

Dawes County Appendix

DAWES COUNTY 2
CITY OF CHADRON & CHADRON STATE COLLEGE 19
CITY OF CRAWFORD 42

Community Profile

DAWES COUNTY

Region 23 Emergency Management Agency
Multi-Jurisdictional Hazard Mitigation Plan Update

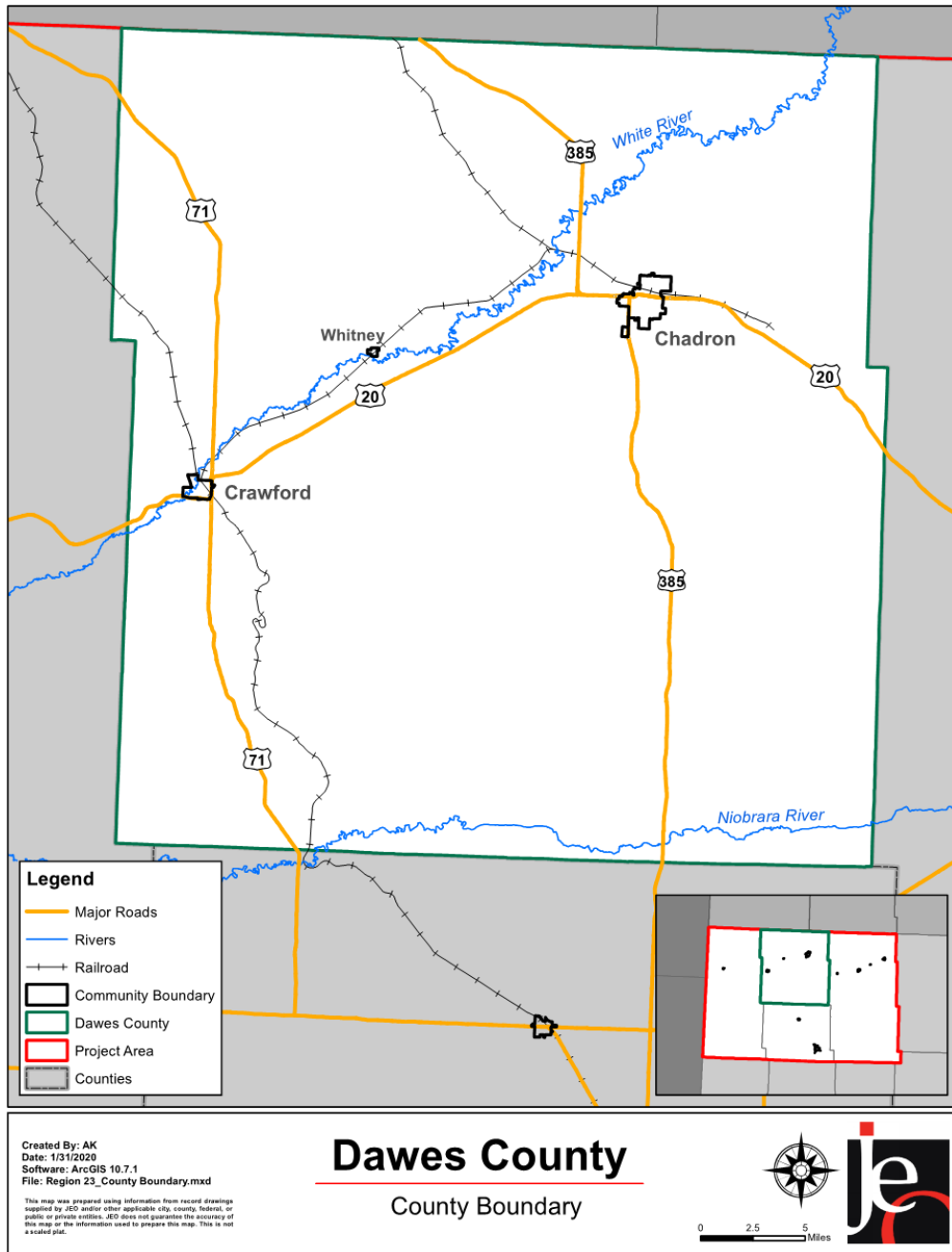
2020

Local Planning Team

Table DWS.1: Dawes County Local Planning Team

NAME	TITLE	JURISDICTION
JAKE STEWART	Board Member	Dawes County
KARL DAILEY	Sheriff	Dawes County

Figure DWS.1: Dawes County



Location, Geography, and Climate

Dawes County is located in north western Nebraska and is bordered by Sioux, Box Butte, and Sheridan counties in Nebraska and Fall River and Oglala Lakota counties in South Dakota. The total area of Dawes County is 1,401 square miles. The Niobrara River flows along the southern border of the county and the White River bisects the northwestern corner. Dawes County is comprised of Rolling Hills, valleys, Valley-Side Slopes, Bluffs and Escarpments, Dissected Palins, and Plains topographic regions¹, with the majority of land used as rangeland for livestock.

Climate

For Dawes County, the normal high temperature for the month of July is 89.8°F and the normal low temperature for the month of January is 10.2°F. On average, Dawes County receives 18.05 inches of precipitation and 42.7 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 DWS.2: Dawes County Climate Normals

	DAWES COUNTY	STATE OF NEBRASKA
JULY NORMAL HIGH TEMP	89.8°F	87.4°F
JANUARY NORMAL LOW TEMP	10.2°F	13.8°F
ANNUAL NORMAL PRECIPITATION	18.05"	23.8"
ANNUAL NORMAL SNOWFALL	42.7"	25.9"

Source: NCEI 1981-2010 Climate Normals², High Plains Regional Climate Center, 1981-2010³
Precipitation includes all rain and melted snow and ice.

Transportation

Dawes County's major transportation corridors include Nebraska Highway 2/71 running north-south, U.S. Highway 385 running north-south, and U.S. Highway 20 running east-west. Major county roads which connect Crawford to Chadron and Chadron to Hemingford are of top concern for the County. A Burlington Northern Santa Fe rail line also runs through the western portion of the county while a Nebraska Northwest Railroad Inc. line runs east from Ft. Robinson (west of Crawford) to Chadron and then north into South Dakota. Rail lines commonly transport hazardous materials through the county including coal, oil, or waste materials. The county also has an air landing strip located near Chadron.

Past hazard events, specifically flooding, have closed major routes in the county for months at a time. Numerous critical facilities for the county or communities are located along these major routes including the airport, the hospital, the hazmat facility, courthouse, and Chadron State College. This information is important to hazard mitigation plans insofar as it suggests possible evacuation corridors in the county, as well as areas more at risk to transportation incidents.

Chemical Transportation

Hazardous materials are commonly transported by a range of transportation methods, including highways, rail, air, and pipeline. Railway and highway transportation spills are the most frequently occurring chemical transportation incidents. While incident proximity will always occur near or on transportation methods, it is not possible to predict precise locations of possible future events. Proximity of pipelines, rail lines, and highways near critical facilities or vulnerable population

¹ Center for Applied Rural Innovation. "Topographic Regions Map of Nebraska." 2001. <http://digitalcommons.unl.edu/caripubs/62>.

² National Centers for Environmental Information. "1981-2010 U.S. Climate Normals." Accessed December 2019. <https://www.ncdc.noaa.gov/cdo-web/datatools>.

³ High Plains Regional Climate Center. "Monthly Climate Normals 1981-2010 – Chadron NE." Accessed December 2019. <http://climod.unl.edu/>.

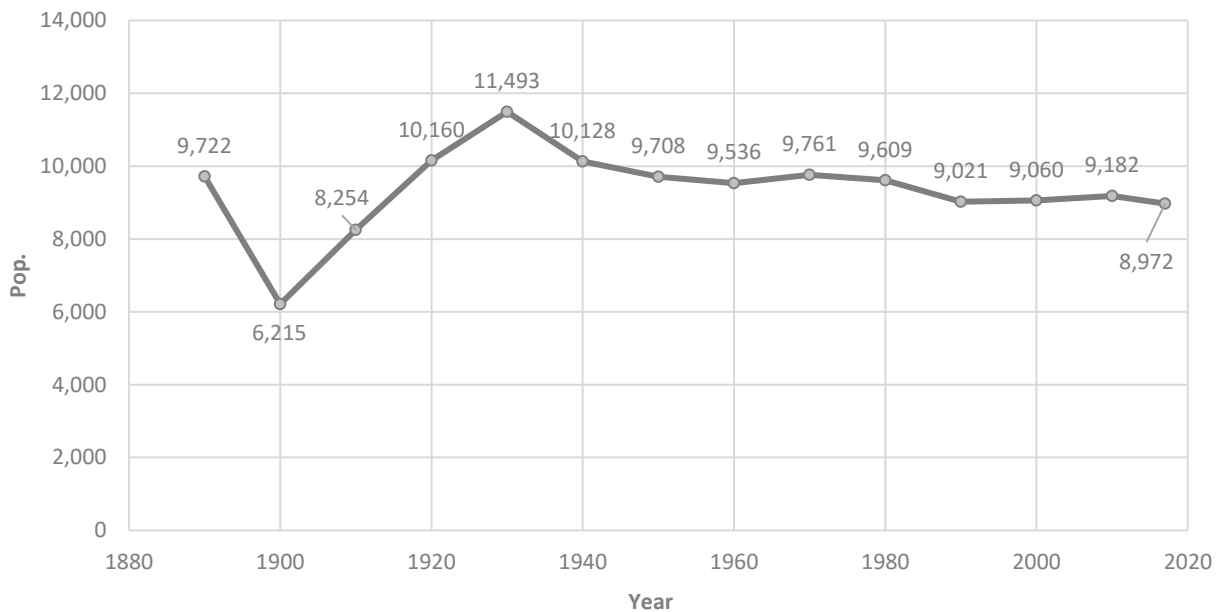
centers, including schools, daycares, nursing homes, and/or hospitals, increases overall vulnerability to chemical transportation spills. A BNSF rail line, a DM&E rail line, state highway 2/71, and U.S. Highways 385 and 20 are all commonly used to transport hazardous chemicals across the County. Private entities, local emergency response units, and state resources have strict regulatory oversight and emergency action plans in place to respond to significant chemical spills. For the County, local fire departments, Dawes County Sheriff, and Nebraska State Patrol would respond to chemical transportation incidents. While the local fire departments have some training, additional training is needed.

Demographics

The following figure displays the historical population trend from 1890 to 2017. This figure indicates that the population of Dawes County has remained relatively stable since the 1950s. This is notable for hazard mitigation as communities with stable populations will likely have similar housing, transportation, and emergency response needs over time. Stable populations can represent consistent tax revenue income for the county which could make implementation of mitigation actions more fiscally available.

Figure DWS.2: Population 1890 – 2017

Dawes County Population



Source: U.S. Census Bureau⁴

The following table indicates the State of Nebraska has a higher percentage of people under the age of five; however Dawes County has a greater proportion of residents over 64. This is relevant to hazard mitigation insofar as 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*.

⁴ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov>.

SECTION SEVEN: DAWES COUNTY COMMUNITY PROFILE

Table DWS.3: Population by Age

AGE	DAWES COUNTY	STATE OF NEBRASKA
<5	5.5%	6.9%
5-64	77.0%	78.3%
>64	17.5%	14.8%
MEDIAN	34.0	36.2

Source: U.S. Census Bureau⁶

The following table indicates that median household income and per capita income for the county is slightly lower than the State of Nebraska. Median home value and rent are also both lower than the rest of the state. 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.

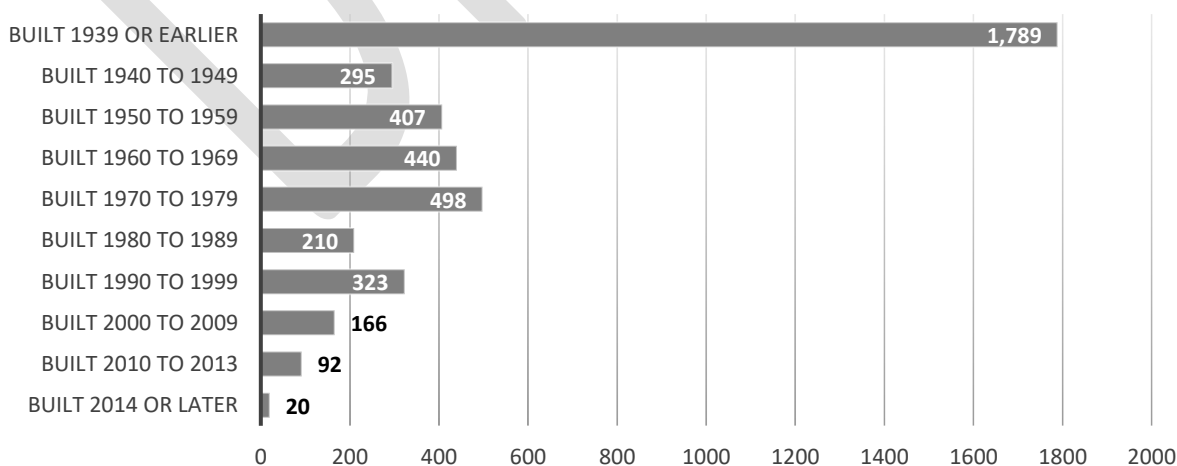
Table DWS.4: Housing and Income

	DAWES COUNTY	STATE OF NEBRASKA
MEDIAN HOUSEHOLD INCOME	\$46,146	\$56,675
PER CAPITA INCOME	\$28,811	\$29,866
MEDIAN HOME VALUE	\$107,500	\$142,000
MEDIAN RENT	\$632	\$773

Source: U.S. Census Bureau^{6,7}

The following figure indicates that the majority of housing in Dawes County was built prior to 1939 (42.2%). According to 2017 ACS 5-year estimates, the county has 4,240 housing units with 83.9% percent of those units occupied. There are approximately 460 mobile homes in the county. The local planning team indicated mobile homes are located primarily west and south of the City of Chadron at City Dams, State Park, and Chadron Eagle’s Rest Park. Housing age can serve as an indicator of risk as structures built prior to state building codes may be at greater risk. Finally, residents that live in mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms.

Figure DWS.3: Housing Units by Year Built



Source: U.S. Census Bureau⁸

⁵ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov>.

⁶ United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov>.

⁷ United States Census Bureau. "2017 American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov>.

⁸ United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov>.

Table DWS.5: Housing Units

JURISDICTION	TOTAL HOUSING UNITS				OCCUPIED HOUSING UNITS			
	Occupied		Vacant		Owner		Renter	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
DAWES COUNTY	3,557	83.9%	683	16.1%	2,222	62.5%	1,335	37.5%
NEBRASKA	748,405	90.8%	75,771	9.2%	494,189	66.0%	254,216	34.0%

Source: U.S. Census Bureau⁹

Major Employers

According to 2016 Business Patterns Census Data, Dawes County had 262 business establishments. The following table presents the number of establishments, number of paid employees, and the annual payroll in thousands of dollars. Communities which have a diverse economic makeup may be more resilient following a hazardous event, especially if certain industries are more impacted than others.

Table DWS.6: Business in Dawes County

	TOTAL BUSINESSES	NUMBER OF PAID EMPLOYEES	ANNUAL PAYROLL (IN THOUSANDS)
TOTAL FOR ALL SECTORS	262	2,155	\$64,373

Source: U.S. Census Bureau¹⁰

Agriculture is also important to the economic fabric of Dawes County, and the state of Nebraska as a whole. Dawes County's 491 farms cover 750,204 acres of land, over 83% of the county's total area. Crop and livestock production are the visible parts of the agricultural economy, but many related businesses contribute as well by producing, processing, and marketing farm and food products. These businesses generate income, employment and economic activity throughout the region.

Table DWS.7: Dawes County Agricultural Inventory

DAWES COUNTY AGRICULTURAL INVENTORY	
NUMBER OF FARMS	491
LAND IN FARMS	750,204

Source: USDA 2017 Census of Agriculture¹¹

Future Development Trends

Few changes have occurred in the county over the past five years. The local planning team indicated additional housing development has occurred outside the city limits of Chadron. The county's population has remained relatively stable over the past several decades due to steady employers. The major employers in the county include Chadron State College, Walmart, Forest Service, Job Corp, the County and City governments, and the state roads department.

At this time there are no new housing or commercial developments planned in the next five years. In the unincorporated areas new structures will most likely be new farming operations.

⁹ United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov>.

¹⁰ United States Census Bureau. "2016 American Fact Finder: Geography Area Series County Business Patterns 2015 Business Patterns." [database file]. <https://factfinder.census.gov>.

¹¹ United States Department of Agriculture, National Agricultural Statistics Server. 2019. "2017 Census of Agriculture – County Data." <https://www.nass.usda.gov/Publications/AgCensus/2017/index.php>.

Structural Inventory and Valuation

GIS parcel data as of December 2019 was requested from GIS Workshop, which the county hires to manage the County Assessor data. This data was analyzed for the location, number, and value of property improvements 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 DWS.8: Dawes County Parcel Valuation

NUMBER OF PARCELS	NUMBER OF IMPROVEMENTS	TOTAL IMPROVEMENT VALUE	NUMBER OF IMPROVEMENTS IN FLOODPLAIN	VALUE OF IMPROVEMENTS IN FLOODPLAIN
7,447	4,017	\$507,749,479	751	\$118,896,717

Source: County Assessor

Critical Infrastructure/Key Resources

Hazardous Materials

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are 21 chemical storage sites throughout Dawes County which house hazardous materials; however, there are none located in unincorporated Dawes County. The local planning area indicated the following chemical sites are of concern for the county: Dawes County Weed Department, Chadron Hospital, Westco., and Crow Butte businesses. For a description and map of chemical sites located in incorporated areas, please see the jurisdiction's participant section.

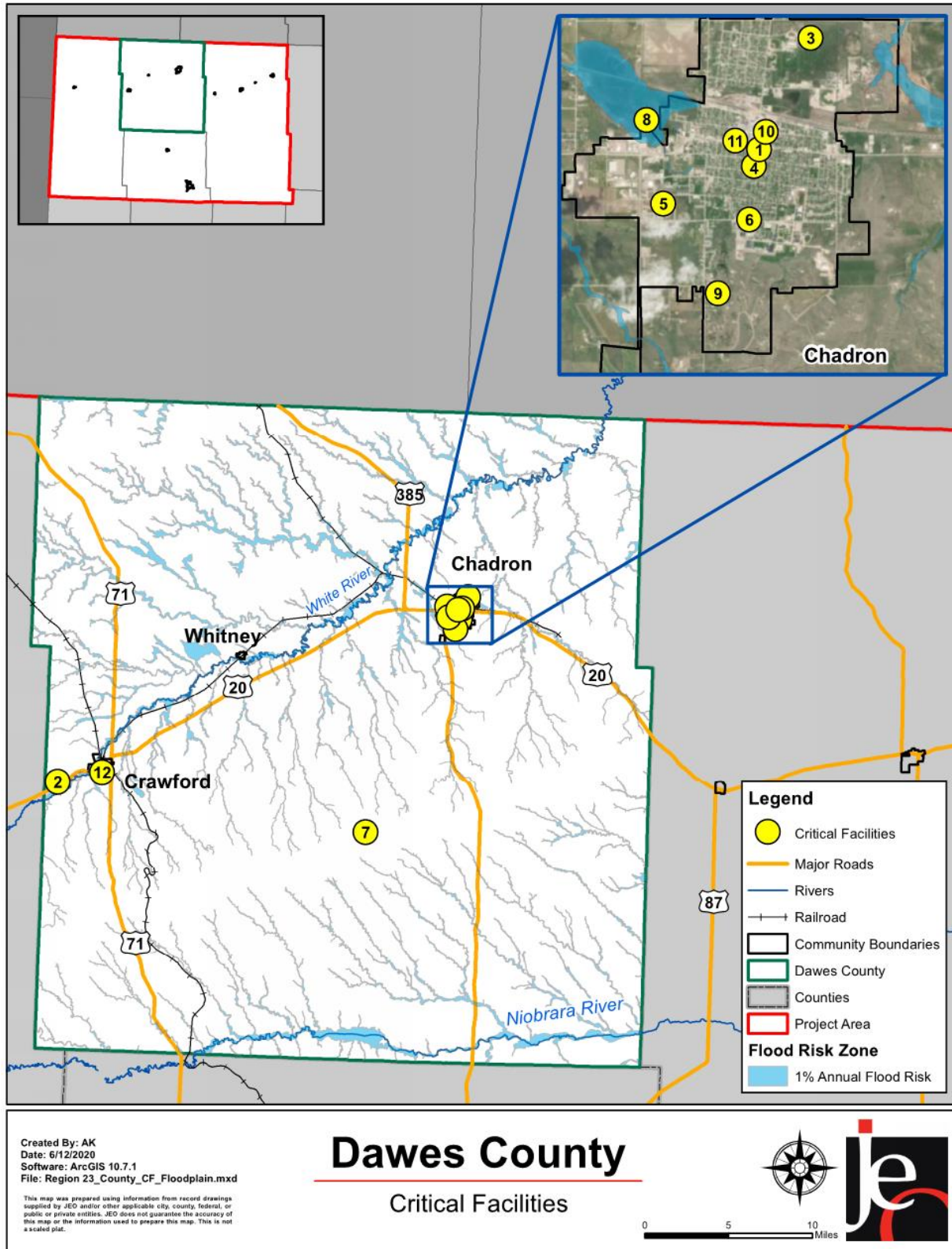
Critical Facilities

Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and are 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 a part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Table DWS.9: Dawes County Critical Facilities

CF Number	Name	Shelter (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Nebraska State Patrol	N	N	N
2	Fort Robinson State Park	Y	N	Y
3	Dawes County Fairgrounds	Y	N	N
4	Dawes County Courthouse	Y	Y	N
5	Community Hospital	Y	Y	N
6	Chadron State College	Y	Y	N
7	Radio Tower	N	N	N
8	Radio Tower	N	N	Y
9	Radio Tower	N	N	N
10	Region 23 EMA Office	N	N	N
11	Chadron Fire Dept	N	Y	N
12	Crawford Rural Fire Dept	N	N	N

Figure DWS.4: Critical Facilities



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 – September 2019) should be considered only as broad estimates. Sources include but are not limited to: emergency management; local law enforcement; Skywarn spotters; NWS damage surveys; newspaper clipping services; insurance industry; and the general public. Crop damages reports come from the USDA Risk Management Agency for Dawes County between 2000 and 2019.

Table DWS.10: Severe Weather Events for Dawes County

HAZARD TYPE		Count	Property	Crop
Agricultural Disease	Animal Disease ¹	3	3	N/A
	Plant Disease ²	19	N/A	\$290,080
Dam Failure ³		0	\$0	N/A
Drought and Extreme Heat ^{4,5}	Drought	253/1,489 months	\$0	\$4,237,397
	Extreme Heat	Avg 8 days/year	\$0	\$647,950
Flooding ⁵	Flash Flood	5	\$1,000	\$54,232
	Flood	2	\$0	
High Winds and Tornadoes ⁵	High Winds	49	\$45,500	\$1,549,484
	Tornadoes	11	\$0	\$0
Severe Thunderstorms ⁵	Hail	187	\$366,500	\$5,864,842
	Heavy Rain	6	\$0	\$764,649
	Lightning	2	\$405,000	N/A
	Thunderstorm Wind 1 injury	70	\$405,000	N/A
	Blizzard	17	\$2,000	
Severe Winter Storms ⁵	Extreme Cold/Wind Chill	11	\$0	
	Heavy Snow	11	\$0	\$1,865,444
	Ice Storm	0	\$0	
	Winter Storm	39	\$25,000	
	Winter Weather	18	\$0	
Terrorism ⁷		0	\$0	N/A
Wildfires ⁸ 2 injuries		533	99,280 acres	\$37,260
		947	\$1,250,000	\$15,311,348

N/A: Data not available

1 NDA (2014-2019)

2 USDA RMA (2000-2019)

3 Stanford NPDP (1911-2018)

4 NOAA (1895-2019)

5 NCEI (January 1996 to Sept 2019)

6 HPRCC (1987-2019)

7 GTD (1970-2017)

8 NFS (2010-2018)

County Hazard Prioritization

For an in-depth discussion regarding area wide hazards, please see *Section Four: Risk Assessment*. The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the community. The selected hazards were then prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

High Winds and Tornadoes

The county planning team identified high winds as a significant concern for the county. According to the NCEI, there were 49 high wind events and 11 tornadic events with a total of \$45,500 in property damage and \$1,549,484 in crop damage. High winds and tornadoes can cause significant damage to critical facilities, down power lines and trees, and block transportation routes with debris. There are several shelter locations identified throughout the county which can be used by residents seeking shelter during tornado events. Storm sirens are located throughout the county.

Severe Thunderstorms

Severe thunderstorms are likely to occur annually across the planning area; however, the planning team indicated due to their frequency, residents are likely well prepared to cope with such events. The NCEI reported a total of 265 thunderstorm events, which included hail, heavy rain, lightning, and thunderstorm wind. These events totaled \$1,176,500 in property damages and \$6,629,500 in crop damages. A summary of the events with recorded damages can be found in the participant sections where they occurred. Property damages include downed trees and tree limbs. One thunderstorm wind event in 2001 reported one injury and loss of power in Crawford.

Severe Winter Storms

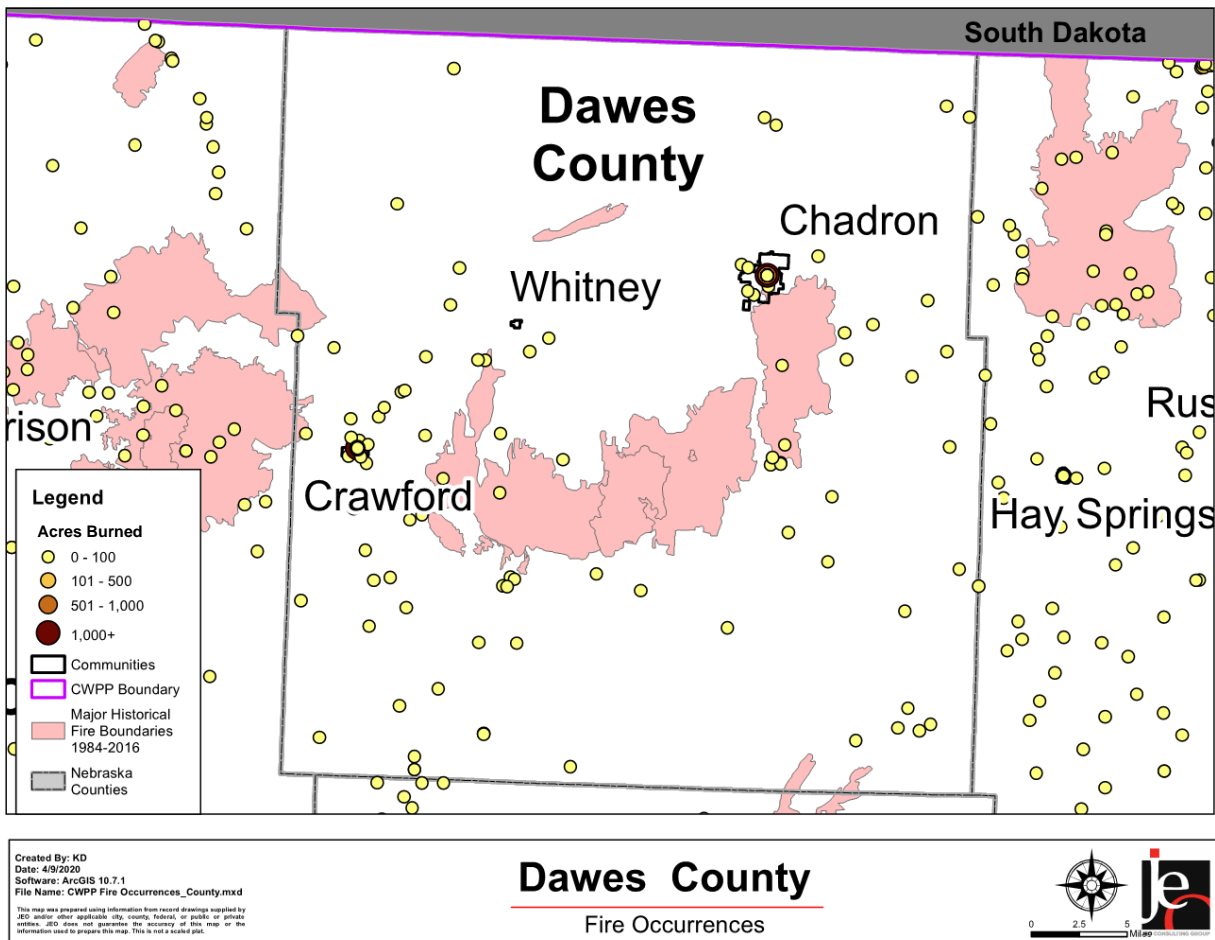
Severe winter storms are likely to occur annually across the planning area; however, the planning team indicated due to their frequency, residents are likely well prepared to cope with such events. The NCEI reported 96 severe winter storm events in Dawes County from 1996 through December 2019. These events resulted in \$27,000 in property damage and \$1,865,444 in crop damage. Most recorded events included a combination of factors including snow, wind, and ice. There were 11 reported events resulting solely from extreme cold temperatures. Extreme low temperature events in Dawes County have reported wind chills between 20 and 40 degrees below zero.

Wildfire

The local planning team identified grass and wildfire as the greatest threat to Dawes County. The entire county falls within the WUI as defined in the CWPP. According to the Nebraska Forestry Department there were 533 reported fires by Chadron and Crawford Fire Departments from 2000 to 2018 which consumed a total of 99,280 total acres. The county has seen numerous large-scale fires including the Fort Robinson Fire complex (1989, 49,000 acres burned), the Spotted Trail fire (2006, 69,000 acres burned), and the Region 23 Complex fire (2012, 58,450 acres burned). Past fires also resulted in \$37,260 in damages to crops, destroyed at least six homes, and destroyed 15 other structures. The local planning team noted that property damages in 2006 alone were at least \$300,000 and damages in total have exceed \$1 million since 2000. Of the reported fires the most frequent cause is lightning followed by burning debris. The local planning teams indicated greatest concerns regarding wildfire include the presence of forested areas in the county (high fuel loads for wildfire events), impacts to the local economy from burned rangeland, resource availability to combat wildfires, and the terrain and distance between resources and events. Local officials have also identified the Pine Ridge and the Niobrara River as being at high risk. The communities of Chadron, Crawford, and Marsland and the Fort Robinson State Park all lie within

areas of concern. Crow Butte Resources, a uranium mining operation in the Squaw Creek watershed, sits near the forested Pine Ridge and also lies within the area of concern.

Figure DWS.5: Wildfire Events in Dawes County



Governance

A community's governance structure impacts its capability to implement mitigation actions. Dawes County is governed by a three member board of commissioners. The county also has the following offices and departments:

- County Clerk
- County Assessor
- County Treasurer
- County Attorney
- Emergency Management
- Highway Superintendent
- Sheriff's Office
- Zoning Administrator
- Safety Committee
- Weed Superintendent
- VSO Office

- Building and Grounds
- County Court

Capability Assessment

The capability assessment consisted of a Capability Assessment Survey completed by the jurisdiction and a review of local existing policies, regulations, plans, and the programs. The survey is used to gather information regarding the jurisdiction's planning and regulatory capability; administrative and technical capability; fiscal capability; and educational and outreach capability.

Table DWS.10: Capability Assessment

Survey Components/Subcomponents		Yes/No
PLANNING & REGULATORY CAPABILITY	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	Yes
	Emergency Operational Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	No
	Floodplain Ordinance	Yes
	Building Codes	Yes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Community Wildfire Protection Plan	Yes
	Other (if any)	
ADMINISTRATIVE & TECHNICAL CAPABILITY	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	Yes
	Civil Engineering	No
	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	No
	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	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.	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	Yes
	StormReady Certification	Yes
	Firewise Communities Certification	No
	Tree City USA	No
	Other (if any)	

Overall Capability	Limited/Moderate/High
Does your county have the financial resources need to implement mitigation projects?	Moderate
Does your county have the staff/expertise to implement projects?	Moderate/High
Does your county have the community support to implement projects?	Moderate/High
Does your county staff have the time to devote to hazard mitigation?	Moderate

Plan Integration

The Dawes County Comprehensive Plan was last updated in 2014 and was developed by the Panhandle Area Development District. The plan provides an overall description of overall economic health, local transportation routes and avenues, land use, housing needs, and energy resources. The major driver of the plan was to improve community livability and engage the county in positive healthy living.

The County has building codes which are updated as needed. The Zoning and Subdivision resolutions were adopted in 2002 and are updated on an as needed basis. The codes and ordinances limit development in hazardous areas, such as the floodplain, but do not limit or prohibit development in the WUI or near chemical fixed sites. The local planning team has identified the need to update building codes to address hail resistant roofing.

The Dawes County LEOP, last updated June 2017, incorporates mitigation by: identifying hazards of concern requiring emergency action; specific responsibilities of individual communities or community roles; scenarios that would require evacuation; sheltering locations; an animal disease response plan; media contacts; and other information for the county. This plan is updated every

five years by Region 23 Emergency Management Agency. The county sheriff's department has Mutual Aid Agreements and Memorandums of Understanding between all surrounding counties through the Panhandle Mutual Aid agreement.

Mitigation Strategy

Completed Actions

MITIGATION ACTION	CIVIL SERVICE IMPROVEMENTS
DESCRIPTION	Mobile Command for Law Enforcement, Radio Supplies, etc., newer SUV/Truck for quick response for emergency rescue and response equipment.
HAZARD(S)	All hazards
STATUS	Mobile command unit became operational in 2019 at the Courthouse. The project was paid for through the county budget.

New and Ongoing Actions

MITIGATION ACTION	BACKUP POWER GENERATORS
DESCRIPTION	Provide a portable or stationary source of backup power to Dawes County Courthouse, Dawes County Office building, Dawes County Road shop, and as portable power source for Dawes County Law enforcement.
HAZARD(S)	All Hazards
ESTIMATED COST	\$30,000+ per generator
FUNDING	Tax Dollars, General Fund, Region 23 EMA, HMGP, PDM
TIMELINE	5+ years
PRIORITY	High
LEAD AGENCY	Dawes County Commissioners, Dawes County Sheriff
STATUS	This project has not yet been started. Generators are needed at the courthouse, county offices, road shops, and Sheriff Office. An additional generator is needed for the new emergency response trailer.

MITIGATION ACTION	DATABASE OF VULNERABLE POPULATIONS
DESCRIPTION	Work with stakeholders to develop a database of vulnerable populations and the organizations which support them
HAZARD(S)	All Hazards
ESTIMATED COST	Staff Time
FUNDING	General Fund
TIMELINE	2 – 5 years
PRIORITY	Medium
LEAD AGENCY	Dawes County Roads Department, County Sheriff
STATUS	This project has not yet been started.

MITIGATION ACTION		DEVELOP CONTINUITY PLANS FOR CRITICAL COMMUNITY SERVICES
DESCRIPTION	Continuity planning helps to ensure that services can be maintained during and after a disaster	
HAZARD(S)	All Hazards	
ESTIMATED COST	Staff Time	
FUNDING	General Fund	
TIMELINE	5+ years	
PRIORITY	High	
LEAD AGENCY	Dawes County Roads Department	
STATUS	This project has not yet been started.	

MITIGATION ACTION		HAIL RESISTANT ROOFING
DESCRIPTION	Encourage the use of hail resistant roofing for any new construction	
HAZARD(S)	Severe Thunderstorms	
ESTIMATED COST	Staff Time	
FUNDING	General Fund	
TIMELINE	1 year	
PRIORITY	Low	
LEAD AGENCY	Dawes County Roads Department	
STATUS	Building codes need to be updated to include language encouraging hail resistant roofing.	

MITIGATION ACTION		HAZARDOUS TREE REMOVAL
DESCRIPTION	Identify and remove hazardous limbs and/or trees	
HAZARD(S)	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds	
ESTIMATED COST	\$20,000	
FUNDING	County Budget	
TIMELINE	2-5 years	
PRIORITY	Medium	
LEAD AGENCY	Dawes County Roads Department	
STATUS	This is an ongoing action. The County removes hazardous trees as they become apparent.	

MITIGATION ACTION		PUBLIC AWARENESS/EDUCATION
DESCRIPTION	Considerations for activities include outreach projects and the distribution of maps and environmental education materials to increase public awareness of natural hazards to public and private property owners, property renters, businesses, and local officials. Other activities include providing education to citizens on water conservation methods. Purchasing and using equipment such as overhead projectors and laptops can allow for easier ways to educate the public during meetings.	
HAZARD(S)	All Hazards	
ESTIMATED COST	\$500+	
FUNDING	General Fund	
TIMELINE	5+	
PRIORITY	Medium	
LEAD AGENCY	Dawes County Commissioners	
STATUS	Education and outreach efforts is a collaboration between Region 23 Emergency Management and the county. Region 23 receives funding specifically to assist with public awareness.	

MITIGATION ACTION		WARNING SYSTEMS
DESCRIPTION	Improve city cable TV interrupt warning system and implement telephone interrupt systems such as Reverse 911, emergency text messaging warning system, etc.	
HAZARD(S)	All Hazards	
ESTIMATED COST	\$5,000+	
FUNDING	General Fund, Region 23 EMA, PDM, HMGP	
TIMELINE	2-5 years	
PRIORITY	High	
LEAD AGENCY	Dawes County Roads Department, Region 23 EMA	
STATUS	The county utilizes the CodeRed alert system managed by Region 23 EMA. New sirens are needed in Crawford and Whitney.	

MITIGATION ACTION		WEATHER RADIOS
DESCRIPTION	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed	
HAZARD(S)	All Hazards	
ESTIMATED COST	\$50 per radio	
FUNDING	Region 23 EMA, Dawes County General Fund, Taxes, PDM, HMGP	
TIMELINE	1 year	
PRIORITY	High	
LEAD AGENCY	Dawes County Sheriff	
STATUS	Currently the Sheriff Deputy is visiting with Crawford Schools to determine need for weather radios.	

Removed Actions

MITIGATION ACTION		ADOPT A NO-ADVERSE IMPACT APPROACH TO FLOODPLAIN MANAGEMENT
DESCRIPTION	No Adverse Impact floodplain management reduces the cumulative impacts of floodplain development on flood heights	
HAZARD(S)	Flooding	
REASON FOR REMOVAL	Flooding is not a hazard of top concern for the county and this project was determined to no longer be a priority.	
MITIGATION ACTION		MAINTAIN GOOD STANDING IN THE NFIP
DESCRIPTION	Maintain good standing in the NFIP	
HAZARD(S)	Flooding	
REASON FOR REMOVAL	While the County will continue to participate in the NFIP program, this is no longer considered a mitigation action by FEMA.	
MITIGATION ACTION		WINDBREAKS/LIVING SNOW FENCE
DESCRIPTION	Installation of windbreaks and/or living snow fences to increase water storage capacity in soil and reduce blowing snow.	
HAZARD(S)	Drought and Extreme Heat, Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds	
REASON FOR REMOVAL	This project is currently not a priority for the county due to financial and time constraints.	

Community Profile

CITY OF CHADRON & CHADRON STATE COLLEGE

Region 23 Emergency Management Agency
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table CHD.1: Chadron Local Planning Team

NAME	TITLE	JURISDICTION
CHERYL WELCH	Council Member	City of Chadron
GREGORY YANKER	City Manager	City of Chadron
BRENDA BARRY-SCHOMMER	Safety Coordinator	Chadron State College
MILO RUST	Public Works Director	City of Chadron
JANET JOHNSON	Building/Zoning Official	City of Chadron

Location and Geography

The City of Chadron is located in the northeastern portion of Dawes County and covers an area of 3.9 square miles. The City of Chadron is the county seat for Dawes County. There are no major waterways located near the City of Chadron.

Transportation

Chadron's major transportation corridors include U.S. Highway 385 which averages 3,480 vehicles per day and U.S. Highway 20 which averages 2,285 vehicles per day.¹² Highway 385 is the primary north south and Highway 20 is the primary east west transportation corridor used for local traffic. Within Chadron, Main Street, 1st St, and 10th Streets are most commonly used. The Chadron Municipal Airport is located in Chadron and is the only public airport in Dawes County.

A Nebraska Northwest Railroad Inc. line is located within the city and extends both east and west outside of town. Railroads can commonly transport hazardous materials including coal, oil, and waste products; however, the local planning team indicated only empty cars are located within town. A BNSF rail line is located west of town with active transportation. One derailment has occurred in Chadron with no reported damages, injuries, or fatalities. Past major transportation incidents include a general aviation aircraft crash in 2019 with three fatalities, a BNSF train derailment near Dakota Junction, and several small-scale vehicular accidents. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk to transportation incidents.

Chemical Transportation

Hazardous materials are commonly transported by a range of transportation methods, including highways, rail, air, and pipeline. Railway and highway transportation spills are the most frequently occurring chemical transportation incidents. While incident proximity will always occur near or on transportation routes, it is not possible to predict precise locations of possible future events. Proximity of pipelines, rail lines, and highways near critical facilities or vulnerable population centers, including schools, daycares, nursing homes, and/or hospitals, increases overall vulnerability to chemical transportation spills. The local planning team indicated rail cars located in the City are empty, but other products including petroleum, propane, and fuel is commonly transported through the City via semi-trucks.

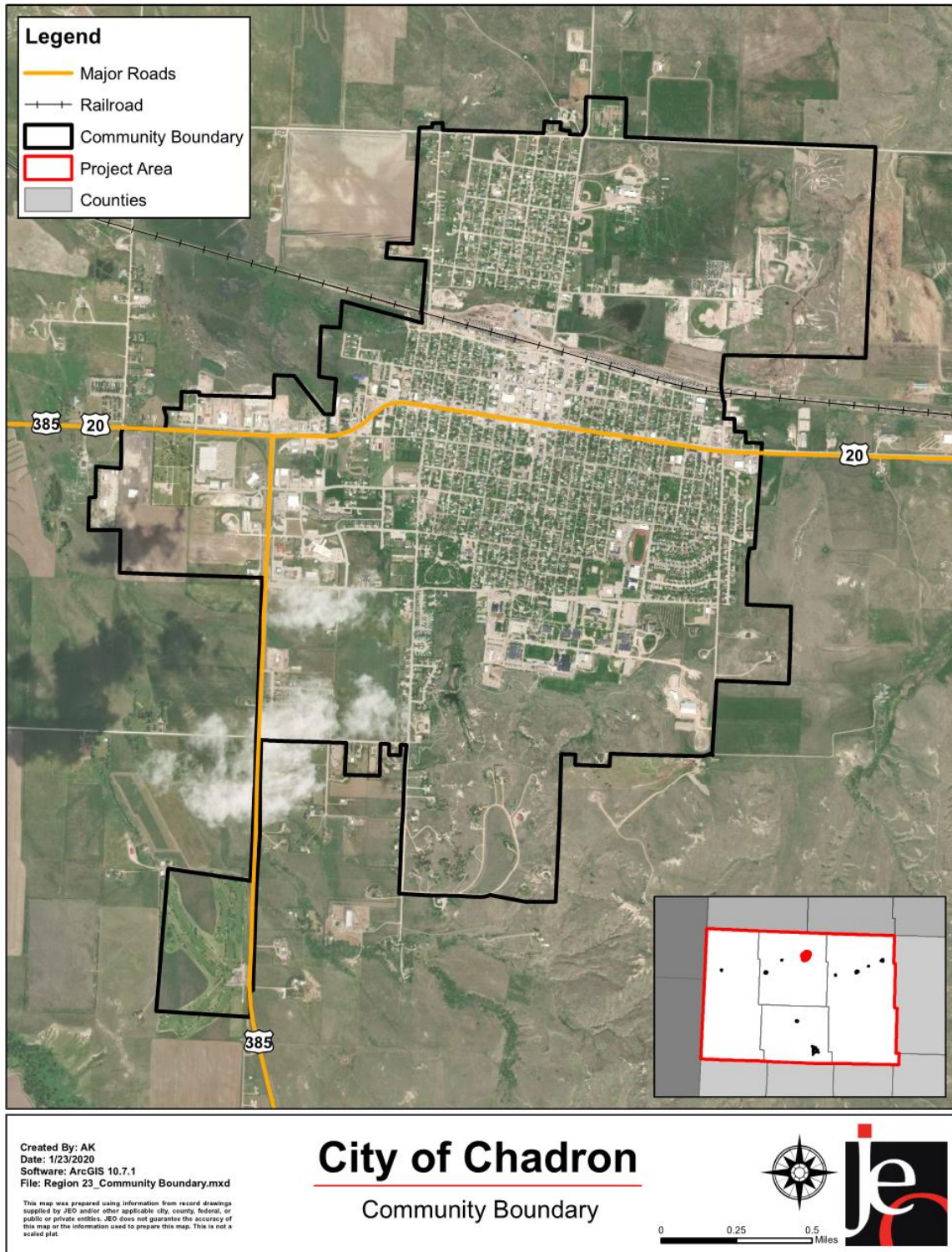
The local volunteer fire department would be responsible for responding to hazardous chemical spills in town. All volunteers have basic wildland and structural fire-fighting training. The VFD has firefighting gear but not HazMat gear. Any past chemical spills events have been minor petroleum spills which have been below the reporting threshold. The local planning team also indicated

¹² Nebraska Department of Roads. "Traffic Flow Map of the State Highways: State of Nebraska." [map]. Scale 1"= 20 miles. State of Nebraska: Department of Roads, 2015. <http://www.roads.nebraska.gov/media/2510/2014-statewide-traffic-flow-map.pdf>

SECTION SEVEN: CHADRON AND CHADRON COLLEGE COMMUNITY PROFILE

several critical facilities or vulnerable populations are located near main chemical transportation routes, including the hospital, NDOT office, the Prairie Pines senior housing, and some subsidized housing. Private entities, local emergency response units, and state resources have strict regulatory oversight and emergency action plans in place to respond to significant chemical spills.

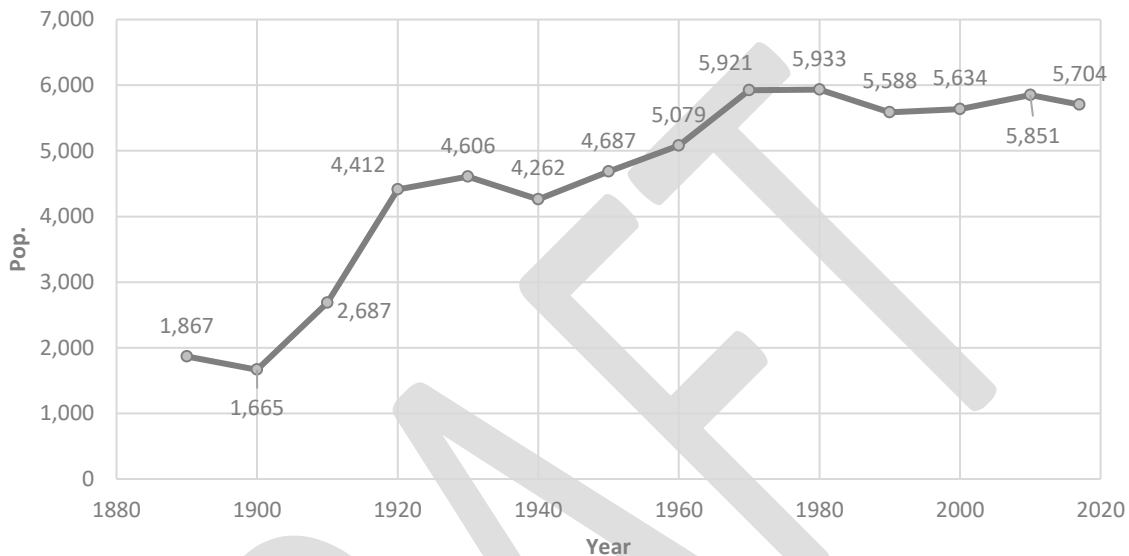
Figure CHD.1: City of Chadron



Demographics

Chadron's population has grown steadily since the 1920s. Growing populations can lead to increased tax revenues to pursue mitigation projects. Chadron's population accounted for 64% percent of Dawes County's population in 2017.¹³

Figure CHD.2: Estimated Population 1890 – 2017



Source: U.S. Census Bureau¹⁴

The young, elderly, minorities, and poor may be more vulnerable to certain hazards than other groups. In comparison to the County, Chadron's population was:

- **Younger.** The median age of Chadron was 27.9 years old in 2017, compared with the County average of 34.0 years. Chadron's population has remained relatively stable since 2010, when the median age was 27.8 years old. Chadron had a larger proportion of people under 20 years old (29.3%) than the County (27.6%).¹⁵
- **More ethnically diverse.** Since 2010, Chadron grew more ethnically diverse. In 2010, 2.7% of Chadron's population was Black or African American 2.3% was American Indian and Alaska Native. By 2017, about 2.4% of Chadron's population was Black or African American 4.3% was American Indian and Alaska Native. During that time, the Black or African American and American Indian population in the County grew from 1.9% and 4.4% in 2010 to 1.6% and 2.9% in 2017, respectively.¹⁶
- **Similar likelihood to be at the federal poverty line.** The poverty rate in Chadron (12.7% of families living below the federal poverty line) is similar to the County's poverty rate (12.8%) in 2017.¹⁷

¹³ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov/>.

¹⁴ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov/>.

¹⁵ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov/>.

¹⁶ United States Census Bureau. "2017 American Fact Finder: DP05: ACS Demographic and Housing Estimates." [database file]. <https://factfinder.census.gov/>.

¹⁷ United States Census Bureau. "2017 American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

Employment and Economics

The City's economic base is a mixture of industries. In comparison to Dawes County, Chadron's economy had:

- **Similar mix of industries.** Both Dawes County and Chadron's major employment sectors, accounting for 10% or more of employment each, were: Retail, Educational Services, and Arts and Entertainment in 2017. Additionally, Dawes County's industries also included Agriculture/Fishing/Forestry.¹⁸
- **Lower household income.** Chadron's median household income in 2017 (\$44,773) was about \$1,373 lower than the County (\$46,146).¹⁹
- **Fewer long-distance commuters.** About 81% percent of workers in Chadron commuted for fewer than 15 minutes, compared with about 74% of workers in Dawes County. About 14% of workers in Chadron commute 30 minutes or more to work, compared to about 15% of the County workers.²⁰

Major Employers

Major employers in the City include Chadron State College, Chadron Community Hospital, the City, United States Forest Service, United States Department of Agriculture, and Chadron Public Schools. Chadron is the largest municipality located within the county and draws many surrounding residents for employment; however, some residents may also commute to the Pine Ridge Reservation for work.

Housing

In comparison to Dawes County, Chadron's housing stock was:

- **Less owner occupied.** About 51.6% of occupied housing units in Chadron are owner occupied compared with 62.5% of occupied housing in Dawes County in 2017.²¹
- **Similarly aged housing stock.** Chadron and Dawes County have a similar share of housing built prior to 1970 (81.2% compared to 80.9%).²²
- **Fewer multifamily homes.** Chadron contains fewer multifamily housing with five or more units per structure compared to the County (5.0% compared to 8.0%). About 71.9% of housing in Chadron was single-family detached, compared with 77.3% of the County's housing. Chadron has a smaller share of mobile and manufactured housing (9.9%) compared to the County (10.8%).²³ Chadron's mobile homes are located primarily west or south of town. The City has been undertaking an effort to reduce the total number of vacant and/or dilapidated mobile homes located within its jurisdictional boundaries.

This housing information is relevant to hazard mitigation insofar as the age of housing may indicate which housing units were built prior to state building codes being developed. Further, unoccupied housing may suggest that future development may be less likely to occur. Finally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms.

¹⁸ United States Census Bureau. "2017 American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

¹⁹ United States Census Bureau. "2017 American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

²⁰ United States Census Bureau. "2017 American Fact Finder: S0802: Means of Transportation to Work by Selected Characteristics." [database file]. <https://factfinder.census.gov/>.

²¹ United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

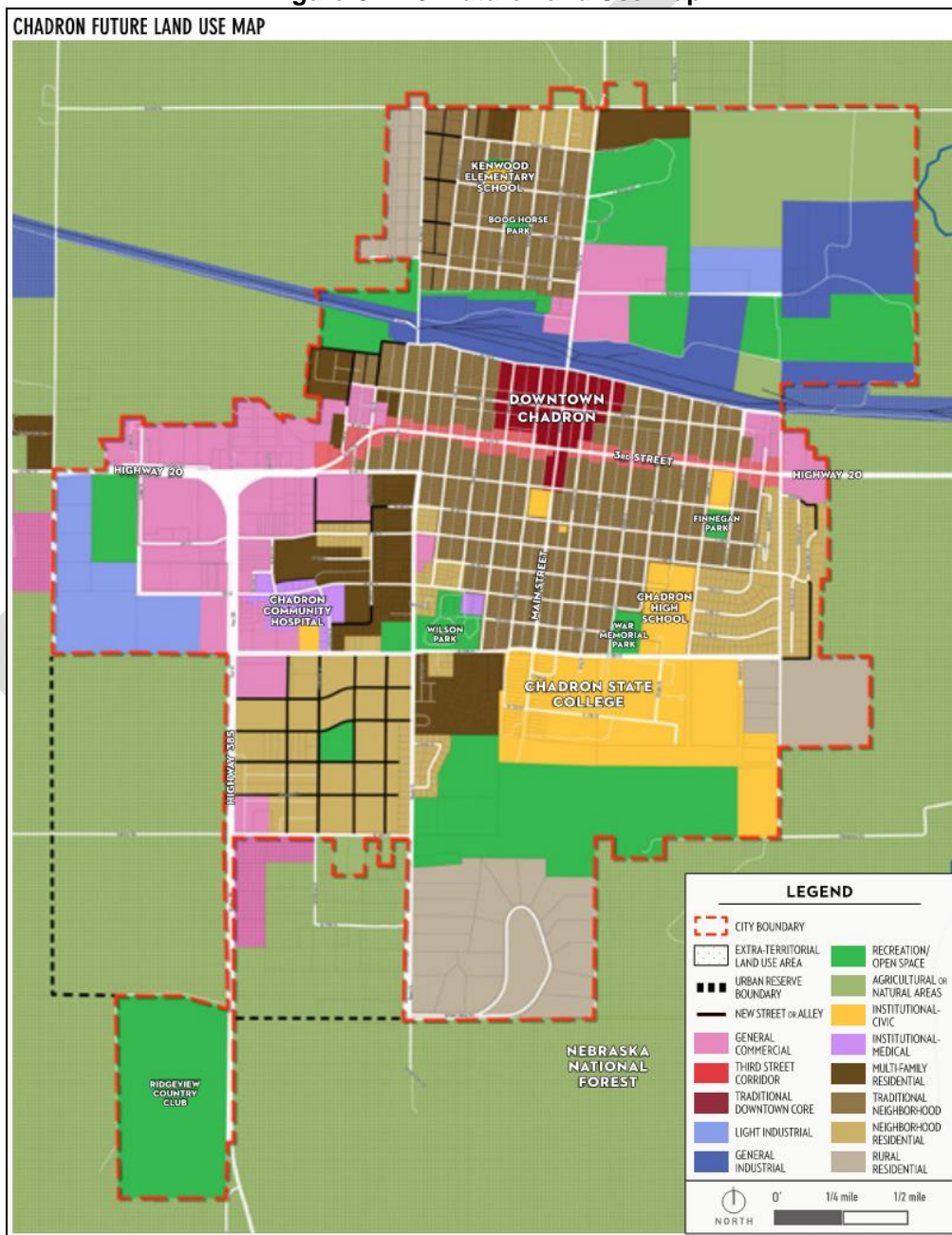
²² United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

²³ United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

Future Development Trends

Chadron has seen several new commercial developments added over the last five years, including a hotel, retail space, and a restaurant. Some existing businesses in the downtown area have been renovated, as well. Additionally, several multi-family units have been built over that time. Chadron’s population has increased steadily over the past few decades and remains relatively stable. The planning team indicated that good employment opportunities and affordable housing have attracted people to the community. Additionally, cultural events offered at Chadron State College attract residents, students, and tourists. No new housing or commercial developments are planned at this time, but the planning team indicated that an industrial park has recently been subdivided to allow for future business opportunity and other lots on East Niobrara Avenue are available.

Figure CHD.3: Future Land Use Map



Structural Inventory and Valuation

The planning team requested GIS parcel data from the County Assessor as of December 2019. This data allowed the planning team to analyze the location, number, and value of property improvements 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 CHD.2: Chadron Parcel Valuation

NUMBER OF PARCELS	NUMBER OF IMPROVEMENTS	TOTAL IMPROVEMENT VALUE	NUMBER OF IMPROVEMENTS IN FLOODPLAIN	VALUE OF IMPROVEMENTS IN FLOODPLAIN
2,265	2,037	\$281,574,709	3	\$507,260

Source: County Assessor

Several Letters of Map Amendment (LOMAs) have been approved by FEMA for the City of Chadron and are described in the table below. Only one of the LOMAs reference a property located within city limits, the Holiday Inn at 247 Ash Street valued at \$5,332,452. All other structures are located within the ETJ.

Table CHD.3: Chadron Letter of Map Amendments

PRODUCT ID	EFFECTIVE DATE	DESCRIPTION OF CHANGE
12-07-0255A-310357	12/08/2011	Residential structure at 235 Goffena Road removed from the SFHA.
12-07-3115A-310357	09/18/2012	Structure (Hay Shed) at 254 Goffena Road removed from SFHA.
13-07-0213A-310357	12/18/2012	Structure at 20 Old Country Club Road removed from the SFHA.
16-07-1528A-310357	07/11/2016	A portion of property at 247 Ash Street in the Buettner Addition subdivision removed from the SFHA.
18-07-1023A-310357	03/16/2018	Residential structure at 167 Goffena Road removed from the SFHA.

Source: County Assessor

Critical Infrastructure/Key Resources

Hazardous Materials

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are 10 chemical storage sites in Chadron that contain hazardous chemicals. According to the U.S. Coast Guard National Response Center, three fixed chemical spills have occurred in the planning area with no reported damages, injuries, or fatalities.

Table CHD.4: Chemical Storage Fixed Sites

FACILITY NAME	ADDRESS
CHADRON COMMUNITY HOSPITAL	821 Morehead St
WESTCO PROPANE PLANT	170 Bordeaux St
CHADRON PLANT	741 E Niobrara Ave
AT&T MICROWAVE TOWER 1300	Wayside Rd
WESTCO CHADRON BULK & WHSE	Jct 1st & Maple Sts
CENTURYLINK	130 E 4th St
WAPA CHADRON SUBSTATION	N Main St
CHADRON COMMUNITY HOSPITAL	825 Centennial Dr

SECTION SEVEN: CHADRON AND CHADRON COLLEGE COMMUNITY PROFILE

ATC WAYSIDE 88997	Wayside Rd
NDOT CHADRON YARD	430 Stockade Rd

Source: Nebraska Department of Environment and Energy²⁴

The local planning team indicated several changes to chemical storage sites have occurred in the past few years which may not be reflected in the list above. These include several facilities which are no longer occupied (Chadron Community Hospital facility, NDOT Chadron Yard 50400, and NDOT Chadron Yard 50500), inaccurate addresses (Westco Chadron Bulk and WHSE located at 131 Taylor Ave), facilities located outside of the jurisdictional boundary (AT&T Microwave Tower 1300 and WAPA Chadron Substation), and a new NDOT Yard located at 430 and 638 Stockade Road.

DRAFT

²⁴ Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed April 2020. <https://deq-iis.ne.gov/tier2/search.faces>.

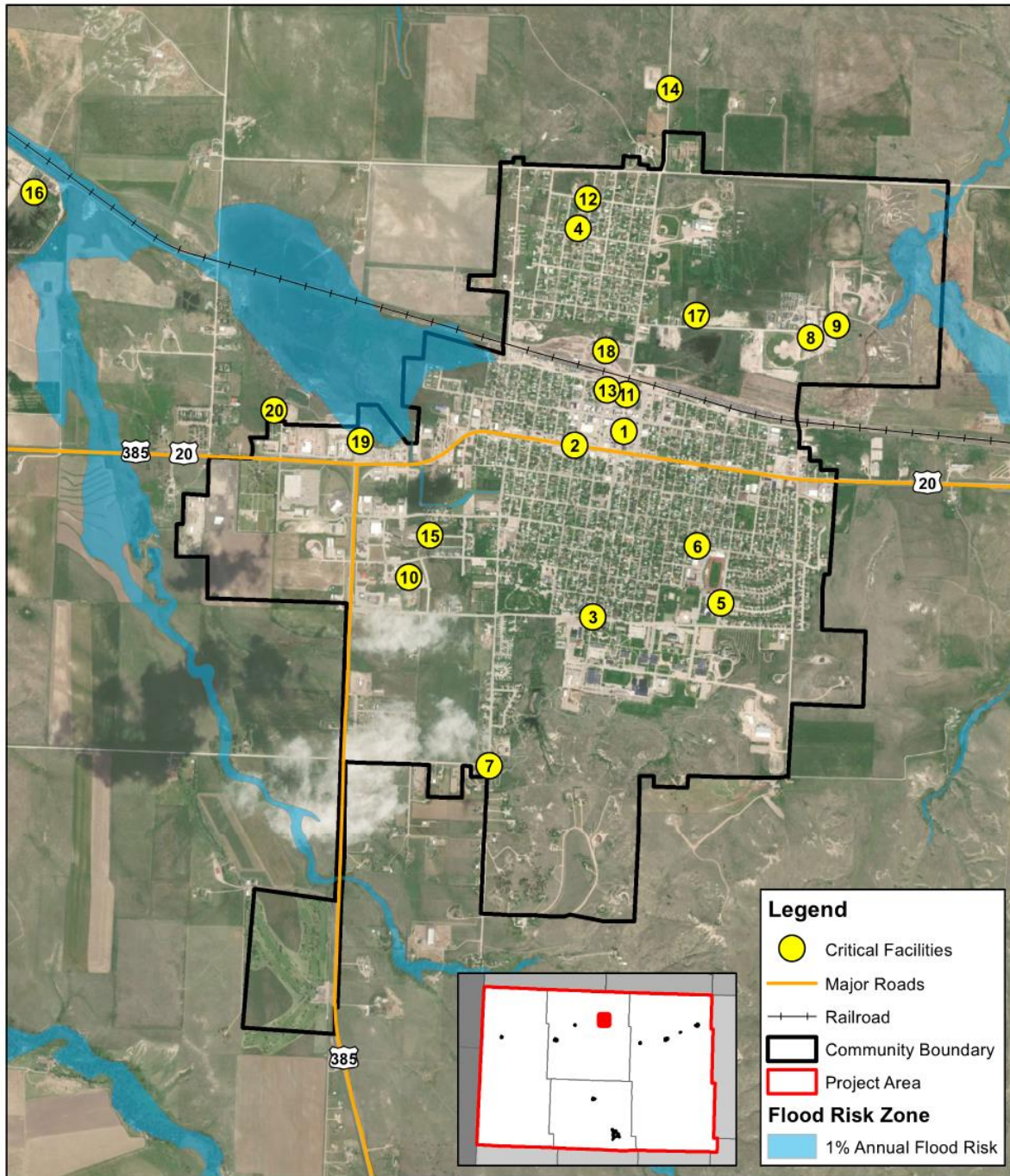
Critical Facilities

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 a part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Table CHD.5: Critical Facilities

CF Number	Name	Shelter (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	City Hall	N	N	N
2	Chadron Fire Hall	N	Y	N
3	Chadron State College	Y	Y	N
4	Chadron Intermediate School	N	N	N
5	Chadron Senior High School	Y	N	N
6	Chadron Middle School	Y	N	N
7	Water Treatment Plant	N	N	N
8	Street Department	N	N	N
9	SWANN Sanitation	N	N	N
10	Community Hospital	N	N	N
11	Crestview Care Facility Center	N	N	N
12	Police Department	N	Y	N
13	NPPD	N	N	N
14	NPPD Sub Station	N	N	N
15	Prairie Pine Lodge	N	N	N
16	Wastewater Treatment Plant	N	Y	N
17	Lift Station 1	N	N	N
18	Lift Station 2	N	N	N
19	Lift Station 3	N	N	N
20	Lift Station 4	N	N	N

Figure CHD.4: Critical Facilities



Created By: AK
 Date: 6/11/2020
 Software: ArcGIS 10.7.1
 File: Region 23_Critical Facility_Floodplain.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 plot.
 This Flood Risk Hazard Area was developed using HAZUS 4.2 as the digital FRM was unavailable. This map should only be used for planning purposes and does not reflect the regulatory floodplain.

City of Chadron

Critical Facilities

0 0.25 0.5 Miles

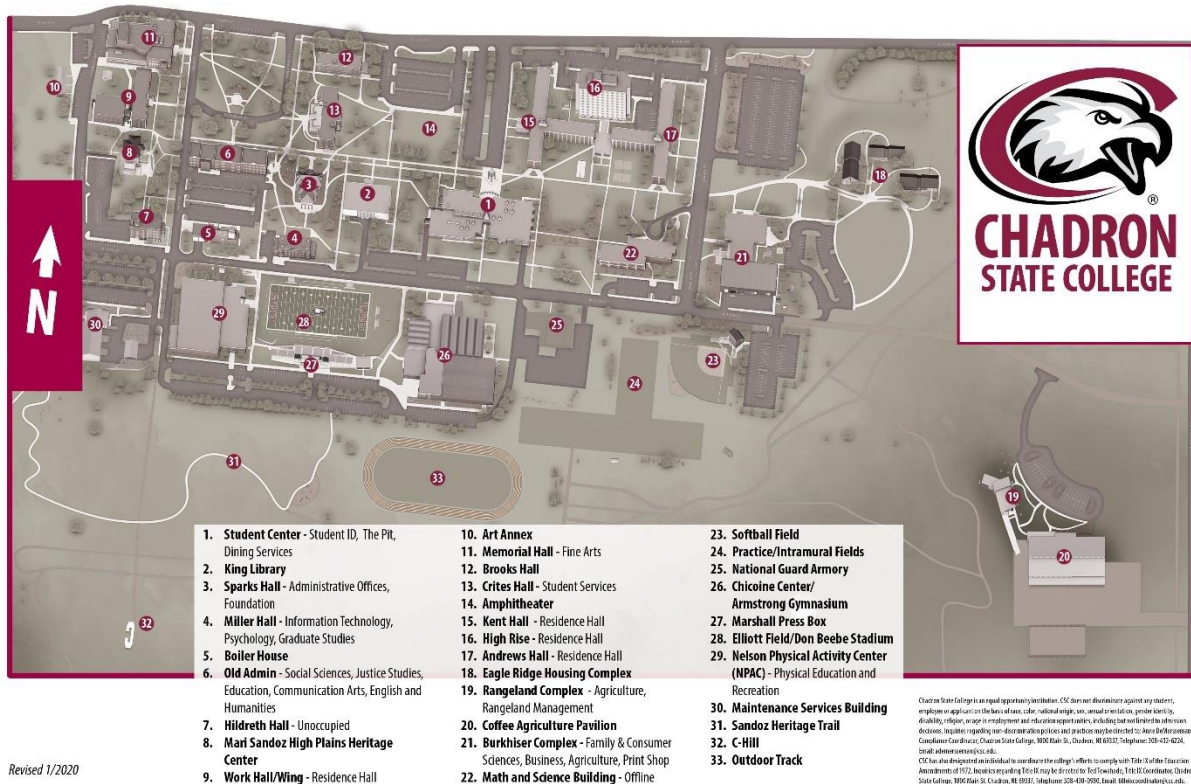
Chadron State College

Chadron State College is a four-year public college located in the southeast portion of Chadron on the outskirts of the community. Chadron State College was founded in 1909 by the Nebraska Legislature to provide a higher education institution in northwest Nebraska. The Board of Education of State Normal Schools selected Chadron as the location of its fourth institution in January 1910. The school opened in June 1911.

Chadron State College has an annual enrollment of approximately 3,000 students. Many majors are offered, but the college specializes in education. Chadron State College is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools and subject-oriented accrediting agencies. The college's theme is "A tradition of excellence in education and service." The following figures display the location of Chadron State College within the City of Chadron as well as the campus facilities.

Due to the similar risks, response capabilities, and shared resources available, Chadron State College and the City of Chadron work closely together during emergency events and are profiled together in this HMP. Identified mitigation actions would be a joint venture and are included together in the *Mitigation Strategy* section.

Figure CHD.5: Chadron State College Campus Map



Source: Chadron State College Website

The campus is adjacent to grasslands and the Pine Ridge forest. The 281-acre campus has 25 major buildings, five of which are listed in the National Register of Historic Places. Their replacement value is more than \$60 million and the campus provides more than 1 million square feet of floor space. Chadron State College does not have any buildings within the one percent annual floodplain, but the entire campus is located in the WUI.

Hazards of Top Concern

The college identified Severe Thunderstorms, Severe Winter Storms, and Wildfire as hazards of top concern. While the City of Chadron also identified each of these hazards, a brief discussion of campus specific concerns is provided below:

Severe Thunderstorms

Several thunderstorms occur annually in the area which affects campus. A major hailstorm in the late 1980s caused severe damage to facility buildings. Hail damage has historically affected roofs, utilities, and trees. Heavy rains have caused localized ponding at Eagle Ridge 1, 2, and 3 buildings. Crites Hall historically experienced flooding issues, but measures have been taken recently to resolve the issue. A campus horticulturist monitors and guides the removal of hazardous trees and tree limbs. The planning team also indicated that all rooms have emergency exit signs and most buildings have basements. Additionally, the school performs a tornado drill annually.

Severe Winter Storms

Severe winter storms cause class cancellations and shutdowns several times annually, especially during late winter and early spring months. College maintenance staff clear parking lots and sidewalks, but equipment is in need of updating. Primary concerns for severe winter storms are for the safety of staff and students as they traverse campus or travel in surrounding areas. The College has had several power outages lasting up to 12 hours. A power substation is located on the east side of campus and powerlines are buried. There are generators at the food service center, utilities building (for heating purposes), Miller (IT) building, and recreational facility. The seven residence halls do not have generators.

Wildfire

Wildfire is of high concern for the college. In the summer of 2006, a wildfire spread to the edge of campus borders and prompted evacuations of staff on campus. Local fire departments and surrounding VFDs all responded to the event. Facility roofs were watered to prevent continued spread and all vehicles were moved out of the approaching area. The college does not have their own resources to respond to fires.

Historical Occurrences

See the Dawes County community profile for historical hazard events.

Hazard Prioritization

For an in-depth discussion regarding area wide hazards, please see *Section Four: Risk Assessment*. The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the community. The selected hazards were then prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community’s capabilities.

High Winds and Tornadoes

The local planning team identified high winds and tornadoes as a significant concern for the community. According to the NCEI, there were 49 high wind events in Dawes County and four tornadoes which passed near Chadron since 1996. All tornadoes were either EF/F 0 with no reported damages, injuries, or fatalities. High wind events report between 60 and 75 miles per hour. Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and overturning of improperly anchored mobile homes. The City has removed several hazardous buildings at risk to high winds and tornadoes and has

been working to reduce the overall number of vacant and dilapidated mobile homes in town. The City also follows and enforces the local building code for wind speed.

Severe Thunderstorms

Severe thunderstorms are a common occurrence across the planning area and include impacts from heavy rain, thunderstorm winds, lightning strikes, and hail. Heavy rains and hailstorms are a top threat for the City of Chadron. NCEI data records 96 hail events with a total of \$292,000 in property damages. Severe thunderstorm damages totaled \$642,000 for the City. The City's Storm Water Master Plan identifies several stormwater infrastructure deficiencies which the City is addressing. In addition, the local building code has updated requirements for residential homes, city facilities, and infrastructure.

Severe Winter Storms

Severe winter storms are a normal part of the regional climate. The planning teams estimated that severe winter storms were highly probable in the future, but given the frequency of occurrence residents across the county are prepared for the events and able to effectively cope with their occurrences. According to the NCEI, Dawes County has experienced 96 severe winter storm events including blizzards, winter storms, winter weather, extreme cold, and ice storms. These events have caused there were 37 severe winter storms in Chadron. These events resulted in \$27,000 in property damage but no injuries or fatalities. The City removes snow from local roads, but current resources are not sufficient to meet local needs.

Wildfires

Wildfire is a top hazard of concern for the City and the planning area as a whole. According to the Nebraska Forestry Department there were 86 reported fires by the Chadron Fire Department from 2000 to 2018 which consumed a total of 465 acres. The most significant fire to impact the city was the 2006 Spotted Tail Fire. This event threatened the southern portion of Chadron and much of the city evacuated. According to the Rapid City Journal, "Some 68,000 acres of Pine Ridge forest in Dawes and Sioux counties burned following a string of intense lightning fires on July 26. At least four homes and several other structures along with about 500 miles of fences were destroyed. One of the fires, the Spotted Tail Fire, began about 12 miles south of Chadron and burned to the edge of the Chadron State College campus. At least 1,000 firemen from 20 states helped battle the blazes. Temperatures of more than 100 degrees added to the misery." The City of Chadron lies within the WUI according to the CWPP. The Chadron Fire Department has mutual aid agreements with the fire departments in the surrounding areas, but during large scale events it is possible nearby fire department would be unable to lend assistance due to addressing the needs of their respective community/protection area. The Nebraska Forest Service has worked on to reduce fire fuel loads in the area.

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Chadron has a number of offices or departments that may be involved in implementing hazard mitigation initiatives. The City has a City Manager and a five member council and the following offices.

- City Manager
- City Clerk
- City Attorney
- Business Improvement District
- Housing Authority

- Planning Commission
- Community Development Advisory Committee
- Planning Commission
- Property Maintenance Code-Problem Resolution Team
- Zoning Board
- Police Department
- Volunteer Fire Department
- Streets Department
- Water/Sewer Department
- Parks/Cemetery Board
- Airport Authority

Capability Assessment

The capability assessment consisted of a Capability Assessment Survey completed by the jurisdiction and a review of local existing policies, regulations, plans, and the programs. The survey is used to gather information regarding the jurisdiction's planning and regulatory capability; administrative and technical capability; fiscal capability; and educational and outreach capability.

Table CHD.6: Capability Assessment

Survey Components/Subcomponents		Yes/No
PLANNING & REGULATORY CAPABILITY	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Economic Development Plan	Yes
	Emergency Operational Plan	Yes
	Floodplain Management Plan	Yes
	Storm Water Management Plan	Yes
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes
	National Flood Insurance Program	Yes
	Community Rating System	<i>No (currently under development)</i>
	Community Wildfire Protection Plan	Yes
Other (if any)	<i>Wellhead Protection Plan</i>	
ADMINISTRATIVE & TECHNICAL CAPABILITY	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	Yes
	Chief Building Official	Yes
	Civil Engineering	<i>Contracted</i>
	Local Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Mutual Aid Agreement	Yes

SECTION SEVEN: CHADRON AND CHADRON COLLEGE COMMUNITY PROFILE

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	Yes
	General Obligation Revenue or Special Tax Bonds	Yes
	Other (if any)	<i>Fire Department Revenue, Property Taxes and Bonds for Aquatic Center</i>
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	<i>No (Chadron State College – Yes)</i>
	Firewise Communities Certification	No
	Tree City USA	Yes
	Other (if any)	

Overall Capability	Limited/Moderate/High
Does your county have the financial resources needed to implement mitigation projects?	Limited
Does your county have the staff/expertise to implement projects?	Limited
Does your county have the community support to implement projects?	Moderate/High
Does your county staff have the time to devote to hazard mitigation?	Limited

Plan Integration

The City's Comprehensive Plan was last updated in February 2015. The plan evaluates a range of demographic, housing, economic, environmental, and land use characteristics of the community. It also identifies numerous community facilities as included in the critical facilities list (city hall, police and fire, schools, etc.) and provides an overview of Chadron State College as well. In general, the plan calls for sustained growth and limiting development impacts to natural areas. It encourages infill development, encourages elevation of structures in the floodplain, the use of drought tolerant landscaping, and other mitigation principles. The city has identified the need for future updates to include more discussion on the WUI and long term management strategies. The Downtown Master Plan was developed in 2013. The Plan's major emphasis is capitalizing on the Downtown area's history and historic architecture and reinvestment. The plan proposes numerous design and public space enhancements as well such as along Main Street and 1st, 2nd, and 3rd streets. The City will be adopting the 2018 IBC in the fall of 2020. Specific amendments to building codes and zoning ordinances are done as needed.

The City developed a Community Housing Study in September 2017. The study provides an overview of the community including a historic overview, demographics, community development, and overall housing stock, age, and needs. The study also discusses community improvement projects planned such as the Chadron Community Hospital, airport improvements, and street improvements. Through the study and the public outreach efforts housing needs identified included: additional housing for low and middle income families; housing for existing/new employees; single family housing; rehabilitation of owner and renter-occupied housing; housing choices for first-time homebuyers; and retirement housing for low to moderate-income elderly persons. The study encourages future development to avoid floodplain and wetland locations, sites near chemical storage areas, or sites near high traffic volume areas for safety.

The City's Capital Improvement Plan is updated annually and identifies projects or equipment the City has allocated resources to acquiring. The city's annual municipal budget is relatively limited to maintenance efforts. There is currently a bond debt for some community facilities and stormwater improvement projects. The Stormwater Master Plan identifies numerous project areas to improve stormwater drainage in the City, specifically along Main Street. The City also has a Floodplain Management Plan which limits development in the floodplain to a BFE of at least 1-foot.

The City's Snow Removal Plan is updated annually or as needed. The plan outlines responsibilities for the City's Street Department to clear snow after severe winter storm events. The plan also identifies emergency routes including: Main Street, Chadron Avenue, Morehead Street, Second Street, and Third Street. The City has an ordinance in place to prevent parking on snow emergency routes.

The City of Chadron has an annex to the Dawes County LEOP, last updated June 2017. The LEOP incorporates mitigation by: identifying hazards of concern requiring emergency action; specific responsibilities of individual communities or community roles; scenarios that would require evacuation; sheltering locations; an animal disease response plan; media contacts; and other information for the county. This plan is updated every five years by Region 23 Emergency Management Agency.

Mitigation Strategy

Completed Actions

MITIGATION ACTION	COMPREHENSIVE CITY DISASTER/EMERGENCY RESPONSE/RESCUE PLAN
DESCRIPTION	Update comprehensive city/village disaster and emergency response /rescue plan.
HAZARD(S)	All Hazards
STATUS	This plan was updated in June 2017 with the assistance of Region 23 Emergency Management

MITIGATION ACTION	DRAINAGE STUDY/STORMWATER MASTER PLAN
DESCRIPTION	Drainage studies can be conducted to identify and prioritize improvements to address site specific localized flooding/drainage problems. Storm water master plans can be conducted to perform a community-wide storm water evaluation, identifying multiple problem areas, and potentially multiple drainage improvements for each.
HAZARD(S)	All Hazards
STATUS	This plan was updated in June 2018 by a bond and general funds.

MITIGATION ACTION	EMERGENCY COMMUNICATION
DESCRIPTION	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inner-operable communications.
HAZARD(S)	All Hazards
STATUS	Code Red is now available to all residents for emergency alerts.

MITIGATION ACTION	WINDBREAKS/LIVING SNOW FENCE
DESCRIPTION	Installation of windbreaks and/or living snow fences to increase water storage capacity in soil and reduce blowing snow/ soil.
HAZARD(S)	High Winds, Severe Thunderstorms, Severe Winter Storms
STATUS	The City of Chadron works with the UNWNRD for tree replacement and installation of trees in needed areas annually.

Ongoing or New Actions

MITIGATION ACTION	ALERT/WARNING SIRENS
DESCRIPTION	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking.
HAZARD(S)	All Hazards
ESTIMATED COST	\$25,000
FUNDING	General Fund, PDM, HMGP
TIMELINE	1 year
PRIORITY	Low
LEAD AGENCY	Police Department
STATUS	This project has not yet been started.

MITIGATION ACTION		BACKUP POWER GENERATORS
DESCRIPTION	Provide a portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other critical facilities and shelters	
HAZARD(S)	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds	
ESTIMATED COST	\$15,000 - \$30,000 per generator	
FUNDING	Utility Rates, HMGP, PDM	
TIMELINE	2-5 years	
PRIORITY	High	
LEAD AGENCY	Public Works and Chadron State College	
STATUS	The Water Treatment Plant needs a generator and other portable generators are also needed. The Chadron State College identified the need for a backup generator at residence halls.	

MITIGATION ACTION		CIVIL SERVICE IMPROVEMENTS
DESCRIPTION	Improve emergency rescue and response equipment and facilities by providing additional or updating existing emergency response equipment. This can include fire trucks, ATV's, water tanks/trucks, snow removal equipment, etc. This would also include developing backup systems for emergency vehicles and identifying and training additional personnel for emergency response.	
HAZARD(S)	All Hazards	
ESTIMATED COST	Varies by need	
FUNDING	General Obligation Bonds, General Fund, Property/Sales Tax, PDM, HMGP	
TIMELINE	5+ years	
PRIORITY	Medium	
LEAD AGENCY	Public Works and Chadron State College	
STATUS	Equipment is continually replaced on an as-needed basis. Additional needs should be evaluated. Chadron State College identified the need for improved snow removal equipment.	

MITIGATION ACTION		DROUGHT MONITORING PLAN AND PROCEDURES
DESCRIPTION	Develop and implement a plan/program to monitor the effects of drought.	
HAZARD(S)	Drought and Extreme Heat	
ESTIMATED COST	\$10,000	
FUNDING	General Fund, NRD, HMGP, PDM	
TIMELINE	5+ years	
PRIORITY	Low	
LEAD AGENCY	UNWNRD, Chadron Public Works	
STATUS	This project has not yet been started.	

MITIGATION ACTION		EXPAND WATER STORAGE CAPACITY
DESCRIPTION	Evaluate the need to expand water storage capacity through a new water tower, stand pipe, etc. to provide a safe water supply for the community and additional water for fire protection. Establish emergency water supplies such as dry hydrants and individual or community cisterns for defending structures from wildland fires.	
HAZARD(S)	Drought and Extreme Heat, Wildfire	
ESTIMATED COST	\$30,000	
FUNDING	Utility Rates, Bonds	
TIMELINE	5+ years	
PRIORITY	Medium	
LEAD AGENCY	Public Works	
STATUS	The Water System Master Plan was completed in June 2018 but still requires full implementation. Strategies to expand water capacity are outlined in the plan.	

MITIGATION ACTION		FIRE PREVENTION PROGRAM
DESCRIPTION	The Nebraska Forest Service Wildland Fire Protection Program provides services in wildfire suppression training, equipment, pre-suppression planning, wildfire preventions, and aerial fire suppression.	
HAZARD(S)	Wildfire	
ESTIMATED COST	Varies by scope	
FUNDING	NFS, HMGP, PDM, General Funds	
TIMELINE	5+ years	
PRIORITY	High	
LEAD AGENCY	City Administration, NFS	
STATUS	Fire Suppression in the surrounding area is an ongoing action. The City removes hazardous trees as needed and works with the NFS to respond to fire events and suppression training as needed.	

MITIGATION ACTION		FIRE WISE COMMUNITY
DESCRIPTION	Work with the Nebraska Forest Service and US Forest Service to become a Fire Wise Communities/USA participant. Develop a Community Wildfire Protection Plan. Train land owners about creating defensible space. Enact ordinances and building codes to increase defensible space, improve building materials to reduce structure ignitability, and increase access to structures by responders. Develop and implement brush and fuel thinning projects.	
HAZARD(S)	Wildfire	
ESTIMATED COST	\$20,000+	
FUNDING	NFS, HMGP, PDM, General Fund	
TIMELINE	5+ years	
PRIORITY	High	
LEAD AGENCY	City Administrator, NFS, USDA	
STATUS	This project has not yet been started.	

MITIGATION ACTION		HAZARDOUS TREE REMOVAL
DESCRIPTION	Identify and remove hazardous limbs and/or trees.	
HAZARD(S)	Drought and Extreme Heat, Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds	
ESTIMATED COST	\$250+ per tree	
FUNDING	General Fund, Private owners	
TIMELINE	5+ years	
PRIORITY	High	
LEAD AGENCY	Public Works	
STATUS	Hazardous trees are removed on an as needed basis.	

MITIGATION ACTION		IMPROVE SNOW/ICE REMOVAL PROGRAM
DESCRIPTION	Improve the snow routes and snow/ice removal procedures for streets. Improvements should address plowing snow, ice removal, parking during snow and ice removal, and removal of associated storm debris.	
HAZARD(S)	Severe Winter Storms	
ESTIMATED COST	\$20,000+	
FUNDING	Streets Fund	
TIMELINE	2 – 5 years	
PRIORITY	Medium	
LEAD AGENCY	Public Works	
STATUS	This is an ongoing effort to update and revise plan as needed.	

MITIGATION ACTION		PUBLIC AWARENESS/EDUCATION
DESCRIPTION	Considerations for activities include outreach projects and the distribution of maps and environmental education materials to increase public awareness of natural hazards to public and private property owners, property renters, businesses, and local officials. Other activities include providing education to citizens on water conservation methods. Purchasing and using equipment such as overhead projectors and laptops will allow for easier ways to educate the public during meetings.	
HAZARD(S)	All Hazards	
ESTIMATED COST	\$500+	
FUNDING	General Funds, Utility Funds	
TIMELINE	5+ years	
PRIORITY	Low	
LEAD AGENCY	All departments (managers) responsible for own education efforts	
STATUS	Education and outreach is an ongoing effort.	

MITIGATION ACTION		SOURCE WATER CONTINGENCY PLAN	
DESCRIPTION	Villages and cities can evaluate and locate new sources of groundwater to ensure adequate supplies to support the existing community and any additional growth which may occur. Water sources for fire protection may also be developed.		
HAZARD(S)	Drought and Extreme Heat, Wildfire		
ESTIMATED COST	\$10,000+		
FUNDING	Utility Rates, Bonds		
TIMELINE	5+ years		
PRIORITY	Medium		
LEAD AGENCY	Public Works		
STATUS	The Master Plan completed in 2018 identified some needs but additional project implementation is needed.		

MITIGATION ACTION		STORMWATER SYSTEM AND DRAINAGE IMPROVEMENTS	
DESCRIPTION	Smaller communities may utilize storm water systems including ditches, culverts, or drainage ponds to convey runoff. Undersized systems can contribute to local flooding. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other storm water system improvements. Bridges typically serve as flow restrictions along streams and rivers. Cleanout and reshaping of channel segments at bridge crossings can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges may be necessary to provide greater capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages.		
HAZARD(S)	Flooding		
ESTIMATED COST	Varies by scope		
FUNDING	General Fund, Bonds, Grants		
TIMELINE	5+ years		
PRIORITY	Medium		
LEAD AGENCY	Public Works		
STATUS	Improvements are an ongoing action throughout Chadron.		

MITIGATION ACTION		STREAM BANK STABILIZATION/GRADE CONTROL STRUCTURES/CHANNEL IMPROVEMENTS
DESCRIPTION	Stream bank degradation has occurred along many rivers and creeks. Stabilization improvements including rock rip rap, vegetative cover, j-hooks, boulder vanes, etc. can be implemented to reestablish the channel banks. Channel stabilization can protect structures, increase conveyance and provide flooding benefits.	
HAZARD(S)	Flooding	
ESTIMATED COST	\$50,000 – \$100,000+	
FUNDING	General Funds	
TIMELINE	5+ years	
PRIORITY	Low	
LEAD AGENCY	Public Works	
STATUS	This project has not yet been started. The Stormwater Master Plan has identified several potential projects including: rebuilding the channel from Fifth and Maple to under Highway 20; rebuilding the headwall at Fifth and Maple; and various stormwater system upgrades along Main Street.	

Removed Actions

MITIGATION ACTION		GROUNDWATER/IRRIGATION/WATER CONSERVATION MANAGEMENT PLAN AND PRACTICES
DESCRIPTION	Develop and implement a plan/ best management practices to conserve water use and reduce total use (high water use to low water use) and consumption of groundwater resources by citizens and irrigators of agricultural land during elongated periods of drought Identify water saving irrigation projects of improvements such as sprinklers or soil moisture monitoring. Potential restrictions on water could include limitation on lawn watering, car washing, farm irrigation restrictions, or water sold to outside sources. Implement BMPs through water conservation practices such as changes in irrigation management, education on no-till agriculture and use of xeriscaping in communities.	
HAZARD(S)	Drought and Extreme Heat	
REASON FOR REMOVAL	This project falls under the responsibility of the NRD. The City would provide input and city information as part of the project.	

MITIGATION ACTION		HAZARDOUS FUELS REDUCTION
DESCRIPTION	The Nebraska Forest Service (NFS) Forest Fuels Reduction Program creates strategically located corridors of thinned forests across the landscape reduces fire intensity, improves fire suppression effectiveness, increases firefighters safety, and better protects lives and property.	
HAZARD(S)	Wildfire	
REASON FOR REMOVAL	This type of project is managed by the NFS. The City collaborates with the NFS as needed.	

MITIGATION ACTION **MAINTAIN GOOD STANDING IN THE NATIONAL FLOOD INSURANCE PROGRAM**

DESCRIPTION	Maintain Good Standing in the National Flood Insurance Program
HAZARD(S)	Flooding
REASON FOR REMOVAL	While the community will continue to participate in the NFIP, this is no longer considered a mitigation action.

MITIGATION ACTION **POWER AND SERVICE LINES**

DESCRIPTION	Communities can work with their local Public Power District or Electricity Department to identify vulnerable transmission and distribution lines and plan to bury lines underground or retrofit existing structures to be less vulnerable to storm events. Electrical utilities shall be required to use underground construction methods where possible for future installation of power lines.
HAZARD(S)	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds
REASON FOR REMOVAL	The City leases all power lines and infrastructure from NPPD. Any hardening or burying of power lines would be the responsibility of the NPPD.

MITIGATION ACTION **WARNING SYSTEMS**

DESCRIPTION	Improve city cable TV interrupt warning system and implement telephone interrupt system such as Reverse 911, emergency text messaging warning system, etc.
HAZARD(S)	High Winds and Tornadoes, Severe Thunderstorms, Severe Winter Storms
REASON FOR REMOVAL	This is no longer a priority for the community as many residents are reliant on cellular phones and alternate types of emergency alert systems such as Code Red and Alert Sense.

MITIGATION ACTION **WEATHER RADIOS**

DESCRIPTION	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
HAZARD(S)	High Winds and Tornadoes, Severe Thunderstorms, Severe Winter Storms
REASON FOR REMOVAL	This is no longer a priority for the community as many residents are reliant on cellular phones and alternate types of emergency alert systems such as Code Red and Alert Sense.

Community Profile

CITY OF CRAWFORD

Region 23 Emergency Management Agency
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table CFD.1: Crawford Local Planning Team

NAME	TITLE	JURISDICTION
CONNIE SHELL	Mayor	City of Crawford
JANE DAILEY	Clerk and Treasurer	City of Crawford

Location and Geography

The City of Crawford is located in eastern Dawes County and covers an area of 1.18 square miles. The White River is located along the northwest side of the city while the White Clay Creek, Squaw Creek and English Creek tributaries of the White River run approximately one mile east of the city.

Transportation

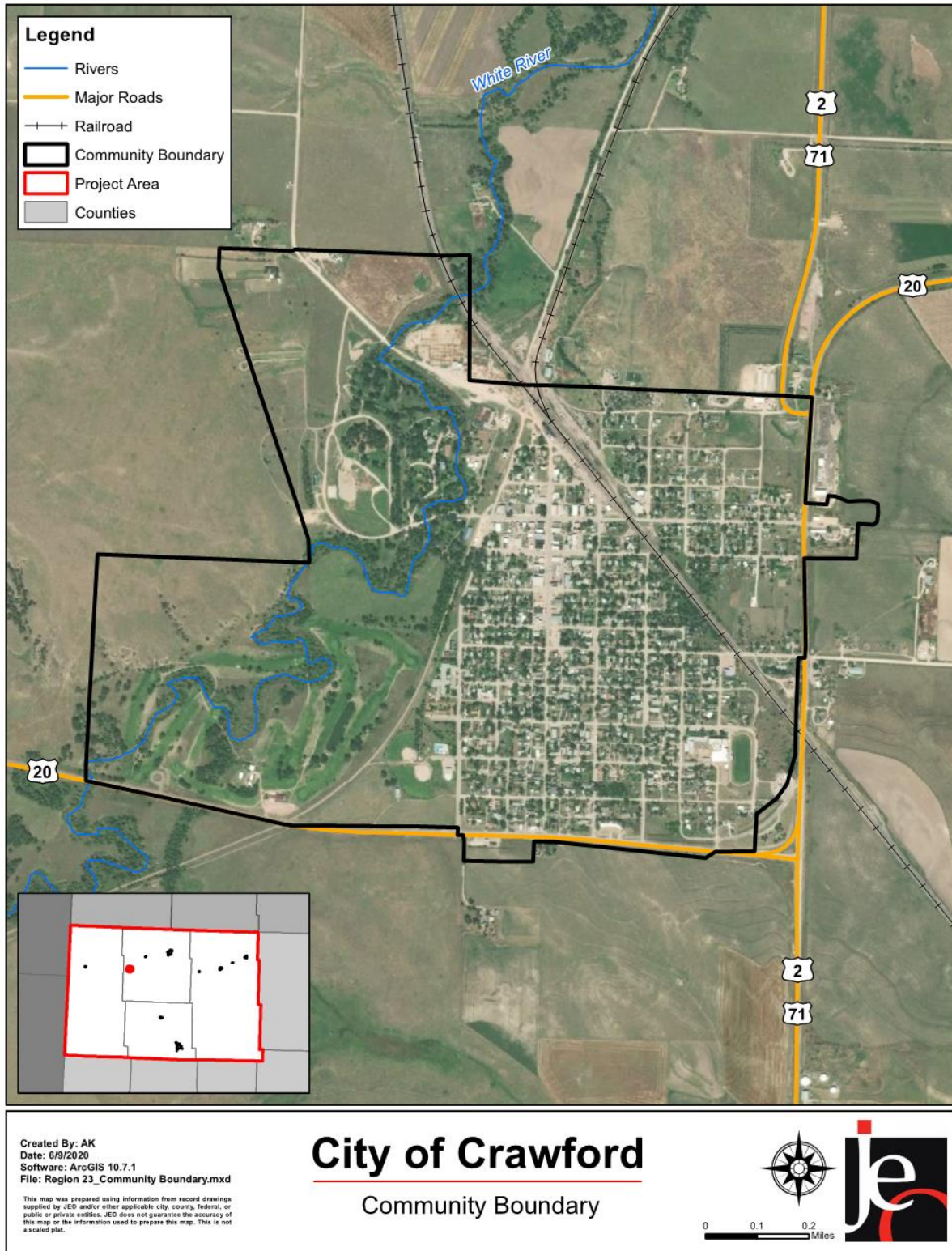
Crawford's major transportation corridors include Nebraska State Highway 71 averages 1,070 vehicles per day and U.S. Highway 20 which averages 1,515 vehicles per day.²⁵ A Burlington Northern Santa Fe rail line and a DM&E rail line bisect the city. Railroads commonly transport hazardous materials including coal, oil, and waste products through town, which is a major concern for the community. Additionally, any hazardous chemical incidents involving the railroad through town may block major streets and access for residents. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk to transportation incidents.

Chemical Transportation

Hazardous materials are commonly transported by a range of transportation methods, including highways, rail, air, and pipeline. Railway and highway transportation spills are the most frequently occurring chemical transportation incidents. While incident proximity will always occur near or on transportation methods, it is not possible to predict precise locations of possible future events. Proximity of pipelines, rail lines, and highways near critical facilities or vulnerable population centers, including schools, daycares, nursing homes, and/or hospitals, increases overall vulnerability to chemical transportation spills. A BNSF and a DM&E rail line bisect Crawford and the main highways are commonly used transport hazardous chemicals through Crawford. Private entities, local emergency response units, and state resources have strict regulatory oversight and emergency action plans in place to respond to significant chemical spills. In the case of a chemical spill, the local volunteer fire department and Dawes County Sheriff's Office would respond. Concerns exist for vulnerable populations and residential areas the railroad bisects. The local gas station is located downtown at the major intersection of Highways 20 and 2/71 as well.

²⁵ Nebraska Department of Roads. "Traffic Flow Map of the State Highways: State of Nebraska." [map]. Scale 1"= 20 miles. State of Nebraska: Department of Roads, 2015. <http://www.roads.nebraska.gov/media/2510/2014-statewide-traffic-flow-map.pdf>

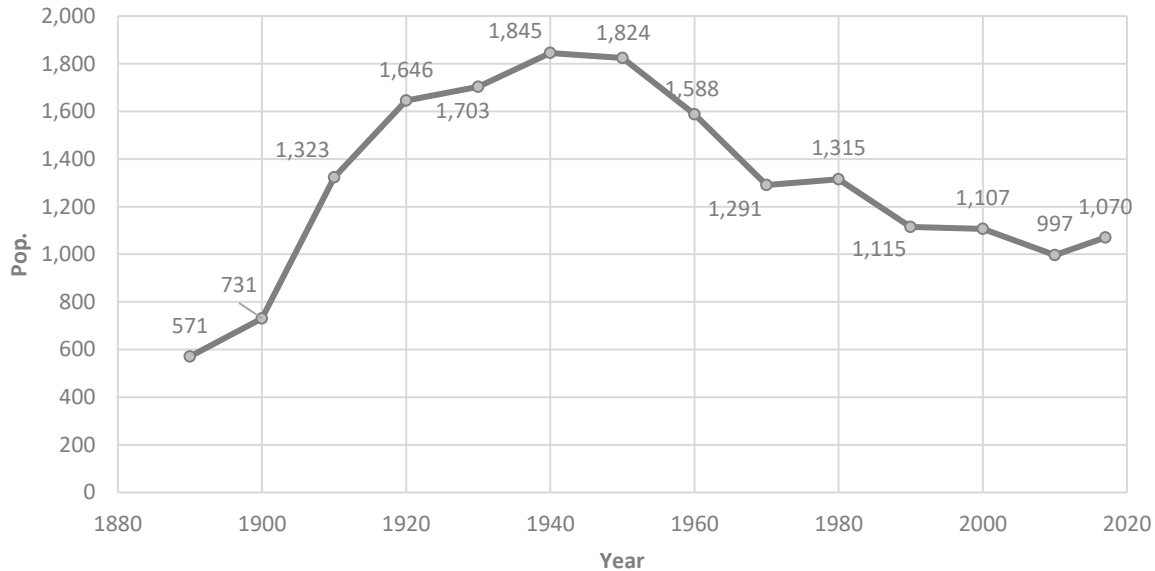
Figure CFD.1: City of Crawford



Demographics

Crawford's population has declined steadily since the 1940s. Declining populations make communities more vulnerable to hazards as it leads to more unoccupied or vacant housing units and decreasing tax revenues to pursue mitigation projects. Crawford's population accounted for 12% percent of Dawes County's population in 2017.²⁶

Figure CFD.2: Estimated Population 1890 – 2017



Source: U.S. Census Bureau²⁷

The young, elderly, minorities, and poor may be more vulnerable to certain hazards than other groups. In comparison to the County, Crawford's population was:

- **Older.** The median age of Crawford was 52.3 years old in 2017, compared with the County average of 34.0 years. Crawford's population has grown older since 2010, when the median age was 44.3 years old. Crawford had a smaller proportion of people under 20 years old (24.0%) than the County (27.6%).²⁸
- **Less ethnically diverse.** Since 2010, Crawford grew less ethnically diverse. In 2010, 93.8% of Crawford's population was white and 3.0% was two or more races. By 2017, about 99.3% of Crawford's population was white while 0.7% was two or more races. During that time, the white population and two or more races populations in the County grew from 94.0% and 1.1% in 2010 to 89.7% and 3.0% in 2017, respectively.²⁹
- **Less likely to be at the federal poverty line.** The poverty rate in Crawford (9.4% of families living below the federal poverty line) is lower than the County's poverty rate (12.8%) in 2017.³⁰

²⁶ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov/>.

²⁷ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov/>.

²⁸ United States Census Bureau. "2017 American Fact Finder: S0101: Age and Sex." [database file]. <https://factfinder.census.gov/>.

²⁹ United States Census Bureau. "2017 American Fact Finder: DP05: ACS Demographic and Housing Estimates." [database file]. <https://factfinder.census.gov/>.

³⁰ United States Census Bureau. "2017 American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

Employment and Economics

The City's economic base is a mixture of industries. In comparison to Dawes County, Crawford's economy had:

- **Similar mix of industries.** Dawes County and Crawford's major employment sectors, accounting for 10% or more of employment each include Retail, Educational Services, and Arts and Entertainment in 2017. Additionally, Dawes County's industries also included Agriculture/Fishing/Forestry, while Crawford's include Construction.³¹
- **Lower household income.** Crawford's median household income in 2017 (\$36,316) was about \$9,830 lower than the County (\$46,146).³²
- **Similar long-distance commuters.** About 68.3% percent of workers in Crawford commuted for fewer than 15 minutes, compared with about 74% of workers in Dawes County. Both Crawford and Dawes County have approximately 15% of workers who commute 30 minutes or more to work.³³

Major Employers

The major employers in the City include the Public School district, Ponderosa Villa, and BNSF Railroad. A small amount of residents may commute to Chadron for work.

Housing

In comparison to Dawes County, Crawford's housing stock was:

- **More owner occupied.** About 77.3% of occupied housing units in Crawford are owner occupied compared with 62.5% of occupied housing in Dawes County in 2017.³⁴
- **Older housing stock.** Crawford has a slightly greater amount of houses built prior to 1970 than the county, 89.7% compared to 80.9% respectively.³⁵
- **Fewer multifamily homes.** Crawford contains fewer multifamily housing with five or more units per structure compared to the County (1.3% compared to 8.0%). About 86.6% of housing in Crawford was single-family detached, compared with 77.3% of the County's housing. Crawford has a smaller share of mobile and manufactured housing (8.5%) compared to the County (10.8%).³⁶ The local planning team indicated that the current planning and zoning regulations only allow single-wide trailers/mobile homes with a conditional use permit to help reduce total amount of mobile home parking.

This housing information is relevant to hazard mitigation insofar as the age of housing may indicate which housing units were built prior to state building codes being developed. Further, unoccupied housing may suggest that future development may be less likely to occur. Finally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms.

Future Development Trends

The City of Crawford has experienced several changes over the past five years. New buildings for commercial use and the Rural Fire Department have been built and efforts to clean up and/or demolish dilapidated buildings using Brownfield assistance have been made. However, the City's

³¹ United States Census Bureau. "2017 American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

³² United States Census Bureau. "2017 American Fact Finder: DP03: Selected Economic Characteristics." [database file]. <https://factfinder.census.gov/>.

³³ United States Census Bureau. "2017 American Fact Finder: S0802: Means of Transportation to Work by Selected Characteristics." [database file]. <https://factfinder.census.gov/>.

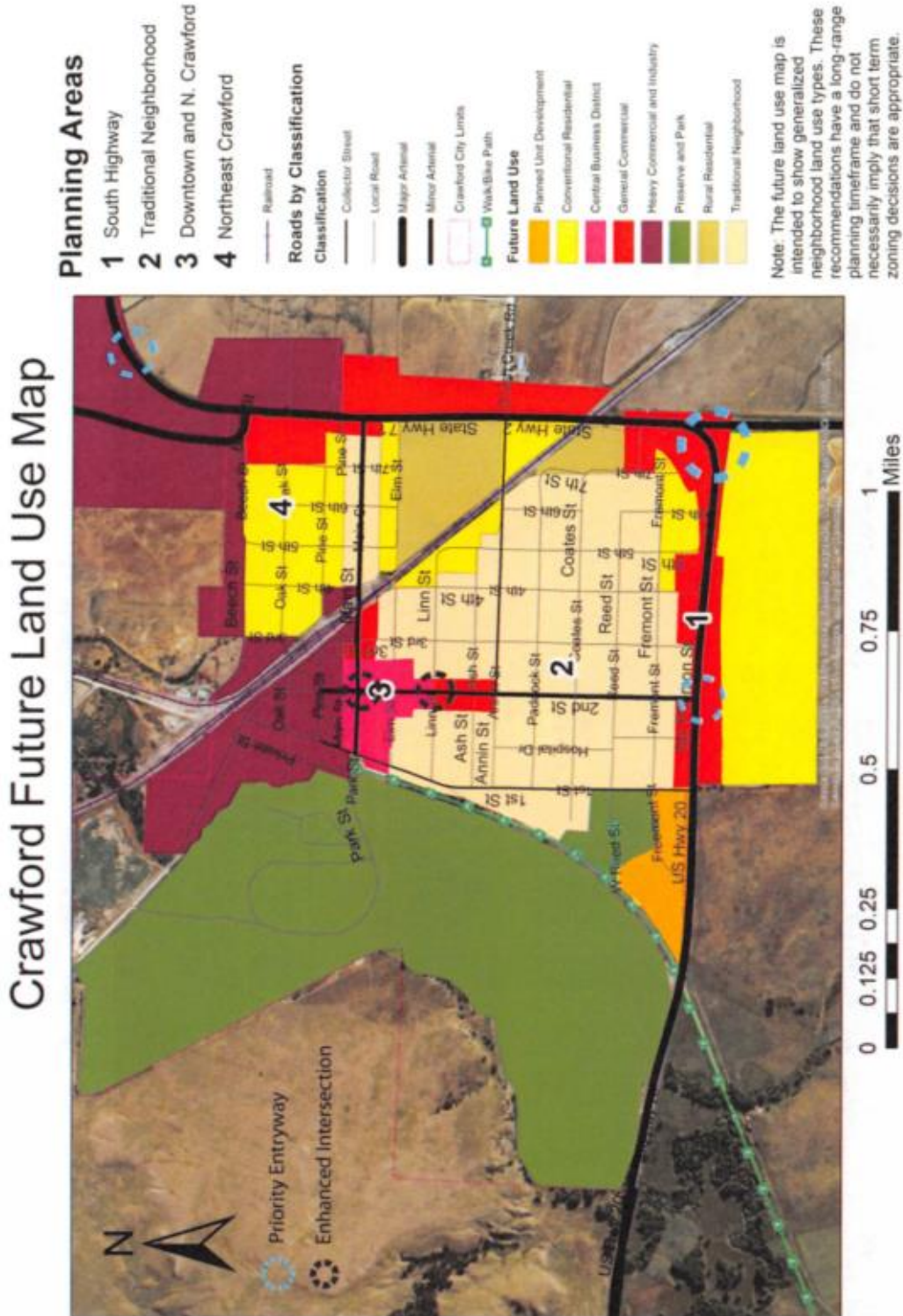
³⁴ United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

³⁵ United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

³⁶ United States Census Bureau. "2017 American Fact Finder: DP04: Selected Housing Characteristics." [database file]. <https://factfinder.census.gov/>.

population is declining which the local planning team attributes to a lack of high paying jobs and families moving away to be with other family members. In the next five years the City may see an expansion in the nursing home and low-income facilities; however, no set plans have been made at this time.

Figure CFD.3: Future Land Use Map



Structural Inventory and Valuation

The planning team requested GIS parcel data from the County Assessor as of December 2019. This data allowed the planning team to analyze the location, number, and value of property improvements 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 CFD.2: Crawford Parcel Valuation

NUMBER OF PARCELS	NUMBER OF IMPROVEMENTS	TOTAL IMPROVEMENT VALUE	NUMBER OF IMPROVEMENTS IN FLOODPLAIN	VALUE OF IMPROVEMENTS IN FLOODPLAIN
735	631	\$34,630,320	5	\$1,164,680

Source: County Assessor

Critical Infrastructure/Key Resources

Hazardous Materials

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are seven chemical storage sites in Crawford that contain hazardous chemicals. According to the U.S. Coast Guard National Response Center, no fixed chemical spills have occurred in the community. Additionally, the local planning team identified the Pine Ridge Bulk Plant as an additional possible chemical storage fixed site which is not listed in the NDEE registry.

Table CFD.3: Chemical Storage Fixed Sites

FACILITY NAME	ADDRESS
HERITAGE SEED COMPANY INC	324 Main St
WESTCO BULK PLANT	20 W Ash Creek Rd
PINE RIDGE SERVICE CENTER	547 2nd St
WESTCO PROPANE PLANT	6 Oak St
NDOT CRAWFORD YARD 50800	3621 Highway 20
CENTURYLINK*	440 2nd St
CROW BUTTE RESOURCES	86 Crow Butte Rd

Source: Nebraska Department of Environment and Energy³⁷

*The local planning team indicated this facility is no longer in operation.

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 a part of this plan update. The following table and figure provide a summary of the critical facilities for the jurisdiction.

Table CFD.4: Critical Facilities

CF Number	Name	Shelter (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Crawford Community Building	Y	N	N
2	Legend Buttes Health Services	N	N	N
3	Bethlehem Lutheran Church	N	N	N

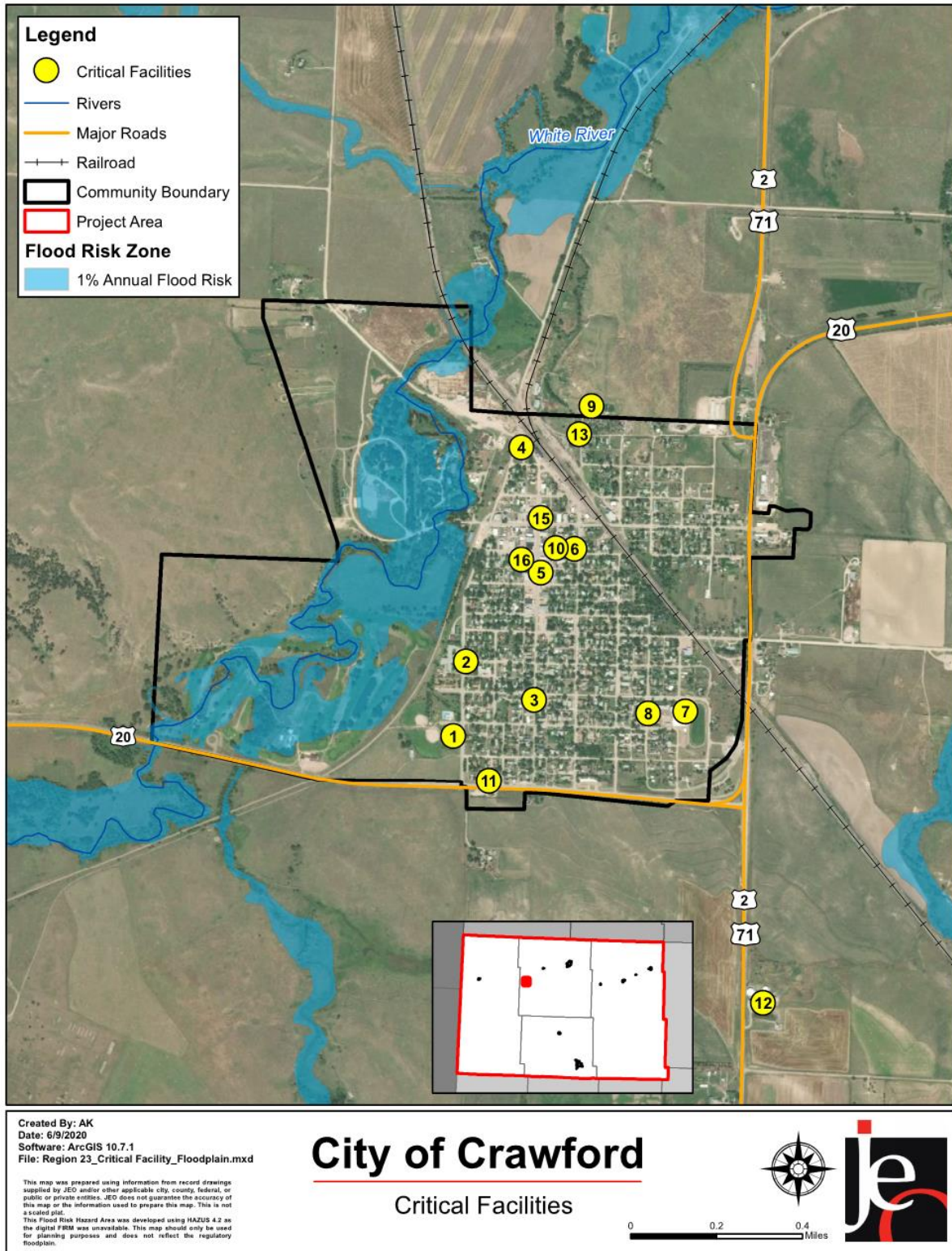
³⁷ Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed November 2018. <https://deq-iis.ne.gov/tier2/search.faces>.

SECTION SEVEN: CITY OF CRAWFORD COMMUNITY PROFILE

CF Number	Name	Shelter (Y/N)	Generator (Y/N)	Floodplain (Y/N)
4	NPPD Sub Station	N	N	N
5	Senior Center	N	N	N
6	Methodist Church	N	N	N
7	Crawford High School	N	N	N
8	Crawford Elementary School	N	N	N
9	Sewer Plant	N	N	N
10	Warning Siren	N	N	N
11	Crawford Rural Fire Dept	N	N	N
12	Water Treatment Plant*	N	N	N
13	Sewer Lift Station	N	N	N
14	Cell Phone Tower*	N	N	N
15	Grocery/Pharmacy Store	N	N	N
16	City Hall	N	N	N

*Not mapped: Cell Phone Tower located south of town along Hwy 2/71

Figure CFD.4: Critical Facilities



Historical Occurrences

See the Dawes County community profile for historical hazard events.

Hazard Prioritization

For an in-depth discussion regarding area wide hazards, please see *Section Four: Risk Assessment*. The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the community. The selected hazards were then prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the community's capabilities.

High Winds and Tornadoes

The local planning team identified tornadoes and high winds significant concern for the community. In total there were 49 windstorms reported that had winds reported between 60 and 75 miles per hour. Winds of this magnitude, according to the Beaufort Wind Force Ranking, can cause trees to uproot, considerable structure damage, and overturning of improperly anchored mobile homes. According to the NCEI data, there were two tornadoes which have passed near Crawford. Both tornadoes were either EF/F 0 and reported no damages. The current warning siren in Crawford needs to be replaced and the City is currently awaiting funding. There are currently no FEMA certified safe rooms located within Crawford; however, the local planning team indicated the community center and local churches would be used as shelters or emergency supply depots if needed. Many residents have basements in the community.

Severe Thunderstorms

Severe thunderstorms are a regular part of the climate for Dawes County and Crawford. The local planning team identified severe thunderstorms as the greatest threat for the community. The NCEI recorded 50 thunderstorm events with one injury and \$506,500 in damages to property. Of these events, hail is a top threat and accounted for 43 of reported events. Severe thunderstorms and hail can result in loss of electricity, blocked roadways, damages to trees, and flooding. Blocked roadways, as a result of downed trees, may also present life safety concerns to those needing immediate medical attention and prevent emergency response vehicles from reaching residents. The City removed hazardous trees as needed and replaces trees as part part of the Nebraska Statewide Arboretum. Additionally, the City has completed a stormwater drainage study and is currently creating a Stormwater Master Plan to identify and remediate areas of localized flooding in the city.

Wildfire

The local planning team identified grass/wildfire as a significant threat for the city. According to the Nebraska Forestry Department there were 372 reported fires by the Crawford Fire Department from 2000 to 2018 which consumed a total of 67,266 acres. The Crawford Fire Department received a USDA grant in 2016 to relocate and construct a new fire hall. The old fire hall was insufficient to meet local needs including equipment storage. However, the new fire hall does not have a backup generator. According to the CWPP there have been five major fires since 1984. The City of Crawford lies within the WUI as defined by the CWPP. The Crawford Fire Department has mutual aid agreements with the fire departments in the surrounding areas, but during large scale events it is possible nearby fire department would be unable to lend assistance due to addressing the needs of their respective community/protection area.

Governance

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Crawford has a number of offices or departments that

may be involved in implementing hazard mitigation initiatives. The City has a mayor and a four member council and the following offices.

- City Clerk
- City Attorney
- Planning Commission
- Streets Department
- Water/Sewer Department
- Park Board
- Golf Board
- Ponderosa Villa Board (nursing home)
- Community Redevelopment Authority

Capability Assessment

The capability assessment consisted of a Capability Assessment Survey completed by the jurisdiction and a review of local existing policies, regulations, plans, and the programs. The survey is used to gather information regarding the jurisdiction’s planning and regulatory capability; administrative and technical capability; fiscal capability; and educational and outreach capability.

Table CFD.5: Capability Assessment

Survey Components/Subcomponents		Yes/No
PLANNING & REGULATORY CAPABILITY	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	No
	Emergency Operational Plan	Yes
	Floodplain Management Plan	No
	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
	Community Wildfire Protection Plan	Yes
	Other (if any)	<i>Wellhead Protection Plan</i>
ADMINISTRATIVE & TECHNICAL CAPABILITY	Planning Commission	Yes
	Floodplain Administration	Yes
	GIS Capabilities	No
	Chief Building Official	No
	Civil Engineering	No
	Local Staff Who Can Assess Community’s Vulnerability to Hazards	Yes
	Grant Manager	No
	Mutual Aid Agreement	Yes
	Other (if any)	

Survey Components/Subcomponents		Yes/No
FISCAL CAPABILITY	Capital Improvement Plan/ 1 & 6 Year plan	Yes
	Applied for grants in the past	Yes
	Awarded a grant in the past	No
	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
Does your city have the financial resources need to implement mitigation projects?	Limited
Does your city have the staff/expertise to implement projects?	Limited
Does your city have the community support to implement projects?	Moderate
Does your city staff have the time to devote to hazard mitigation?	Moderate

Plan Integration

The City’s Comprehensive Plan was last updated in 2017 and provides an overview of the community including demographics, economics, land use, utilities and infrastructure, public facilities, transportation corridors, and housing. The plan identifies several critical facilities as discussed in this HMP. The plan does not discuss natural hazards but outlines future growth opportunities for the community which should be evaluated for hazard potential.

The City utilizes the International Building Codes and International Residential Codes. Additional revisions or updates are made as needed. The Zoning and Floodplain Regulations were last updated in April 2011. While current codes and ordinances do not prevent development in the floodplain or hazardous areas, they do require special permitting and requirements. The floodplain is located only within city park areas. The city also has a one- and six-year plan that is updated annually. The plan identifies projects the city plans to pursue including street repairs and replacing a bridge in the city park located within the floodplain.

The City of Crawford has an annex to the Dawes County LEOP, last updated June 2017. The LEOP incorporates mitigation by: identifying hazards of concern requiring emergency action; specific responsibilities of individual communities or community roles; scenarios that would require evacuation; sheltering locations; an animal disease response plan; media contacts; and other information for the county. This plan is updated every five years by Region 23 Emergency Management Agency. The city also has an emergency water plan which is shared with city officials, local health departments, and emergency departments. The plan is reviewed and updated annually. The plan outlines actions to be taken in the case of: power outages, water outage, equipment failures, water contamination, drought, flood, severe weather, fire, terrorism, and earthquake hazards. Communication protocols, available emergency equipment, and emergency water use restrictions are also described.

Mitigation Strategy

Completed Actions

MITIGATION ACTION	FLOODPLAIN REGULATION ENFORCEMENT AND UPDATES
DESCRIPTION	Continue to enforce local floodplain regulations for structures located in the 1% annual floodplain. Strict enforcement of the type of development and elevations of structures should be considered through issuance of building permits by the city of Crawford. Continue education of building inspectors or Certified Floodplain Managers
HAZARD(S)	Flooding
STATUS	In 2016 the Nebraska Department of Natural Resources reviewed all City processes and regulations. Some educational floodplain management materials were also shared with the City.

Ongoing or New Actions

MITIGATION ACTION	ALERT/WARNING SIRENS
DESCRIPTION	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking.
HAZARD(S)	All Hazards
ESTIMATED COST	\$15,000+
FUNDING	Tax Revenue, CDBG, PDM, HMGP
TIMELINE	1 year
PRIORITY	High
LEAD AGENCY	City Clerk, City Administrator
STATUS	The City has submitted a Notice of Interest to NEMA/FEMA for this project. The project would be located at the public library.

MITIGATION ACTION		BACKUP POWER GENERATORS
DESCRIPTION	Provide a portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, and other critical facilities and shelters.	
HAZARD(S)	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds	
ESTIMATED COST	\$30,000+ per generator	
FUNDING	Tax Revenue, PDM, HMGP	
TIMELINE	2 – 5 years	
PRIORITY	High	
LEAD AGENCY	Water Department	
STATUS	This project is not yet started. Generators are needed at the water plant, gallery, and well field.	

MITIGATION ACTION		BECOME A TREE CITY USA
DESCRIPTION	Work to become a Tree City USA through the National Arbor Day Foundation in order to receive direction, technical assistance, and public education on how to establish a hazardous tree identification and removal program in order to limit potential tree damage and damages caused by trees in a community when a storm event occurs.	
HAZARD(S)	Drought and Extreme Heat, Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds	
ESTIMATED COST	\$1,000+	
FUNDING	Tax Revenue	
TIMELINE	2 – 5 years	
PRIORITY	Low	
LEAD AGENCY	Park Board	
STATUS	The Community Redevelopment Authority of the City of Crawford has become a member of the NE Statewide Arboretum.	

MITIGATION ACTION		DRAINAGE STUDY/STORMWATER MASTER PLAN
DESCRIPTION	Drainage studies can be conducted to identify and prioritize improvements to address site specific localized flooding/drainage problems. Storm water master plans can be conducted to perform a community-wide storm water evaluation, identifying multiple problem areas, and potentially multiple drainage improvements for each.	
HAZARD(S)	All Hazards	
ESTIMATED COST	\$10,000	
FUNDING	Cost share with USDA	
TIMELINE	2 – 5 years	
PRIORITY	Medium	
LEAD AGENCY	Streets Department	
STATUS	This project is currently underway. The initial Stormwater Drainage Study was completed in December 2017 and the Stormwater Master Plan is currently in the works.	

SECTION SEVEN: CITY OF CRAWFORD COMMUNITY PROFILE

MITIGATION ACTION		PUBLIC AWARENESS/EDUCATION
DESCRIPTION	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing equipment such as overhead projectors and laptops.	
HAZARD(S)	All Hazards	
ESTIMATED COST	\$500+	
FUNDING	Tax Revenue	
TIMELINE	1 year	
PRIORITY	Medium	
LEAD AGENCY	City Clerk, Water/Wastewater Departments, Streets Department	
STATUS	This is an ongoing action to share information with the public for water consumption or preventative actions.	

MITIGATION ACTION		SAFE ROOMS
DESCRIPTION	Design and construct storm shelters and safe rooms in highly vulnerable areas such as mobile home parks, campgrounds, school, and other areas	
HAZARD(S)	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds	
ESTIMATED COST	\$250/sf standalone, \$150/sf retrofit	
FUNDING	Tax Revenue, PDM, HMGP	
TIMELINE	5+ years	
PRIORITY	Medium	
LEAD AGENCY	City Council	
STATUS	This project has not yet been started. The Community Center is in need of a safe room.	

MITIGATION ACTION		STORMWATER SYSTEM AND DRAINAGE IMPROVEMENTS
DESCRIPTION		<p>Smaller communities may utilize storm water systems comprising of ditches, culverts, or drainage ponds to convey runoff. Undersized systems can contribute to localized flooding. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other storm water system improvements. Bridges typically serve as flow restrictions along streams and rivers.</p> <p>Cleanout and reshaping of channel segments at bridge crossings can increase conveyance, reducing the potential for flooding. Replacement or modification of bridges may be necessary to provide greater capacity, maintain or improve structural integrity during flood events, and eliminate flooding threats and damages.</p>
HAZARD(S)		Flooding
ESTIMATED COST		\$10,000 - \$100,000+
FUNDING		Tax Revenue, Loans, HMGP, PDM
TIMELINE		2 – 5 years
PRIORITY		Medium
LEAD AGENCY		City Council, Water/Wastewater Departments
STATUS		An initial Stormwater Drainage Study was completed in December 2017. A Stormwater Master Plan will identify specific needs for the City.

Removed Actions

MITIGATION ACTION		MAINTAIN GOOD STANDING IN THE NFIP
DESCRIPTION		Maintain Good Standing in the National Flood Insurance Program
HAZARD(S)		Flooding
REASON FOR REMOVAL		While the City will continue to participate in the NFIP, this is no longer considered a mitigation action by FEMA.