maps. Purchasing equipment such as projectors and laptops to facilitate presentation of information.
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000
Local Funding	Staff Time
Timeline	Ongoing
Priority	High
Lead Agency	Fire Department; City Clerk
Status	This is an ongoing project and is reviewed every five years.

Mitigation Action	Demolition and Destruction Program
Description	Implement a structural demolition program for dilapidated or abandoned properties/structures
Hazard(s) Addressed	Infrastructure Failure
Estimated Cost	$10,000+
Local Funding	Fire Department budget
Timeline	Ongoing
Priority	Low
Lead Agency	Fire Department
Status	This is a continuous project that is reviewed during city council meetings and communicated with FD.

Mitigation Action	First Responder and Public Works Equipment Upgrade
Description	Equipment and facilities upgrade and acquisition plan (police, fire, EMS, public works – both individual and vehicle); install GPS units and laptops in applicable response vehicles; purchase and install emergency response guidebooks in all Public Works vehicles;
Hazard(s) Addressed	Grass/Wildfire
Estimated Cost	$100,000
Local Funding	Fire Department budget
Timeline	2-5 Years
Priority	Low
Lead Agency	Fire Department
Status	In progress. Lacona FD and EMS are part of the Warren County E911 which is working on new radio system (ISICS) and setting up for new dispatch center and CAD system.

Mitigation Action	First Responder Interagency Operability and Training
Description	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies; establish inner-operable communications and purchase necessary equipment to meet national and state interoperability standards; promote training and drills for first responders, EMTs, firefighters, and disaster responders
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000
Local Funding	Fire Department budget, EMPG
Timeline	Ongoing
Priority	High
Lead Agency	Fire Department
Status	A new communications center and CAD system are in the works, along with updated mutual aid agreement.

Mitigation Action	Improve Electrical System
Description	Purchase and install fixed backup power generators and pumping systems for un-served assets; investigate and implement alternative energy sources; bury utility lines in future development
Hazard(s) Addressed	All Hazards
Estimated Cost	$25,000 each
Local Funding	Local sales tax, Fire Department budget, HMGP
Timeline	2-5 Years
Priority	High
Lead Agency	Fire Department, Public Works
Status	Currently use a portable generator for lift station. Working on plan for possible purchase of a stationary backup generator for the City Hall/FD/Library building.

Mitigation Action	Improve Facility Security
Description	Install vehicular barriers, fences, lights, and/or security cameras to protect critical facilities and key infrastructure where possible; develop restricted access procedures
Hazard(s) Addressed	Terrorism
Estimated Cost	$10,000
Local Funding	City budget
Timeline	Ongoing
Priority	High
Lead Agency	City Council and Public Works
Status	Fences have been installed around lift station, water tower, and lagoon. Continuous improvement of other security systems as funding becomes available.

Mitigation Action	Improve Roads
Description	Repair potholes and other road damage caused by flooding; prevent further damage to roads with project to improve their condition and avert flooding
Hazard(s) Addressed	Flooding
Estimated Cost	$100,000
Local Funding	Grants, Road Use Tax, City Budget
Timeline	2-5 Years
Priority	High
Lead Agency	Public Works
Status	This is an ongoing project especially for potholes and sealing of roadways. There is a seven-year plan for street improvements in place.

Mitigation Action	Sanitary Sewer System Improvements
Description	Sanitary sewer system/lagoon study, install water impervious manhole covers; install backflow devices on vulnerable properties; clean sewer lagoons and install rock; construct and/or elevate the City's lift station(s), berms, dikes and/or levees
Hazard(s) Addressed	Flooding, Infrastructure Failure
Estimated Cost	$100,000+
Local Funding	Local Sales Tax
Timeline	5+ Years
Priority	Medium
Lead Agency	Public Works
Status	This is a continuous project. A lagoon study was completed in August 2020, city lagoon was in excellent condition. Currently new rock is being installed for continuous improvement of overall system.

Mitigation Action	Stormwater System Improvement and Upkeep
Description	Clear and deepen ditches; construct/repair storm water drainage infrastructure (underground, culverts, curb, and gutter); identify inadequate storm sewers and replace and/or repair them; replace and repair culverts; develop/expand/improve watershed studies (ditches, culverts, etc.) and plans for possible flood prone areas
Hazard(s) Addressed	Flooding
Estimated Cost	$100,000
Local Funding	Local Sales Tax, Road Use Tax, City Budget
Timeline	2-5 Years
Priority	High
Lead Agency	Public Works and City Council
Status	This is a continuous project. Replacement of culverts, ditch clearing and maintenance as needed, and purchase of additional supplies for storm-water system continues.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this community profile as changes occur or after a major event. The local planning team will include the City Council, Public Works Supervisor, and the local Fire Chief. The plan will be reviewed bi-annually. The public will be included in the review and revision process via council meetings and social media outlets.

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Community Profile

City of Martensdale

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table MTL.1: Martensdale Local Planning Team

Name	Title	Jurisdiction
Brad Prichard	Mayor	City of Martensdale
Deb Hutchison	City Council	City of Martensdale
Eric Hughes	City Council	City of Martensdale
Rich Wheeldon	Assistant Fire Chief	City of Martensdale
Scott Henson	Fire Chief	City of Martensdale
Travis Berger	City Council	City of Martensdale

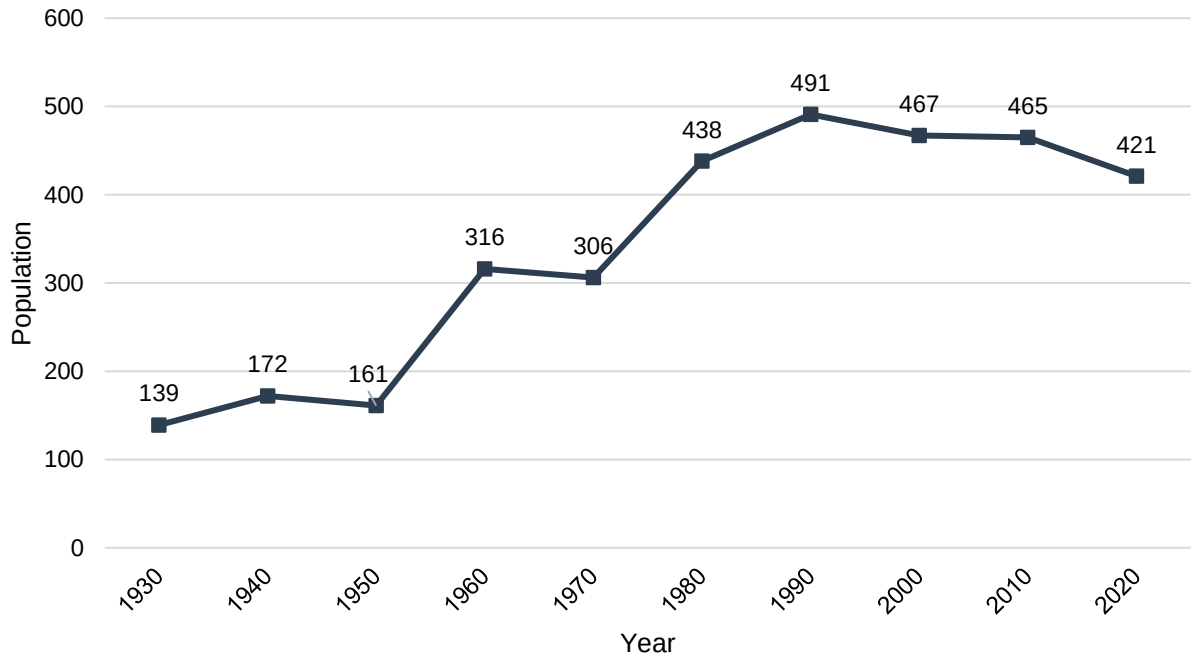
Location and Geography

The City of Martensdale is located in the western portion of Warren County and covers an area of 0.40 square miles. A major waterway in the area is the Middle River.

Demographics

The following figure displays the historical population trend for the City of Martensdale. This figure indicates that the population of Martensdale has been declining since 2010 to 421 people in 2020. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which could make implementation of mitigation projects more fiscally challenging. Martensdale's population accounted for 0.8% of Warren County's population in 2020.[54]

Figure MTL.1: Population 1930 - 2020



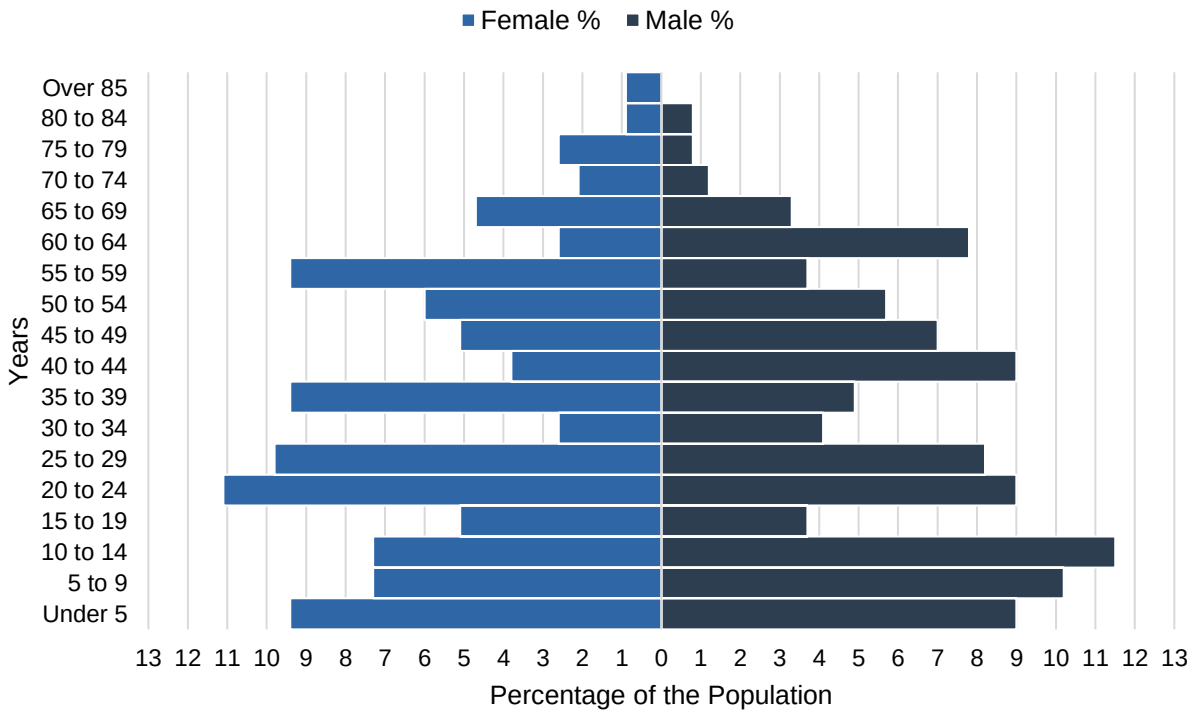
Source: U.S. Census Bureau

[54] United States Census Bureau. "2020 Census Redistricting Data (Public Law 94-171): P1: Race." https://data.census.gov.

The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Martensdale's population:

- **2% is non-white.** Since 2010, Martensdale grew less racially diverse. In 2010, 3% of Martensdale's population was non-white. By 2019, 2% was non-white.[55]
- **Younger median age.** The median age of Martensdale was 29.7 years in old 2019. The population grew younger since 2010, when the median age was 30.1.[56]

Figure MTL.2: Martensdale's Population by Age Cohort and Sex



The figure above shows Martensdale's population percentage broken down by sex and five-year age groups. Martensdale's population is younger with a much higher percentage of the population under 35 years of age.

55 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.

56 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Figure MTL.3: City of Martensdale

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Martensdale's population has:

- **13.2% of people living below the poverty line.** The poverty rate (13.2%) in the City of Martensdale was higher than the state's poverty rate (7.2%) in 2019.[57]
- **$56,667 median household income.** Martensdale's median household income in 2019 ($56,667) was $4,000 lower than the state ($60,523).[4]
- **6.5% unemployment rate.** In 2019 Martensdale had a higher unemployment rate (6.5%) when compared to the state (3.7%).[4]
- **45.7% of workers commuted 30 minutes or more to work.** More workers in Martensdale commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (45.7% compared to 19%).[58]

Major Employers

The major industry within the city of Martensdale is education, with the major employer being the Martensdale-St. Marys School District. A large percentage of resident's commute to neighboring communities, especially to the Des Moines metro area.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

- **72.5% of housing built prior to 1970.** Martensdale has a larger share of housing built prior to 1970 than the state (72.5% compared to 50.9%).[59]
- **6.8% of housing units vacant.** Since 2010, Martensdale's vacancy rate grew. In 2010 the vacancy rate was 0%. By 2019, 6.8% of housing units were vacant.[6]
- **0% mobile and manufacture housing.** The City of Martensdale had a smaller share of mobile and manufactured housing (0%) compared to the state (3.7%).[6]
- **29.4% renter-occupied.** The rental rate of Martensdale was 29.4% in 2019. The percentage went down since 2010, when renter occupied housing was at 30%.[6]

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of Martensdale is governed by a mayor and five-member city council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

57 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

58 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

59 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

- Clerk/Treasurer
- Fire Department
- Police Service
- Utilities Department
- Maintenance

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are limited to maintaining current facilities and systems, with a large portion dedicated to sewer projects in the community. Funds have stayed the same over recent years.

Table MTL.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	Yes
	Local Emergency Operations Plan	Yes (County)
	Floodplain Management Plan	Yes
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes (County)
	Chief Building Official	Contractor
	Civil Engineering	Contractor
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes

Survey Components/Subcomponents		Yes/No
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	Yes
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	Yes
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Limited

Plan Integration

Martensdale has multiple planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Building Code (2021)

The building code sets standards for constructed buildings and structures. The city has adopted the 2021 International Building Codes with no amendments made.

Capital Improvements Plan (2021)

The capital improvements plan annually outlines projects the city would like to pursue and provides a planning schedule and financing options. Projects include stormwater projects, storm sewer system upgrades, upsizing water distribution pipes, installing water meters for residential

structures, and updating electrical system distribution. A future update of the plan will include upsizing of culverts and drainage structures, improving transportation routes for drainage, widening roadways that would improve evacuations, installing emergency generators in critical facilities, constructing a community storm shelter and new water treatment facility.

Comprehensive Plan (1999)

The comprehensive plan is designed to guide the future actions and growth of the city. It incorporates some of the goals and objectives included in the HMP. The plan encourages clustering of development in sensitive areas and elevation of structures located in the floodplain. In a future update the plan will identify areas that need emergency shelters. The comprehensive plan will be updated again sometime in the next three to five years. There are no current strategies to further incorporate the HMP into the Comprehensive Plan.

Floodplain Ordinance (2020), Zoning Ordinance (2021), and Subdivision Regulations (2020)

The city's zoning ordinance discourages development in the floodplain, limits population density in the floodplain, identifies floodplain areas as parks of open space, requires more than one foot of elevation above Base Flood Elevation in the floodplain, considers wildfire and the wildland urban interface, includes well set back requirements, and the ability to implement water restrictions. Subdivision regulations restrict subdivision of land within or adjacent to the floodplain.

Future Development Trends

Over the past five years, the City of Martensdale has installed a new sewer system and had roads resurfaced. No new structures were developed in the floodplain. In the next five years, the city is looking into water line upgrades and a potential housing development at the end of Iowa Avenue.

Community Lifelines

Transportation

Martensdale's major transportation corridors include Interstate 35, which is located about 3 miles west of the community, and State Highway 92. The most traveled route is Interstate 35 with an average of 22,400 vehicles daily, 5,600 of which are trucks.[60] There are no rail lines that travel through the community. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are no chemical storage sites within or near Martensdale which house hazardous materials.

Health and Medical Facilities

There are no medical and health facilities located within the community.

60 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

Critical Facilities

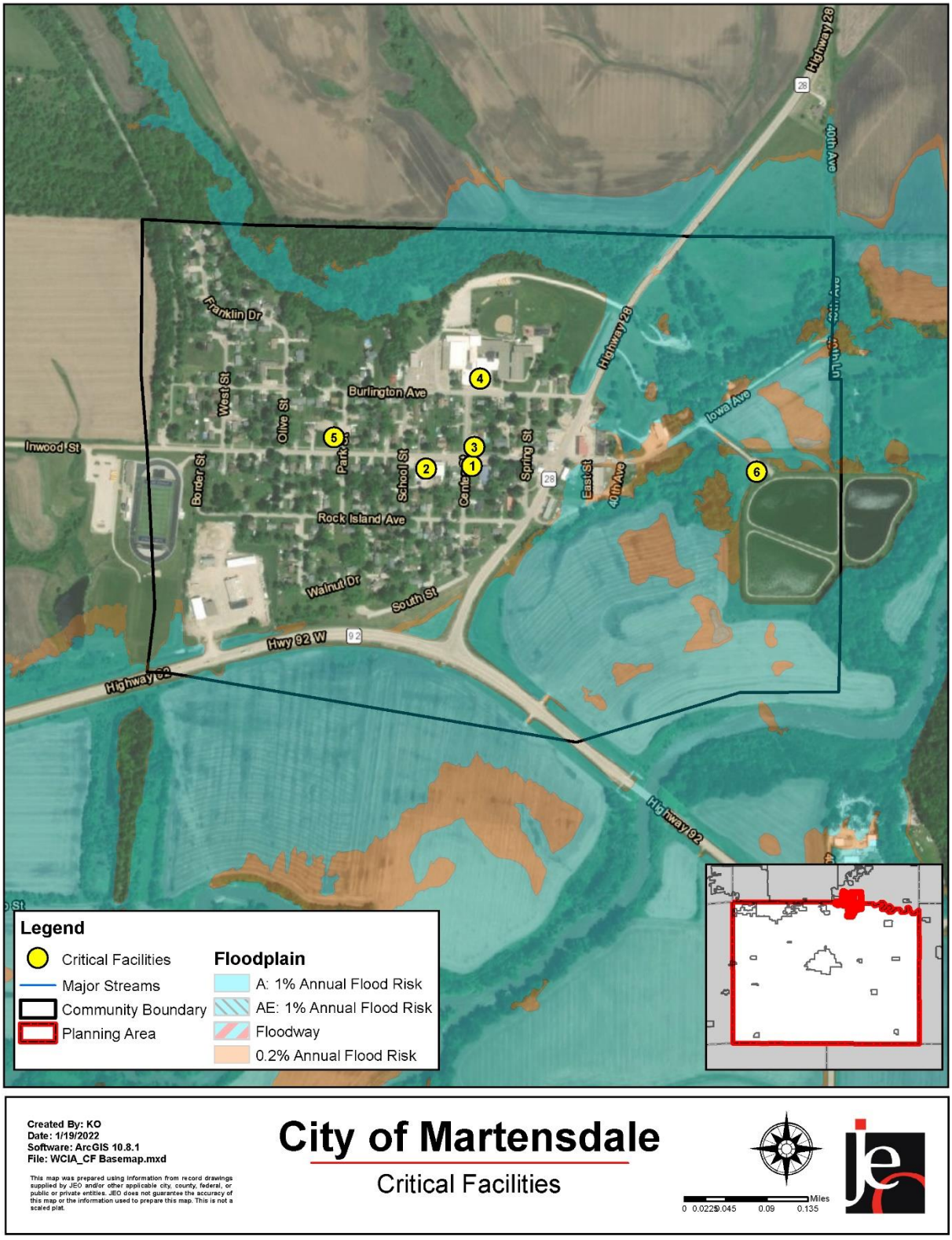
Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table MTL.3: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	City Hall	N	N	N
2	Fire Station and Water Tower	Y	Y - Portable	N
3	Lion's Hall	N	N	N
4	Martensdale Elementary School	Y	N	N
5	St. Paul's Lutheran Church	N	N	N
6	Wastewater/Pumping Station	N	N	N

Figure MTL.4: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table MTL.4: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
21	$6,854,400	6	$5,551,700	29%

Source: County Assessor, 2022

Table MTL.5: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
21	$6,854,400	1	$50,400	5%

Source: County Assessor, 2022

Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Flooding

The City of Martensdale has identified Special Flood Hazard Areas on the northern and eastern sides of the community. These low-lying areas are prone to flooding from the Middle River and the creek north of the city. NCEI records two events where Hwy 28 was covered in water, once in June 2008 and again in July of 2015. Both of these caused approximately $25,000 in property damage. Highway 28 will flood with rainfall rates of 1 inch of rain per hour or greater. The local planning team also reports a history of sewer lines backing up into homes during flood events because of inflow and infiltration issues. In the last three years, about four homes have been flooded. The Fire Station has suffered damage due to poor storm water drainage. Plans to reduce Martensdale's vulnerability to flooding involve projects to improve the sewer system and stormwater system, including installing backflow devices and constructing additional stormwater drainage infrastructure.

Severe Thunderstorms

The local planning team reports that there is approximately one power outage every year, usually lasting 2 to 4 hours, caused by severe thunderstorms. There is also a history of downed trees and localized flash flooding during storms. Highway 28, and the areas around Middle River and the creek on the north side of the city are particularly susceptible to flooding.

Martensdale utilizes several means to protect their power infrastructure. Critical municipal records are protected from lightning strikes and power outages with surge protectors. Trees near power lines are maintained by Mid-American Power company. Of the critical facilities in Martensdale, only the sewer lagoon has a backup power generator. The Fire Station is wired to be powered by a backup generator, and has access to a portable generator, but does not have a fixed generator. Currently no power lines in the community are buried to protect them from storms. The lack of NOAA weather radios in critical facilities leave this as an opportunity for a future mitigation action. Potential mitigation projects include bolstering public safe rooms, supporting the development of private safe rooms, and encouraging home weatherization efforts. In the coming years, the city plans to look into fitting critical facilities with hail resistant materials.

Tornadoes and Windstorms

NCEI records two EF1 tornadoes near Martensdale since 1996. The first was in June of 1998. The tornado caused $5,000 in property damage, mostly to trees, as it touched down intermittently on a path from outside Martensdale to Norwalk. The second EF1 tornado occurred in July 2014 a quarter mile north of the city. While this event led to the declaration of Presidential Disaster Areas in other areas of Iowa, in Martensdale it only caused minor damage, mostly to trees, totaling $1,000, and a short power outage. There has been no damage to critical facilities during past tornadoes or windstorms.

There are warning sirens in the community that are activated by Warren County Emergency Management. Martensdale does not currently have any public safe rooms, though plans are in place to construct or retrofit safe rooms near community assets. Most residents have access to basements in their homes for storm shelter. Severe weather preparedness education and text alerts are provided by County Emergency Management. The city protects its digital municipal records with data backup systems, though most of its records are paper and have no backup system. Mutual Aid Agreements are in place with surrounding communities.

Mitigation Strategy

Completed Mitigation Actions

Mitigation Action	GIS Mapping
Description	Participate in county GIS mapping effort, including zoning and hazard mitigation maps.
Hazard(s) Addressed	All Hazards
Status	Completed

Mitigation Action	Inspect Water Lines
Description	Inspect water lines for signs of degradation
Hazard(s) Addressed	Infrastructure Failure
Status	Inspections were made in 2021.

Continued Mitigation Actions

Mitigation Action	Aid Agreements
Description	Establish aid agreement file. Support other local governmental entities, such as fire departments, schools, and townships in the identification and pursuit of mitigation actions.
Hazard(s) Addressed	All Hazards
Estimated Cost	$100
Local Funding	Municipal funds
Timeline	Ongoing
Priority	Low
Lead Agency	Fire Department, City Clerk
Status	This is an ongoing project.

Mitigation Action	Community Safe Rooms
Description	Develop and implement a public safe room plan; design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, and other areas; construct community safe rooms in or near existing and future critical assets; integrate safe room retrofits into occupied community assets; promote the construction of reinforced in-residence tornado safe rooms; promote/provide safe room education for builders and developers
Hazard(s) Addressed	Severe Thunderstorms, Tornadoes and Windstorms
Estimated Cost	$250,000
Local Funding	Municipal funds
Timeline	5+ Years
Priority	Low
Lead Agency	City Board
Status	This is an ongoing project.

Mitigation Action	Comprehensive Disaster/Emergency Response Plan
Description	Develop and/or update a comprehensive disaster and emergency response plan. Additional plans that can be considered are continuity of operations plans and evacuation plans.
Hazard(s) Addressed	All Hazards
Estimated Cost	$500
Local Funding	Municipal funds
Timeline	Ongoing
Priority	Low
Lead Agency	Fire Department, City Board, Planning and Zoning Committee
Status	This is an ongoing project

Mitigation Action	Demolition and Destruction Program
Description	Implement a structural demolition program for dilapidated or abandoned properties/structures
Hazard(s) Addressed	Infrastructure Failure
Estimated Cost	$10,000+
Local Funding	Municipal funds
Timeline	5+ Years
Priority	Low
Lead Agency	City Board
Status	Not started

Mitigation Action	HAZMAT Response
Description	Designate/enforce HAZMAT transportation routes; map the locations of past chemical contamination spills and sites; establish HAZMAT decontamination sites
Hazard(s) Addressed	Hazardous Materials Release
Estimated Cost	$2,500
Local Funding	Municipal funds
Timeline	Ongoing
Priority	Low
Lead Agency	Fire Department
Status	This is an ongoing project.

Mitigation Action	Housing Fire Codes
Description	Create housing codes requiring extinguishers in certain housing
Hazard(s) Addressed	Grass/Wildfire
Estimated Cost	$1,000
Local Funding	Municipal funds
Timeline	5+ Years
Priority	Low
Lead Agency	Planning and Zoning Committee
Status	Not started

Mitigation Action	Improve Private Residences
Description	Repair structurally weak homes; weatherization efforts; encourage property owner private insurance purchase; update subdivision ordinances to include special mitigation measures
Hazard(s) Addressed	All Hazards
Estimated Cost	$250/yr plus incentives
Local Funding	Municipal funds
Timeline	Ongoing
Priority	Low
Lead Agency	City Board
Status	This is an ongoing project.

Mitigation Action	Improve Sewer System
Description	Conduct a sewer lagoon and sanitary sewer system study; upgrade, replace, and expand sewer lines; clean sewer lagoons and install riprap where needed; install backflow devices to sewer lines; remove dead vegetation around lagoon (MTSD)
Hazard(s) Addressed	Flooding; Pandemic Disease; Infrastructure Failure
Estimated Cost	$250,000
Local Funding	Municipal funds
Timeline	5+ Years
Priority	Medium
Lead Agency	Utilities Department, City Board
Status	Sewer system improvements were made in 2021. This is an ongoing project to keep improving the system.

Mitigation Action	Improve Stormwater System
Description	Conduct drainage studies; construct storm water drainage infrastructure (underground, culverts, curb & gutter); develop Stormwater Master Plan; clear drainage ditches and culverts; identify and replace/repair inadequate storm sewers; replace culverts; install water impervious manhole covers; establish multi-jurisdictional partnership to reduce storm water runoff (city/school); develop stream modification projects, maintain sandbags in dry storage, develop soil erosion stabilization projects; purchase standby pumps for stormwater control; upgrade/replace/expand sewer lines; maintain ditch inspection plan; implement sustainable stormwater control options (such as rain gardens); install backflow devises to sewer lines
Hazard(s) Addressed	Flooding, Infrastructure Failure
Estimated Cost	$250,000
Local Funding	USDA RD; Municipal funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Board, Utilities Department
Status	Stormwater system improvements were made in 2021. This is an ongoing project to keep improving the system.

Mitigation Action	Install New and Upgraded Communication Technology for First Responders
Description	Update first responder and interagency communications protocols and equipment to meet national/state interoperability standards; install repeaters in first responder vehicles; install computers and modern surveillance equipment in applicable response vehicles; establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies; install repeaters in first responder vehicles
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000,000+
Local Funding	Municipal funds, FEMA AGF funds,
Timeline	5+ Years
Priority	High
Lead Agency	Fire Department, Warren County Emergency Management, City Board
Status	Communication technology is updated as funding allows. This is an ongoing project.

Mitigation Action	Purchase Snow Trucks, Plows, and Sanders
Description	Purchase snow trucks, plows, and sanders to improve capabilities to remove snow during and following winter events; have a place to store them
Hazard(s) Addressed	Severe Winter Storms
Estimated Cost	$75,000
Local Funding	Municipal funds
Timeline	Ongoing
Priority	Low
Lead Agency	Utilities Department
Status	Equipment is updated/upgraded as funding allows. This is an ongoing project.

Removed Mitigation Actions

Mitigation Action	Maintain City Streets
Description	Maintain city streets (not upgrade surface type); pave existing streets
Hazard(s) Addressed	All Hazards
Reason for Removal	This is a maintenance project and is being removed to focus on other mitigation projects.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this community profile as changes occur or after a major event. The local planning team will include the Mayor-City Council, County representatives, and the local Fire Chief. The plan will be reviewed bi-annually. The public will be included in the review and revision process via council meetings and website updates.

Community Profile

City of Milo

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table MLO.1: Milo Local Planning Team

Name	Title	Jurisdiction
Diane Hall	Mayor	City of Milo
Doug Hembry	Maintenance Engineer	City of Milo
Misti Kosman	Clerk	City of Milo

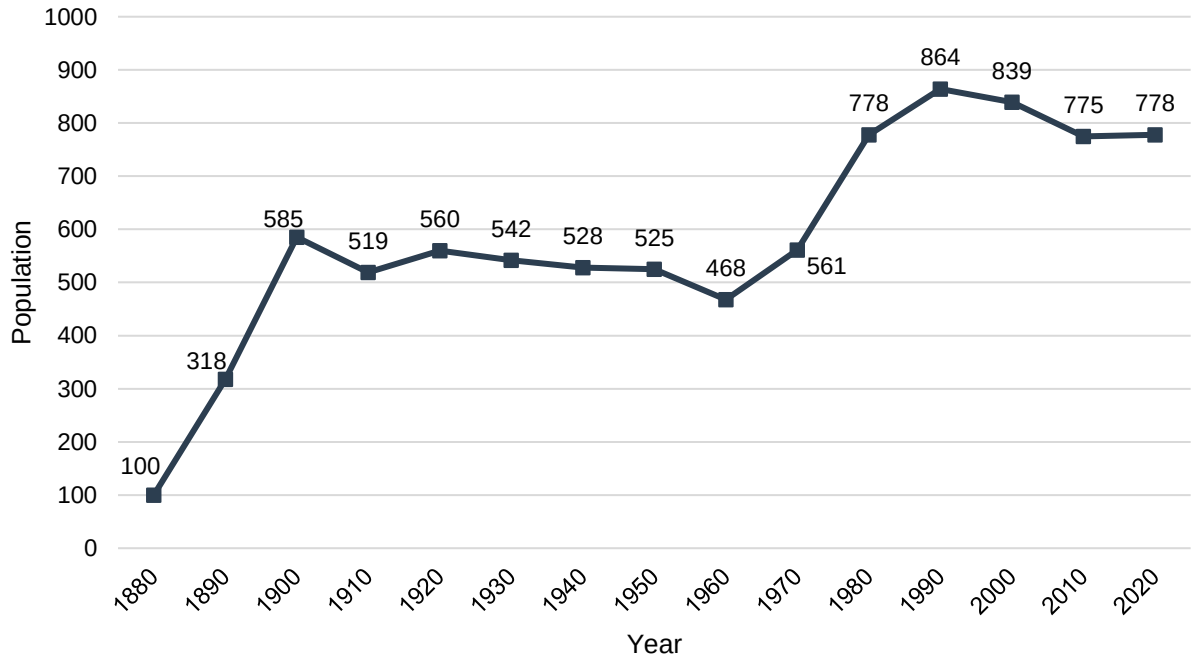
Location and Geography

The City of Milo is located in the eastern portion of Warren County approximately five miles from the Marion County line and covers an area of 0.62 square miles. There are no large rivers or streams in the City, but there are creeks flowing nearby. One of the many creeks near Milo includes Coal Creek, which is to the north of the community. The community is described as flat with little change in elevation, which makes drainage of stormwater difficult during heavy rains.

Demographics

The following figure displays the historical population trend for the City of Milo. This figure indicates that the population of Milo has been increasing since 2010 to 778 people in 2020. Increasing populations are associated with increased hazard mitigation and emergency planning requirements for development. Increasing populations can also contribute to increasing tax revenues, allowing communities to pursue additional mitigation projects. Milo's population accounted for 1.5% of Warren County's population in 2020.[61]

Figure MLO.1: Population 1880 – 2020



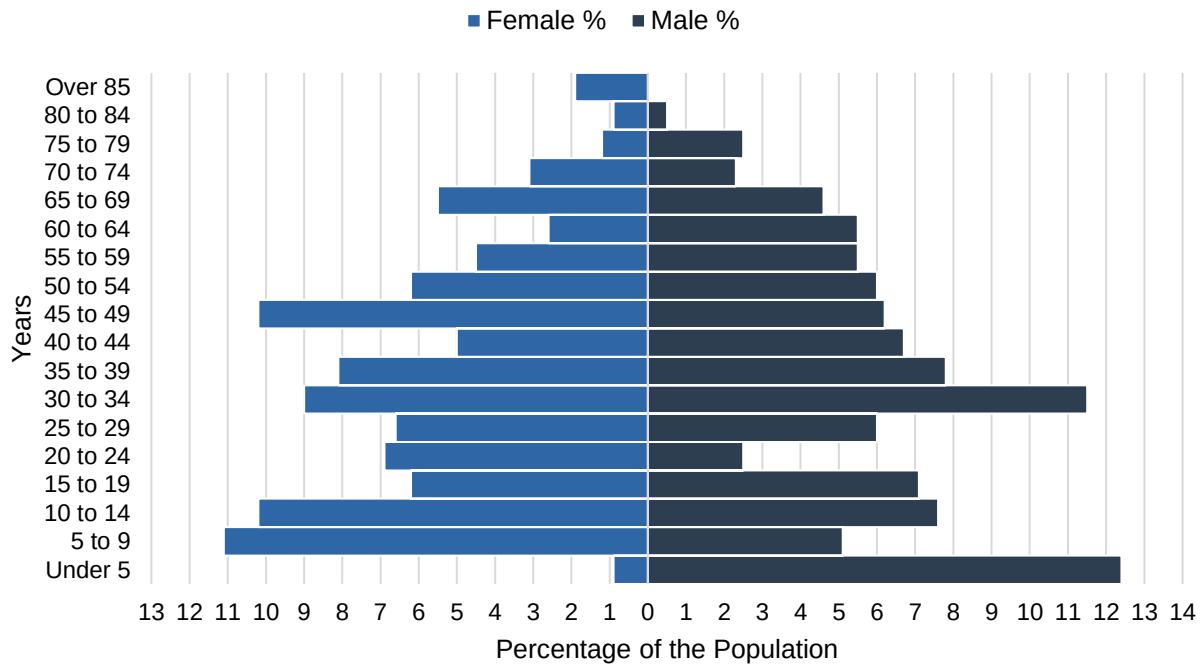
Source: U.S. Census Bureau

[61] United States Census Bureau. "2020 Census Redistricting Data (Public Law 94-171): P1: Race." https://data.census.gov.

The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Milo's population:

- **3% is non-white.** Since 2010, Milo grew more racially diverse. In 2010, 0% of Milo's population was non-white. By 2019, 3% was non-white.[62]
- **Younger median age.** The median age of Milo was 33.7 years in old 2019. The population grew younger since 2010, when the median age was 38.5.[63]

Figure MLO.2: Milo's Population by Age Cohort and Sex

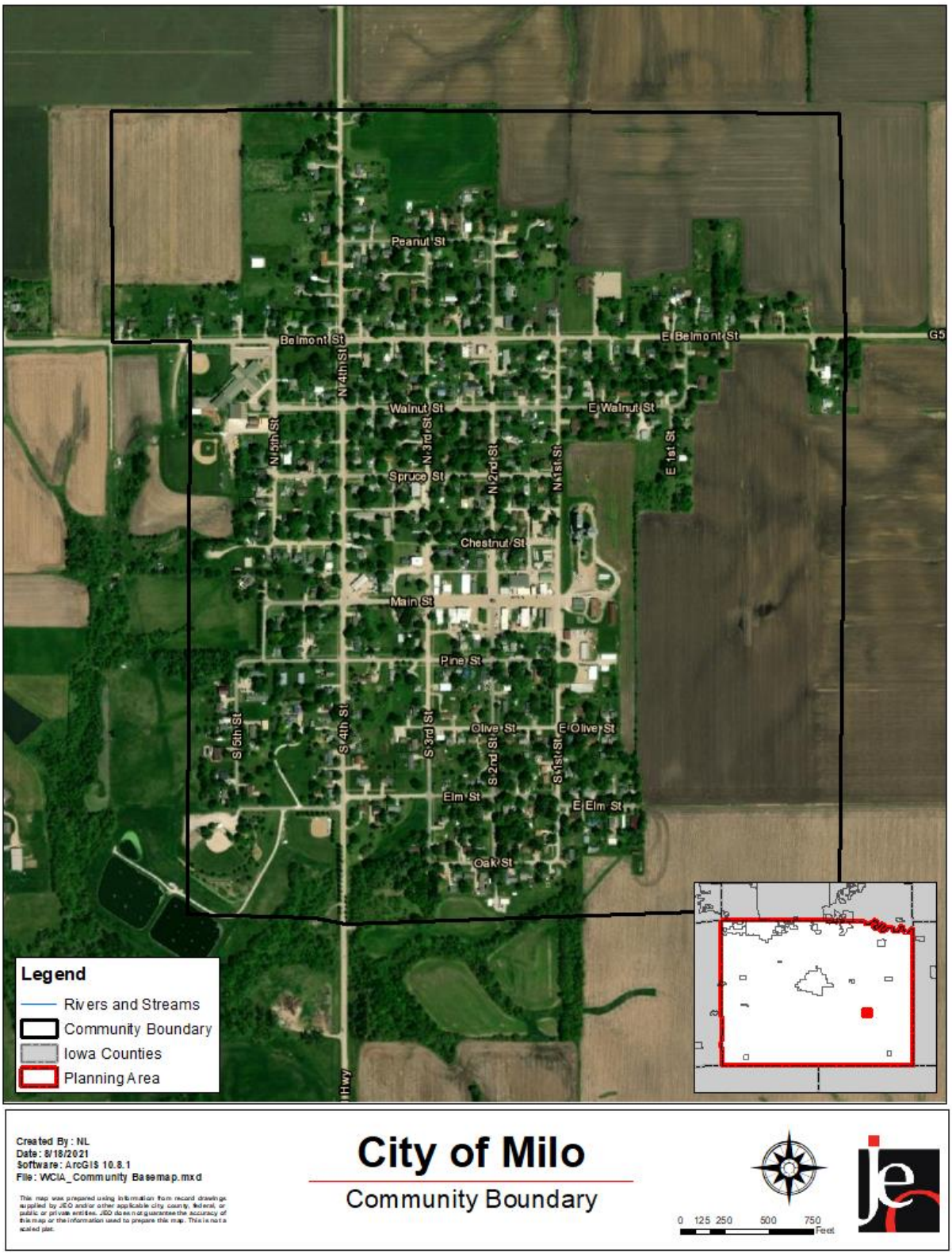


The figure above shows Milo's population percentage broken down by sex and five-year age groups. Milo's population is younger with a much higher percentage of the population below 40 years of age. This likely indicates a growing population in the years to come.

62 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.

63 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Figure MLO.3: City of Milo



Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Milo's population has:

- **7% of people living below the poverty line.** The poverty rate (7%) in the City of Milo was lower than the state's poverty rate (7.2%) in 2019.[64]
- **$56,932 median household income.** Milo's median household income in 2019 ($56,932) was $4,000 lower than the state ($60,523).[4]
- **1.1% unemployment rate.** In 2019 Milo had a lower unemployment rate (1.1%) when compared to the state (3.7%).[4]
- **60.5% of workers commuted 30 minutes or more to work.** More workers in Milo commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (60.5% compared to 15.4%).[65]

Major Employers

The major employers in the City of Milo are Southeast Warren Community School District, Country Propane, Milo Locker, and Casey's General Store. Milo is a bedroom community, as many of its residents commute to Des Moines for work.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

- **45.2% of housing built prior to 1970.** Milo has a smaller share of housing built prior to 1970 than the state (45.2% compared to 50.9%).[66]
- **1.7% of housing units vacant.** Since 2010, Milo's vacancy rate decreased. In 2010 the vacancy rate was 2.9%. By 2019, 1.7% of housing units were vacant.[6]
- **0.9% mobile and manufacture housing.** The City of Milo had a smaller share of mobile and manufactured housing (0.9%) compared to the state (3.7%).[6]
- **19.9% renter-occupied.** The rental rate of Milo was 19.9% in 2019. The percentage went up since 2010, when renter occupied housing was at 16.8%.[6]

64 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.
65 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.
66 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of Milo is governed by a Mayor and a five-member City Council. Other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Board of Adjustments
- Clerk/Treasurer
- City Engineer (Contractor)
- Library Board
- Maintenance Director
- Milo Hometown Pride
- Milo Volunteer Fire and EMS
- Warren County Economic Development
- Zoning Board

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are sufficient to pursue new capital projects with a large portion already dedicated to a wastewater treatment facility and fire truck. Funds have increased over recent years.

Table MLO.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	Under Development
	Economic Development Plan	No
	Local Emergency Operations Plan	Yes – County
	Floodplain Management Plan	No
	Storm Water Management Plan	Under Development
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	State Codes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	County
	Chief Building Official	Yes
	Civil Engineering	Yes – Contractor

Survey Components/Subcomponents		Yes/No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes – County
	Grant Manager	Mayor & Clerk
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Under Development
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	Yes – Lions Club & Hometown Pride
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes – Fire Department
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Limited
Time to devote to hazard mitigation	Limited

Plan Integration

Milo has multiple planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Building Code

The building code sets standards for constructed buildings and structures. The village has not adopted specific a building code; however, the State of Iowa currently requires the 2015 International Building Code (IBC).

Capital Improvements Plan (Under Development)

The capital improvements plan annually outlines projects the city would like to pursue and provides a planning schedule and financing options. Although the Capital Improvement Program is currently under development, the local planning team noted several items that they anticipate including in future updates: stormwater projects, upsizing of culverts and drainage structures, installing drainage ditches around the park and high runoff areas in the city, regular maintenance of drainage structures, and upgrading the storm sewer systems. Additionally, they aim to include installing emergency generators at critical facilities, improving the existing fire hall, and constructing a community storm shelter.

Subdivision Regulations (2004) and Zoning Ordinance (2004)

The City of Milo's zoning ordinances were last updated in 2004. The ordinances discourage development in the floodplain, identify the floodplain areas as parks of open space, and require at least one foot above base flood elevation in the floodplain. They also prohibit development within the floodway and the filling of wetlands.

Future Development Trends

In the past five years, there has been one new commercial property located on Main Street that received improvements and new owners. No new structures were developed in the floodplain. In the next five years, the city plans to remove multiple buildings by May 2023 and begin new construction after their removal. The city also has plans for a possible subdivision on 4th Street.

Community Lifelines

Transportation

Milo's major transportation corridors include County Road G58, County Road S23, and U.S. Highway 65, which is four miles west of the city. The most traveled route is Highway 65 with an average of 2,190 vehicles daily, 230 of which are trucks.[67] The local planning team noted that critical facilities such as the school are located along main transportation routes. There are no rail lines that travel through the community. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are three chemical storage sites within or near Milo which house hazardous materials. In

67 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Table MLO.3: Chemical Storage Sites

Name	Address	Located in Floodplain?
Smith Feed & Grain	101 1st Street	No
US Cellular - Liberty Center	21427 Highway 65	No

Source: Iowa Department of Natural Resources[68]

Health and Medical Facilities

There are no medical and health facilities located within the community.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

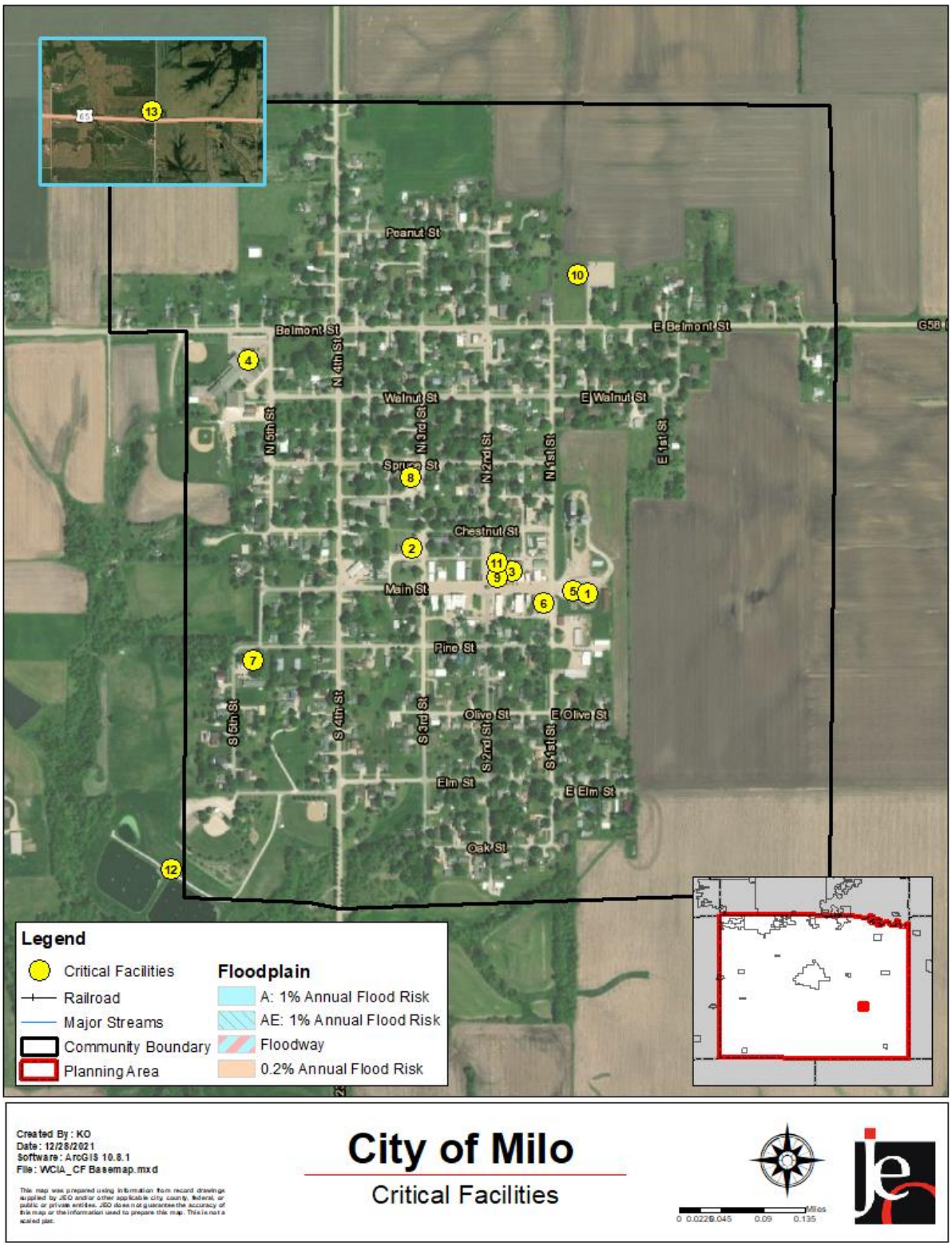
Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table MLO.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Ambulance Building	N	N	N
2	Christian Union Church	N	N	N
3	Community Center	N	N	N
4	Elzora Town Daycare/Southeast Warren Primary Care Center (K-3)	N	N	N
5	Maintenance Building	N	N	N
6	Milo City Hall/Fire Hall	N	Y, 3 Portable	N
7	Milo Manor	N	N	N
8	Milo United Methodist Church		N	N
9	Public Library	N	N	N
10	St. Augustine's Catholic Church	N	N	N
11	Warning Siren	N	N	N
12	Wastewater Treatment Plant/Lift Station	N	N	N
13	Water Tower	N	N	N

68 Iowa Department of Natural Resources. 2021. "Emergency Response - Tier II Chemical Storage." [datafile]. https://facilityexplorer.iowadnr.gov/facilityexplorer/.

Figure MLO.4: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g., buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table MLO.5: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
34	$4,480,100	0	$0	0%

Source: County Assessor, 2022

Table MLO.6: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
34	$4,480,100	0	$0	0%

Source: County Assessor, 2022

Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Animal and Plant Disease

The local planning team cites agricultural animal and plant diseases as a top hazard for Milo because of concerns about potential impacts on Milo's agriculture-based economy, though there have been no outbreaks yet. The horse and cattle populations are of greatest concern to the local planning team. Two places are particularly vulnerable because of their large concentrations of livestock: Knoxville Livestock Market (20 miles from Milo) and Russel Livestock (25 miles from Milo). To date there have been reports of minor outbreaks of Foot-and-Mouth Disease, aphids, Dutch Elm Disease, Emerald Ash Borers, and Soybean Rust. There are no city plans in place to respond to an agricultural disease outbreak, but the State and most animal production facilities do have plans.

Flooding

The local planning team noted that the 200 block of 2nd Street and 300 block of Peanut Street are the most prone to flooding. In July of 2014 a flash flood caused by heavy rain resulted in $300,000 in property damage. Ditches overflowed and water rose as high as five feet in some places. Several hours following the downpour, up to three feet of standing water was still present in the community.

Milo is a very flat community. Due to the lack of elevation change and absence of a formal stormwater management system, the community is vulnerable to flash flooding. Because few

streets in the community have curb and gutters, there is a reliance on ditches for stormwater conveyance. Residential areas are particularly prone to flooding. The local planning team reports that homes across Milo flooded two to three times in 2015 and 2016. The critical facilities in the city have not had any flood damage. The city identified improvements to the city's stormwater and sewer systems as potential mitigation actions. Milo will conduct a stormwater drainage study and deepen ditches as part of this effort. The city has hired an engineering firm to develop plans for a possible dam which would cost $2-3 million. The city is working on storm water flow improvements when time and funding allow. The City of Milo does not have a Special Flood Hazard Area identified in or near the community.

Infrastructure Failure

Milo has a history of infrastructure failure. An ice storm in December of 2008 deposited a half inch of ice on Milo, causing several days of power outages. Of most concern lately is the possibility of road and bridge failure. Closures would have vast economic impacts on residents, many of whom rely on this infrastructure for their daily commutes to work in Des Moines.

The city is particularly concerned with infrastructure failure threatening water supplies. Milo receives water from Des Moines Water Works via Warren Water District. If either system were compromised, Milo would be without water. The city would like to develop a plan to prepare for a water supply shortage scenario.

Warren County is responsible for the bridges and roads that have the highest impact on Milo's mobility, but the city itself plans to install backup generators at critical facilities to improve power continuity, implement infrastructure retrofits to protect critical facilities, and utilize GIS maps to identify opportunities for relocating municipal systems.

Severe Winter Storms

In October of 1997, nine inches of snow caused so much damage to crops, power lines, and trees that Warren County was declared a Presidential Disaster Area. Over $3,500,000 in property damage was accrued across Iowa. Milo has not suffered any damage to critical facilities from severe winter weather, but it has been subject to power outages and reduced mobility. The city's streets are cleared with little issue, but the county often leaves peripheral roads covered in snow, hampering commuter travel. There are no designated snow routes or fences in Milo, but there has been little need for them in the past. The city employs two snowplows and one salt and sand truck to clear all roads outside of S23 and G58, (for which the County is responsible). While snow removal resources are sufficient, the local planning team notes that Milo would benefit from designating a space to keep removed snow after heavy storms. The city purchased a new snowplow in 2018.

Tornadoes and Windstorms

The local planning team is concerned about the lack of storm shelters available to vulnerable populations in the community. Milo Manor, a local retirement home, has no basements or other shelter available. Milo has not suffered any damage from tornadoes in the past, but their absence of community safe rooms makes the community particularly vulnerable to future tornadoes. Milo is additionally vulnerable because critical municipal records that are in digital format are backed up regularly, but paper records are not fire or waterproof.

The city has warning sirens that reach all areas of the community and can be activated manually or by the county. The County Emergency Manager offers severe weather text alerts and educational outreach to the community. The local fire department has mutual aid agreements in

place with all of Warren County to respond to disasters. The city has worked to remove hazardous tress in the community. Milo plans to additionally reduce its vulnerability to tornadoes by promoting the purchase and use of NOAA weather radios, conducting community drills, incorporating safe room retrofits into existing critical facilities, and building community safe rooms.

Pandemic Disease

The local planning team identified pandemic disease as a hazard of concern. As a response to Covid-19, the city has implemented plans to address supplies, staffing, and containment and mitigation of the virus. Hand sanitizer stations were also placed in public buildings. According to the planning team, no major impacts occurred in the community thus far from Covid-19.

Mitigation Strategy

Completed Mitigation Actions

Mitigation Action	Designate a Snow Storage Site
Description	Designate a site snow cleared from streets after heavy snowfall events can be stored
Hazard(s) Addressed	Severe Winter Storms
Status	A snow storage site has been designated.

Mitigation Action	Install New and Upgraded Communication Technology for First Responders
Description	Update first responder and interagency communications protocols and equipment to meet national/state interoperability standards; install repeaters in first responder vehicles; install computers and modern surveillance equipment in applicable response vehicles; establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies; install repeaters in first responder vehicles
Hazard(s) Addressed	All Hazards
Status	New equipment/technology has been installed.

Mitigation Action	Purchase Snow Trucks, Plows, and Sanders
Description	Purchase snow trucks, plows, and sanders to improve capabilities to remove snow during and following winter events; have a place to store them
Hazard(s) Addressed	Severe Winter Storms
Status	New equipment has been purchased.

New Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Purchase backup power generators. Needed for the Community Center and Warning Siren.
Hazard(s) Addressed	All Hazards
Estimated Cost	$75,000
Local Funding	General Funds
Timeline	1 Year
Priority	High
Lead Agency	City Government, Fire Department
Status	In the process of gathering quotes.

Mitigation Action	Water Supply Shortage Plan
Description	Develop a water supply shortage plan to better prepare for a water shortage event.
Hazard(s) Addressed	Infrastructure Failure, Water Shortage
Estimated Cost	$20,000
Local Funding	General Funds
Timeline	5+ Years
Priority	Low
Lead Agency	City Government, Fire Department
Status	Not started

Continued Mitigation Actions

Mitigation Action	Comprehensive Disaster/Emergency Response Plan
Description	Develop and/or update a comprehensive disaster and emergency response plan. Additional plans that can be considered are continuity of operations plans and evacuation plans.
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000+, Staff Time
Local Funding	General Funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Council, Mayor
Status	Not started

Mitigation Action	Develop GIS Maps of Municipal Infrastructure
Description	Acquire Geographic Information System (GIS) to locate municipal infrastructure such as water and sewer lines
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,500 single user & staff time
Local Funding	General funds
Timeline	1 Year
Priority	High
Lead Agency	City Maintenance Department
Status	In progress

Mitigation Action	Develop Secondary Alert Systems
Description	Promote NOAA weather radio purchase and use; install siren warning systems where necessary; countywide AlertIowa/Code Red participation
Hazard(s) Addressed	All Hazards
Estimated Cost	$30/radio
Local Funding	General Funds, Fire Department Funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Fire Department
Status	Ongoing community education takes place regularly.

Mitigation Action	First Responder Interagency Operability and Training
Description	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies; establish inner-operable communications and purchase necessary equipment to meet national and state interoperability standards; promote training and drills for first responders, EMTs, firefighters, and disaster responders
Hazard(s) Addressed	All Hazards
Estimated Cost	$25,000+
Local Funding	AFG, Fire Department Funds
Timeline	2-5 Years
Priority	High
Lead Agency	Fire Department
Status	Training is an ongoing project.

Mitigation Action	Improve Sewer System
Description	Conduct a sewer lagoon and sanitary sewer system study; upgrade, replace, and expand sewer lines; clean sewer lagoons and install riprap where needed; install backflow devices to sewer lines; remove dead vegetation around lagoon (MTSD)
Hazard(s) Addressed	Flooding
Estimated Cost	$4,000,000
Local Funding	SRF Grants, General funds
Timeline	5+ Years
Priority	High
Lead Agency	City Council
Status	Currently in planning and design phase. Anticipating construction to begin Fall 2023.

Mitigation Action	Improve Stormwater System
Description	Conduct drainage studies; construct storm water drainage infrastructure (underground, culverts, curb & gutter); develop Stormwater Master Plan; clear drainage ditches and culverts; identify and replace/repair inadequate storm sewers; replace culverts; install water impervious manhole covers; establish multi-jurisdictional partnership to reduce storm water runoff (city/school); develop stream modification projects; maintain sandbags in dry storage, develop soil erosion stabilization projects; purchase standby pumps for stormwater control; upgrade/replace/expand sewer lines; maintain ditch inspection plan; implement sustainable stormwater control options (such as rain gardens); install backflow devises to sewer lines
Hazard(s) Addressed	Flooding
Estimated Cost	$140,000
Local Funding	General funds, RUT, ARPA
Timeline	1 Year
Priority	High
Lead Agency	City Maintenance Department, Garden & Associates
Status	Improvements will be done to system on Main Street, Chestnut Street, and 2nd and 3rd Streets.

Mitigation Action	Protect Power at Critical Facilities
Description	Provide a portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations and other critical facilities such as the community center, city hall, and fire station; purchase and install surge protectors on sensitive equipment in critical facilities
Hazard(s) Addressed	All Hazards
Estimated Cost	$20,000+
Local Funding	General Funds, HMA
Timeline	1 Year
Priority	High
Lead Agency	City Council, Mayor, Fire Department
Status	Currently accepting quotes.

Mitigation Action	Safe Rooms and Storm Shelters
Description	Develop and implement and public safe room plan; design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, and other areas; construct community safe rooms in or near existing and future critical assets; integrate safe room retrofits into occupied community assets; promote the construction of reinforced in-residence tornado safe rooms; promote/provide safe room education for builders and developers
Hazard(s) Addressed	Tornadoes and Windstorms, Severe Thunderstorms
Estimated Cost	Varies
Local Funding	General Funds, HMA
Timeline	5+ Years
Priority	Low
Lead Agency	City Council, City Engineer
Status	Not started

Removed Mitigation Actions

Mitigation Action	Annually Train Local Leaders on Hazard Mitigation Issues
Description	Educate and train local leaders annually on hazard mitigation issues; review the mitigation plan during education/training, perhaps including coordinating and inviting members of the fire department, emergency manager, and/or FEMA to come speak at council meetings; support other local governmental entities, such as fire departments, schools, and townships in the identification and pursuit of mitigation actions; institute efforts to increase the supply and morale of volunteers
Hazard(s) Addressed	All Hazards
Reason for Removal	This project is no longer a priority for the community.

Mitigation Action	Infrastructure Retrofits
Description	Bolster the protection of critical facilities through structural retrofits; expand and upgrade fire station to meet modern needs for vehicles and training
Hazard(s) Addressed	All Hazards
Reason for Removal	This project is no longer a priority for the community.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this community profile as changes occur or after a major event. The local planning team will include the Mayor, City Maintenance Director, and City Clerk. The plan will be reviewed annually on June 1st. The public will be included in the review and revision process via council meetings, social media, and fliers in public spaces.

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Community Profile

City of New Virginia

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table NVA.1: New Virginia Local Planning Team

Name	Title	Jurisdiction
Chris Truman	Council Member	City of New Virginia
Brent Baughman	Deputy City Clerk	City of New Virginia
Jennifer Baughman	City Clerk	City of New Virginia
Norville Huston	Mayor	City of New Virginia

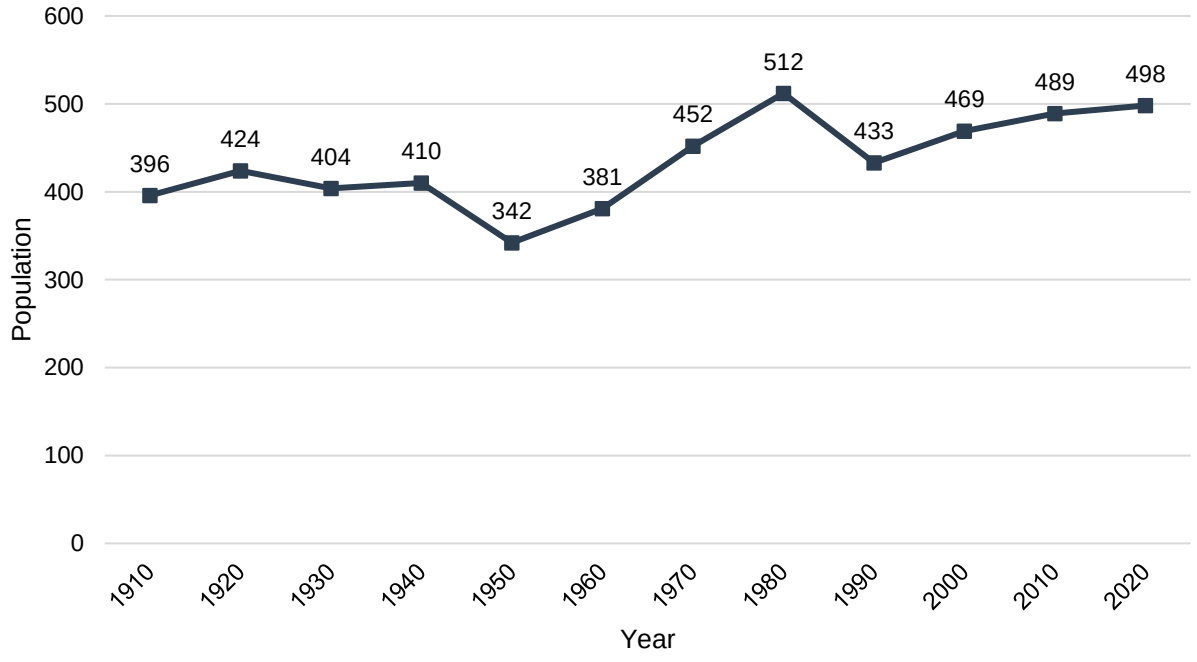
Location and Geography

The City of New Virginia is located in the southwestern portion of Warren County and covers an area of 0.46 square miles. Major waterways in the area include Walnut Creek to the south, Limestone Creek northwest of the community, and Box Elder Creek northeast of the community.

Demographics

The following figure displays the historical population trend for the City of New Virginia. This figure indicates that the population of New Virginia has been increasing since 1990 to 498 people in 2020. Increasing populations are associated with increased hazard mitigation and emergency planning requirements for development. Increasing populations can also contribute to increasing tax revenues, allowing communities to pursue additional mitigation projects. New Virginia's population accounted for 1% of Warren County's population in 2020.[69]

Figure NVA.1: Population 1910 – 2020



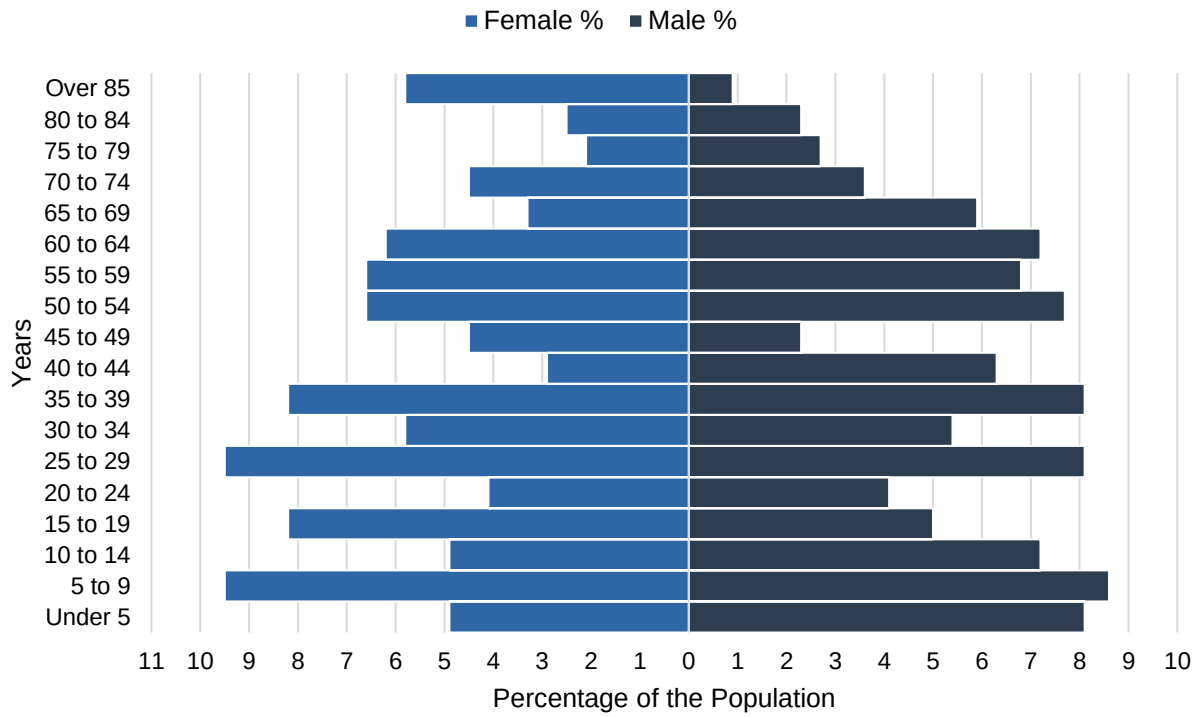
Source: U.S. Census Bureau

[69] United States Census Bureau. "2020 Census Redistricting Data (Public Law 94-171): P1: Race." https://data.census.gov.

The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at New Virginia's population:

- **2% is non-white.** In 2010 and 2019, 2% of New Virginia's population was non-white.[70]
- **37.2 median age.** The median age of New Virginia was 37.2 years in old 2019. The population grew older since 2010, when the median age was 28.[71]

Figure NVA.2: New Virginia's Population by Age Cohort and Sex



The figure above shows New Virginia's population percentage broken down by sex and five-year age groups. New Virginia's population is younger with a much higher percentage of the population below 40 years of age. This likely indicates a growing population in the years to come.

70 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.

71 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Figure NVA.3: City of New Virginia

Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. New Virginia's population has:

- **7.2% of people living below the poverty line.** The poverty rate (7.2%) in the City of New Virginia was the same as the state's poverty rate (7.2%) in 2019.[72]
- **$66,429 median household income.** New Virginia's median household income in 2019 ($66,429) was $6,000 higher than the state ($60,523).[4]
- **5.8% unemployment rate.** In 2019 New Virginia had the same unemployment rate (5.8%) when compared to the state (3.7%).[4]
- **72.9% of workers commuted 30 minutes or more to work.** More workers in New Virginia commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (72.9% compared to 10.9%).[73]

Major Employers

The major industries in New Virginia City are retailers and financers. Major employers include Strange Electric and Performance Inc. and City State Bank. A large percentage of residents commute to Des Moines.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. The local planning team noted that there are two mobile homes in the city located on Dunn Street and Grand Street. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

- **65.7% of housing built prior to 1970.** New Virginia has a larger share of housing built prior to 1970 than the state (65.7% compared to 50.9%).[74]
- **9.3% of housing units vacant.** Since 2010, New Virginia's vacancy rate grew. In 2010 the vacancy rate was 8.7%. By 2019, 9.3% of housing units were vacant.[6]
- **2.8% mobile and manufacture housing.** The City of New Virginia had a smaller share of mobile and manufactured housing (2.8%) compared to the state (3.7%).[6]
- **26.5% renter-occupied.** The rental rate of New Virginia was 26.5% in 2019. The percentage went up since 2010, when renter occupied housing was at 23.2%.[6]

72 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

73 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

74 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of New Virginia is governed by a mayor and five-member city council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Clerk/Treasurer
- Fire Department
- Jesus Right Hand Emergency Action Committee
- Methodist Church Emergency Action Committee
- Planning and Zoning Committee
- Sanitary Sewer Board

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are limited to maintaining current facilities and systems with a large portion of funds dedicated to park upgrades, replacing water meters, street improvements and stormwater drainage improvements. Funds have increased over recent years.

Table NVA.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	No
	Economic Development Plan	No
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	No
	Building Codes	State Codes
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	No
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes

Survey Components/Subcomponents		Yes/No
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	No
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	Yes
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	Yes
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Limited

Plan Integration

The City of New Virginia's Zoning Ordinances were last updated over ten years ago. The Ordinances currently do not integrate hazard mitigation. However, the local planning team noted a few items that they anticipate including in future updates, including discouraging development in the flood prone areas and identifying flood prone areas as parks of open space. As of 2022, the city is working with a company to get zoning ordinances updated. No other examples of plan integration were identified.

Future Development Trends

In the past five years, there have been two new homes built, two homes renovated, and three old homes demolished in the city. No new structures were developed in the floodplain. There are no new businesses or developments planned for the next five years.

Community Lifelines

Transportation

New Virginia's major transportation corridors include County Roads G76, R45, and Interstate 35, which is a couple of miles west of the community. The most traveled route is Interstate 35 with an average of 20,300 vehicles daily, 5,400 of which are trucks.[75] The local planning team noted that County Road G76 east of the city is in poor condition and in need of resurfacing. There are no rail lines that travel through the city. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there is one chemical storage site within or near New Virginia which houses hazardous materials. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Table NVA.3: Chemical Storage Sites

Name	Address	Located in Floodplain?
AEC Enterprises Inc.	21305 20th Avenue	No
US Cellular - New Virginia	23432 18th Avenue	No

Source: Iowa Department of Natural Resources[76]

Health and Medical Facilities

There are no medical and health facilities located within the community.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

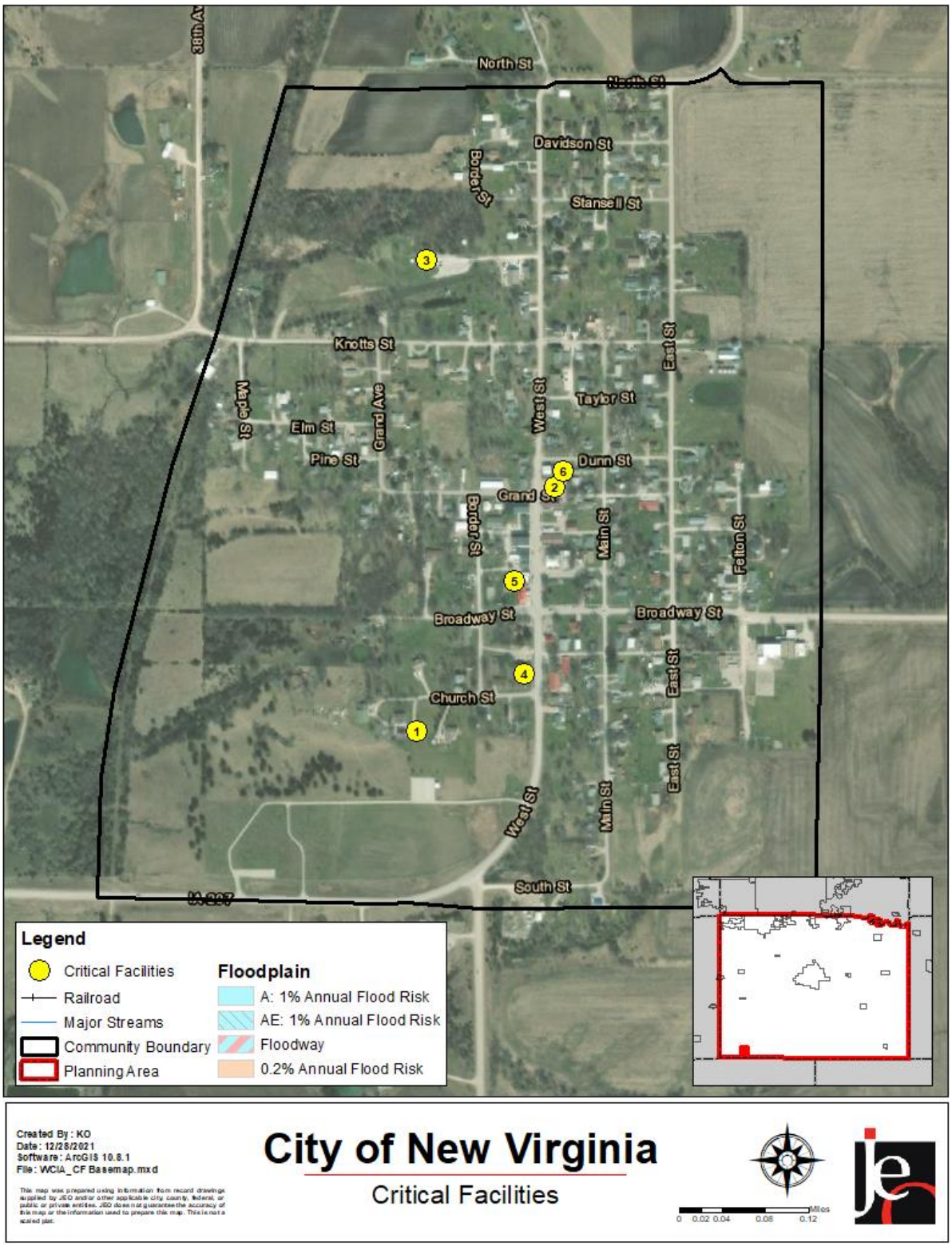
75 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

76 Iowa Department of Natural Resources. 2021. "Emergency Response - Tier II Chemical Storage." [datafile]. https://facilityexplorer.iowadnr.gov/facilityexplorer/.

Table NVA.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	City Gas Shutoff	N	N	N
2	City Hall and Fire Station	N	Y	N
3	GAMP Community Building	Y	N	N
4	Methodist Church	Y	Y	N
5	Water Tower	N	N	N
6	Windstream Phone Service Building	N	Y	N

Figure NVA.4: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table NVA.5: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
42	$1,458,040	0	$0	0%

Source: County Assessor, 2022

Table NVA.6: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
42	$1,458,040	0	$0	0%

Source: County Assessor, 2022

Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Infrastructure Failure

The local planning team does not report any previous instances of infrastructure failure, but they are concerned about the resilience of their infrastructure as it ages. Several privately-owned 100-year-old, two story brick buildings on West Street need renovation. The city-owned water system is over 50 years old, including the elevated water tower.

In New Virginia, the local construction crews are probably the best suited to respond to water system failures, and to repair building infrastructure failures. The fire department only has minimal training. To mitigate against this hazard, the city has renovated one building in the business district and made improvements to the city water tower which include sandblasting, interior painting, and a new riser pipe. Future mitigation actions include hardening public and private infrastructure to eliminate the chance of failure.

Severe Thunderstorms

According to NCEI data, there have been 62 severe thunderstorm events in New Virginia that have caused $453,500 in property damages since 1996. During a tornado that hit Warren County in July of 2008, two-inch hail caused $25,000 in property damage to the community. The local planning team is concerned about hail causing damaged windows and roofs, electrical power outages, tree damage, and injured citizens. In 2010, one-inch hail dented the GAMP Community Building's roof. In 1980, the fire station's roof was also dented by hail. The city's critical facilities

are not built with hail resistant materials, but they are insured against hail damage by ICAP. The community plans to harden critical facilities against damage and update building codes to reduce damage to private properties.

In March of 1996, a cow was killed by debris after a tree was struck by lightning. In May of 2014, damage from thunderstorm winds occurred to roofs, trees, and power lines. The local planning team is concerned about continued power outages, and building damages, as well as the safety and security of residents. Most of the critical records in New Virginia are paper, and not backed up. The city plans to install surge protectors to protect critical municipal records that are digital. Approximately 10% of powerlines are buried in the community.

Mitigation alternatives include creating a redundant power system and creating a database of oxygen users to easily reach this vulnerable population during power outages. A tree board and maintenance program will be established to care for trees that would otherwise be hazardous and contribute to power outages. The city also plans to support secondary storm alert systems by promoting the purchase and use of NOAA weather radios.

Severe Winter Storms

In October of 1997, nine inches of snow caused so much damage to crops, power lines, and trees that Warren County was declared a Presidential Disaster Area. Over $3,500,000 in property damage was accrued across Iowa. New Virginia was pummeled with snow again in February of 2008, when 11 inches of snow fell in one night. Though no critical facilities have been damaged by winter storm in the past, the local planning team is concerned about the city's vulnerability to power outages, inaccessible streets, roof collapses from heavy snowfall, their inability to move deep drifts, and frozen water pipes. Approximately five to ten percent of the power lines in the community are buried, and the water system is over 50 years old. The city's snow removal services are contracted out to a private company whose resources are only sufficient for light to moderate snow falls. Designated snow routes are on West St, East St, North St, and Broadway St, but there are no snow fences in use.

Hazard mitigation efforts for severe winter storms will include hardening electrical systems, improving storm response by purchasing a new snow plow, continuing to revise and improve the snow and ice removal program for streets, and improving first responder capability to rescue residents stranded in blizzards.

Tornadoes and Windstorms

According to NCEI data, there have been three tornado events in New Virginia that have caused $76,000 in property damage since 1999. In April of 1999, an EF2 tornado formed near New Virginia. Despite the strength of this tornado, its path was intermittent in a rural area, so only very limited property damage occurred. The major concerns of the local planning team regarding tornadoes are damages to buildings and facilities, power outages, fires, and resident safety.

No critical facilities have been damaged by tornadoes in the past, but residents have no public safe rooms to seek shelter should an incident occur. Public shelter is available at the churches in town. The city plans to improve their storm shelter facilities as part of their hazard mitigation effort. Jesus Right Hand Organization is available to respond to disasters, as well as the Fire Department and their mutual aid agreement partners throughout Warren County and nearby Clarke and Madison Counties. The County Emergency Manager offers severe weather text alerts for the public, and New Virginia plans to encourage the private use of weather radios. Critical municipal records are not backed up. The city has warning sirens that reach all areas of the community and are activated by Warren County Dispatch or manually at the fire station. The city does not have

any safe rooms, but they are looking into building one as part of a rest room facility in one of the city parks.

Pandemic Disease

The planning team has identified pandemic disease as a top hazard due to concerns over Covid-19 and continuing variants of the virus being a threat to the community. Due to the pandemic, city community buildings were closed from March 2019 into 2020. There has been one known death as a result of Covid-19 in the community.

Mitigation Strategy

Completed Actions

Mitigation Action	Install New and Upgraded Communication Technology for First Responders
Description	Update first responder and interagency communications protocols and equipment to meet national/state interoperability standards; install repeaters in first responder vehicles; install computers and modern surveillance equipment in applicable response vehicles; establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies; install repeaters in first responder vehicles
Hazard(s) Addressed	All Hazards
Status	Completed

Continued Actions

Mitigation Action	Building Codes
Description	Prohibit the installation of flat roofs in new construction; update subdivision ordinances to include special mitigation measures, including requiring mitigation before occupancy of all residential and business properties
Hazard(s) Addressed	All Hazards
Estimated Cost	$100
Local Funding	City funds
Timeline	5+ Years
Priority	Medium
Lead Agency	City Government
Status	City council currently in the process of updating city codes.

Mitigation Action	County GIS Participation
Description	Improve participation with County GIS – including zoning and hazard mitigation maps on GIS
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000
Local Funding	City Funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Government
Status	Along with updating city codes, the council continues to work on updating zoning and mapping.

Mitigation Action	Community Education and Awareness
Description	Establish a community education program to increase awareness related to household level mitigation actions. Utilize outreach projects and the distribution of maps. Purchasing equipment such as projectors and laptops to facilitate presentation of information.
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000
Local Funding	City Funds
Timeline	2-5 Years
Priority	High
Lead Agency	City Government
Status	In the last year the city has purchases a projector and big screen to use for future community education and awareness programs.

Mitigation Action	Comprehensive Disaster/Emergency Response Plan
Description	Develop and/or update a comprehensive disaster and emergency response plan. Additional plans that can be considered are continuity of operations plans and evacuation plans.
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,500
Local Funding	City Funds
Timeline	5+ Years
Priority	High
Lead Agency	City Government
Status	Continuing project on 5+ year timeline.

Mitigation Action	Develop Secondary Alert Systems
Description	Promote NOAA weather radio purchase and use; install siren warning systems where necessary; countywide AlertIowa/Code Red participation
Hazard(s) Addressed	All Hazards
Estimated Cost	$25,000
Local Funding	City Funds
Timeline	5+ Years
Priority	Medium
Lead Agency	City Government and Fire Department
Status	Continuing project on 5+ year timeline.

Mitigation Action	Establish Disaster Response Agreements and Assets
Description	Develop electronic resource directory of local resources; establish aid agreement file; train to agreements and test/exercise them; ensure communication systems are interoperable, reliable, portable, scalable, resilient, and redundant; simulate a disabled radio tower or other vital communication resource; identify and establish a 24-hour Emergency Operations Center; develop a comprehensive City Disaster and Emergency Response Plan
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000
Local Funding	City Funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Government
Status	The fire and EMS services along with Warren County has installed new communications systems including base, mobile, and portable radios and radio towers.

Mitigation Action	Fire Preparedness
Description	Determine the level of fire suppression needed; encourage citizen purchase/use of smoke detectors
Hazard(s) Addressed	Grass/Wildfire
Estimated Cost	$10,000
Local Funding	City Funds, Virginia Township Funds
Timeline	5+ Years
Priority	High
Lead Agency	Fire Department
Status	Continuing project on 5+ year timeline.

Mitigation Action	Harden Infrastructure
Description	Use roofing materials that are resistant to hail impacts for new buildings; retrofit existing building with hail resistant roofing; identify aging infrastructure and replace and/or repair them (including bridges, roads, and tunnels)
Hazard(s) Addressed	Severe Thunderstorms, Infrastructure Failure
Estimated Cost	$2,500 / ft2
Local Funding	City funds
Timeline	5+ Years
Priority	Medium
Lead Agency	City Government
Status	Metal roofs have been replaced on two city buildings. Metal siding installed on one of the buildings.

Mitigation Action	Improve Electrical System
Description	Purchase and install fixed backup power generators and pumping systems for un-served assets; investigate and implement alternative energy sources; bury utility lines in future development
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000
Local Funding	City Funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	City Government
Status	Portion of this project is being completed in the spring/summer of 2022. A fixed backup generator is being installed at the fire station.

Mitigation Action	Protect City Records
Description	Backup city/school files and records – store in alternate locations (vaults and digital storage); purchase and install surge protectors on sensitive equipment in critical facilities
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000
Local Funding	City Funds
Timeline	2-5 Years
Priority	High
Lead Agency	City Government
Status	Parts of this project are complete. Other parts of this project are still a work in progress including vaults and digital storage. The timeline remains 2-5 years. Within the current budget year, the city has purchased a new computer for the city clerk, deputy clerk, library and fire department.

Mitigation Action	Safe Rooms and Storm Shelters
Description	Formally designate and stock community shelters; construct community shelters in or near existing and future critical assets; install a storm shelter at the fire station; support legislation increasing standards for emergency shelters; publicly identify and list public storm shelters
Hazard(s) Addressed	All Hazards
Estimated Cost	$250,000
Local Funding	City Funds
Timeline	Ongoing
Priority	High
Lead Agency	City Government, Methodist Church and Jesus Right Hand Committees
Status	The city continues to keep lines of communication open regarding the research to establish and construct a storm shelter suitable for New Virginia.

Mitigation Action	Stormwater System Improvement and Upkeep
Description	Clear and deepen ditches; construct/repair storm water drainage infrastructure (underground, culverts, curb, and gutter); identify inadequate storm sewers and replace and/or repair them; replace and repair culverts; develop/expand/improve watershed studies (ditches, culverts, etc.) and plans for possible flood prone areas
Hazard(s) Addressed	Flooding, Infrastructure Failure
Estimated Cost	$75,000
Local Funding	City Funds
Timeline	Ongoing
Priority	Medium
Lead Agency	City Government
Status	The city has completed three stormwater improvement projects with underground culverts and intakes. This project is ongoing.

Mitigation Action	Remove Hazardous Trees
Description	Identify and remove hazardous limbs and/or trees; educate public on appropriate tree planting and establish an annual tree trimming program to assist low income and/or elderly residents; become a Tree City USA to receive direction, technical assistance, and public education on establishing a hazardous tree identification and removal program; create a tree inventory to identify problem trees; develop city tree planting and maintenance guidelines
Hazard(s) Addressed	Severe Thunderstorms
Estimated Cost	$5,000
Local Funding	City funds
Timeline	Ongoing
Priority	Medium
Lead Agency	City Government
Status	A tree trimming project was completed this past fall in all streets “right of ways” within city limits. This project is ongoing.

Mitigation Action	Vulnerable Population Registration Program
Description	Implement a special needs/oxygen-user registration program
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000
Local Funding	City Funds
Timeline	c
Priority	High
Lead Agency	Fire Department
Status	This project is ongoing.

Removed Actions

Mitigation Action	Emergency Fuel Supply Plan
Description	Plan to ensure adequate fuel supply is available during an emergency; actions might include: prioritization and rationing plan for gasoline and diesel uses in extended loss of fuel supply or electric power supply; a plan to purchase local fuel supply, etc.
Hazard(s) Addressed	All Hazards
Status	The city would like to focus on other projects.

Mitigation Action	Facilities for Vulnerable Populations
Description	Ensure that facilities which house vulnerable populations are placed in the least vulnerable areas of the community; harden existing facilities if applicable
Hazard(s) Addressed	All Hazards
Status	The city would like to focus on other projects.

Mitigation Action	Improve Snow Removal Plan
Description	Designate snow routes for the community to use; continue to revise and improve the snow and ice removal program for streets (addressing plowing, ice removal, parking during snow and ice removal, and removal of other storm debris); improve capability to rescue those stranded in blizzards
Hazard(s) Addressed	Severe Winter Storms
Status	The city would like to focus on other projects.

Mitigation Action	Lightning Preparedness and Protection
Description	Protect tall buildings and towers from lightning; purchase and deploy static detectors to predict lightning during community events; install lightning rods in strategic locations at high points
Hazard(s) Addressed	Severe Thunderstorms
Status	The city would like to focus on other projects.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The community profile was last reviewed by the local planning team in 2017, which included updating mitigation strategies with completed projects and listing ongoing and new actions. The mayor, city council, city clerk, deputy city clerk, and fire chief will be responsible for reviewing and updating the plan in the future. These individuals will review the plan bi-annually. The public will be notified at council meetings, through the city website, Facebook, and informational inserts in the water bills.

Community Profile

City of Norwalk

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table NRW.1: Norwalk Local Planning Team

Name	Title	Jurisdiction
Doug Richardson	Firefighter/Paramedic	Norwalk Fire Department
Jennifer Porter	Fire Chief	Norwalk Fire Department
Luke Nelson	City Manager	City of Norwalk

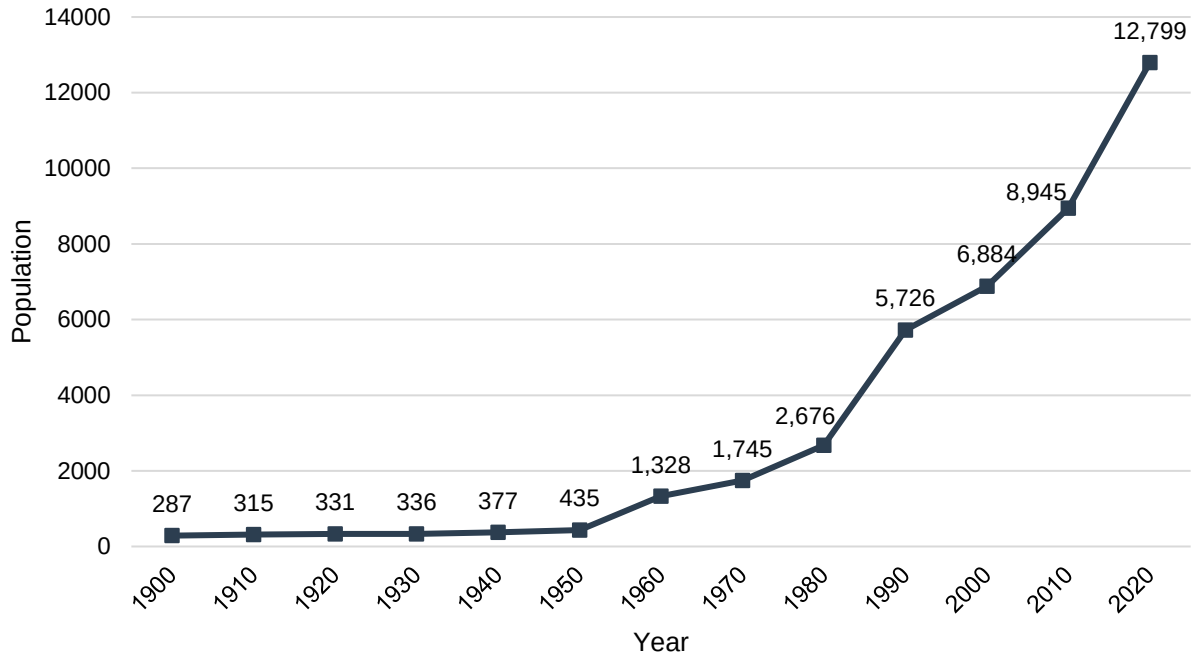
Location and Geography

The City of Norwalk is located in the northwestern portion of Warren County and covers an area of 11.09 square miles. Major waterways in the area include Middle Creek, which is in the northeastern portion of the city, Lake Colechester located in the northwestern portion of the City, and the North River, which is located south of the community.

Demographics

The following figure displays the historical population trend for the City of Norwalk. This figure indicates that the population of Norwalk has been increasing since 1900 to 12,799 people in 2020. Increasing populations are associated with increased hazard mitigation and emergency planning requirements for development. Increasing populations can also contribute to increasing tax revenues, allowing communities to pursue additional mitigation projects. Norwalk's population accounted for 24.4% of Warren County's population in 2020.[77]

Figure NRW.1: Population 1900 - 2020



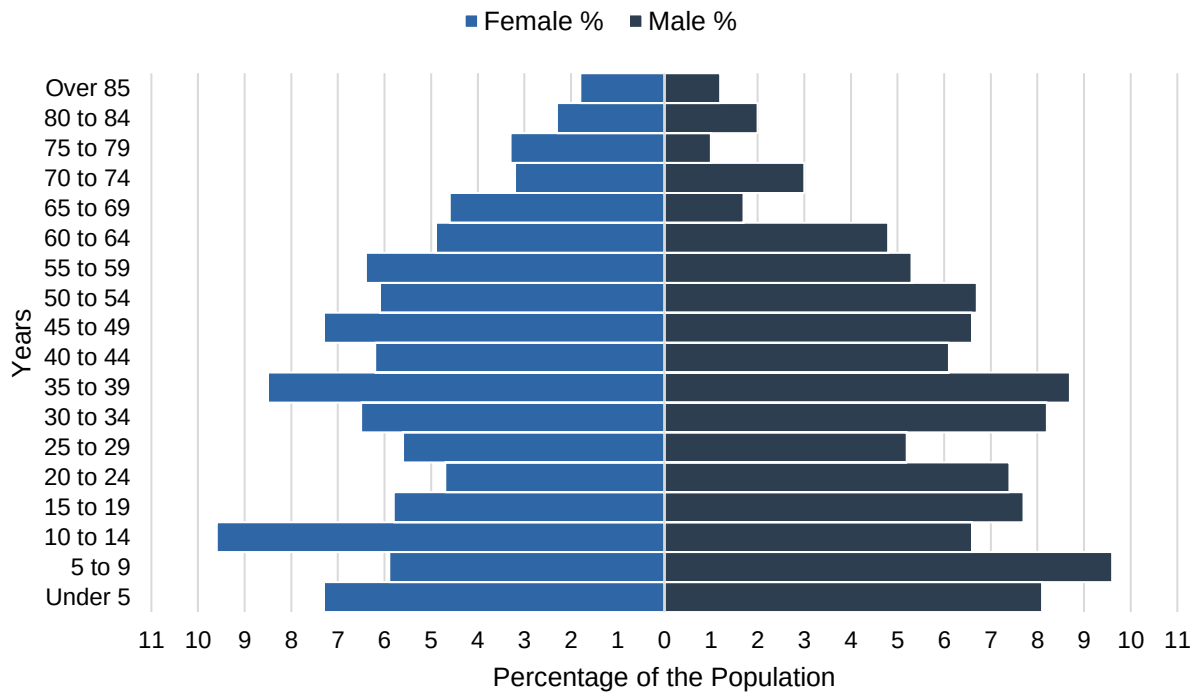
Source: U.S. Census Bureau

[77] United States Census Bureau. "2020 Census Redistricting Data (Public Law 94-171): P1: Race." https://data.census.gov.

The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at Norwalk's population:

- **4% is non-white.** In 2010 and 2019, 4% of Norwalk's population was non-white.[78]
- **35.6 median age.** The median age of Norwalk was 35.6 years in old 2019. The population grew younger since 2010, when the median age was 37.[79]

Figure NRW.2: Norwalk's Population by Age Cohort and Sex

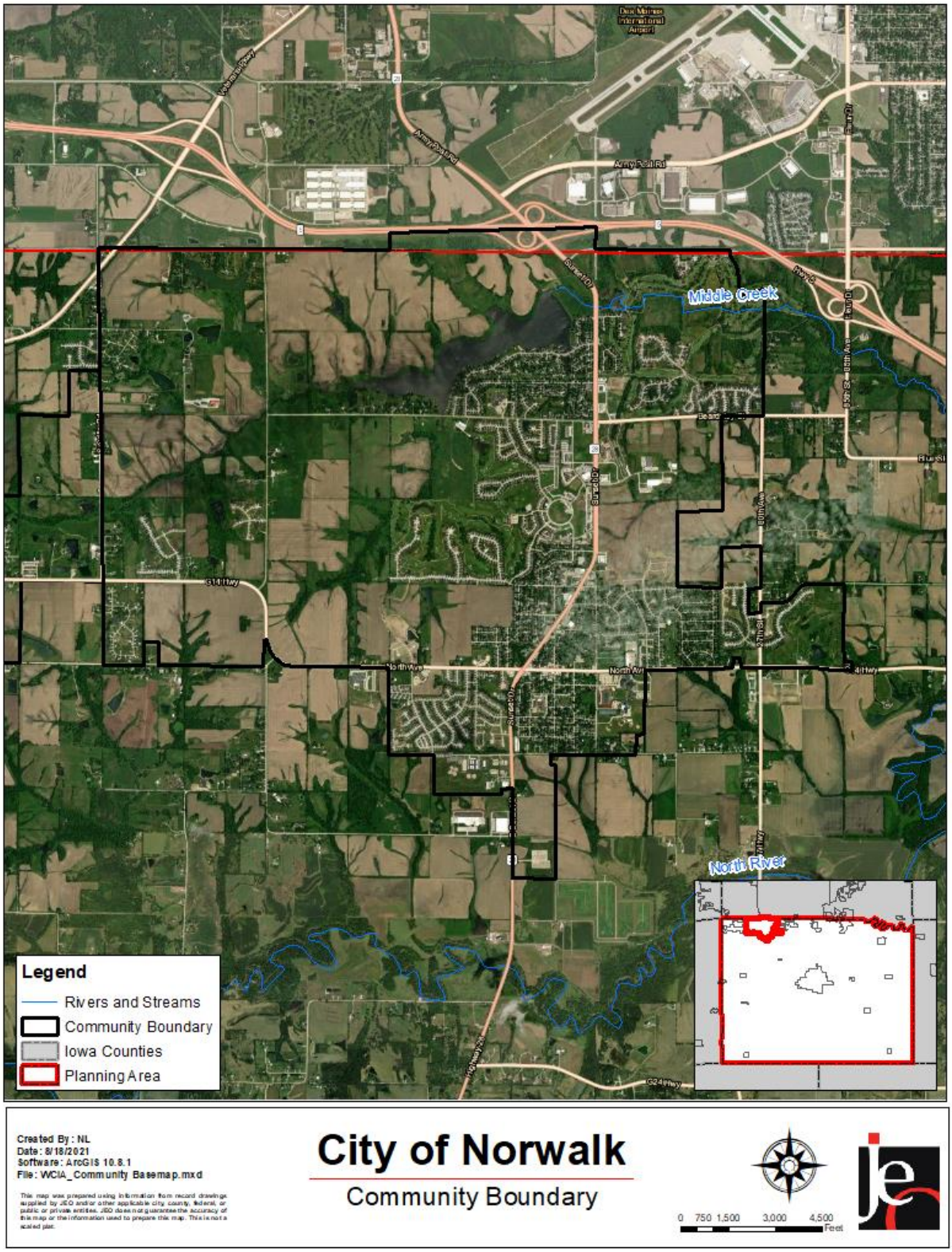


The figure above shows Norwalk's population percentage broken down by sex and five-year age groups. Norwalk's population is younger with a much higher percentage of the population below 40 years of age. This likely indicates a growing population in the years to come.

78 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.

79 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Figure NRW.3: City of Norwalk



Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. Norwalk's population has:

- **2.6% of people living below the poverty line.** The poverty rate (2.6%) in the City of Norwalk was lower than the state's poverty rate (7.2%) in 2019.[80]
- **$83,403 median household income.** Norwalk's median household income in 2019 ($83,403) was $23,000 higher than the state ($60,523).[4]
- **2.4% unemployment rate.** In 2019 Norwalk had a lower unemployment rate (2.4%) when compared to the state (3.7%).[4]
- **24.3% of workers commuted 30 minutes or more to work.** More workers in Norwalk commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (24.3% compared to 23.4%).[81]

Major Employers

The major industries in Norwalk are education, retail, food processing, and government. The major employers are the Norwalk Community School District, Capital City Fruit, Norwalk Ready Mix, Loffredo Produce, La Quercia Food Processing, Michael Foods, Windsor Windows, Gregg Young Chevrolet, Edencrest at the Legacy, UnityPoint Clinic, Crayons 2 Pencils, Lil Scholars Preschool, K&R Wholesale, Holland Farms Senior Living, Fareway, Regency Care Center, Echo Valley Country Club, City State Bank, Luana Savings Bank and Norwalk City government. Many residents commute to other parts of the Des Moines metropolitan area for work. The planning team noted that the Covid-19 pandemic created a significant increase in remote workers in the community.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. The local planning team indicated that there are no mobile homes in the community. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

- **20% of housing built prior to 1970.** Norwalk has a smaller share of housing built prior to 1970 than the state (20% compared to 50.9%).[82]
- **2.1% of housing units vacant.** Since 2010, Norwalk's vacancy rate decreased. In 2010 the vacancy rate was 5.7%. By 2019, 2.1% of housing units were vacant.[6]
- **0.4% mobile and manufacture housing.** The City of Norwalk had a smaller share of mobile and manufactured housing (0.4%) compared to the state (3.7%).[6]
- **21.6% renter-occupied.** The rental rate of Norwalk was 21.6% in 2019. The percentage went down since 2010, when renter occupied housing was at 26.1%.[6]

80 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.

81 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.

82 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of Norwalk is governed by a Mayor and five-member city council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Administrative Services (HR, Utility Billing, Accounting)
- City Clerk
- City Manager
- Communications Coordinator
- Community Development Services
- Economic Development
- Finance Director
- Fire/Emergency Services
- Library
- Parks and Recreation
- Public Works
- Police Department
- Technology Department

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are limited to maintaining current facilities and systems with a large portion of funds dedicated to several projects within the Capital Improvement Plan. The city has the ability to levy up to 5% of its total valuation or capital improvements and equipment. Property taxes generate the Debt Service Fund that covers general purpose city projects. Funds have increased over recent years, due to continued population growth in the city.

Table NRW.2: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	Yes
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	Yes
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Local Codes
	National Flood Insurance Program	Yes

Survey Components/Subcomponents		Yes/No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	Yes
	Civil Engineering	Yes
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	Yes
	Water/Sewer Service Fees	Yes
	Development Impact Fees	Yes
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	Yes
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	High
Public support to implement projects	High
Time to devote to hazard mitigation	Limited

Plan Integration

The City of Norwalk has multiple planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The city will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Comprehensive Plan (2013)
The City of Norwalk's Comprehensive Plan, updated in 2013 and amended in 2016, contains some of the goals and objectives consistent with the hazard mitigation plan. The plan also contains goals and objectives that are aimed at Safe Growth. It directs development away from the floodplain and from dam inundation areas. (Norwalk has nine low hazard dams and one significant hazard dam.) The plan encourages infill development, limits density in areas adjacent to known hazardous areas, encourages clustering of development in sensitive areas, encourages elevation of structures located in the floodplain, identifies areas that need emergency shelters, and encourages preservation of open space in hazard-prone areas. The Comprehensive Plan is currently in the process of being updated.

Zoning Ordinance (2021), Floodplain Ordinance (2013), & Subdivision Regulations (2020)
The city's floodplain ordinance, zoning ordinance, and subdivision regulations outline where and how development should occur in the future. These documents prohibit development in the floodplain, identify floodplain areas as parks of open space, and require at least one foot above base flood elevation in the floodplain. Furthermore, they restrict subdivision of land within or adjacent to the floodplain, include the ability to implement water restrictions, and discourage development near chemical storage sites. They do account for current population trends and limit population density in the floodplain.

Building Code (2018)
Building Codes are based on the 2018 International Building Codes. These Codes include the following: require elevation of structures and mechanical systems in the floodplain, sewer backflow valves for structures in the floodplain, outline proper sump pump installation, and require onsite stormwater detention for commercial structures. Additionally, they allow for raingardens in residential areas, encourage the use of permeable surfaces and hail resistant building materials, require a safe room in apartments, require the use of fire-resistant building materials, and encourage the use of native or drought resistant plantings.

Capital Improvement Plan (2021)
The city's Capital Improvement Program outlines large purchases and projects that the city would like to pursue. The plan is reviewed and updated annually as part of the budget process, and includes storm water projects, upsizing of culverts and drainage structures, upgrading storm sewer systems, improving transportation routes for drainage, upsizing water distribution pipes. The planning team indicated that widening roadways to improve evacuations would be included in a future update.

Future Development Trends

In the past five years the City of Norwalk has had significant commercial and industrial growth with $73.3 million in new value since 2017. Housing demand has caused significant interest in remodeling and renovating older homes. Norwalk has also had significant residential growth and over 700 acres of new development. This has placed over 3,500 new developable lots into Norwalk's lot stock. The city has issued 1,069 new residential permits over the past 5 years. The city has issued permits for a sanitary sewer crossing through Middle Creek, placement of a trail bridge across Middle Creek, placement of a trail bridge across the Lake Colchester inlet, and a farm field crossing over the Middle Creek. Additionally, the city has added a secondary water source from the west which includes a backup generator, upgraded water mains, widened North Avenue by adding shoulders, conducted a joint traffic access management study for Highway 28 with the Iowa DOT, added regional retention ponds at Holland Park, and purchased a 177-acre natural preserve to ensure long-term flood mitigation along the North River located south of the community.

In the next five years there are housing developments planned for many areas of the city. The only location with limited development planned is the northwest area of the city. There is currently over 1,000 acres of land being planned or speculated for development and growth.

Figure NRW.4: Future Land Use Map 1

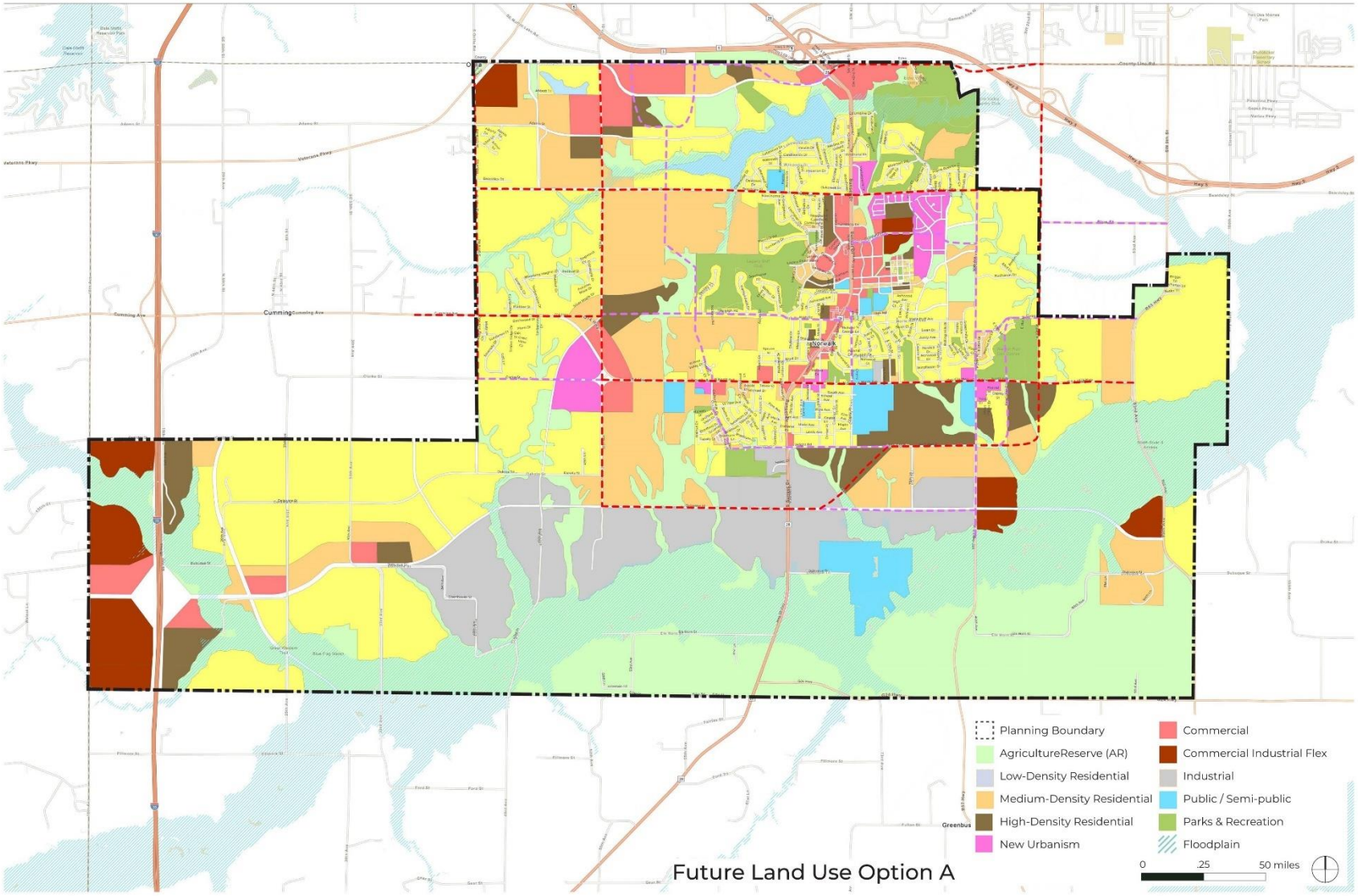
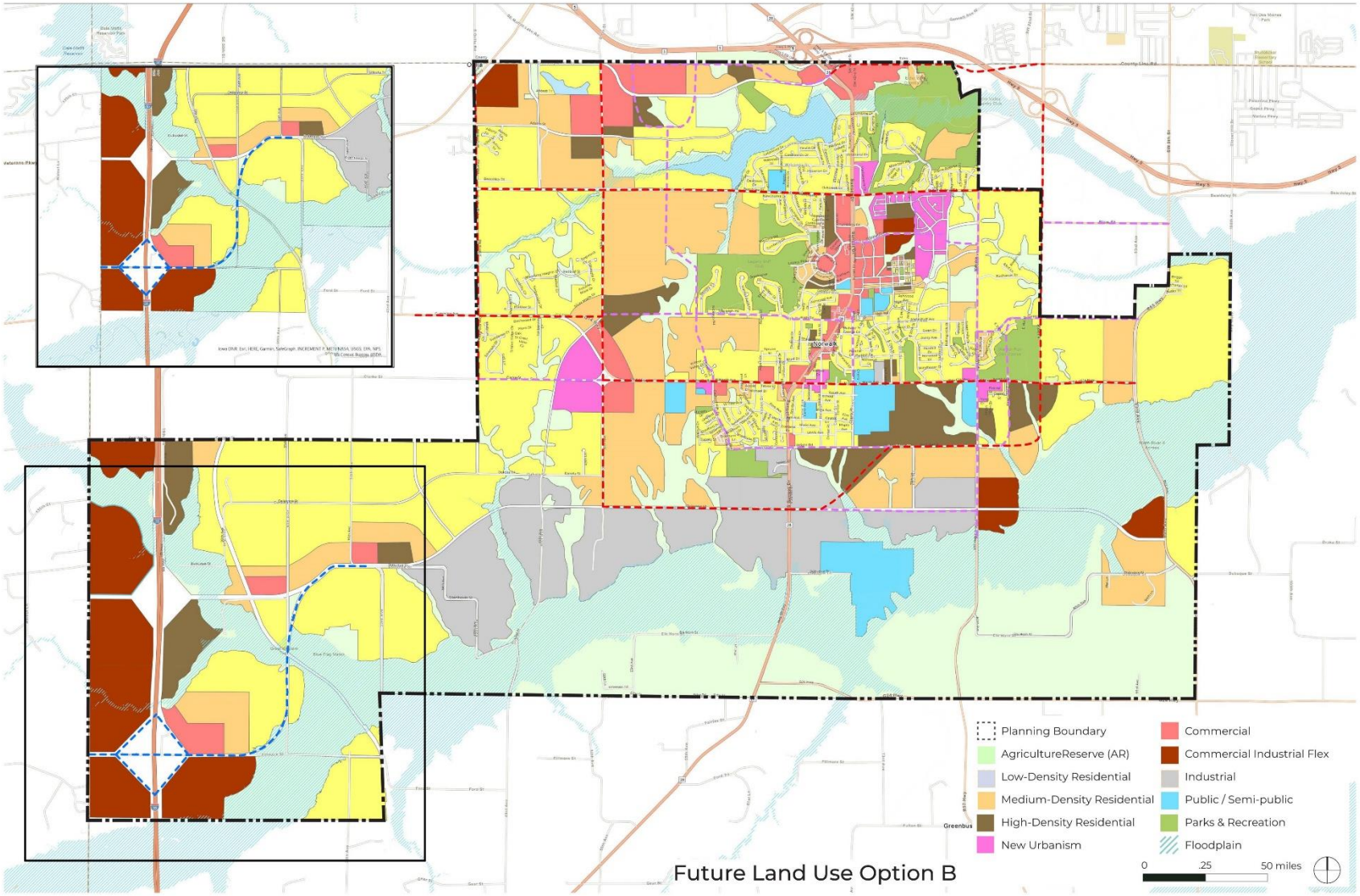


Figure NRW.5: Future Land Use Map 2



Community Lifelines

Transportation

Norwalk's major transportation corridors include State Highways 5 and 28 and County Highway G-14. The most traveled route is State Highway 5 with an average of 23,900 vehicles daily, 980 of which are trucks.[83] There are no rail lines that travel through the community. The local planning team indicated other routes of concern include South Orilla Road, 50th Street, East 27th, High Road, Beardsley, County Line Road, and Veterans Parkway. Although no chemical spills have occurred locally, numerous chemicals and hazardous materials are transported through Norwalk on North Avenue & Sunset Drive when Interstate 35 detours occur. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa DNR, there are six chemical storage sites within or near Norwalk which house hazardous materials. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Table NRW.3: Chemical Storage Sites

Name	Address	Located in Floodplain?
Ferrellgas-Wilshire Trailer Park	2765 R63 Highway	No
MFI Norwalk Plant	101 Delaware Street	No
MidAmerican Energy – Norwalk Substation	1060 South Sunset Drive	No
Norwalk CO	721 North Avenue	No
Norwalk Ready Mix Concrete Inc	1535 North Avenue	No
US Cellular - Norwalk	830 Carpenter Street	No

Source: Iowa Department of Natural Resources[84]

Health and Medical Facilities

The following medical and health facilities are located within the community.

Table NRW.4: Health and Medical Facilities

Name	Type of Facility	Address	Number of Beds
Edencrest at the Legacy	Assisted Living	2901 Cedar Street	80
Holland Farms Senior Living	Assisted Living	2800 Sunset Drive	120
Homesteaders at Holland Farms	Assisted Living	2800 Sunset Drive	80
Mercy Norwalk Medical Clinic	Medical Clinic	9421 Market Place Dr	NA
Regency Assisted Living	Assisted Living	815 West High Road	60
UnityPoint Clinic Family Medicine	Medical Clinic	801 Colonial Circle	N/A

Source: Iowa Department of Inspections and Appeals[85]

83 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

84 Iowa Department of Natural Resources. 2021. "Emergency Response - Tier II Chemical Storage." [datafile]. https://facilityexplorer.iowadnr.gov/facilityexplorer/.

85 Iowa Department of Inspections and Appeals. 2021. "Direct Care Worker Registry & Health Facility Database." https://dia-hfd.iowa.gov/

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

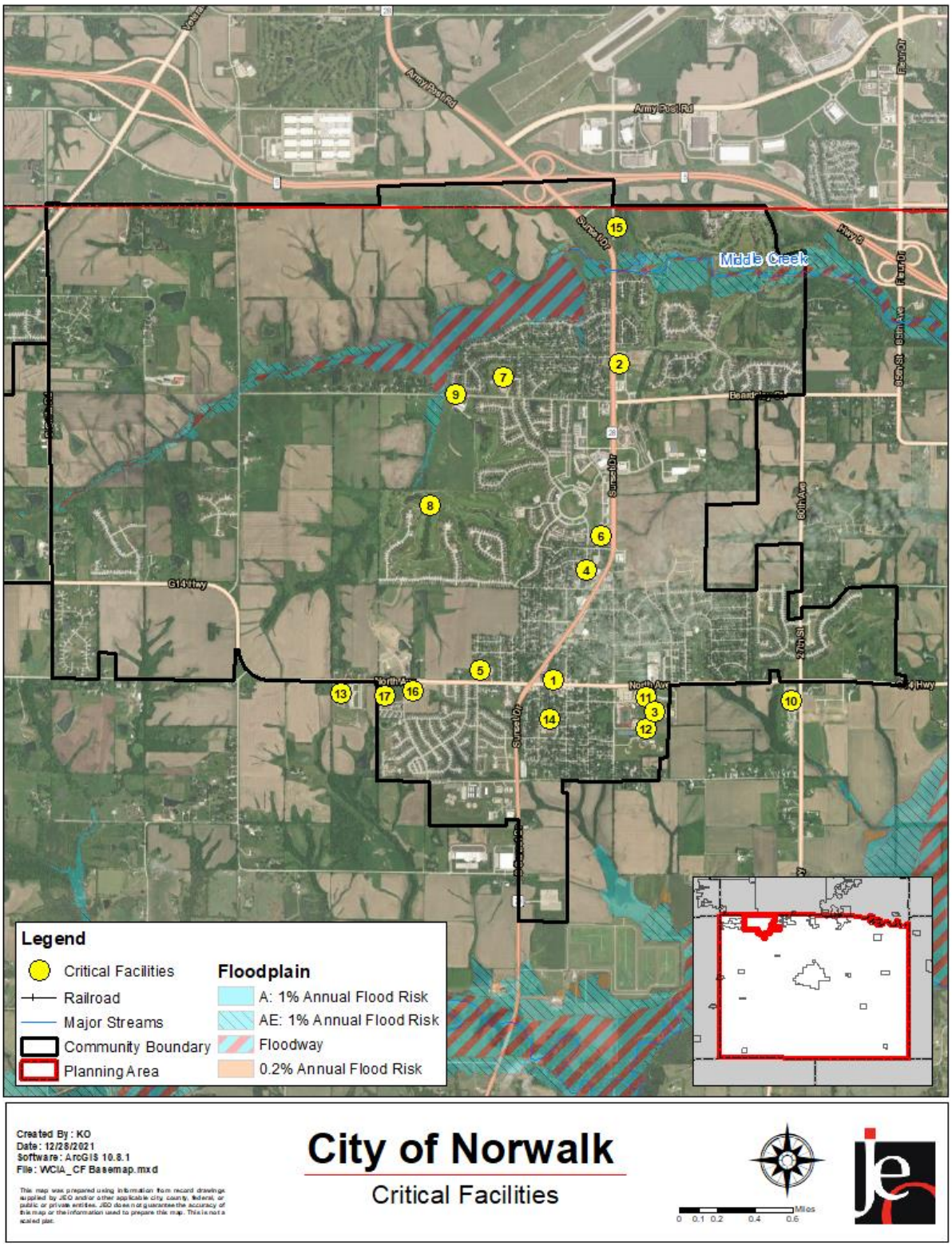
Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table NRW.5: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	City Hall	N	N	N
2	Community Room/Launa Savings Bank	N	N	N
3	Eastview Elementary	N	N	N
4	Fareway Grocery	N	N	N
5	Fellowship Community Church	N	N	N
6	Fire Station/Police Station	N	Y	N
7	Lakewood Elementary School	N	N	N
8	Lift Station 1	N	Y	N
9	Lift Station 2	N	Y	N
10	Maintenance Shop	N	Y	N
11	Norwalk High School	N	N	N
12	Norwalk Middle School	N	N	N
13	Orchard Elementary School	N	N	N
14	Oviatt Elementary School	N	N	N
15	Pumping Station	N	N	N
16	St. John's Catholic Church	N	N	N
17	Water Tower	N	Y	N
18	Good Life Retirement Center*	N	N	N

**Not mapped*

Figure NRW.6: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table NRW.6: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
146	$106,042,907	8	$2,155,200	6%

Source: County Assessor, 2022

Table NRW.7: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
146	$106,042,907	0	$0	0%

Source: County Assessor, 2022

Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Expansive Soils

The City of Norwalk experiences impacts and losses annually from expansive soils as clay soils are located throughout the community. Typical impacts include but are not limited to: heaving of portions of roadways; damages to basements and other subterranean infrastructure; and shifting and settling of sidewalks and driveways. One area of note that has experienced damages is the parking tarmac in front of the fire department. Seasonally, this surface will heave or settle one to three inches; the movement itself is not necessarily the problem, but where the tarmac abuts the building, the unevenness of surfaces can present difficulties. To this point, the fire department has been able to open and close doors (main doors and garage doors), but if the problem intensifies this could change.

The fire station is not the only site that experiences this situation as it is common across the community. The city also experiences heaving of roadways, which is particularly intense during the winter months. The city uses manholes as a measure to determine the amount of movement that occurs; this is effective as manholes are a permanent structure that are anchored to the infrastructure buried in the ground. During the winter months, roadways may raise as much as three inches. Typically, this phenomenon does not result in immediate cost, but can decrease the effective life of paved surfaces. The city requires new building sites to conduct a geotechnical analysis of soil condition prior to construction. The geotechnical report advises the builder on the appropriate design conditions for the footing of the building. The city has also made changes to

subdivision standards to improve subsurface drainage beneath streets, which also helps improve the longevity and quality of city streets.

The city does work to mitigate the impacts of expansive soils as a part of capital projects. Mitigation efforts includes but is not limited to: over digging footings and soil amendments. While the city has grown rather adept at the process of mitigation, there are significant costs associated with the process. The local planning team reports that the process of mitigating through over digging and soil amendments can result in additional project costs as great as 20 percent more than projects that do not require mitigation.

Extreme Temperatures

Like most communities located in the region, Norwalk experiences prolonged periods of time with extreme heat. There is always an element of vulnerability from a human perspective, but there have not been significant injuries or deaths resulting from heat in recent years. The city does, however, experience damages to municipal infrastructure on an annual basis from extreme heat. Annual impacts include damages to roadways, brownouts and/or loss of power.

In 2016, the city experienced approximately five “blow-ups” on municipal streets. “Blow-ups” occur when ground temperatures fluctuate resulting in shifting and/or expansion of subterranean soils. As the soils expand, areas of weakness in paved surfaces may fracture and even at times have sections of concrete push out of the ground. In addition to these disruptions to transportation routes, the city has experienced loss of traffic lights due to brownouts and/or complete loss of power. During these periods of lost power, the city must deploy temporary traffic control devices borrowed from either county or state transportation agencies. The power outages also affect critical facilities without backup power generators. The local planning team identified specific facilities that would benefit from the installation of generators which include the City Hall, pump station, temporary shelters (two local churches), and the grocery store. Furthermore, they would also benefit from a portable generator unit that could be deployed to the area of greatest need. Currently, the city does have backup power generators located at the public works facility and the two municipal lift stations. There is a backup generator located at one of the pumping stations in the city as well as the Norwalk Public Library which can act as a cooling center for citizens.

Infrastructure Failure

Norwalk is a rapidly developing community; if the current rate of growth continues, it is possible that the City’s population will double in ten years. This rapid development results in significant stress on municipal infrastructure. It also is a challenge for the city to develop new infrastructure needed to facilitate and support growth, let alone simply maintaining existing infrastructure. The city has utilized TIF financing and tax abatement as growth incentive tools, but the result is often that municipal budgets lag behind development needs. Complicating this is the fact that some municipal utilities are provided by other entities. MidAmerican Energy provides electrical utilities to the communities. To date, most utility lines are above ground, creating the potential for prolonged power outages during severe storm events. A byproduct of prolonged power outages could be stresses on or depletion of municipal water supplies as the booster system and pumps which feed the water towers currently lack backup power generators. Other infrastructure systems and concerns have been addressed through the discussion of other hazards and their potential impacts. To mitigate against this hazard, the city has constructed a secondary potable water source to the community.

Severe Winter Storms

Severe winter storms are not uncommon for Norwalk or Iowa as a whole. When major storms occur, the city is vulnerable to prolonged power outages; this is due to municipal power being provided by MidAmerican Energy, which also provides power to the Des Moines metropolitan area. Snow drifts in rural areas and re-freeze in the springtime are a concern for the planning team. The local planning team also identified concerns related to the limited number of grocery stores available within the community. At this time, there is one grocery store which serves the community which would have depleted resources during a prolonged event, especially if transportation routes to nearby communities were closed or impassible. Currently, the city can provide snow removal service, but will continue to review equipment needs. Snow removal is completed by the city Public Works Department. Snow removal resources include various single and double axle dump trucks with associated dump box/sand & salt bins with traditional snowplow blades, wing blades and belly plows. Norwalk also utilizes medium size commercial trucks and blades as well as various tractors, road maintainers and end-loaders to assist with snow removal.

Tornadoes and Windstorms

Norwalk has many of the same vulnerabilities to tornadoes as communities across the region. If a tornado was to directly impact the city, losses could be catastrophic. In an effort to better understand their vulnerabilities and the way they could mitigate potential impacts; the Public Works Department brought the Director of Oklahoma City Public Works to town. This interaction allowed for an analysis of readiness and planning for how Norwalk could better prepare itself for potential events. Many of the suggestions have been incorporated into their standard procedures and plans. The city has upgraded their warning sirens and identified areas for future growth needs. Currently, the community does not have any safe rooms.

Transportation Incidents

Norwalk is located on major transportation routes on the fringe of the metropolitan area of Des Moines; these dynamics result in a significant amount of traffic locally. In recent years, the community has experienced an increase in the number of vehicles being detoured from Interstate 35. This increase in traffic is problematic in that the local transportation routes are not designed for this volume of traffic and the type of roadway is not designed for a high volume of heavy trucks and trailers. The city experiences detoured traffic multiple times annually. Detours may be the result of accidents on Interstate 35 or even as a result of roadway construction/improvements along Interstate 35. Many of the detours for roadway construction or improvements occur during the overnight hours. In the past, semi-trucks have had challenges navigating some of the intersections throughout Norwalk, resulting in traffic backups and delays for other detoured traffic but also local traffic including first response vehicles.

The local planning team identified the need for increased and improved signage along the detour route to facilitate more effective traffic flow. In the past, the city has utilized temporary signage provided by Iowa DOT, but having these resources available municipally would be beneficial. In addition, roadway improvements and expansion in some areas would ease some of the concentration of flow. Specific areas needing improvements include N Avenue and Highway 28. Specifically, these roadways would benefit from lane expansions and a larger radius for turn lanes. In addition to the temporary signage, the city utilizes social media to communicate with citizens when detours are scheduled.

Mitigation Strategy

Completed Mitigation Actions

Mitigation Action	Added Secondary Water Source
Description	Obtain secondary water source for the city.
Hazard(s) Addressed	All Hazards
Status	The city obtained a secondary water source from the west that includes a backup generator.

Mitigation Action	Natural Preserve
Description	Create natural preserve for long-term flood mitigation.
Hazard(s) Addressed	Flooding
Status	Purchased a 177-acre natural preserve to ensure long-term flood mitigation along the North River.

Mitigation Action	Improve Electrical System
Description	Purchase and install fixed backup power generators and pumping systems for un-served assets; investigate and implement alternative energy sources; bury utility lines in future development
Hazard(s) Addressed	All Hazards
Status	This was completed for the north pump station east of Hwy 28 (2018). The secondary source of potable water is a new pump station south of Maffit Lake Reservoir. The pumping station was designed and included a generator for backup.

Mitigation Action	Increase Emergency Shelter Standards
Description	Support legislation increasing standards for emergency shelters
Hazard(s) Addressed	All Hazards
Status	Adoption of the 2018 Building Codes incorporated mandatory storm shelters for new education facilities and in other situations.

Mitigation Action	Restricted Access Procedures
Description	Implement restricted access procedures for critical facilities including counter barrier
Hazard(s) Addressed	Terrorism
Status	City Hall, PW, Library and PD/Fire have been updated to include key card access to critical rooms/facilities. The system also incorporated a camera system.

Objective	Retention Ponds
Description	Establish retention ponds at Holland Park.
Hazard(s) Addressed	Flooding
Status	Regional Retention Ponds were installed at Elizabeth Holland Park.

Objective	Traffic Study
Description	Conduct traffic study for Highway 28.
Hazard(s) Addressed	Transportation Incidents
Status	A joint traffic access management study was completed for Highway 28 with the Iowa DOT.

Mitigation Action	Warning Siren Installation
Description	Install siren warning systems and sirens for annexed areas; upgrade existing sirens
Hazard(s) Addressed	Tornadoes and Windstorms
Status	Warning sirens have been installed/upgraded.

Objective	Water Booster Station Redundancy Planning
Description	Redundancy planning for the north water booster station.
Hazard(s) Addressed	Flooding, Severe Thunderstorms
Status	Redundancy planning has been completed.

Objective	Water Main Upgrades
Description	Upgrade water mains in the community
Hazard(s) Addressed	Flooding
Status	Water mains have been upgraded.

New Mitigation Actions

Mitigation Action Name	Construct Secondary Water Tower
Description	Construct secondary water tower for redundancy.
Hazard(s) Addressed	Drought, Extreme Temperatures, Infrastructure Failure
Estimated Cost	$3,000,000
Local Funding	Water Enterprise Funds
Timeline	5 Years
Priority	High
Lead Agency	City of Norwalk
Status	Norwalk has identified land and is negotiating with the property owner. The city has also incorporated future budget expenses as part of the CIP and budget projections.

Mitigation Action Name	Transportation Corridor Planning, Reconstruction, and Expansion
Description	Transportation corridor planning to provide alternative emergency routes and address growing traffic. North Ave and Highway 28 intersection reconstruction and expansion. Highway 28 and Beardsley intersection reconstruction and expansion. Expansion of multi-use path to reduce bicycle and vehicle conflicts on roadways.
Hazard(s) Addressed	Infrastructure Failure, Transportation Incidents
Estimated Cost	$10,000,000+
Local Funding	City General Fund, County, State
Timeline	5+ Years
Priority	Medium
Lead Agency	City of Norwalk
Status	Study Phase

Mitigation Action Name	Regional Retention Pond
Description	Establish regional retention pond serving Colonial Parkway and Norwalk Central.
Hazard(s) Addressed	Flooding
Estimated Cost	$20,000
Local Funding	Public Works
Timeline	2-5 Years
Priority	Medium
Lead Agency	City of Norwalk
Status	In progress

Continued Mitigation Actions

Mitigation Action	100-Year Floodplain Mitigation
Description	Remove buildings in 100-year floodplain
Hazard(s) Addressed	Flooding
Estimated Cost	$2,000,000
Local Funding	General Funds
Timeline	Ongoing
Priority	High
Lead Agency	Public Works
Status	Norwalk has very little FEMA designated 100-year floodplain; however, there are several areas that could cause flooding in the event of significant rain events. The costs to abate these situations is not currently estimated by an engineer. The estimate above is general.

Mitigation Action	Aid Agreements and Community Drills
Description	Train to, test, and exercise agreements; perform community drills
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000
Local Funding	First responder staff salary
Timeline	Ongoing
Priority	Medium
Lead Agency	Fire Department, Police Department, Public Works
Status	Ongoing planning with various other agencies and organizations to perform training.

Mitigation Action	Community Rating System
Description	Re-evaluate the Community Rating System (CRS) and possible participation
Hazard(s) Addressed	Flooding
Estimated Cost	$25,000
Local Funding	City staff salary
Timeline	2-5 Years
Priority	Medium
Lead Agency	Floodplain Administrator
Status	Ongoing

Mitigation Action	Comprehensive Disaster/Emergency Response Plan
Description	Develop and/or update a comprehensive disaster and emergency response plan. Additional plans that can be considered are continuity of operations plans and evacuation plans.
Hazard(s) Addressed	All Hazards
Estimated Cost	$50,000
Local Funding	City staff salary, Fire Department staff salary, Road-Use Tax, City Budget
Timeline	Ongoing
Priority	Medium
Lead Agency	City Council
Status	Project is in progress but currently not completed.

Mitigation Action	Disaster and Continuity Planning
Description	Develop continuity of operations and succession plan; develop a mass casualty plan; institute efforts to increase supply and morale of volunteers; designate/create backup EOC and/or communications center
Hazard(s) Addressed	All Hazards
Estimated Cost	$50,000
Local Funding	City staff salary
Timeline	Ongoing
Priority	High
Lead Agency	City Manager
Status	Project is planned and not yet complete.

Mitigation Action	First Responder Interagency Operability and Training
Description	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies; establish inner-operable communications and purchase necessary equipment to meet national and state interoperability standards; promote training and drills for first responders, EMTs, firefighters, and disaster responders
Hazard(s) Addressed	All Hazards
Estimated Cost	$25,000
Local Funding	General funds
Timeline	Ongoing
Priority	High
Lead Agency	Fire Department and Police Department
Status	Project is currently in planning stages to replace equipment to enhance interoperability. Training is ongoing.

Mitigation Action	Improve Bridges and Culverts
Description	Replace and rehabilitate bridges and culverts
Hazard(s) Addressed	Flooding, Infrastructure Failure
Estimated Cost	$250,000
Local Funding	Road-Use Tax
Timeline	Ongoing
Priority	Medium
Lead Agency	Public Works
Status	Ongoing

Mitigation Action	Improve Reliability of Electrical System
Description	Construct redundant electrical systems and modernize generators; purchase and install fixed backup power generators and/or standby pumps for all critical assets; replace fixed backup generators at certain critical assets; bury existing power lines in current development areas
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000,000
Local Funding	General Funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Technology Department
Status	Added generator backup at some critical locations. a backup generator is still needed at City Hall and other locations.

Mitigation Action	Lake Dredging
Description	Create and implement lake/pond dredging plan, which is privately owned by Lakewood Village
Hazard(s) Addressed	Flooding
Estimated Cost	$250,000
Local Funding	FEMA grant funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Lakeview Village Association
Status	This is in process by the Lake Rec District.

Mitigation Action	Purchase Snow Trucks, Plows, and Sanders
Description	Purchase snow trucks, plows, and sanders to improve capabilities to remove snow during and following winter events; identify a place to store them
Hazard(s) Addressed	Severe Winter Storms
Estimated Cost	$75,000+
Local Funding	City funds, HMGP
Timeline	Ongoing
Priority	Medium
Lead Agency	Public Works Department
Status	Resources are purchased as funds allow.

Mitigation Action	Safe Rooms and Storm Shelters
Description	Develop and implement and public safe room plan; design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, schools, and other areas; construct community safe rooms in or near existing and future critical assets; integrate safe room retrofits into occupied community assets; promote the construction of reinforced in-residence tornado safe rooms; promote/provide safe room education for builders and developers
Hazard(s) Addressed	Severe Thunderstorms, Tornadoes and Windstorms
Estimated Cost	$10,000
Local Funding	Grants, City funds, HMGP, PDM, Fire Department funds
Timeline	5+ Years
Priority	Low
Lead Agency	City Manager, Fire Department
Status	The city continues to seek opportunities for storm shelters.

Mitigation Action	Sewer System Upgrade
Description	Comprehensive sewer system upgrade/expansion to meet city growth (follow up with televising); purchase and install backflow devices on vulnerable properties
Hazard(s) Addressed	Flooding
Estimated Cost	$500,000
Local Funding	Wastewater utility funds
Timeline	Ongoing
Priority	High
Lead Agency	Public Works
Status	Norwalk has several large sanitary sewer expansion projects in the Capital Improvement Plan. Recently a large sewer main was installed that opened up the center of Norwalk.

Mitigation Action	Stormwater System Improvement and Upkeep
Description	Clear and deepen ditches; construct/repair storm water drainage infrastructure (underground, culverts, curb, and gutter); identify inadequate storm sewers and replace and/or repair them; replace and repair culverts; develop/expand/improve watershed studies (ditches, culverts, etc.) and plans for possible flood prone areas
Hazard(s) Addressed	Flooding
Estimated Cost	$100,000
Local Funding	Local storm water utility funds, Road-Use tax
Timeline	Ongoing
Priority	High
Lead Agency	Public Works
Status	Improvements are made as funding allows.

Mitigation Action	Vegetation Maintenance
Description	Promote tree and vegetation maintenance on private properties; establish tree planting initiative; remove dead vegetation - public and nuisance issues; promote landscaping practices and proper vegetation management on private properties
Hazard(s) Addressed	Severe Thunderstorms, Tornadoes and Windstorms, Severe Winter Storm, Grass/Wildfire
Estimated Cost	$2,500
Local Funding	Road-Use Tax, Local Sales Tax
Timeline	Ongoing
Priority	Medium
Lead Agency	Public Works Department
Status	Norwalk is actively addressing Emerald Ash Borer tree issues on both City and privately held property. In addition, the City works with property owners to address dead, dying, or diseased trees.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The local planning team is responsible for reviewing and updating this community profile as changes occur or after a major event. The local planning team will include the Fire Chief, Police Chief, Public Works Director, and City Manager. The plan will be reviewed bi-annually. The public will be included in the review and revision process via council meetings, website updates, and social media.

Community Profile

City of St. Marys

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table STM.1: St. Marys Local Planning Team

Name	Title	Jurisdiction
Chuck Gehringer	Mayor	City of St. Marys

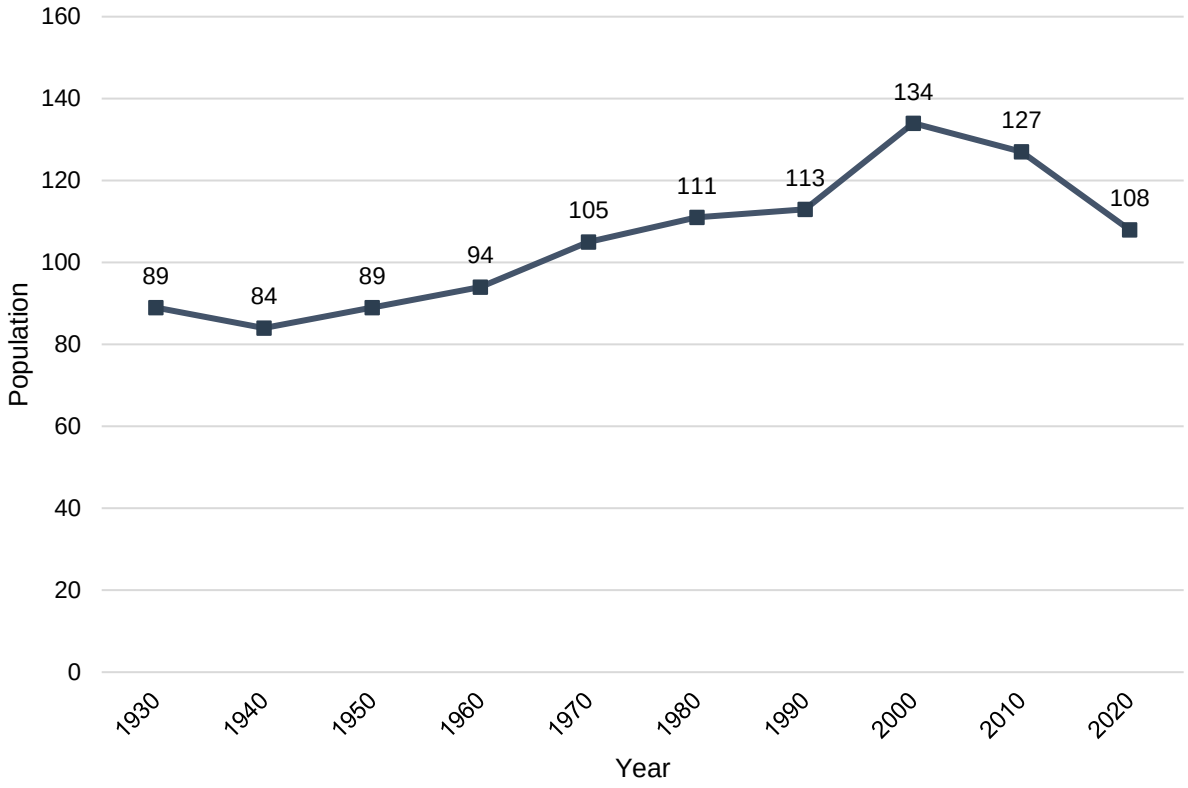
Location and Geography

The City of St. Marys is in southwestern Warren County and covers an area of 0.14 square miles. There are no major waterways in the area.

Demographics

The following figure displays the historical population trend for the City of St. Marys. This figure indicates that the population of St. Marys has been declining since 2000 to 108 people in 2020. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore, with fewer residents, there is decreasing tax revenue for the community, which could make implementation of mitigation projects more fiscally challenging. St. Mary's population accounted for 0.2% of Warren County's population in 2020.[86]

Figure STM.1: Population 1930 - 2020



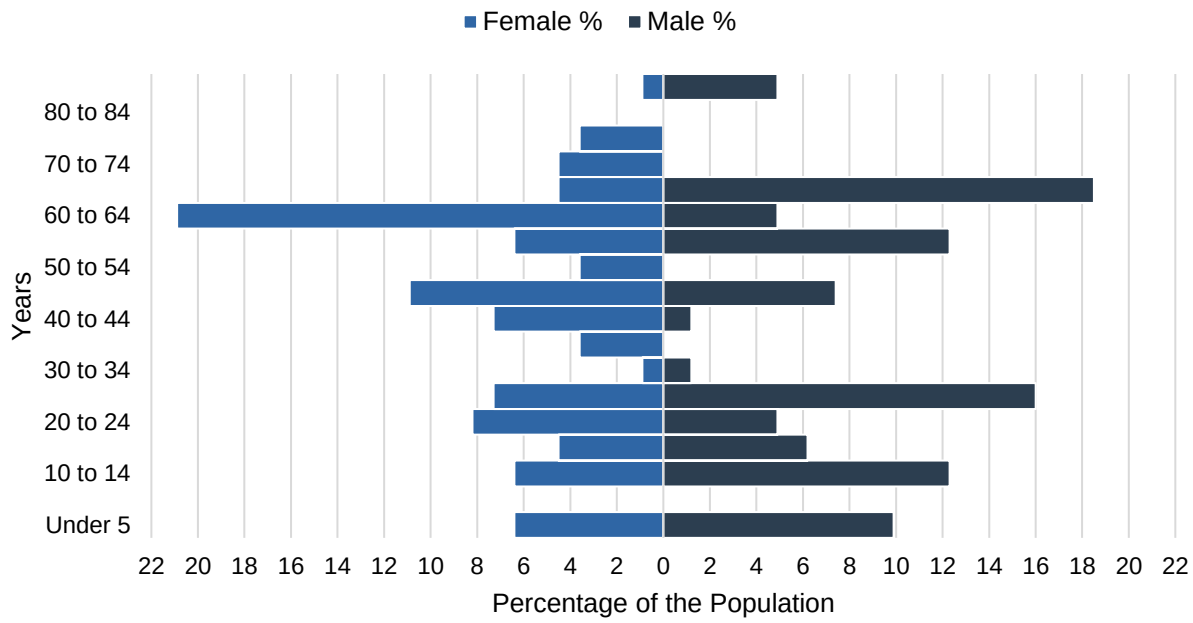
Source: U.S. Census Bureau

86 United States Census Bureau. 2019. "DP05: Demographic and Housing Estimates [database file]. https://data.census.gov/cedsci/

The young, elderly, and minority populations may be more vulnerable to certain hazards than other groups. Looking at St. Mary's population:

- **12% is non-white.** Since 2010, St. Marys grew more ethnically diverse. In 2010, 9% of St. Mary's population was non-white. By 2019, 12% was non-white.[87]
- **Older median age.** The median age of St. Marys was 36 years in old 2019. The population grew older since 2010, when the median age was 33.5.[88]

Figure STM.2: St. Mary's Population by Age Cohort and Sex

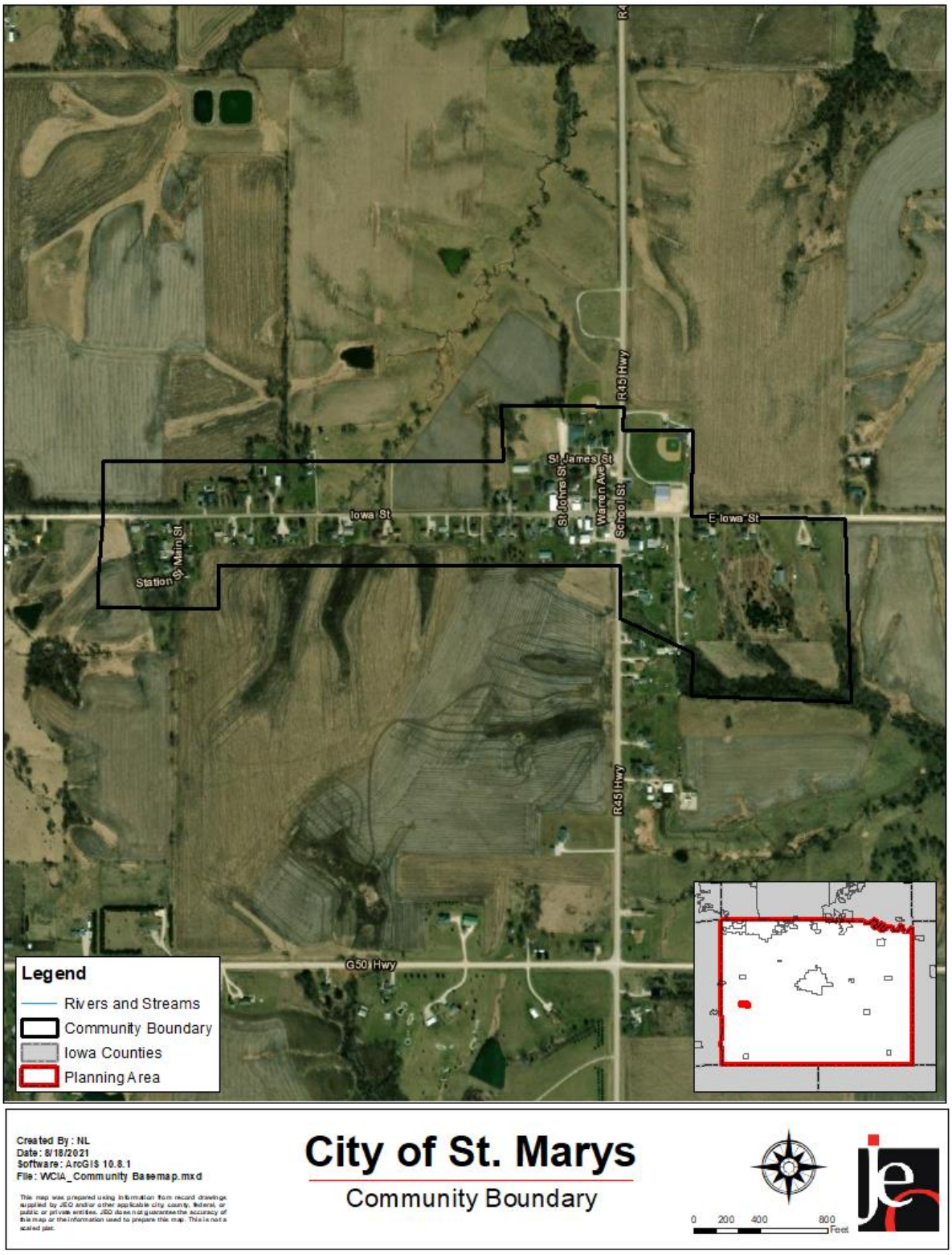


The figure above shows St. Mary's population percentage broken down by sex and five-year age groups. St. Mary's population is older with a much higher percentage of the population over 40 years of age.

87 United States Census Bureau. "2019 Census Bureau American Community Survey: DP05: ACS Demographic and Housing Estimates." https://data.census.gov/cedsci/.

88 United States Census Bureau. "2019 Census Bureau American Community Survey: S0101: Age and Sex." https://data.census.gov/cedsci/.

Figure STM.3: City of St. Marys



Employment and Economics

Low-income populations, long distance commuters, and the unemployed may be more vulnerable to certain hazards than other groups. St. Mary's population has:

- **7.3% of people living below the poverty line.** The poverty rate (7.3%) in the City of St. Marys was similar to the state's poverty rate (7.2%) in 2019.[89]
- **$69,271 median household income.** St. Marys' median household income in 2019 ($69,271) was nearly $9,000 higher than the state ($60,523).[4]
- **0% unemployment rate.** In 2019 St. Marys had a lower unemployment rate (0%) when compared to the state (3.7%).[4]
- **51.8% of workers commuted 30 minutes or more to work.** More workers in St. Marys commuted 30 minutes or more to work than compared to workers commuting less than 15 minutes (51.8% compared to 15.3%).[90]

Major Employers

The major employers in the community are the Northside Tavern and Nelson Carpet. A large percentage of St. Marys' residents commute to Indianola and Des Moines.

Housing

The age of housing may indicate which housing units were built prior to the development of state building codes. Vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Unoccupied housing may also suggest that future development may be less likely to occur. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe thunderstorms if those homes are not anchored correctly. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have flood insurance, or to know their risks to flooding and other hazards.

- **58.1% of housing built prior to 1970.** St. Marys has a larger share of housing built prior to 1970 than the state (58.1% compared to 50.9%).[91]
- **10.1% of housing units vacant.** Since 2010, St. Mary's vacancy rate grew. In 2010 the vacancy rate was 3.6%. By 2019, 10.1% of housing units were vacant.[6]
- **6.3% mobile and manufacture housing.** The City of St. Marys had a larger share of mobile and manufactured housing (6.3%) compared to the state (3.7%).[6]
- **16.9% renter-occupied.** The rental rate of St. Marys was 16.9% in 2019. The percentage went up since 2010, when renter occupied housing was at 3.7%.[6]

89 United States Census Bureau. "2019 Census Bureau American Community Survey: DP03: Selected Economic Characteristics." https://data.census.gov/cedsci/.
90 United States Census Bureau. "2019 Census Bureau American Community Survey: S0802: Means of Transportation to Work by Selected Characteristics." https://data.census.gov/cedsci/.
91 United States Census Bureau. "2019 Bureau American Community Survey: DP04: Selected Housing Characteristics." https://data.census.gov/cedsci/.

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. The City of St. Marys is governed by a mayor and five-member city council; other governmental offices and departments that may be involved in implementing hazard mitigation initiatives are listed below.

- Clerk/Treasurer
- Fire Department (served by the Jackson Township Fire Department)
- Water/Sewer Department

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the community's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Municipal funds are limited to maintaining current facilities and systems. Municipal funds have decreased in recent years.

Table STM.3: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	No
	Economic Development Plan	No
	Local Emergency Operations Plan	Yes (County)
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	No
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	No
	Building Codes	State Codes
	National Flood Insurance Program	No
	Community Rating System	No
	Other (if any)	
Administrative & Technical Capability	Planning Commission	No
	Floodplain Administration	No
	GIS Capabilities	Yes (County)
	Chief Building Official	No
	Civil Engineering	Contractor
	Local Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	

Survey Components/Subcomponents		Yes/No
Fiscal Capability	Capital Improvement Plan/ 1- & 6-Year plan	No
	Applied for grants in the past	Yes
	Awarded a grant in the past	Yes
	Authority to Levy Taxes for Specific Purposes such as Mitigation Projects	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	
Education & Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc. Ex. CERT Teams, Red Cross, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	No
	Natural Disaster or Safety related school programs	No
	StormReady Certification	No
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Limited
Time to devote to hazard mitigation	Limited

Plan Integration

The City of St. Marys did not identify additional planning capabilities beyond utilizing the state building codes and county emergency operations plan. However, the city will seek out and evaluate any opportunities to integrate information from the hazard mitigation plan into other planning mechanisms as they're developed.

Future Development Trends

Over the past five years, the City of St. Marys had two new homes built. The city does not anticipate additional development as growth is limited to the available water and sewer hookups.

Community Lifelines

Transportation

St. Mary's nearest major transportation corridors include Interstate 35 to the west and County Road G50 just south of the community. The most traveled route is Interstate 35, with an average of 20,300 vehicles daily, 5,400 of which are trucks.[92] In town, Iowa Street and Highway R45 are the main routes in and out of the community, and fertilizer for agricultural use is regular transported on these routes. There are no rail lines that travel through the community. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources and the local planning team, there are no chemical storage sites within or near St. Marys which house hazardous materials. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Health and Medical Facilities

There are no medical and health facilities located within the community.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

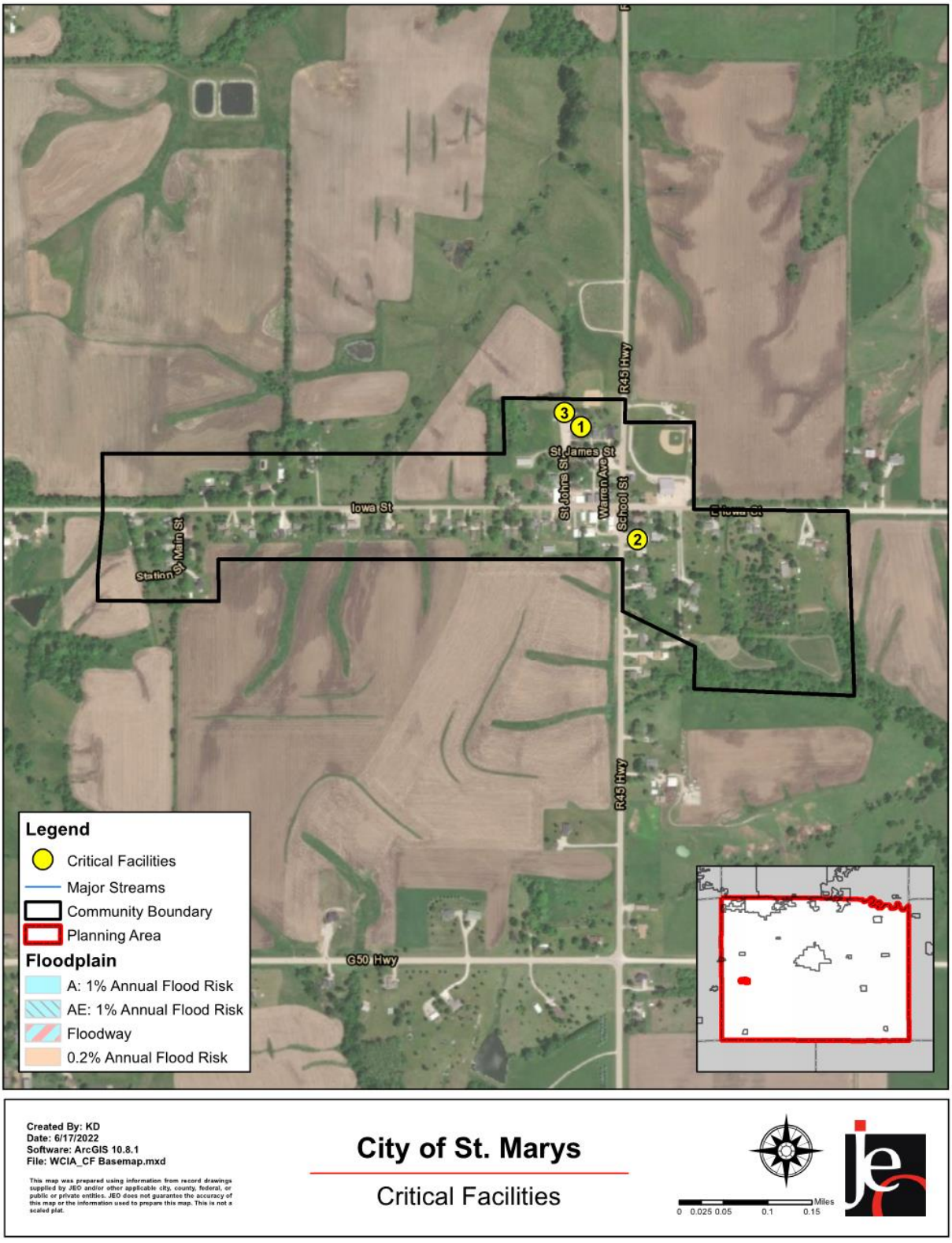
Table STM.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Church Hall	Y	N	N
2	Fire Station and City Meetings	Y	Y	N
3	Water Tower*	N	N	N

**Water provided by rural water supply.*

92 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

Figure STM.4: Critical Facilities



Parcel Improvements and Valuation

The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis is provided in the following table.

Table STM.5: Parcel Improvements and Value in the 1% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
13	$896,575	0	$0	0%

Source: County Assessor, 2022

Table STM.6: Parcel Improvements and Value in the 0.2% Annual Flood Risk Area

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
13	$896,575	0	$0	0%

Source: County Assessor, 2022

Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Grass/Wildfires

The City is generally surrounded by agricultural fields, and there's a concern if nearby vegetation is dry and catches fire, the city could be affected quickly. The Jackson Township Fire Department is responsible for responding to wildfire in the area and has a fire station located in the community. The City does not have a Wildland Urban Interface Code or promote defensible spaces around structures. However, the Fire Department does have and utilize Mutual Aid Agreements. According to the Iowa Department of Natural Resources, the Fire Department has not responded to any wildfires near the community since 2009.

Severe Thunderstorms

The major concerns associated with thunderstorms in St. Marys are property damage and downed trees from high winds and hail. The local planning team indicated that power outages are infrequent and short in duration, and they have not reported any damages from lightning or heavy rain impacts. The NCEI Storm Events Database lists 17 hail events since 1996 with the largest hail size at 1.75 inches in 2001. Several thunderstorm wind events are also reported with the highest magnitude of 65 mph in 1999. The primary impacts from these high winds was downed trees.

St. Marys' residents work together to maintain the trees around the community and ensuring dead limbs are cut back. The local fire station does have a backup power generator, but the church hall that may be used for temporary shelter is in need of a backup generator.

Severe Winter Storms

Beginning in February of 2007 and stretching to February of 2008, seven severe winter storms hit Warren County, causing a total of $375,000 in property damage. Three of these storms caused power outages because of heavy ice and snow build up on trees and power lines. The last major snowstorm to affect St. Marys was in January 2020 when upwards of 8 inches fell and near blizzard conditions impacted travel.

Power outages as a result of heavy snow, wind, and/or ice is the primary concern for the community. Power lines are located above ground and would be heavily impacted if a significant ice storm impacted the region. The County provides plowing services to the community. The local planning team said that snow response by the County is good but large, significant snowfall may impede the County's ability to respond to the community quickly. Downed trees and tree limbs as a result of ice build up or high winds would be cleaned up by community members.

Tornadoes and Windstorms

NCEI records two EF0 tornadoes near St. Marys since 1996. The first was in June 2000 and the second ten years later. Neither tornado caused any property damage or injuries. The community's warning siren is newer and can be activated by County Emergency Management. St. Marys does not currently have any public safe rooms, but many residents have access to basements in their homes for storm shelter. Severe weather preparedness education and text alerts are provided by County Emergency Management. Mutual Aid Agreements are in place with surrounding communities.

Mitigation Strategy

New Mitigation Action

Mitigation Action	Backup and Emergency Generators
Description	Purchase a backup power generator. Needed for the Church Hall as it is utilized as a mass care shelter. The Fire Station will need to replace its aging generator soon.
Hazard(s) Addressed	All Hazards
Estimated Cost	$75,000
Local Funding	General Funds
Timeline	2-5 years
Priority	Medium
Lead Agency	Mayor, Church Leadership, Fire Department (Jackson Township)
Status	Coordination with the Church and the Fire Department will be needed for any generator needs.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (i.e. annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The Mayor is responsible for reviewing and updating this community profile as changes occur or after a major event. Additional assistance may be provided by the members of the City Council and local fire department. The plan will be reviewed annually, and the public will be included in the review process via council meetings. Notification of meetings and updates may be posted at local businesses and the post office.

School District Profile

Indianola Community School District

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table ISD.1: Indianola Community School District Local Planning Team

Name	Title	Jurisdiction
Bernie Brueck	Director of Facilities	Indianola Community Schools

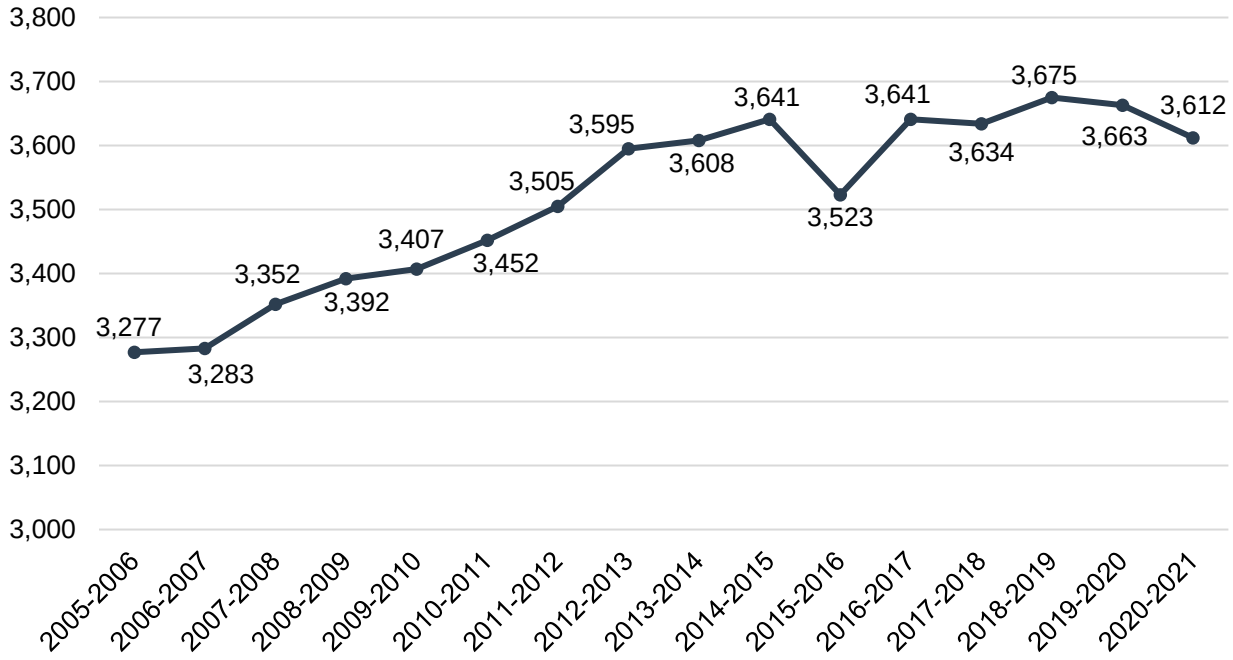
Location

Indianola Community School District (CSD) is in the central portion of Warren County and serves six schools: Emerson Elementary, Indianola Middle School, Indianola High School, Irving Elementary, Whittier Elementary, and Wilder Elementary. Other district owned buildings include the district office, transportation/food service/facilities building, IT/storage building, facilities equipment storage building, and the vacant district office building. The school district provides services to students in the communities of Ackworth, Indianola, Spring Hill, and the rural areas surrounding them.

Demographics

The following figure displays the historical student population trend starting with the 2005-06 school year and ending with the 2020-2021 year. It indicates that the student population has been stable since 2017. There are 3,612 students enrolled in the district.[93] The district anticipates a slight increase in student population in the coming years. Additional languages spoken in the district include Spanish, Russian, Q'eqchi, Afar, Ukrainian, Tagalog, Paluan, Korean, Twi, Ew, Ga, Chinese, Mandarin, Nepali, Arabic, Somali, and Portuguese.

Figure ISD.1: Student Population 2005-2021



Source: Iowa Department of Education

93 Iowa Department of Education. October 2021. "2020-2021 Iowa Public School Building PreK-12 Enrollments by School, Grade, Race and Gender." https://educateiowa.gov/documents/public-school-building-prek-12-enrollment-grade-race-and-gender/2021/05/2020-2021-iowa.

Figure ISD.2: Indianola Community School District

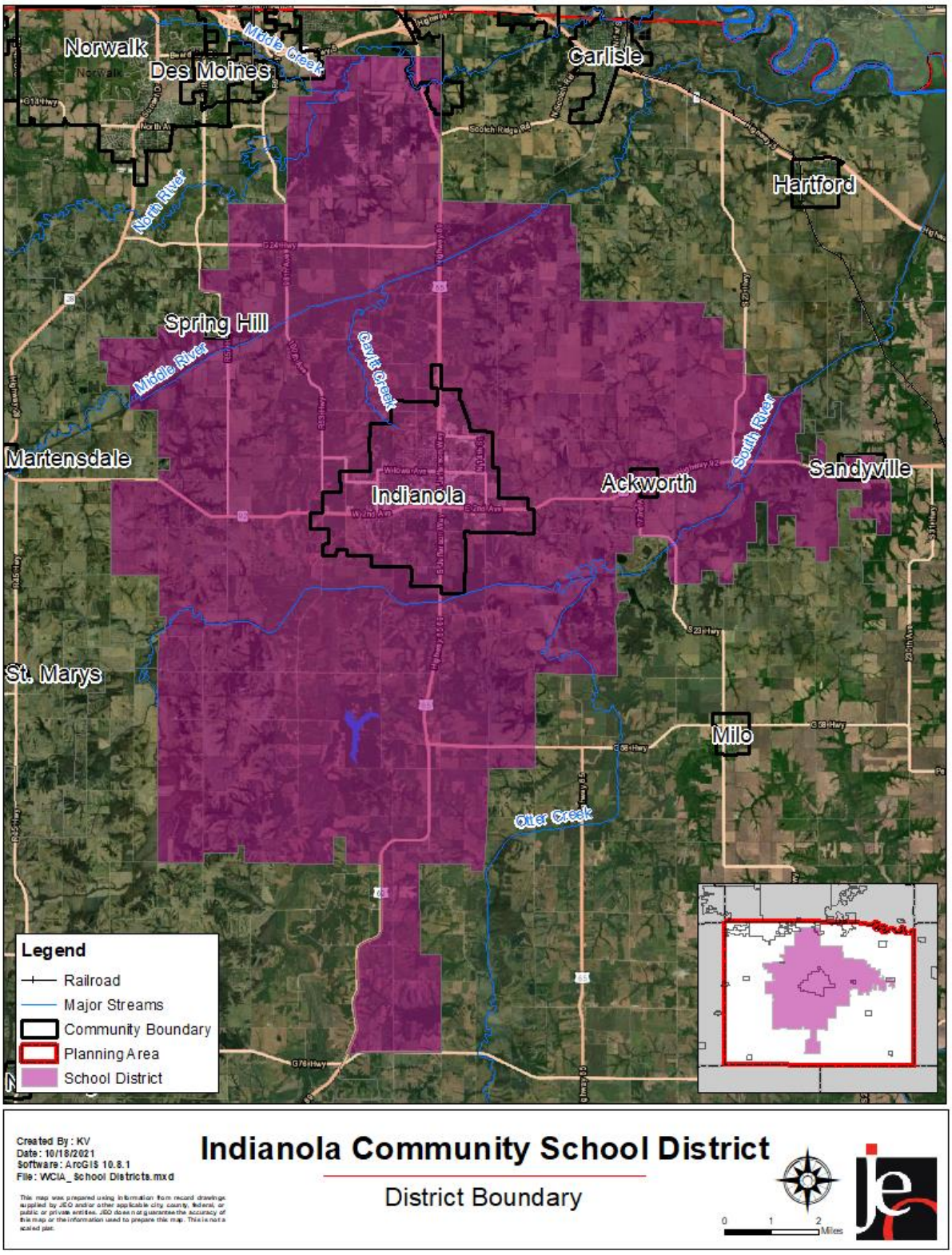
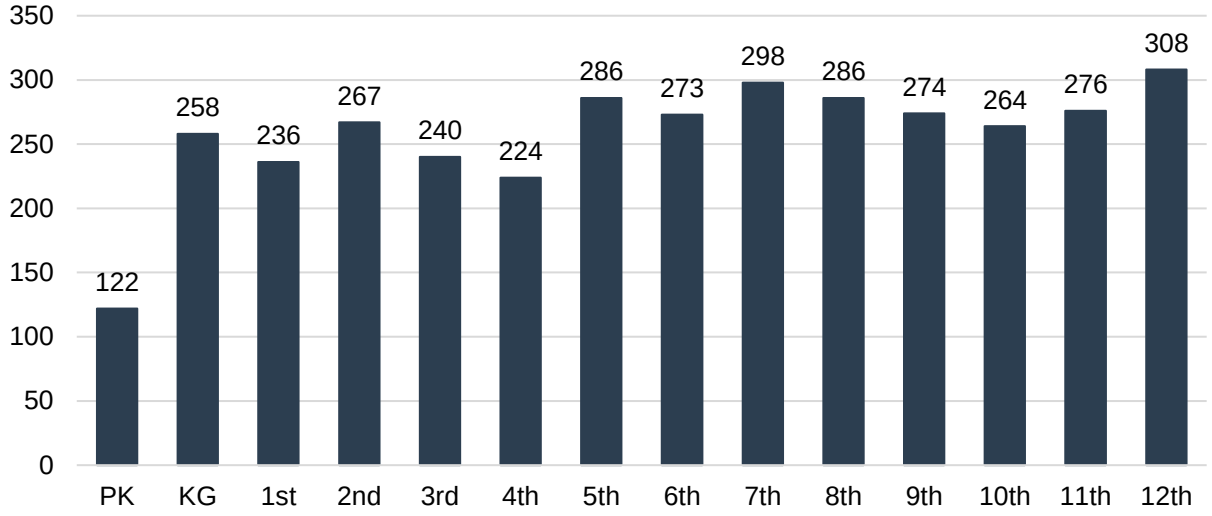


Figure ISD.3: Number of Students by Grade, 2020-2021



Source: Iowa Department of Education

The figure above indicates that the largest number of students are in the 7th and 12th grades. The lowest population of students are Pre-Kindergarten and 4th grade. According to the Iowa Department of Education, 24.76% of students receive either free or reduced priced meals at school. This is lower than the state average of 41.77%. Additionally, 11.16% of students are in the Special Education Program and 1.4% of students are English Language Learners. These particular students may be more vulnerable during a hazardous event than the rest of the student population.

Table ISD.2: Student Statistics, 2020-2021

	School District	State of Iowa
Free/Reduced Priced Meals	24.76%	41.77%
Special Education Students	11.16%	12.20%
English Language Learners	1.4%	6.30%

Source: Iowa Department of Education[94]

Administration and Staff

The school district has a superintendent, an assistant superintendent, and seven principles. The school board is made up of a seven-member panel. Approximately 600 staff are employed in the district. Staff are trained on emergency procedures through building level drills and review of plans.

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the district's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects. Students and families are educated about emergency procedures through practice drills. The district partners with the local police department for educational outreach. The police department also assists the district with the review of plans and procedures.

94 Iowa Department of Education. "Student Demographic Information." Accessed October 2021. https://educateiowa.gov/data-reporting/education-statistics#Staff_Data.

District funds are sufficient to pursue small projects with a large portion of funds already dedicated to a new auxiliary service facility. Funds have increased over recent years.

Table ISD.3: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning Capability	Capital Improvements Plan/Long-Term Budget	Yes
	Continuity of Operations Plan	Yes
	Disaster Response Plan	Yes
	Other (if any)	
Administration & Technical Capability	GIS Capabilities	No
	Civil Engineering	No
	Local staff who can assess community's vulnerability to hazards	Yes
	Grant Manager	No
	Mutual Aid Agreement	No
	Other (if any)	
Fiscal Capability	Applied for grants in the past	No
	Awarded grants in the past	No
	Authority to levy taxes for specific purposes such as mitigation projects	No
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Approved bonds in the past	No
	Flood Insurance	No
	Other (if any)	
Education & Outreach Capability	Local school groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc. (Ex. Parent groups, hazard mitigation boards, etc.)	No
	Ongoing public education or information program (Ex. Responsible water use, fire safety, household preparedness, environmental education, etc.)	Yes
	StormReady Certification	No
	Other (if any)	
Drills	Fire	4 / year
	Tornado	4 / year
	Intruder	1 / year
	Bus evacuation	2 / year
	Evacuation	1 / year
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Moderate
Staff/expertise to implement projects	Moderate
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Limited

Plan Integration

Indianola Community Schools has three planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The district will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Crisis Response Plan (2021)

The crisis response plan for the school provides response protocols for unique situations such as large-scale natural disaster or criminal activities. The plan discusses natural hazards such as fires and tornadoes. It assigns specific responsibilities to individuals, provides clear assignment of responsibility during an emergency, addresses shelter in place protocols and locations, identifies scenarios that would require evacuation, and identifies opportunities for mitigation following an event. Departments familiar with the crisis response plan include transportation, food service, facilities, early childhood, instructional staff, an administration.

Infrastructure Plan (2019)

The infrastructure plan plots future development for the district. Hazard mitigation and risk reduction is always considered during the update of this plan. The goal of the district is to provide a safe and secure learning environment for all students. The concept of protecting lives and reducing property damage is consistent with the district's goals and always a part of the development process. With the entire administrative team being involved with this planning process, they will be more aware of the principles of mitigation and the goals of this HMP which will inform their processes in the future.

Strategic Plan (2015)

The strategic plan for the district reflects connections with the community, effective communication, teaching integration, and meeting student needs. Mitigation actions in the hazard mitigation plan will be reflected in the district's strategic plan going forward.

Future Development Trends

Over the past five years there have been no new developments in the district. In the next five years, the district plans to add an auxiliary service facility building south of the middle school.

Community Lifelines

Transportation

Three major transportation corridors travel through the district: US Highway 65, and Iowa State Highways 69 and 92. The most traveled route is Highway 65 with an average of 18,800 vehicles daily, 960 of which are trucks.[95] There are no rail lines that run through the district. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the district, as well as areas more at risk of transportation incidents. The district owns 34 buses with over 1,500 students bused to and from school.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are 21 chemical storage sites in the district that contain hazardous chemicals. The local planning team noted that the Laura Ingalls Wilder Elementary School is located near some of the

95 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

Co-op facilities. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Critical Facilities

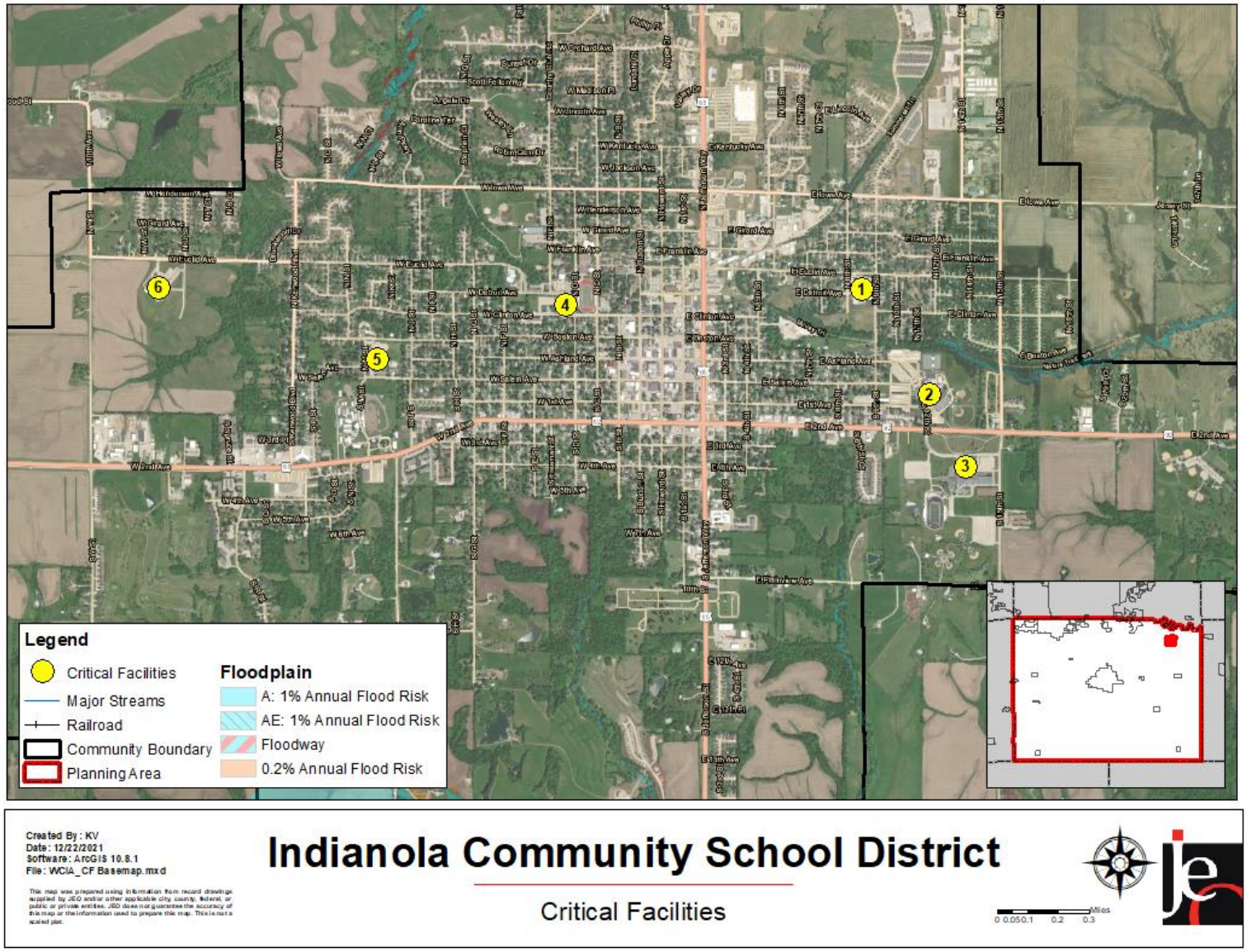
Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the district.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table ISD.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Emerson Elementary	N	N	N
2	Indianola High School	N	N	N
3	Indianola Middle School/Central Office	Y	N	N
4	Irving Elementary	N	N	N
5	Whittier Elementary	N	N	N
6	Wilder Elementary	N	N	N

Figure ISD.4: Critical Facilities



Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Flooding

This hazard is neither flash flooding or riverine flooding, rather storm sewer system backups during significant rain events. At the high school, the courtyard has backed up with rainwater multiple times in the past several years. This occurs during storm events of approximately 2" or greater. There have been damages to the structure during these events. Damages have included water backing up into approximately ten rooms during the last two years. School officials attribute this flooding to the increase of impervious surfaces in recent years. This flooding issue is new to the school in the last two years. The City of Indianola has plans to upgrade the stormwater system city-wide with projects to build drainage culverts and to maintain existing drainage systems. As for the school district, they plan to address flooding concerns by tracking property damage from flooding and other natural hazards to have a better understand of why and where damage occurs. This information can then be used to target high-risk properties for mitigation. To mitigate against this hazard the district has completed water retention areas and significant drainage work that has helped address flooding problems.

Terrorism

The threat and concern related to active shooter incidents and cyber-terrorism is present for the district. They reported an incident as having occurred a couple of years ago. They have participated in ALICE (Alert, Lockdown, Inform, Counter, Evacuate) training previously. To protect students during an active-shooter events, the schools plans to purchase intruder defense tools that will allow teachers and other school staff members to quickly bar doors and windows from intruders. The district also plans to create a reunification plan so that parents, teachers, and students can reunite after an evacuation. The district has already invested in security measures to include bollards outside of main entrances and automatic door locks.

Severe Thunderstorms

Like all schools, there are concerns related to lightning strikes. In the past, district elementary schools have been struck by lightning, but repairs have been completed. They noted that power continuity is not a significant concern as many (approximately 85 percent) of municipal power lines have been buried. The school district plans to further reduce the vulnerability of their power system by installing backup generators to all administrative and academic buildings.

Tornadoes and Windstorms

At this time, each school facility has an area designated as a "safe area," but the facilities are not actually hardened to provide a high level of protection. The school does conduct tornado drills each semester. The school identified the need for a continuity of operations plan which could be utilized during tornado events. This is due, in part, to the fact that school buildings may be utilized for temporary shelters if the community were to be impacted, thus limiting the ability for the district to continue with business as usual. The district plans to create and implement school continuity

plans in the next 2-5 years. There are warning sirens in the district that reach all district facilities. Hazardous trees have been removed in the district. The district has designated reunification centers in the event of an emergency.

Transportation Incidents

The high school and middle school are located along Highway 92, a major transportation route. Chemicals are transported regularly through Indianola, as mentioned in the discussion of hazardous materials in Section Four: Risk Assessment. Emerson and Irving Elementary are both located near fertilizer plants that store explosive nitrogen compounds. The school plans to implement trainings for school staff on the correct response to protect themselves and students from the various hazards associated with chemical spills. Responses include evacuation or sheltering-in place, depending on the type and amount of chemical released.

Mitigation Strategy

Continued Actions

Mitigation Action	Data Collection
Description	Set up and maintain a data collection process to record and manage damages resulting from natural hazards
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000, Staff time
Local Funding	General funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Business Manager
Status	Reflected in Emergency Operation Plan. Additional plan details to be developed.

Mitigation Action	Protect Power at Critical Facilities
Description	Provide a portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations and other critical facilities and shelters; purchase and install surge protectors on sensitive equipment in critical facilities
Hazard(s) Addressed	All Hazards
Estimated Cost	$3,500+, depending on site requirements
Local Funding	General funds, HMGP
Timeline	2-5 Years
Priority	High
Lead Agency	Facilities Director
Status	District owns two generators. They are tested twice each year.

Mitigation Action	Public Awareness and Education for Schools
Description	Educate staff, students, and parents on hazard vulnerability and mitigation measures (may include: classroom modules profiling hazards and discussing preparedness, educational materials, etc.); purchase education equipment (overhead projectors, laptops, etc.)
Hazard(s) Addressed	All Hazards
Estimated Cost	$3,000+
Local Funding	General funds
Timeline	Ongoing
Priority	High
Lead Agency	Assistant Superintendent
Status	Building level drills occur. Further education measures could be undertaken.

Mitigation Action	Reunification Plan
Description	Develop a reunification plan in the event of school evacuations for parents to relocate and unite with their children
Hazard(s) Addressed	Hazardous Materials, Infrastructure Failure, Terrorism
Estimated Cost	$2,000, Staff time
Local Funding	General funds
Timeline	1-3 Years
Priority	High
Lead Agency	Assistant Superintendent
Status	Reviewed as part of emergency operation procedures.

Mitigation Action	School Continuity Plan
Description	Develop continuity plans for critical services in order to increase resilience after a hazardous event
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000+, Staff time
Local Funding	General funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Assistant Superintendent
Status	All hazards approach is reflected in Emergency Operation Plan. Concrete details and community partners could be further developed.

Mitigation Action	Training for Chemical Spills
Description	Conduct a training on chemical spills with school staff
Hazard(s) Addressed	Hazardous Materials
Estimated Cost	$5,000, Staff time
Local Funding	General funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Assistant Superintendent
Status	Need to determine type of training and time

Removed Actions

Mitigation Action	Community Safe Rooms
Description	Develop and implement and public safe room plan; design and construct storm shelters and safe rooms; construct safe rooms in or near existing and future district buildings; integrate safe room retrofits into current structures.
Hazard(s) Addressed	All Hazards
Status	The district would like to focus on other projects.

Mitigation Action	Intruder Defense Tools
Description	Purchase intruder defense resources and tools
Hazard(s) Addressed	Terrorism
Status	The district would like to focus on other projects.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The community profile was last reviewed by the local planning team in March 2017. The superintendent will be responsible for reviewing and updating the plan bi-annually. The public will be notified at board meetings and through the school website.

School District Profile

Martensdale-St Marys Community School District

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table MSM.1: Martensdale-St Marys Community School District Local Planning Team

Name	Title	Jurisdiction
Trent Christensen	Maintenance Director	Martensdale-St Marys CSD

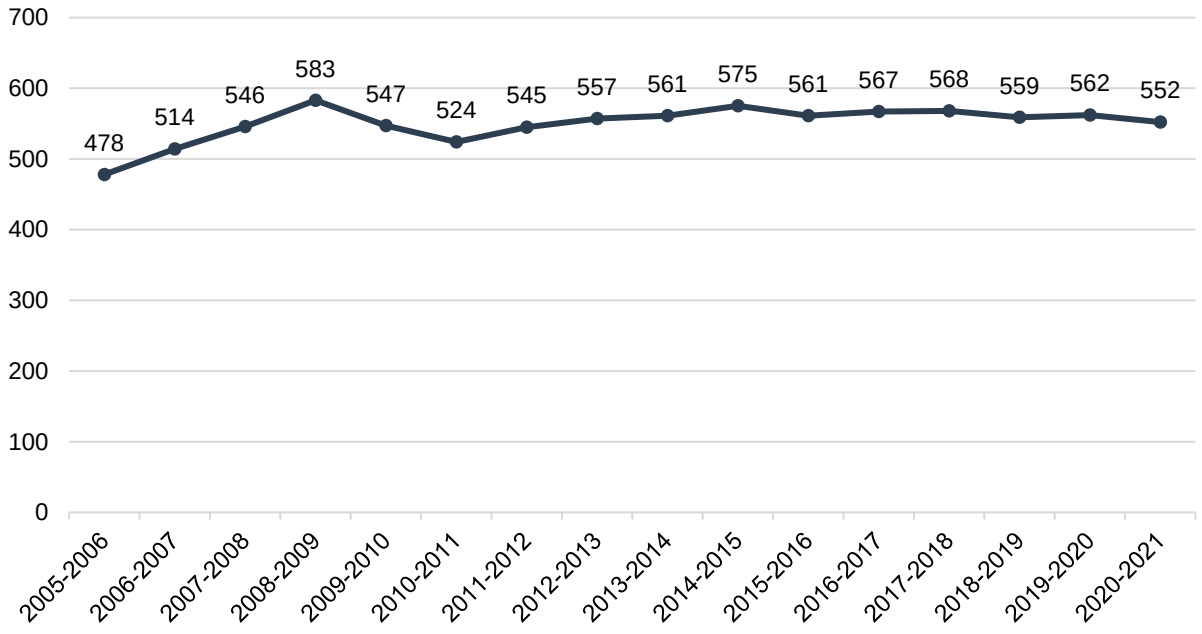
Location

Martensdale-St Marys Community School District is in western Warren County and serves two schools: Martensdale Elementary School and Martensdale-St Marys Jr-Sr High School. The district also has football/track stadium and bus barn. The school district provides services to students in the communities of Bevington, Martensdale, St. Marys and the rural areas surrounding them.

Demographics

The following figure displays the historical student population trend starting with the 2005-06 school year and ending with the 2020-2021 year. It indicates that the student population has been stable since 2012. There are 552 students enrolled in the district.[96] The district anticipates little growth in student population in the coming years.

Figure MSM.1: Student Population 2005-2021



Source: Iowa Department of Education

96 Iowa Department of Education. October 2021. "2020-2021 Iowa Public School Building PreK-12 Enrollments by School, Grade, Race and Gender." https://educateiowa.gov/documents/public-school-building-prek-12-enrollment-grade-race-and-gender/2021/05/2020-2021-iowa.

Figure MSM.2: Martensdale-St Marys Community School District

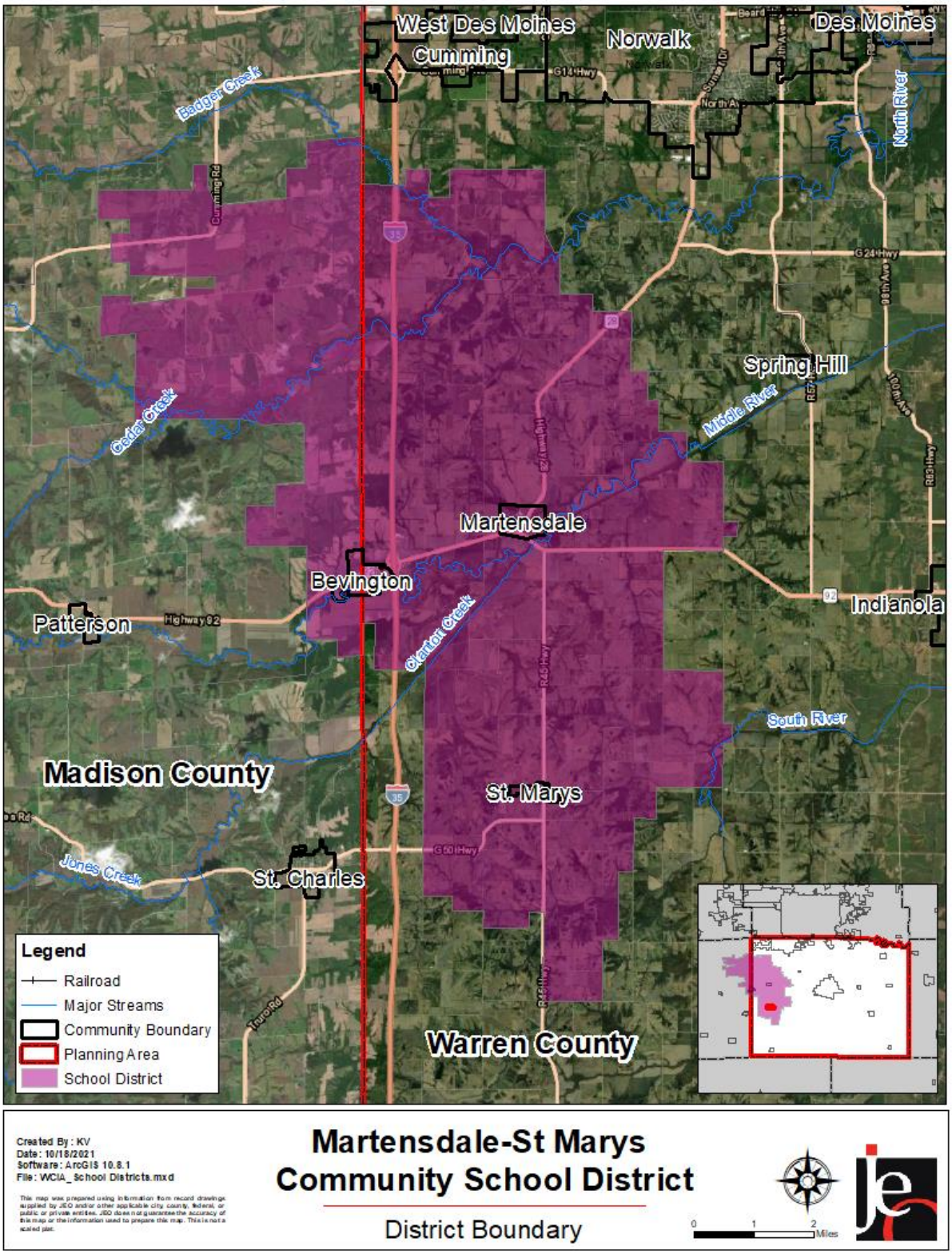
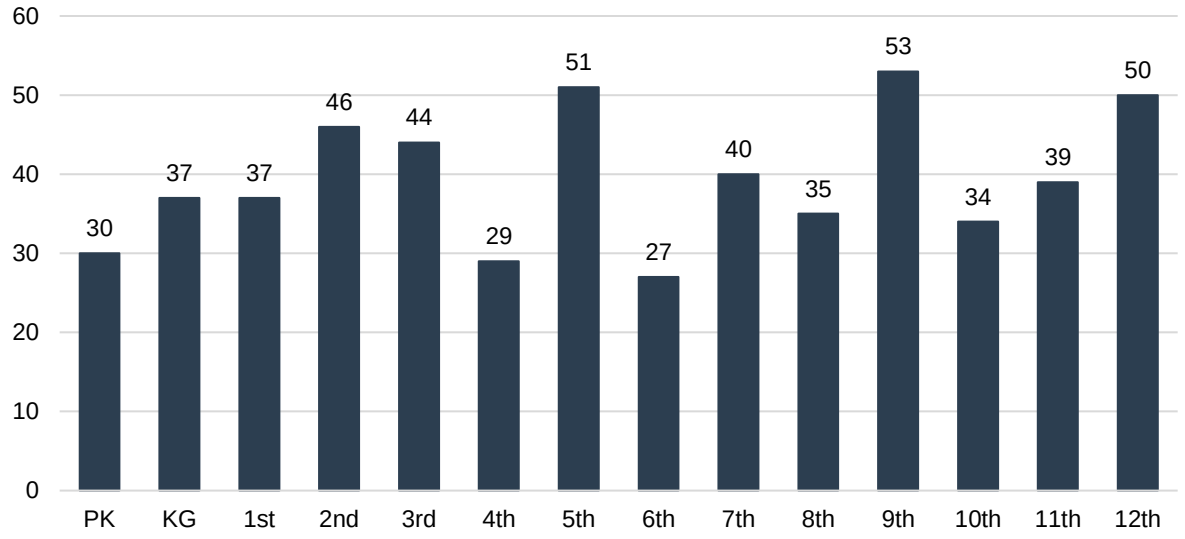


Figure MSM.3.: Number of Students by Grade, 2020-2021



Source: Iowa Department of Education

The figure above indicates that the largest number of students are in the 5th and 9th grades. The lowest population of students are 4th and 6th grades. According to the Iowa Department of Education, 23.75% of students receive either free or reduced priced meals at school. This is lower than the state average of 41.77%. Additionally, 11.96% of students are in the Special Education Program and 0% of students are English Language Learners. These particular students may be more vulnerable during a hazardous event than the rest of the student population.

Table MSM.2: Student Statistics, 2020-2021

	School District	State of Iowa
Free/Reduced Priced Meals	23.75%	41.77%
Special Education Students	11.96%	12.20%
English Language Learners	0%	6.30%

Source: Iowa Department of Education[97]

Administration and Staff

The school district has a superintendent, two principals, and four secretaries. The school board is made up of a five-member panel. Approximately 107 staff are employed by the district. Staff are trained on emergency procedures through group presentations, written materials, and drills.

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the district's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

District funds are sufficient to pursue new capital projects with a large portion of funds already dedicated to general building repairs and upgrades. Funds have slightly increased over recent years. The district partners with the local fire department for joint drills and has shared emergency plans with law enforcement.

97 Iowa Department of Education. "Student Demographic Information." Accessed October 2021. https://educateiowa.gov/data-reporting/education-statistics#Staff_Data.

Table MSM.3: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning Capability	Capital Improvements Plan/Long-Term Budget	Yes
	Continuity of Operations Plan	Yes
	Disaster Response Plan	Yes
	Other (if any)	
Administration & Technical Capability	GIS Capabilities	No
	Civil Engineering	No
	Local staff who can assess community's vulnerability to hazards	No
	Grant Manager	No
	Mutual Aid Agreement	No
	Other (if any)	
Fiscal Capability	Applied for grants in the past	No
	Awarded grants in the past	No
	Authority to levy taxes for specific purposes such as mitigation projects	No
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Approved bonds in the past	Yes
	Flood Insurance	No
	Other (if any)	
Education & Outreach Capability	Local school groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc. (Ex. Parent groups, hazard mitigation boards, etc.)	No
	Ongoing public education or information program (Ex. Responsible water use, fire safety, household preparedness, environmental education, etc.)	No
	StormReady Certification	No
	Other (if any)	
Drills	Fire	4 / year
	Tornado	2 / year
	Intruder	2 / year
	Bus evacuation	2 / year
	Evacuation	1 / year
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Limited

Plan Integration

The District has a Crisis Response Plan, which is reviewed and updated annually. It outlines the staff and chain of command that should be notified during a crisis event. It also provides contact information to outside agencies including, but not limited to the County Sheriff, Fire Department, County Public Health, and County Emergency Management.

The following types of emergencies are covered under the Crisis Response Plan:

1. Suicide / Attempted Suicide / Death
2. Major School Fire / Explosion / Building Collapse / Gas Leak
3. Fighting / Violent Behavior / Assault / Rape / Sexual Assault
4. Abduction / Intruder / Lost Child
5. Tornado or Severe Windstorm
6. Bomb Threat
7. Bus Accident
8. Bus Intruder
9. Hazardous Materials
10. First Aid Priorities, Universal Precautions
11. Other situations determined by administration

No other examples of plan integration were identified, and there are currently no plans to further integrate planning mechanisms.

Future Development Trends

In the past five years, no changes have been made to district facilities. There are no plans for construction or renovation in the next five years.

Community Lifelines

Transportation

Three major transportation corridors travel through the district: Interstate 35 and Iowa State Highways 28 and 92. The most traveled route is Interstate 35 with an average of 22,400 vehicles daily, 560 of which are trucks. [98] There are no rail lines that travel through the district. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the district, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are no chemical storage sites in the district that contain hazardous chemicals. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident. According to the local planning team, no district buildings are located near chemical facilities and no chemical releases have occurred in the past.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified

98 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the district.

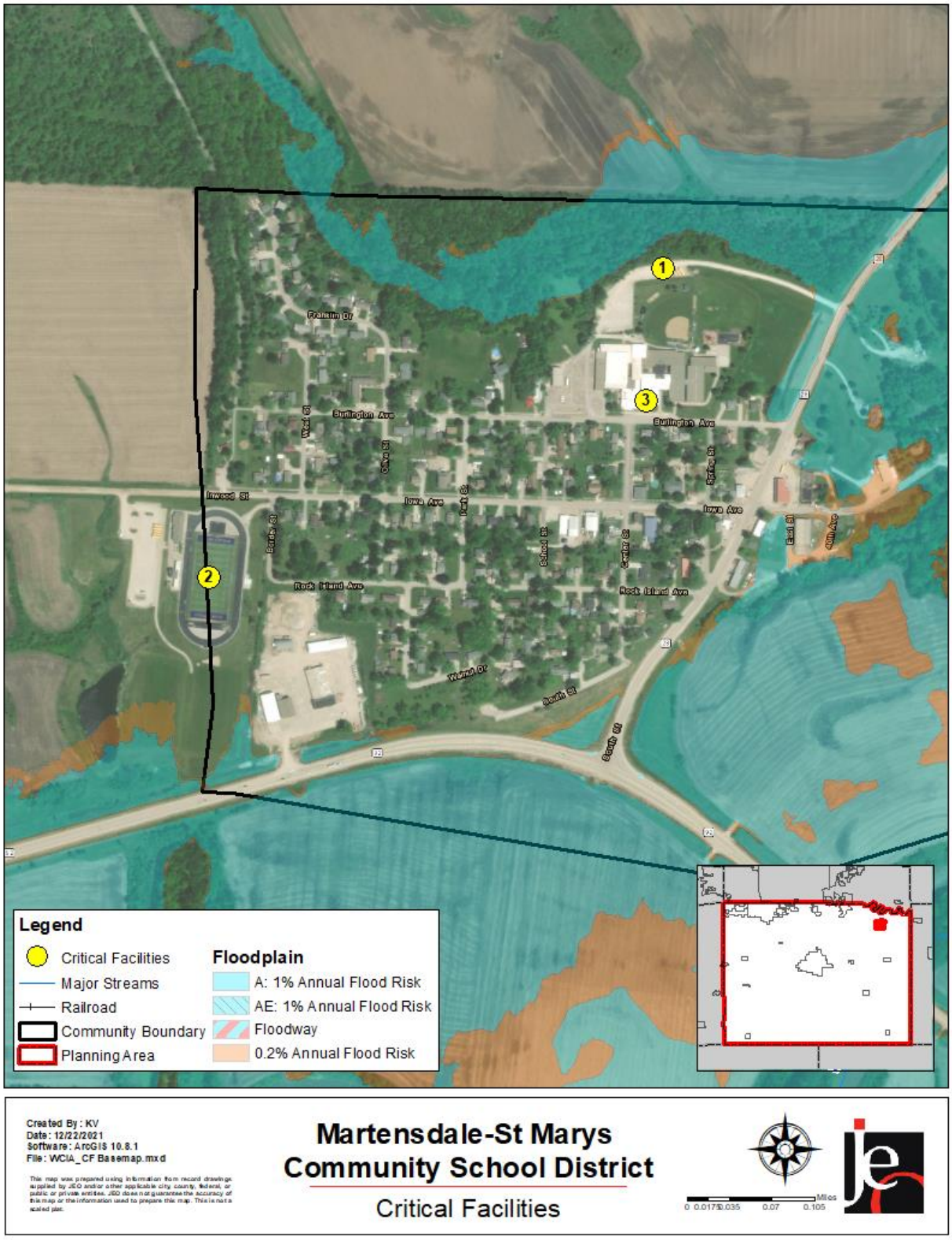
Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table MSM.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Bus Barn	N	N	N
2	Football Stadium	N	N	N
3	Martensdale-St. Marys Elementary and High Schools	Y	N	N

The Martensdale-St Marys Elementary and High School has a weather radio. The bus barn is located next to the school so does not need a weather radio. At the football/track stadium, weather apps are used to track severe weather.

Figure MSM.4: Critical Facilities



Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Flooding

The main impact of flooding on the School District is in regard to busing students. The rural roads around Martensdale and St. Marys are occasionally flooded with water, making transportation treacherous. In the spring of 2013, busing was canceled for three days while the rural roads north of the school were flooded. This occurred again in early spring of 2016, when rural roads were nearly impassible from flooding and poor road maintenance. The district plans to create an alternate transportation plan for buses to use in situations like these when roads become impassible. The Middle and North Rivers, as well as the creek north of the school, will occasionally flood, though this has had little impact on the school in the past.

Hazardous Materials Release

The School District has been affected by chemical spills in transportation previously when a spill on Interstate 35 rerouted traffic past the schools. This heavy traffic made school dismissal dangerous for students. This previous incident and the school buildings' proximity to Highways 92 and 28 make hazardous spills a concern for the local planning team. FEMA and the County Emergency Manager have met to discuss and plan for HAZMAT spills. The School District's Crisis Response Plan also incorporates chemical spills. School response will vary based on the type and amount of chemical release, but the plan includes both evacuation and shelter-in-place contingencies, including the ability for the school to shutdown air vents to the outside. Plans to further mitigate the hazards associated with chemical spills included public education on response actions during disaster events and removing unused chemicals from the school buildings.

Pandemic Disease

According to the local planning team, disease outbreaks are most noticeable among high school students because of their severity. In October through November of 2016 a pertussis outbreak swept through the high schoolers. This disease is unusual in the United States because it can be prevented by standard vaccination procedures, but outbreaks can occur if vaccination rates in a population are suffering. There have also been strep throat outbreaks among high school students. The Warren County Health Department is responsible for responding to disease events, so the Crisis Response Plan does not cover disease outbreaks. The outbreak of pertussis showed that the communication between Health Department and School District could be improved, because the Health Department did not give sufficient reason to the school administrators for why students needed to be kept home. To prepare for future disease outbreaks, the School District would like to develop plans to address these events in conjunction with the Warren County Health Department.

Severe Winter Storms

Winter storms tend to leave county roads covered in snow for days, making it difficult for children in rural areas to be bused to school because of unpaved roads that are not regularly plowed. The

School District plans to create an alternation transportation plan for buses when their regular routes are unusable. The district tends to cancel school too quickly, so there are days when students could safely come to school but do not. The district plans to develop a system to call snow days more accurately.

Past structural damage to school buildings was caused by ice buildup, and mainly impacted flashing and gutters. There has also been one power outage caused by winter weather, when a squirrel bit through power lines in a transformer box. The school plans to mitigate future power outages by providing backup power generators to critical buildings.

The maintenance staff at the school oversees snow removal, and any extra removal needed is contracted out. Their snow removal equipment is sufficient after the purchase of a new plow for the truck and brush for the bobcat in 2016.

Tornadoes and Windstorms

Tornadoes are a concern for the district because there are no sure plans in place for school dismissal during inclement weather. One such event was in the fall semester of 2015, when students were dismissed from school during a thunderstorm warning. After 15 minutes, this warning turned into a tornado watch. The school does hold students from dismissal in the event of hail, high wind, and tornado watches. The district plans to update the Crisis Response Plan to address this. Sirens in the community can be heard at all district facilities. Over the past six years, hazardous trees in the district have been removed.

The school does not have a safe room, but instead uses the hallways as shelter. The district plans to construct a safe room for the building. Critical records are backed up with cloud-based software.

Mitigation Strategy

Completed Actions

Mitigation Action	Anti-virus Software
Description	Install and/or update anti-virus software
Hazard(s) Addressed	Terrorism
Status	IT manages software and updates as needed.

Mitigation Action	Hazard Education
Description	Annually train district officials/staff on hazard mitigation issues; enhance or formalize efforts for education about hazards
Hazard(s) Addressed	All hazards
Status	The District provides educational opportunities to educators, staff, and students throughout the school year.

Mitigation Action	Remove Chemicals
Description	Remove unused chemical containers (mostly household HAZMAT)
Hazard(s) Addressed	Hazardous Materials
Status	Chemicals have been removed as necessary.

Continued Actions

Mitigation Action	Accessible Public Facilities
Description	Make all applicable school facilities handicap accessible
Hazard(s) Addressed	All hazards
Estimated Cost	$100,000
Local Funding	General funds
Timeline	Ongoing
Priority	Low
Lead Agency	Maintenance
Status	Not started.

Mitigation Action	Community Safe Rooms
Description	Develop and implement and public safe room plan; design and construct storm shelters and safe rooms, schools, and other areas (sports complexes); integrate safe room retrofits into existing facilities
Hazard(s) Addressed	Tornados, Windstorm
Estimated Cost	$250,000
Local Funding	General funds, HMGP, PDM
Timeline	5+ Years
Priority	Medium
Lead Agency	Maintenance
Status	School storm shelters are still needed for current facilities.

Mitigation Action	Contact List in School Vehicles
Description	Include and update annually a contact list in each applicable bus and school vehicle with names, addresses, and phone numbers for parents of students
Hazard(s) Addressed	All hazards
Estimated Cost	$500
Local Funding	General funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Business Manager
Status	Not started.

Mitigation Action	Develop Secondary Alert Systems
Description	Promote NOAA weather radio purchase and use; install siren warning systems where necessary; countywide AlertIowa participation
Hazard(s) Addressed	All hazards
Estimated Cost	$1,000
Local Funding	General funds
Timeline	Ongoing
Priority	Low
Lead Agency	Superintendent
Status	Additional weather radios are needed to ensure alerts are received.

Mitigation Action	GPS Units
Description	Install GPS units in applicable school vehicles
Hazard(s) Addressed	All hazards
Estimated Cost	$1,000
Local Funding	General funds
Timeline	2-5 Years
Priority	Low
Lead Agency	IT Department
Status	Not started.

Mitigation Action	Improve Facility Security
Description	Install vehicular barriers, fences, lights, and/or security cameras to protect critical facilities and key infrastructure where possible; develop restricted access procedures
Hazard(s) Addressed	Terrorism
Estimated Cost	$10,000
Local Funding	General funds, Homeland Security grants
Timeline	Ongoing
Priority	Medium
Lead Agency	Maintenance, Facilities Committee
Status	Not started.

Mitigation Action	Prepare and Adopt an EOP
Description	Adopt a thorough EOP including mass casualty plan and multiple capabilities
Hazard(s) Addressed	All hazards
Estimated Cost	$2,500
Local Funding	General funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Administration
Status	Not started.

Mitigation Action	Terrorism Response Plan
Description	Adopt and promote a terrorism response plan for the District
Hazard(s) Addressed	Terrorism
Estimated Cost	$2,500
Local Funding	General funds
Timeline	Ongoing
Priority	High
Lead Agency	Administration
Status	Response are updated as needed and identified deficiencies during trainings are addressed and addressed in the plan.

Mitigation Action	Transportation Plan
Description	Establish alternate bus routes and plans for road closures
Hazard(s) Addressed	All hazards
Estimated Cost	$500
Local Funding	General funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Maintenance, Business Manager
Status	Not started.

Removed Actions

Mitigation Action	Hazard Mitigation Plans and Legislation
Description	Assure the plan is annually reviewed and is updated in five years; develop continuity plans for critical community services; promote the result of the hazard mitigation plan; research government and non-government grant funding options and have pre-planned projects; review and update district emergency operations plans; full review of policy, procedure for mitigation inclusion; annually train district leaders on hazard mitigation issues; develop and enforce evacuation plans/routes with contingencies
Reason for Removal	Plan maintenance and public involvement is covered in the following section.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The maintenance supervisor, business manager, and superintendent will be responsible for reviewing and updating the plan in the future. These individuals will review the plan bi-annually. The public will be notified through the board meeting agenda.

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School District Profile

Norwalk Community School District

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table NSD.1: Norwalk Community School District Local Planning Team

Name	Title	Jurisdiction
Brad Criswell	School Resource Officer	Norwalk CSD
DT Magee	Superintendent	Norwalk CSD
Richard Sleeth	Building and Grounds Director	Norwalk CSD
Tom Scallon	SIAC Safety Lead	Norwalk CSD

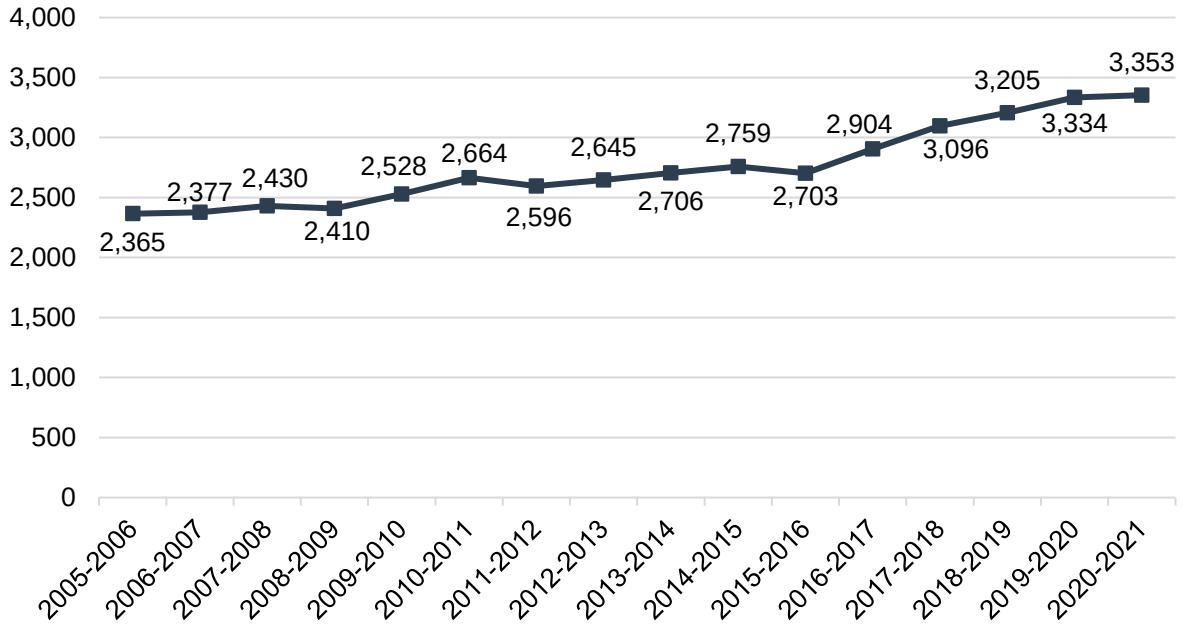
Location

Norwalk Community School District is in northwestern Warren County and serves five schools: Oviatt Elementary, Orchard Hills Elementary, Lakewood Elementary, Norwalk Middle School, and Norwalk High School. The school district provides services to students in the communities of Cumming, Norwalk, Spring Hill and the rural areas surrounding them.

Demographics

The following figure displays the historical student population trend starting with the 2005-06 school year and ending with the 2020-2021 year. It indicates that the student population has been growing since 2016. There are 3,353 students enrolled in the district.[99] The district anticipates an increase in student population in the coming years due to rapid population growth.

Figure NSD.1: Student Population 2005-2021



Source: Iowa Department of Education

99 Iowa Department of Education. October 2021. "2020-2021 Iowa Public School Building PreK-12 Enrollments by School, Grade, Race and Gender." https://educateiowa.gov/documents/public-school-building-prek-12-enrollment-grade-race-and-gender/2021/05/2020-2021-iowa.

Figure NSD.2: Norwalk Community School District

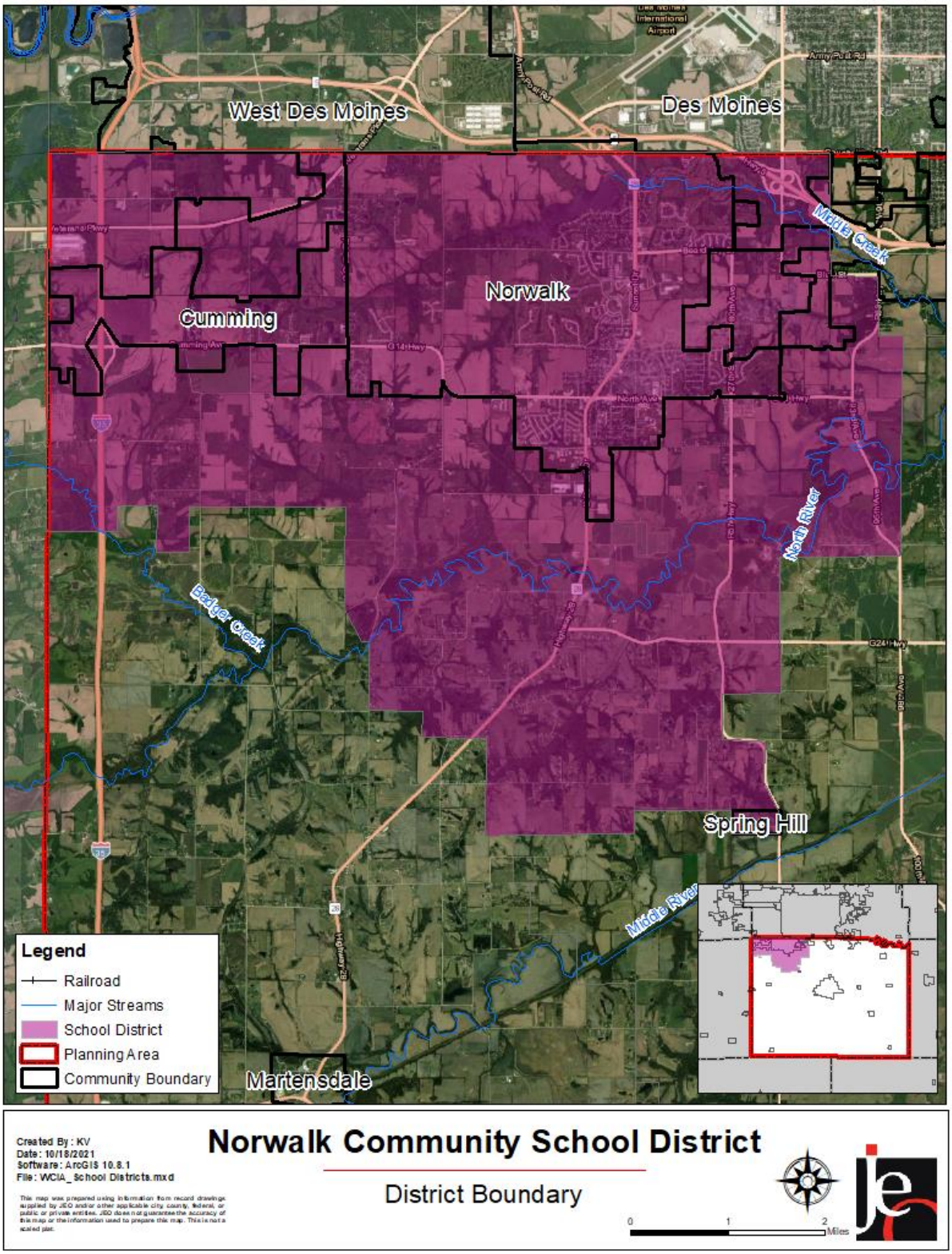
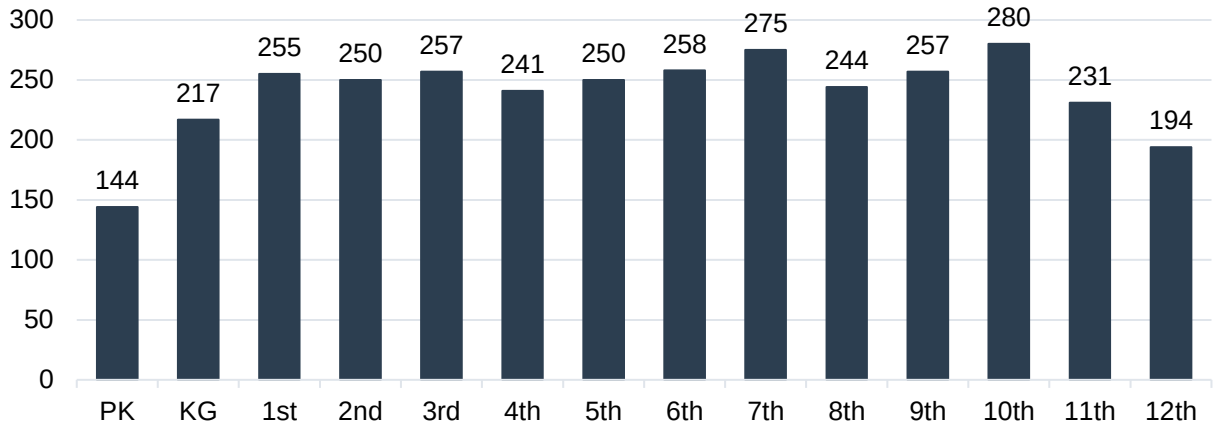


Figure NSD.3: Number of Students by Grade, 2020-2021



Source: Iowa Department of Education

The figure above indicates that the largest number of students are in the 7th and 10th grades. The lowest population of students are Pre-kindergarten and 12th grade. According to the Iowa Department of Education, 19% of students receive either free or reduced priced meals at school. This is lower than the state average of 41.77%. Additionally, 21.47% of students are in the Special Education Program and 1.2% of students are English Language Learners. These particular students may be more vulnerable during a hazardous event than the rest of the student population.

Table NSD.2: Student Statistics, 2020-2021

	School District	State of Iowa
Free/Reduced Priced Meals	19.04%	41.77%
Special Education Students	21.47%	12.20%
English Language Learners	1.2%	6.30%

Source: Iowa Department of Education[100]

Administration and Staff

The school district has a superintendent and five principals. The school board is made up of a five-member panel. Approximately 475 staff are employed by the district. Staff are provided with copies of plans and educated at training sessions and drills on emergency procedures.

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following tables summarize the district's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects. Students are educated about emergency procedures through drills and safety discussions. Drills and exercises are published and communicated to parents. The School Resource Officer organizes exercises and drills in the district, with the local police and fire departments encouraged to participate and attend.

District funds are sufficient to pursue new capital projects with a large portion of funds already dedicated to a secondary campus. Funds have increased over recent years.

100 Iowa Department of Education. "Student Demographic Information." Accessed October 2021. https://educateiowa.gov/data-reporting/education-statistics#Staff_Data.

Table NSD.3: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning Capability	Capital Improvements Plan/Long-Term Budget	Yes
	Continuity of Operations Plan	Yes
	Disaster Response Plan	Yes
	Other (if any)	
Administration & Technical Capability	GIS Capabilities	No
	Civil Engineering	No
	Local staff who can assess community's vulnerability to hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes
	Other (if any)	
Fiscal Capability	Applied for grants in the past	Yes
	Awarded grants in the past	Yes
	Authority to levy taxes for specific purposes such as mitigation projects	Yes
	Development Impact Fees	Yes
	General Obligation Revenue or Special Tax Bonds	Yes
	Approved bonds in the past	Yes
	Flood Insurance	Yes
	Other (if any)	
Education & Outreach Capability	Local school groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc. (Ex. Parent groups, hazard mitigation boards, etc.)	Yes
	Ongoing public education or information program (Ex. Responsible water use, fire safety, household preparedness, environmental education, etc.)	Yes
	StormReady Certification	No
	Other (if any)	
Drills	Fire	8 / year
	Tornado	4 / year
	Intruder	8 / year
	Bus evacuation	1 / year
	Evacuation	8 / year
	Other (if any)	

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Limited
Public support to implement projects	Limited
Time to devote to hazard mitigation	Limited

Plan Integration

Norwalk Community Schools has two planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The district will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Crisis Response Plan (2021-2022)

The crisis response plan for the school provides response protocols for unique situations such as large-scale natural disaster or criminal activities. It assigns specific responsibilities to individuals, provides clear assignment of responsibility during an emergency, addresses shelter in place protocols and locations, identifies scenarios that would require evacuation, provides evacuation routes, and identifies opportunities for mitigation following an event. The local police department, fire department, and EMS are familiar with the crisis response plan.

Strategic Plan (2021-2022)

The strategic plan for the district details specific hazards and response protocols for those hazards. The plan has been submitted to the Warren County Emergency Management Office for review.

Future Development Trends

Over the past five years, the district has built a new elementary school, Orchard Hills Elementary. In the next five years, the district plans to build a secondary campus that includes a new gymnasium, wrestling room, and physical education facility.

Community Lifelines

Transportation

Three major transportation corridors travel through the district: Interstate 35 and Iowa State Highways 5 and 28. The most traveled route is Interstate 35 with an average of 22,400 vehicles daily, 5,600 of which are trucks.[101] Additional routes of concern are Highway 28, Highway 5, R57, R63, G14, G24, and Interstate 35. There are no rail lines that travel through the district. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the district, as well as areas more at risk of transportation incidents. The district owns 19 buses with over 1,500 students bused to and from school across six routes.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are eight chemical storage sites in the district that contain hazardous chemicals. The high school is located near a concrete plant. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the district.

101 Iowa Department of Transportation. "Statewide Vehicular, Truck and Interstate Traffic Maps". 2018. https://iowadot.gov/maps/digital-maps/state-maps/state-map-page

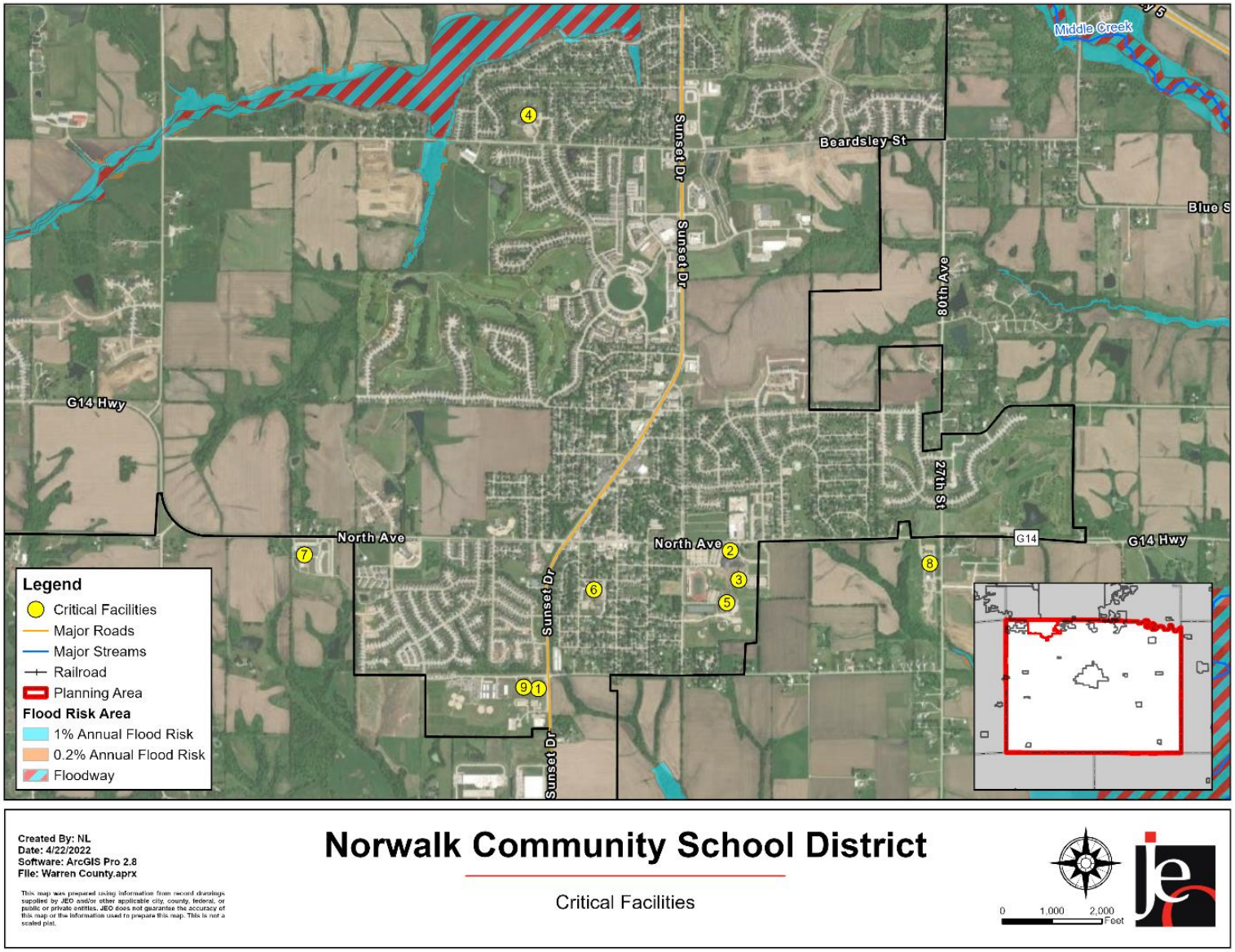
Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

It was noted that while the schools are not equipped with supplies for mass care, they could be utilized in an emergency situation if needed.

Table NSD.4: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	District Office	N	N	N
2	Eastview Elementary	N	N	N
3	High School	N	N	N
4	Lakewood Elementary	N	N	N
5	Middle School	N	N	N
6	Oviatt Elementary	N	N	N
7	Orchard Hills Elementary	N	N	N
8	Bus Barn	N	N	N
9	Buildings & Grounds and IT & Business Office	N	N	N

Figure NSD.4: Critical Facilities



Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Hazardous Materials Release

Hazardous materials were identified as a concern due to the school facilities housing chemicals in proximity to students as well as the proximity to Highway 28, which is likely having hazardous materials transported along its route. There is a fixed chemical storage facility in Norwalk near Oviatt Elementary that is also of concern to the local planning team, because it houses unknown chemicals. There have been no known incidents of hazardous material spills in or near the schools. However, in the event of a spill or release of hazardous materials, students and staff could be vulnerable and may require evacuation or shelter in place during a release. The school conducts yearly training with employees and each school has evacuation plans and agreements with local churches. The Des Moines HAZMAT response team is available to respond to chemical spills.

Infrastructure Failure

Infrastructure failure is a concern to the School District, particularly as it relates to issues with school buildings, roads, and sewer damage. The school has had to close due to sewer issues in the past. The district plans to install lightning protection, bollards, and breach deterrents to guard against some structural damage. They also plan to implement a tree maintenance program and reinforce doors and windows. Local responders are trained and equipped to properly respond in the event of an infrastructure or building failure.

Severe Thunderstorms

Thunderstorms are a common occurrence in the area, which can cause significant impacts due to the combination of lightning, high winds, hail, and heavy rain. The local planning team identified structural damage and power outages as the primary concerns when thunderstorms and lightning impact the school facilities. The schools currently do not have backup power generators and only some of the school records and electronic devices are on surge protectors. To reduce damage from lightning and the district's vulnerability to power outage, the District plans to install lightning protection equipment and provide backup generators to each facility. Additionally, the local planning team noted that hazardous trees are a concern in the event of high winds at the High School and Oviatt Elementary School, such as in June of 2014 when a thunderstorm caused $25,000 in damage to trees throughout Norwalk. The district plans to implement a tree maintenance program to reduce this concern. Every school building does have its own weather radio, and the district plans to further promote and upgrade weather radios. The district does not have any backup generators.

Tornadoes and Windstorms

As for most school districts across the Midwest, tornadoes are a hazard of concern for the Norwalk Community School District. In the event of a tornado impacting one of the district's facilities, school buildings do have identified shelter areas. However, as the district continues to grow, additional

areas and space will likely be needed to safely shelter all students and staff. Proper and sufficient shelter space is a concern for the district. One of the school buildings did sustain damage to the roof and power poles in 2011 from a tornado. The district regularly conducts drills with students and staff, and records are backed up. It was noted that the schools would benefit from the addition of backup power generators in the event that the community needs to utilize the schools as short-term shelters. Warning sirens can be heard in the district. Building and grounds staff maintain and remove hazardous trees.

Transportation Incidents

Highway 28 is a major corridor that runs north and south centrally through the community, so the route is critical not only to the city, but also to the School District. Additionally, it serves as an emergency route if traffic is displaced from Interstate 35. The School District noted that chemicals are regularly transported along this route. In the event of a chemical spill, schools may be vulnerable and may need to evacuate or shelter-in-place depending on the type of release.

There have not been any chemical spills in the community, however, it was noted that Interstate 35 was closed three times in 2016 due to major accidents. These closures put a heavy strain on the traffic in the city and disrupt the School District's ability to efficiently transport students to and from school. The district plans to address this issue by creating an alternate busing plan for when normal routes are not useable.

Mitigation Strategy

Completed Actions

Mitigation Action	Develop Secondary Alert Systems
Description	Promote NOAA weather radio purchase and use; install siren warning systems where necessary; countywide AlertIowa participation
Hazard(s) Addressed	All Hazards
Status	Weather radios have been placed in the front office of all buildings in the district as well as custodial offices.

Continued Actions

Mitigation Action	Safe Rooms and Storm Shelters
Description	Construct community safe rooms on campus in or near existing and future developments
Hazard(s) Addressed	Tornadoes, High Winds
Estimated Cost	$250,000
Local Funding	General Funds, HMGP
Timeline	5+ Years
Priority	High
Lead Agency	Administration Team
Status	This remains a priority for the district. Tentative plans for a new community recreation facility includes a large shelter area that the school district would have access to. The city also now requires that new school construction projects have shelter locations as part of their plans.

Mitigation Action	Disaster and Continuity Planning
Description	Develop continuity of operations and succession plan; develop a mass casualty plan; institute efforts to increase supply and morale of volunteers; designate/create backup EOC and/or communications center
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000
Local Funding	General funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	City/School officials
Status	Training and planning are an ongoing process. The school works closely with local police and fire. The school has their own Emergency Operations Plan that mirrors the city's plan.

Mitigation Action	Harden Infrastructure
Description	Add bollards/breach deterrents to structures; reinforce doors and windows with steel
Hazard(s) Addressed	Infrastructure Failure
Estimated Cost	$50,000+
Local Funding	General Funds
Timeline	5+ Years
Priority	Low
Lead Agency	Buildings and Grounds
Status	This remains a project the district would like to implement, however, funding has not allowed much progress in this area.

Mitigation Action	Improve Electrical System
Description	Purchase and install fixed backup power generators and pumping systems for un-served assets; investigate and implement alternative energy sources; bury utility lines in future development
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000
Local Funding	PPEL
Timeline	5+ Years
Priority	High
Lead Agency	Buildings and Grounds, IT Departments
Status	This remains a goal for the district. However, the district currently does not have alternate energy sources for its facilities.

Mitigation Action	Lightning Preparedness and Protection
Description	Protect tall buildings and towers from lightning; purchase and deploy static detectors to predict lightning during community events; install lightning rods in strategic locations at high points
Hazard(s) Addressed	Thunderstorms and Lightning
Estimated Cost	$25,000
Local Funding	General Funds
Timeline	5+ Years
Priority	Medium
Lead Agency	Buildings and Grounds
Status	All new construction will have these protection features installed. Retro fitting older buildings with these features remains a goal for the district.

Mitigation Action	Prepare for Extreme Heat and Power Failure Events
Description	Develop heat recovery plan and provide medical equipment for extreme heat events; develop recovery plan for power failure
Hazard(s) Addressed	All Hazards
Estimated Cost	$2,000
Local Funding	General Funds
Timeline	2-5 Years
Priority	High
Lead Agency	City/school officials
Status	Schools in Iowa have the advantage of not having very many students and staff on site during the hottest parts of the year. However, certain jobs and activities do take place during this time. Suspending certain activities and events in times and places that extreme conditions are hazardous to participating individuals can become necessary.

Mitigation Action	Protect Records
Description	Backup city/school files and records – store in alternate locations (vaults and digital storage); purchase and install surge protectors on sensitive equipment in critical facilities
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000
Local Funding	General Funds
Timeline	Ongoing
Priority	Medium
Lead Agency	IT Department
Status	Some of the district's files are located and backed up in the “Cloud” and/or off site in locations such as the police department.

Mitigation Action	Tree Trimming Planning
Description	Update tree trimming plan; tree trimming projects at schools
Hazard(s) Addressed	Severe Winter Storms, Thunderstorms and Lightning, Tornadoes, Windstorms
Estimated Cost	$2,000
Local Funding	General Funds
Timeline	Ongoing
Priority	Low
Lead Agency	Buildings and Grounds
Status	This building and grounds department has been very diligent in maintaining the trees throughout the district to work towards meeting CPTED requirements as well as mitigating hazards that could result from storms and high winds, etc.

Removed Actions

Mitigation Action	Promote Mitigation Plan
Description	Promote the results of this hazard mitigation plan; ensure annually maintains and updates in mitigation plan after five years
Reason for Removal	Plan maintenance, promotion, and public involvement is covered in the following section.

Mitigation Action	Maintain and Update Mitigation Plan
Description	Assure the plan is annually reviewed and updated in five years; full review of policy, procedures, and codes to include mitigation plans
Reason for Removal	Plan maintenance is covered in the next section.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (i.e. annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The district safety coordinator, building and grounds director, school resource officer, and superintendent will be responsible for reviewing and updating the plan in the future. These individuals will review the plan bi-annually. The public will be notified through the board meeting agenda.

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College Profile

Simpson College

Warren County
Hazard Mitigation Plan 2022

Local Planning Team

Table SNC.1: Simpson College Local Planning Team

Name	Title	Jurisdiction
Chris Frerichs	Director of Security	Simpson College
Matt Hansen	Dean of Students	Simpson College

Location and Geography

Simpson College is located in central Warren County and operates two campuses: One campus is located in Indianola and the other campus is located in West Des Moines.

Simpson's main campus is comprised of 85 acres with 34 major buildings, including: College Hall, Wallace Hall, Mary Berry Hall, George Washington Carver Science Center, Dunn Library, Kent Campus Center, Smith Memorial Chapel, Blank Performing Arts Center, Cowles Athletic Complex, Amy Robertson Music Center and McNeill Hall. Additionally, the campus has outdoor athletic facilities.

Demographics

Simpson College has 1,138 enrolled full-time students and 130 part-time students. Between 20-30 percent of these students are from out of state. Approximately 85 percent of Simpson College students live on campus. On average, the students that live off campus reside within one hour of campus. The college employs 104 full-time faculty, 234 fulltime employees, and six emergency personnel. Some faculty members commute from Des Moines.

Figure SNC.1: Simpson College

Housing

There are four dormitories (Barker Kresge, Picken, and Buxton Halls), four apartment complexes (Weinman, Detroit, Clinton, and Station Square Apartments), and three houses (Colonial, Hamilton, and Washington Houses) that provide on-campus housing for students. Approximately 1,000 students live on campus.

Governance

The following offices, departments, or services may be involved in implementing hazard mitigation initiatives:

- Accessibility Services
- Athletics
- Business Office
- Campus Services
- Counseling Services
- Dining Services
- Disability Services
- Emergency Management Working Team
- Human Resources
- Information Technology Services
- Maintenance
- President's Office
- Purchasing
- Residence Life
- Safety Committee
- Security

Capability Assessment

Due to the unique structure of the college, the typical capability assessment table was not used. The following table summarizes the college's overall capabilities. Simpson College will continue to utilize existing relationships with local, county, state, and federal agencies to aid in the implementation of mitigation projects.

Table SNC.2: Capability Assessment

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	Limited
Staff/expertise to implement projects	Moderate
Public support to implement projects	Limited
Time to devote to hazard mitigation	Limited

Plan Integration

Simpson College has two planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The district will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Crisis Response Plan (2021-2022)

The crisis response plan for the school provides response protocols for unique situations such as large-scale natural disaster or criminal activities. It assigns specific responsibilities to individuals, provides clear assignment of responsibility during an emergency, addresses shelter in place protocols and locations, and identifies scenarios that would require evacuation. In a future update, the plan will identify critical evacuation routes, identify opportunities for mitigation following an event, and identify any gaps related to hazards. The Simpson College Director of Security and Warren County Emergency Management are familiar with the plan.

Strategic Plan (2021-2022)

The college has a campus strategic plan that examines future development and priorities for the next three and five years. The plan incorporates the principles of hazard mitigation by examining how the campus is currently vulnerable to a wide range of hazards and how they can work to reduce those vulnerabilities. Considerations in the project prioritization process include facility needs, safety of the campus population and how to reduce losses from all hazards.

Another tool utilized by the college is annual drills and exercises. The college works closely with County Emergency Management to develop realistic scenarios that are then incorporated into a tabletop or full-scale exercise. The drills are an annual reminder of what has been done and what still needs to be addressed. In addition to exercises, the college has developed an emergency management working team that is serving as the planning team for the update of the HMP. The team includes representatives from the President's Office, Registrar, Dean of Students, Controller, Maintenance, Campus Services and also includes the Director of Security, and Vice President of Marketing. The college will continue to work on including hazard mitigation and risk reductions measures into planning documents as they have in the past. In addition, the projects and measures identified in this plan will be considered during the annual budgeting process with prioritization being given to projects that might be eligible for grants.

Future Development Trends

In recent years, the college worked to remove the city street that bisected the campus. The removal and rerouting of traffic was a major project but was a top priority in the campus master plan due to both increasing usable campus space and creating a safe campus. In addition, the college has also worked to decentralize the steam production facility utilized for heating buildings. This has resulted in more efficient steam production and greater resilience in the system. This project was completed in 2014. In the next five years, there are plans to renovate the Dunn Library. The college works continually to improve their facilities and the safety of students on campus.

Community Lifelines

Transportation

Five major transportation corridors travel near the two college campuses. US Highway 65 and Iowa State Highway 92 travel near the Indianola campus. Interstate 35, 235, and US Highway 6 travel near the West Des Moines campus. Additionally, a Union Pacific Railroad line and a Norfolk and Southern Railway Co line travel by the West Des Moines Campus. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the college, as well as areas more at risk of transportation incidents.

Hazardous Materials

According to the Tier II System reports submitted to the Iowa Department of Natural Resources, there are 22 chemical storage sites located in or near Indianola and 37 chemical storage sites located in West Des Moines that contain hazardous chemicals. In the event of a chemical spill, the local fire department and emergency response may be the first to respond to the incident.

Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the college.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table SNC.3: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Barker Hall		N	N
2	Buxton Hall		N	N
3	Carver Science Center		Y	N
4	Clinton Apartments		N	N
5	Colonial House		N	N
6	Detroit Apartments		N	N
7	Dunn Library		N	N
8	Hamilton House		N	N
9	Hillman Hall		N	N
10	Kent Campus Center		N	N
11	Kresge Hall		N	N
12	McNeill Hall		N	N
13	Pfeiffer Dining Hall		N	N
14	Picken Hall		N	N
15	Station Square Apartments		N	N
16	Washington House		N	N
17	Weinman Apartments		N	N
18	West Des Moines Campus		N	N

Figure SNC.2: Critical Facilities

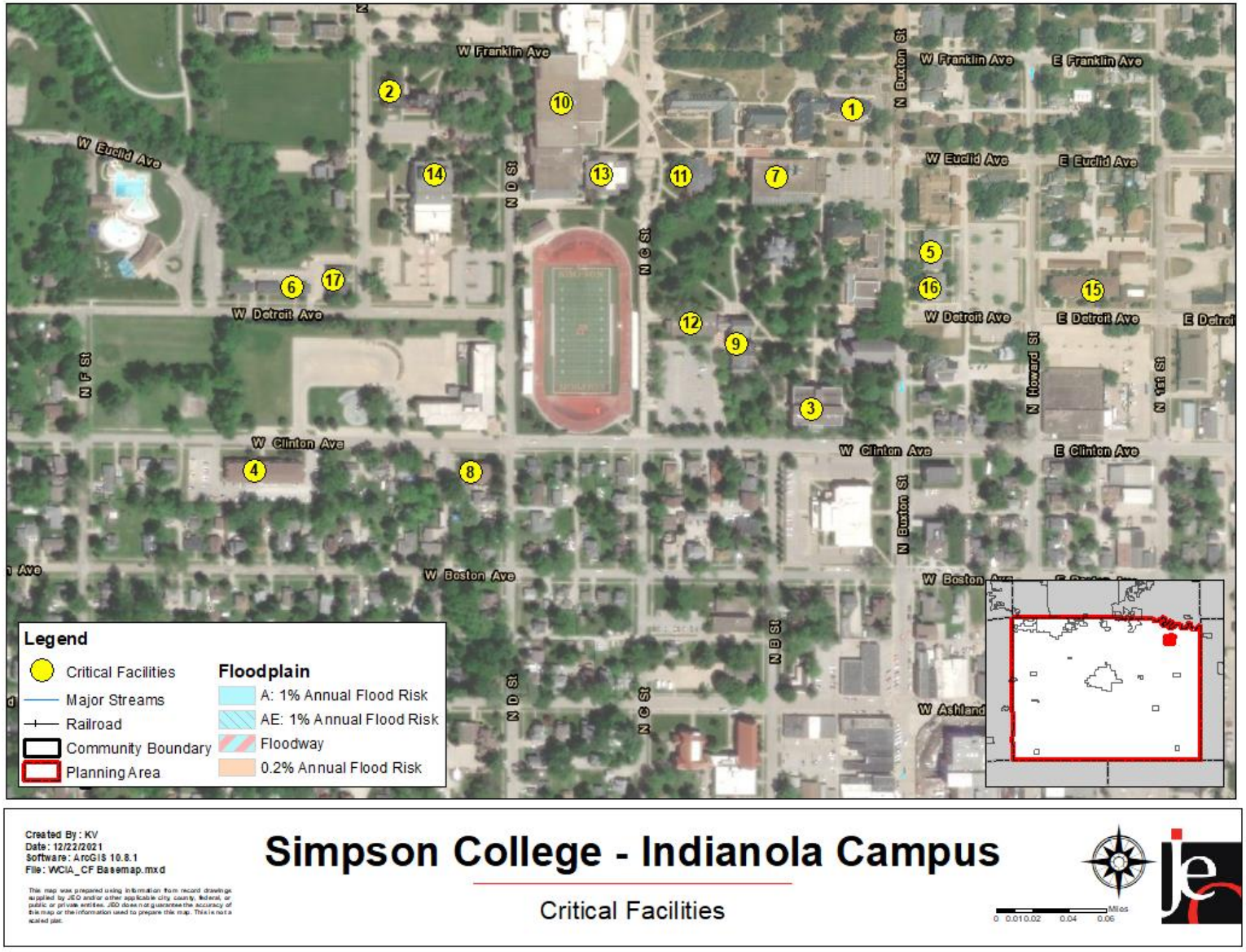
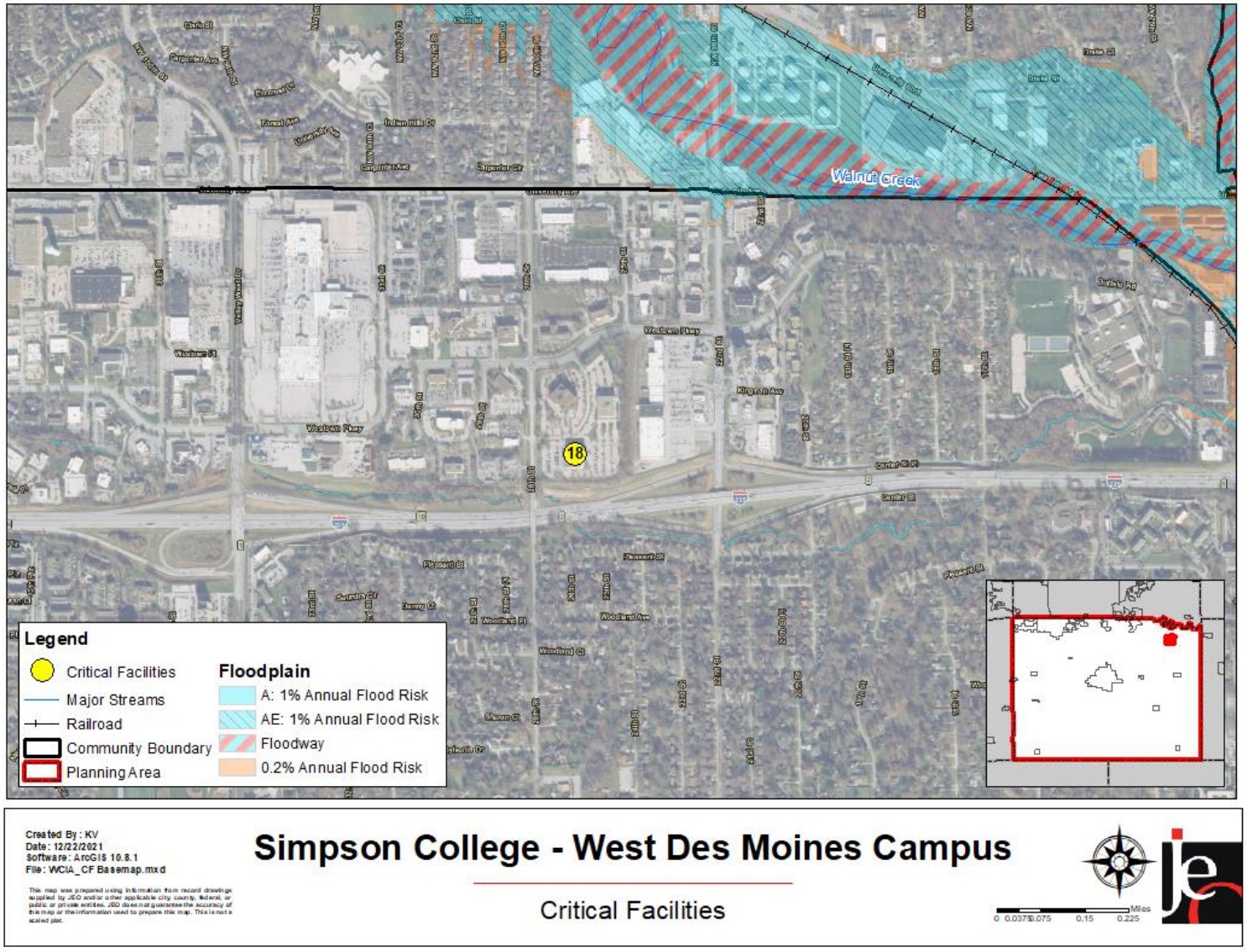


Figure SNC.3: Critical Facilities



Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the community. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the community's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Flooding

The college has experienced localized flooding in the past. Clinton Avenue (south center of campus) can overtop during rain events. Kresge Hall experiences flooding in the basement due to hydrostatic pressure during rain events of 3 inches or greater. This results in a labor-intensive clean-up effort and has resulted in the discontinuation of using seven residential rooms in this area. Also, the kitchen and computer area for this building are located in the basement, and there has been some loss of service/access during these flooding events. In the past they have installed reservoir tanks around the footing of the building, but this had little impact on flooding. Simpson College plans to conduct a hydrologic study to find the cause of the water infiltration so that it can be repaired to prevent future flooding. There has also been flooding issues in Picken Hall. To mitigate against this hazard, the college has implemented water proofing on campus at Kresge, Picken, and Clinton Halls.

Pandemic Disease

Given the confined nature of a college campus the potential for human disease to spread rapidly is very real. In response to the Covid-19 pandemic Simpson College followed the COVID-19 guidelines from the CDC, IDPH, WCPH, NCAA, ARC (America River Conference), and ACHA (American College Health Association). Some but not all examples include social distancing in classrooms, requiring mask use on campus, signage of hand and respiratory hygiene, alterations to our residence and dining halls, providing separate isolation and quarantine rooms, daily symptom monitoring of all students, staff, and faculty, increase sanitation around campus, COVID testing, contact tracing, altering our athletic events, and multiple vaccine clinics. Changes to college policies include limiting gathering size, randomized testing in 2020-2021, randomized testing of unvaccinated students/staff/faculty 2021-2022 and implementing isolation and quarantine guidelines per CDC instruction. Thee college also offered distance learning in the Spring of 2020 and through the 2020-2021 academic year.

The college has worked to install hand sanitizer stations across the campus as well as improving the student screening process related to vaccination records. The college does post basic hygiene related signage in the residence halls and in the past, they have also distributed disinfection kits to the student body to prevent microbial diseases. In 2016, Simpson College collaborated with WC EMA to conduct a pandemic tabletop exercise that included a range of stakeholders (IPD, WC Dept. of Health, other). The school does have a plan with guidelines for closure during disease outbreak, closer criteria considers both student, staff ad facility concerns and losses. In addition to the plan at the college-wide level, each course/professor is encouraged to include cancellation and workarounds should class be cancelled for a prolonged period. Workarounds include, but are not limited to, conducting courses online. The school also has a plan for students who are participating in the study abroad program to protect against outbreaks in study abroad

areas as well as containment upon returning to the states. The college also offers flu shots to students, staff and faculty on an annual basis.

The college has some health concerns over mold issues in some of the dorms on campus. Past samples and testing of mold have come back as non-toxic, but it is still a concern. Many roofs and windows on campus need repair or replacement to help against mold growth. Any reports of mold are cleaned quickly with mold and mildew killer, as well as other cleaning supplies to ensure it doesn't continue to grow.

Terrorism

Like most schools, Simpson College is aware of the concerns related to an active shooter event and has worked to prepare for this potential. Staff and faculty have participated in the ALICE program to educate themselves on an appropriate response. The college is also considering purchasing intruder defense tools. The college conducted a lighting audit across campus to examine gaps in lighting and how best to address the needed improvements; approaches include adding new lighting in areas and installing more powerful lights in other areas. The college was able to complete the needed lighting upgrades to improve safety on campus. In addition, the insurance company utilized by the college conducts an annual inspection and review of campus facilities and offers suggestions and recommendations for improvements that will result in reduced exposure to risks. To mitigate against this hazard, the college has installed locks on all classrooms and conducted drills and training.

Severe Thunderstorms

In past years, the college has been struck by lightning multiple times. Recently lightning strikes have disabled the chiller as well as IT networks. When IT networks and internet service are disrupted, the college has no functioning phone lines and has to rely on handheld radios and cell phones. The administration building on campus has been struck by lightning four times in recent years and the campus as a whole is located on top of a hill increasing the potential for strikes in the future. The college plans to install lightning protection, a power failure recovery plan, and backup generators on critical assets to maintain electrical service during storms.

Urban fire could occur as a secondary impact resulting from natural hazards such as lightning. In the past, McNeill Hall has had a fire event with minor damages. This building houses the Business Administration & Economics and Communication Studies programs, the college newspaper, Information Services, and faculty offices. Should a fire start on campus, there is the potential for it to spread to other structures. The college does have an established document backup and storage policy to reduce the probability of loss of records from fire events. The library has an updated emergency plan which specifically addresses fire events and also has installed a fire suppression system to reduce the likelihood of fire event spreading to other structures. The college has worked in recent years to ensure all multiple family units have installed sprinkler systems. Additionally, the college has implemented a centralized fire notification system that can send text alerts to staff and students in the event of a fire. The security office and Hillman Hall have weather radios, but they are in need of an upgrade. The planning team noted that they would also like weather radios for the athletics department and student development. In the future, the college plans to purchase and upgrade fire extinguishing equipment to improve monitoring and response to fire on campus.

Tornadoes and Windstorms

While no direct impacts have occurred in the recent past, tornadoes still present a significant concern for the college. Given the typical nature of a campus, the clustering of students in a small

area could result in a high number of casualties, should a tornado impact the campus. There are safe areas designated across campus, but these facilities are not necessarily constructed to a higher standard, rather they are just less vulnerable due to the absence of windows. Some safe areas are located in subterranean structures such as basements, but these too have an element of risk should a building collapse during a tornadic event. Simpson College plans to install reinforced safe rooms in all critical facilities to reduce this vulnerability. The college does have a tree care program carried out by campus landscape services, resulting in very few incidents of trees or limbs falling on campus and no incidents of reported damage. While the college has worked to reduce vulnerabilities through activities like the tree care program and the city has worked at burying power lines, power outage could still occur. Typically, the local utility provider is very efficient and timely with repairs, but during a widespread outage power restoration could be delayed. The college plans to install backup generators at all critical facilities and to develop a power failure recovery plan to augment the utility provider's services during power outages. The college has also installed signage and conducted drills to provide more education on this hazard.

Mitigation Strategy

Completed Mitigation Actions

Mitigation Action	Campus Lighting
Description	Implement the projects identified in the campus lighting audit
Hazard(s) Addressed	All Hazards
Status	Completed. Audits conducted annually.

Mitigation Action	Improve Sewer System
Description	Conduct a sewer lagoon and sanitary sewer system study; upgrade, replace, and expand sewer lines; clean sewer lagoons and install riprap where needed; install backflow devices to sewer lines; remove dead vegetation around lagoon (MTSD)
Hazard(s) Addressed	Infrastructure failure
Status	Prioritizing other projects.

New Mitigation Actions

Mitigation Action Name	Improve Emergency Communications
Description	Purchase satellite phones to ensure communication in the event of power loss or cell phone service interruptions.
Hazard(s) Addressed	All Hazards
Estimated Cost	Initial $1,000, $90/monthly
Local Funding	Capital funds
Timeline	2-5 Years
Priority	High
Lead Agency	Security Department
Status	In planning stage.

Continued Actions

Mitigation Action	Backup Power Generators
Description	1. Purchase and install three 20-ton backup generators for summer 2022 and four additional 20-ton generators for summer 2023. 2. Installation of backup generator at Cowles Fieldhouse to accommodate sheltering of 3,500 people. 3. Installation of backup generator at Pfieffer Dining Hall to power the electrical and mechanical systems that allow food to be stored and prepared. 4. Upgrade heating and cooling system 5. Utilize backup generators to tie into Indianola Municipal Utilities electrical grid to create redundancy in case of power outages.
Hazard(s) Addressed	All Hazards
Estimated Cost	$1.5 million
Local Funding	Capital funds
Timeline	2-5 years
Priority	High
Lead Agency	Maintenance
Status	Need to provide electronic connections for temporary rental generators. Working with Emergency Management Team to identify options, priorities, and funding.

Mitigation Action	Safe Rooms/Storm Shelters
Description	Construct safe rooms on campus in or near existing and future critical assets such as Cowles Fieldhouse to provide students and residents of Indianola and Warren County with a community shelter.
Hazard(s) Addressed	Tornadoes, High Winds
Estimated Cost	$500,000
Local Funding	Capital funds
Timeline	5+ years
Priority	Low
Lead Agency	Business and Finance Departments
Status	Need to identify safety and upgrade needs for existing structures.

Mitigation Action	Disaster and Continuity Planning
Description	Develop continuity of operations and succession plans for Simpson College
Hazard(s) Addressed	All Hazards
Estimated Cost	$2,500
Local Funding	Capital funds, staff time
Timeline	2-5 years
Priority	Medium
Lead Agency	Security Department, Human Resources Department
Status	Due to Covid-19, other project needs, and work-flow changes, work on this action has been delayed. The college plans to resume work after the Spring of 2022 semester.

Mitigation Action	Hazard Mitigation Plans and Legislation
Description	Assure the plan is annually reviewed and is updated in five years; develop continuity plans for critical services; improve street and alley plan; promote the result of the hazard mitigation plan; research government and non-government grant funding options and have pre-planned projects; full review of policy and procedure for mitigation inclusion; annually train campus leaders on hazard mitigation issues; develop and enforce evacuation plans/routes with contingencies
Hazard(s) Addressed	All Hazards
Estimated Cost	$1,000
Local Funding	Capital funds, staff time
Timeline	Ongoing
Priority	Medium
Lead Agency	Security Department, Emergency Management Working Team
Status	Will be discussed further at Emergency Management Working Team meetings in 2022.

Mitigation Action	Inter-Campus Communication
Description	Install inter-campus communication systems to facilitate more effective warnings and notifications about extreme events, and to monitor central Fire Alarm Systems on campus
Hazard(s) Addressed	All Hazards
Estimated Cost	$500,000
Local Funding	Capital funds
Timeline	5+ years
Priority	Low
Lead Agency	Security Department, Maintenance
Status	Anticipated to be completed in Spring 2022.

Mitigation Action	Legislation Through Partnerships
Description	Formulate relationships to gain legislation
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000
Local Funding	Capital funds
Timeline	Ongoing
Priority	High
Lead Agency	President’s Office
Status	The Simpson College president has met with Iowa senator Ernest and is continuing to pursue partnerships.

Mitigation Action	Lightning Preparedness and Protection
Description	Protect tall buildings and towers from lightning; purchase and deploy static detectors to predict lightning during community events; install lightning rods in strategic locations at high points
Hazard(s) Addressed	Thunderstorms and Lightning
Estimated Cost	$25,000
Local Funding	Capital funds
Timeline	2-5 years
Priority	Medium
Lead Agency	Business and Financing Departments
Status	The college is transitioning to a new maintenance company (JLL) and will work with them to gain insight on lightning preparedness and protection.

Mitigation Action	Prepare and Adopt an EOP
Description	Adopt a thorough EOP including mass casualty plan and multiple capabilities
Hazard(s) Addressed	All Hazards
Estimated Cost	$2,000
Local Funding	Capital funds, staff time
Timeline	Ongoing
Priority	Medium
Lead Agency	Security Department
Status	Opportunity to work on this with the Emergency Management Working Team in the future.

Mitigation Action	Prepare for Extreme Heat and Power Failure Events
Description	Develop heat recovery plan and provide medical equipment for extreme heat events; develop recovery plan for power failure
Hazard(s) Addressed	All Hazards
Estimated Cost	$2,500
Local Funding	Capital funds, staff time
Timeline	2-5 years
Priority	Medium
Lead Agency	Security Department, Human Resources Department
Status	Part of emergency power plan. The college will work with health services, JLL maintenance company, and IT to identify medical needs, a work plan, recovery plan, and temporary mitigation measures during power outages.

Mitigation Action	Protect Buildings Against Flooding
Description	Conduct a hydrologic study to find the cause of water infiltration of Kresge Hall and develop strategies to eliminate infiltration
Hazard(s) Addressed	Flooding
Estimated Cost	$30,000
Local Funding	Capital funds
Timeline	2-5 years
Priority	Medium
Lead Agency	Maintenance, President's Office
Status	Will work with JLL maintenance company to plan and prioritize actions.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside community planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The director of security, dean of students, and maintenance director will be responsible for reviewing and updating the plan in the future. These individuals will review the plan annually. The public will be notified through social media, website updates, emails, and campus postings.

Water District Profile

Warren Water District

Warren County
Hazard Mitigation Plan 2022

Local Planning Teams

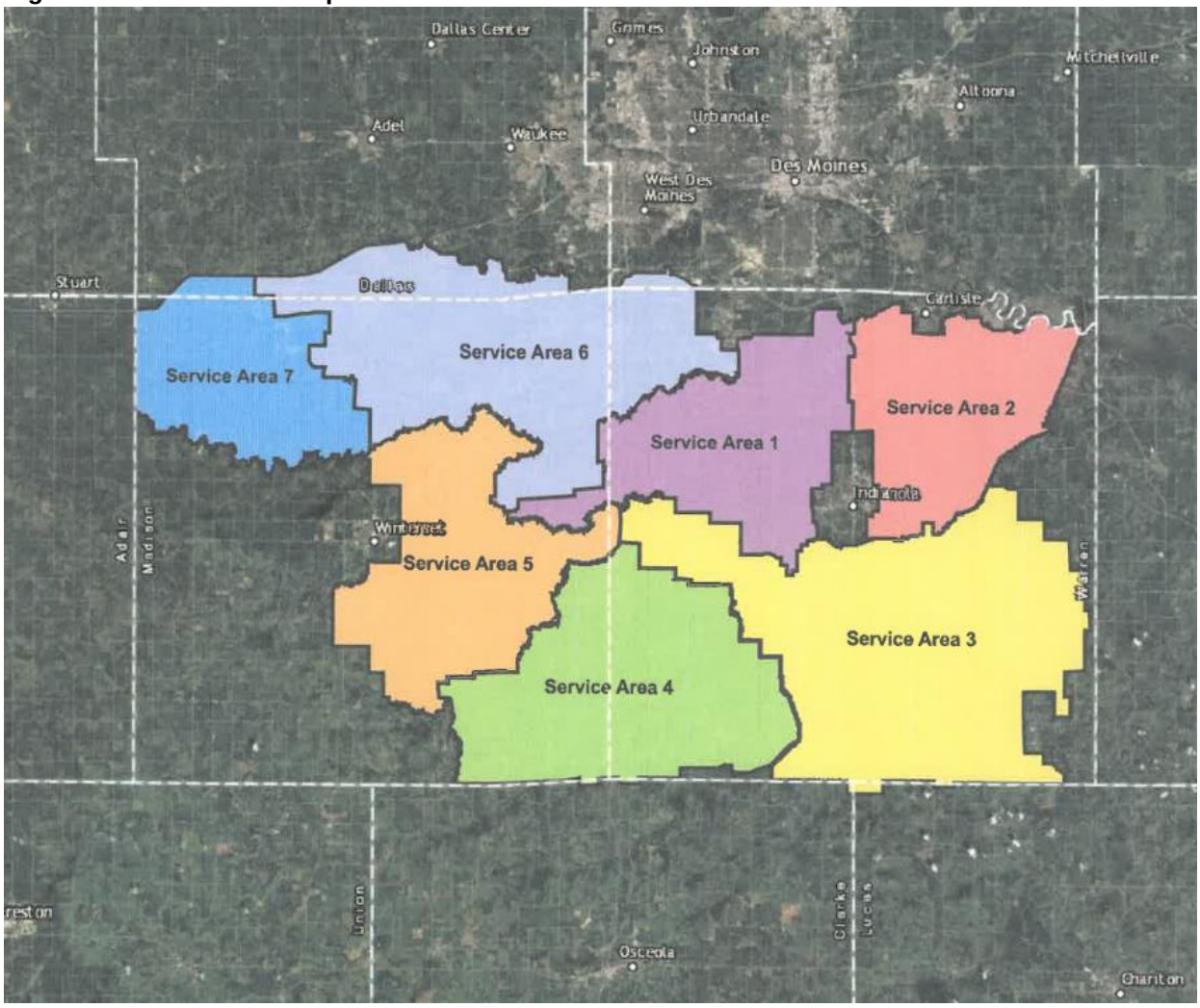
Table WWD.1: Warren Water District Local Planning Team

Name	Title	Jurisdiction
Stan Ripperger	Systems Manager	Warren Water District

Location and Geography

The Warren Water District provides service to rural communities, businesses, and schools in Dallas, Madison, Polk and Warren Counties. Figure WWD.1 shows the seven areas serviced by the district in Madison and Warren Counties. Service areas one through four and parts of service areas five and six reside in the planning area.

Figure WWD.1: District Map



Services

The primary purpose of the district is to provide safe drinking water to rural areas and communities in the planning area. Approximately 1,200 miles of water line serves nearly 7,500 customers. The district provides water to the following communities: Ackworth, Martensdale, Milo, New Virginia, and St. Marys. The district also provides water to Southeast Warren Schools, Hartford Mobile Home Park, Camp Wesley Woods, River Oaks Water Co, Xenia Rural Water District and Lake Ahquabi State Park. The district purchases water from Des Moines Water Works and averages 1.7 million gallons per day for delivery. There are seven hydraulic service areas, (systems 1-7) used for water distribution which includes seven water storage facilities and nine booster pump stations.

Governance and Staffing

The water district is governed by a nine-member board of directors who will oversee the implementation of hazard mitigation projects. Staff positions in the district include a manager, assistant manager, administrative manager, four service technicians, and two customer service representatives.

Capability Assessment

Due to the unique structure of water districts, the typical capability assessment table was not used. The following tables summarizes the district's overall capability. Revenue for the district is generated through water sales within the planning area.

Table WWD.2: Overall Capability

Overall Capability	Limited/Moderate/High
Financial resources to implement mitigation projects	High
Staff/expertise to implement projects	High
Public support to implement projects	Moderate
Time to devote to hazard mitigation	Moderate

Plan Integration

The Warren Water District has limited planning documents that discuss or relate to hazard mitigation. Each plan is listed below along with a short description of how it is integrated with the hazard mitigation plan. The district will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates. The district will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Emergency Response Plan (2021)

The emergency response plan serves as a guideline for district staff and operators to minimize disruption of normal services to consumers and to provide public health protection during an emergency event. The document identifies human-caused events such as vandalism and contamination and discusses the water system's response during those events.

Long Range Capital Improvement Plan (2022)

The capital improvement plan annually outlines projects the district would like to pursue and provides a planning schedule and financing options. Projects discussed in the plan include improvements for 5-20 years in the future. 0-5-year projects include hydraulic improvements in several areas, transmission line improvements, and water line installations. 5–10-year projects include transmission line improvements, elevating storage tanks, installing pressure reducing

valves, and water line installations. 15–20-year projects include transmission line improvements, and water line installations and replacements. Additional considerations include obtaining an alternative water source and transmission line and pump upgrades.

Future Development Trends

In the past five years the district has upgraded several areas of the water system and added backup generators to Booster Stations #2, #3, #4, #5A, #6, and #7. In the next five years, the district plans to continue upgrading the water system where necessary and complete a long-range plan to identify focus areas.

Community Lifelines

Critical Facilities

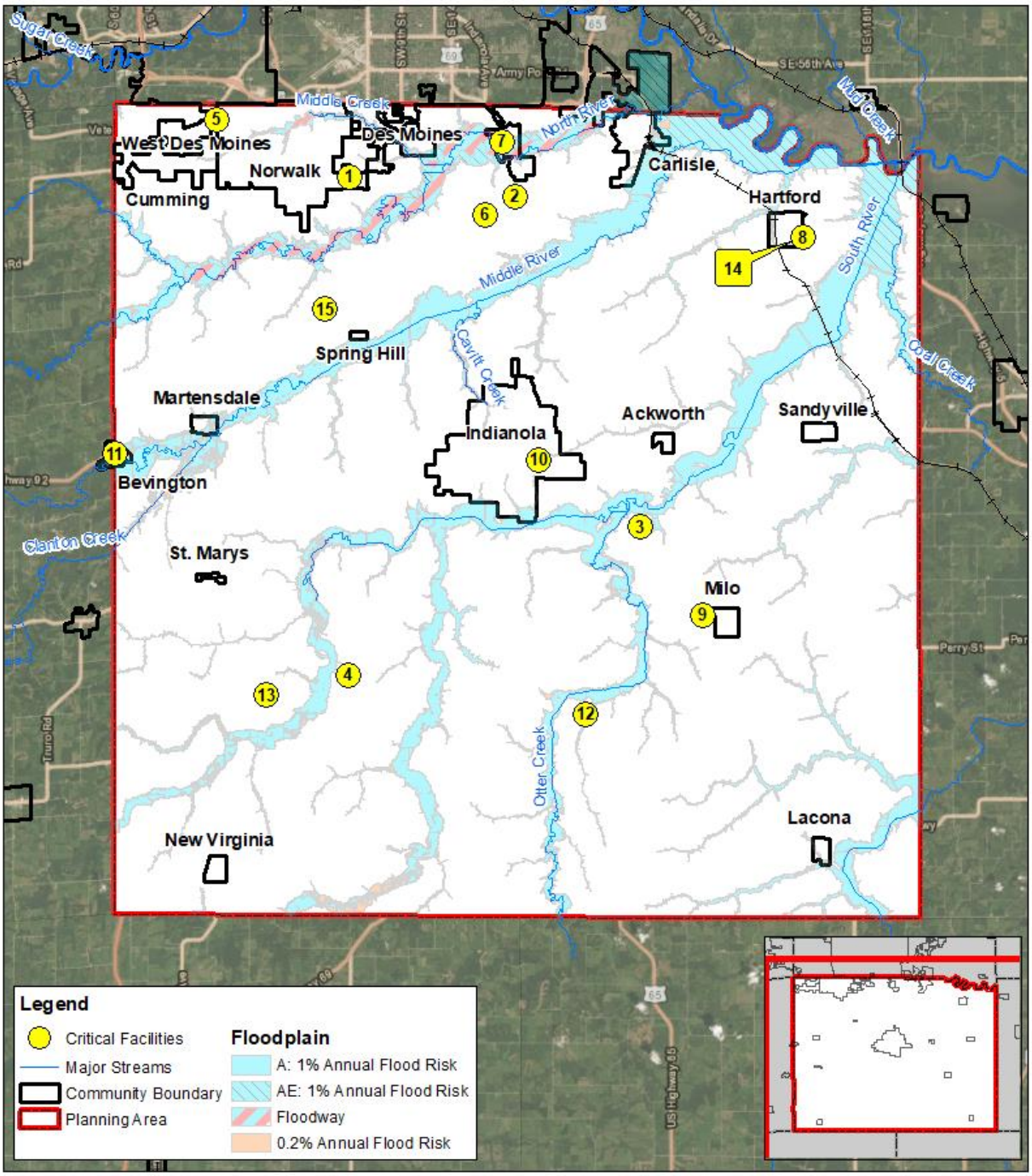
Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during the original planning process and updated by the local planning team as part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Although they may not be listed in the table below, critical infrastructure also includes power infrastructure, cell towers, alert sirens, water infrastructure, wastewater infrastructure, and roadways.

Table WWD.3: Critical Facilities

CF Number	Name	Mass Care (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Pump Station #1	N	N	N
2	Pump Station #2	N	Y	N
3	Pump Station #3	N	Y	N
4	Pump Station #4	N	Y	N
5	Pump Station #5A	N	Y	N
6	Pump Station #6	N	Y	N
7	Pump Station #7	N	Y	Y (0.2%)
8	Pump Station #8	N	N	N
9	Pump Station #9	N	N	N
10	Warren Water District Office	N	N	N
11	Wastewater Treatment Plant	N	N	Y (1%)
12	Water Tower	N	N	N
13	Water Tower	N	N	N
14	Water Tower	N	N	N
15	Water Tower #1/Storage Warehouse	N	N	N

Figure WWD.2: Critical Facilities



Historical Occurrences

See the Warren County profile for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the district. The local planning team prioritized the selected hazards based on historical hazard occurrences, potential impacts, and the district's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Drought

Drought is a top concern for the district as it poses a threat to water supplies necessary for the district to carry out essential functions. Drought is defined in the district as a lack of rain and possible restrictions. Des Moines Water Works treats water for nitrates as needed before sending it to the district. The planning team noted that water resources are sufficient and have been during past droughts. Alternative water sources are needed for backup and redundancy.

Flooding

The water district identified flooding as a hazard of top concern due to washouts of streams and rivers which can cause damage or loss of pipes. Concerns for areas prone to flooding include the Bevington Treatment Facility. No impacts or damages have occurred in the district due to flooding.

Infrastructure Failure

The local planning team identified this hazard of concern due to the possibility of damage or failure to district facilities. No impacts or damages have occurred in the district due to infrastructure failure.

Severe Thunderstorms

Severe thunderstorms can create lightening which has the possibility of striking antennas on district facilities such as water towers. In the past, lightning damage has occurred in the district.

Severe Winter Storms

According to the local planning team, ice buildup on water towers and antennas have prevented them from transmitting in the past. No other impacts or damages have occurred in the district from severe winter storms. To mitigate against this hazard, the district ensures generators are fueled to prepare for severe winter storms.

Terrorism

Concerns with terrorism in the district include the potential for contamination occurring in water supplies or damage to facilities. There have not been any impacts from terrorism in the past. To mitigate against terrorism, there is fencing, entry alarms, and lighting at district facilities.

Mitigation Strategy

New Mitigation Actions

Mitigation Action Name	Emergency Water Connection
Description	Coordinated effort to intertie water system with the City of Indianola Water system.
Hazard(s) Addressed	Infrastructure Failure
Estimated Cost	$150,000
Local Funding	District Funds, Municipal Funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Warren Water District, Indianola Municipal Utilities
Status	Currently in planning stage.

Mitigation Action Name	Water Tower Fencing
Description	Install fencing for water towers #2, #3, #4, #6, and #7, and booster stations #3 and #5A.
Hazard(s) Addressed	Terrorism
Estimated Cost	$200,000
Local Funding	District Funds
Timeline	2-5 Years
Priority	Medium
Lead Agency	Warren Water District
Status	Currently in planning stage.

Plan Maintenance

Hazard Mitigation Plans should be living documents and updated regularly to reflect changes in hazard events, priorities, and mitigation actions. These updates are encouraged to occur after every major disaster event, alongside district planning documents (e.g., annual budgets and Capital Improvement Plans), during the fall before the HMA grant cycle begins, and/or prior to other funding opportunity cycles begin including CDBG, Water Sustainability Fund, Revolving State Fund, or other identified funding mechanisms.

The district profile was last reviewed by the local planning team in 2012. The district manager, assistant manager, and board members will be responsible for reviewing and updating the plan in the future. These individuals will review the plan bi-annually. The public will be notified at board meetings and through the district website.