County Profile

Chase County

Perkins, Chase, and Dundy Counties
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table CCO.1: Chase County Local Planning Team

Name	Title	Jurisdiction
Duane Dreiling	Emergency Manager	Chase County
Abigail Cyboron	Interim CEO	Chase County Community Hospital

Location and Geography

Chase County is located in the southwestern corner of Nebraska and is bordered by the State of Colorado, Perkins, Dundy, and Hayes Counties. The total area of Chase County is 890 square miles. Enders Reservoir sits in the southeastern portion of the county. Most of the county's land is used for agricultural production.

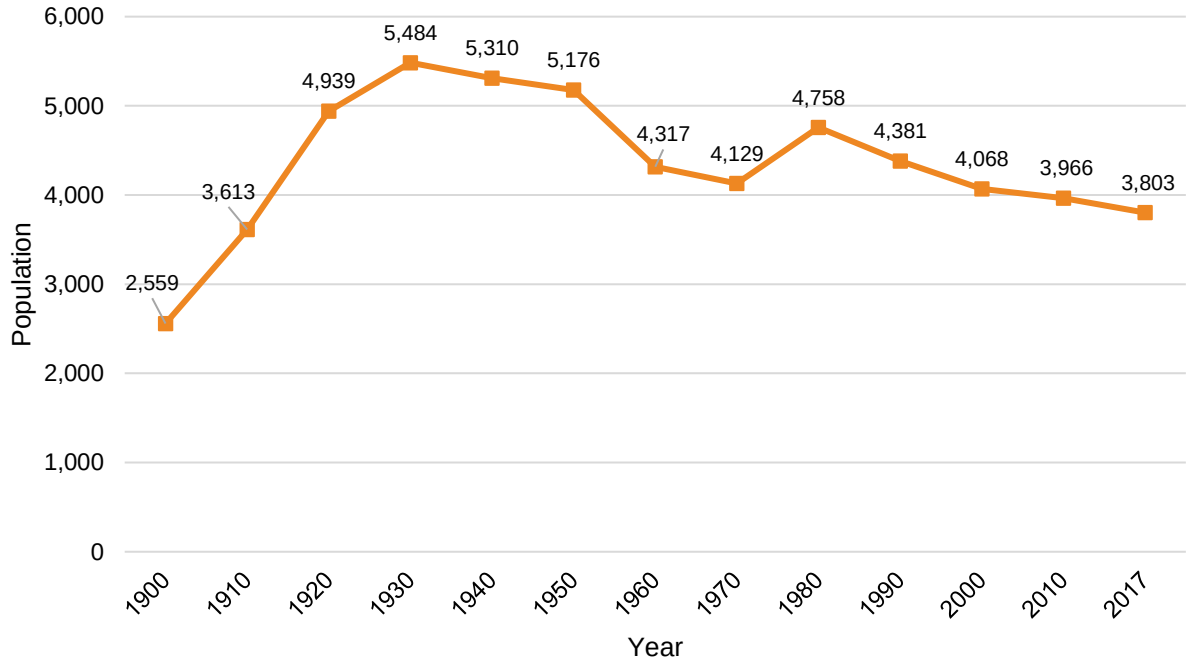
Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors and areas more at risk of transportation incidents. Chase County's major transportation corridors include US Highway 6 and Nebraska State Highway 61. A Nebraska Kansas Colorado Railroad rail line runs northwest to southeast through the county from Imperial to Hayes County.

Demographics, Employment, and Economics

The following figure displays the historical population trend from 1900 to 2017. This figure indicates that the population of Chase County has been decreasing since 1980.

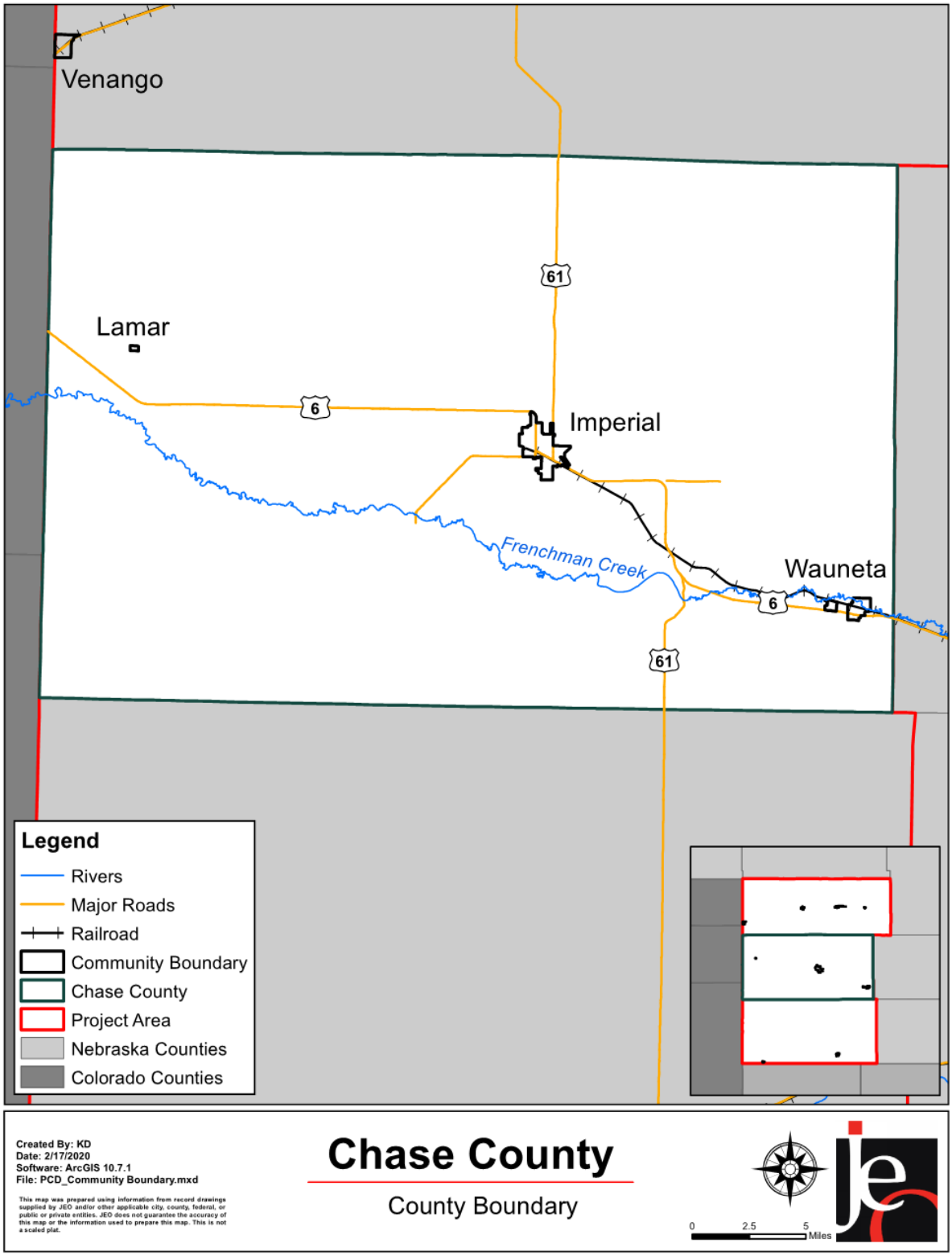
Figure CCO.1: Population



Source: U.S. Census Bureau, 1900 - 2017[1]

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

Figure CCO.2: Chase County



The young, elderly, minority populations, and low-income populations may be more vulnerable to certain hazards than other groups. The following table indicates that the county's population is older than the state and has a lower poverty rate. The median household income in Chase County is slightly lower than the State of Nebraska. A more detailed discussion of the vulnerabilities associated with age, ethnicity, and poverty can be found in *Section Four: Risk Assessment*.

Table CCO.2: Demographics

	Chase County	State of Nebraska
Median age[2]	44.4 years old	36.3 years old
Hispanic[2]	10.5%	10.5%
Below the federal poverty line[3]	8.0%	12.0%
Median Household Income	$54,568	$56,675

Source: U.S. Census Bureau

Major Employers

Major employers in the county include Nutrien Ag Solutions, Helena Chemicals, the City of Imperial, and Chase County.

Table CCO.3: Business in Chase County

	Total Businesses	Number of Paid Employees	Annual Payroll (In Thousands)
Total for all sectors	164	1,107	39,117

Source: U.S Census Bureau[4]

Agriculture is important to the economic fabric of the State of Nebraska. Chase County's 191 farms cover 280,005 acres of land. Crop and livestock production are the visible parts of the agricultural economy, but many related businesses contribute to agriculture by producing, processing and marketing farm products. These businesses generate income, employment and economic activity throughout the region.

Table CCO.4: Agricultural Inventory

	Agricultural Inventory
Number of farms with harvested cropland	191
Acres of harvested cropland	280,005

Source: USDA Census of Agriculture, 2017[5]

Housing

Housing age can serve as an indicator of vulnerability, as structures that are poorly maintained or that were built prior to state building codes are at greater risk to damage from hazards. The following table indicates that most of the housing in Chase County was built prior to 1970 (53.6%). The original Flood Insurance Rate Map (FIRM) was developed in February 2008. Housing built in the floodplain after the FIRM was adopted is built to a standard of one foot above the base flood elevation, as required by the floodplain ordinance; housing built prior to 2008 may not be built to the same standard.

2 United States Census Bureau. "American Fact Finder: DP05: ACS Demographic and Housing Estimates." [database file]. URL: https://factfinder.census.gov/.
3 United States Census Bureau. "American Fact Finder: DP03: Selected Economic Characteristics." [database file]. URL: https://factfinder.census.gov/.
4 United States Census Bureau. "2016 County Business Patterns and 2016 Nonemployer Statistics." [database file]. https://factfinder.census.gov.
5 U.S. Department of Agriculture. "2017 Census of Agriculture." https://www.nass.usda.gov/Publications/AgCensus/2017/.

In the county, about 10% of housing units are mobile homes; communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms if those homes are not anchored correctly. Chase County has less renter-occupied but more vacant housing than the state. Renter occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have renter's insurance or flood insurance, or to know their risks to flooding and other hazards.

Table CCO.5: Housing

	Chase County	State of Nebraska
Housing built before 1970	53.6%	47.2%
Mobile and manufactured	10.9%	3.4%
Renter-occupied	19.5%	34.0%
Vacant	13.8%	9.2%

Source: U.S. Census Bureau[6,7]

Future Development Trends

Over the past five years, new housing has been built and Black Hills Energy installed new pipelines to replace old and outdated lines. New businesses or industries were added to unincorporated areas during this time. According to the 2017 American Community Survey estimates, Chase County's population is declining. This could lead to a decreasing tax base, making it more difficult to implement mitigation projects. The local planning team attributes this decline to a lack of new businesses. In the next five years no new businesses or housing developments are anticipated in the unincorporated areas of the county.

Parcel improvements and Valuation

GIS parcel data was acquired from the County Assessor. This data was analyzed for the location, number, and value of property improvements at the parcel level. Property improvements include any built structures such as roads, buildings, and paved lots. 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 CCO.6: Parcel Improvements and Value in the Floodplain

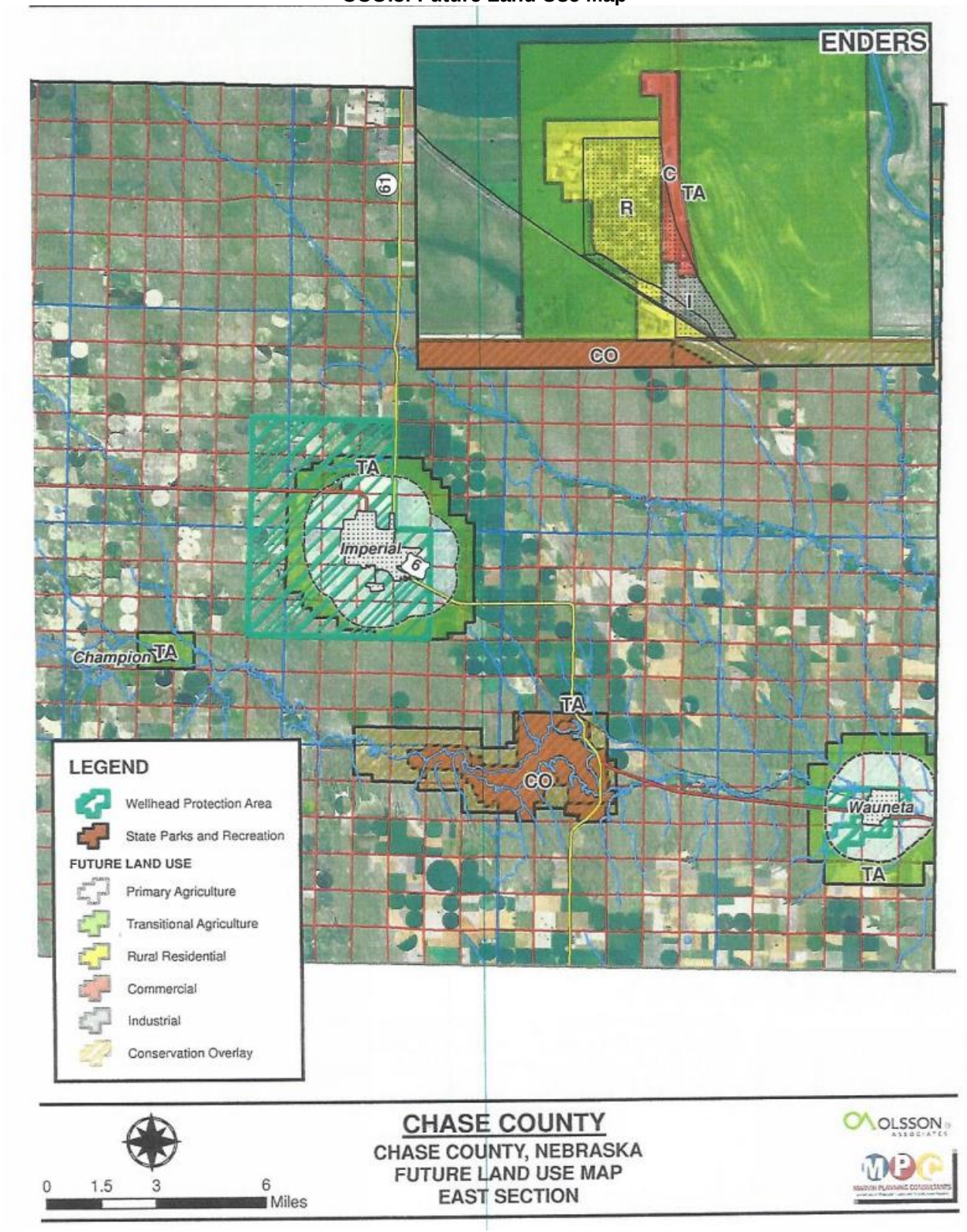
Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
2,652	$290,050,850	276	$17,011,884	10.4%

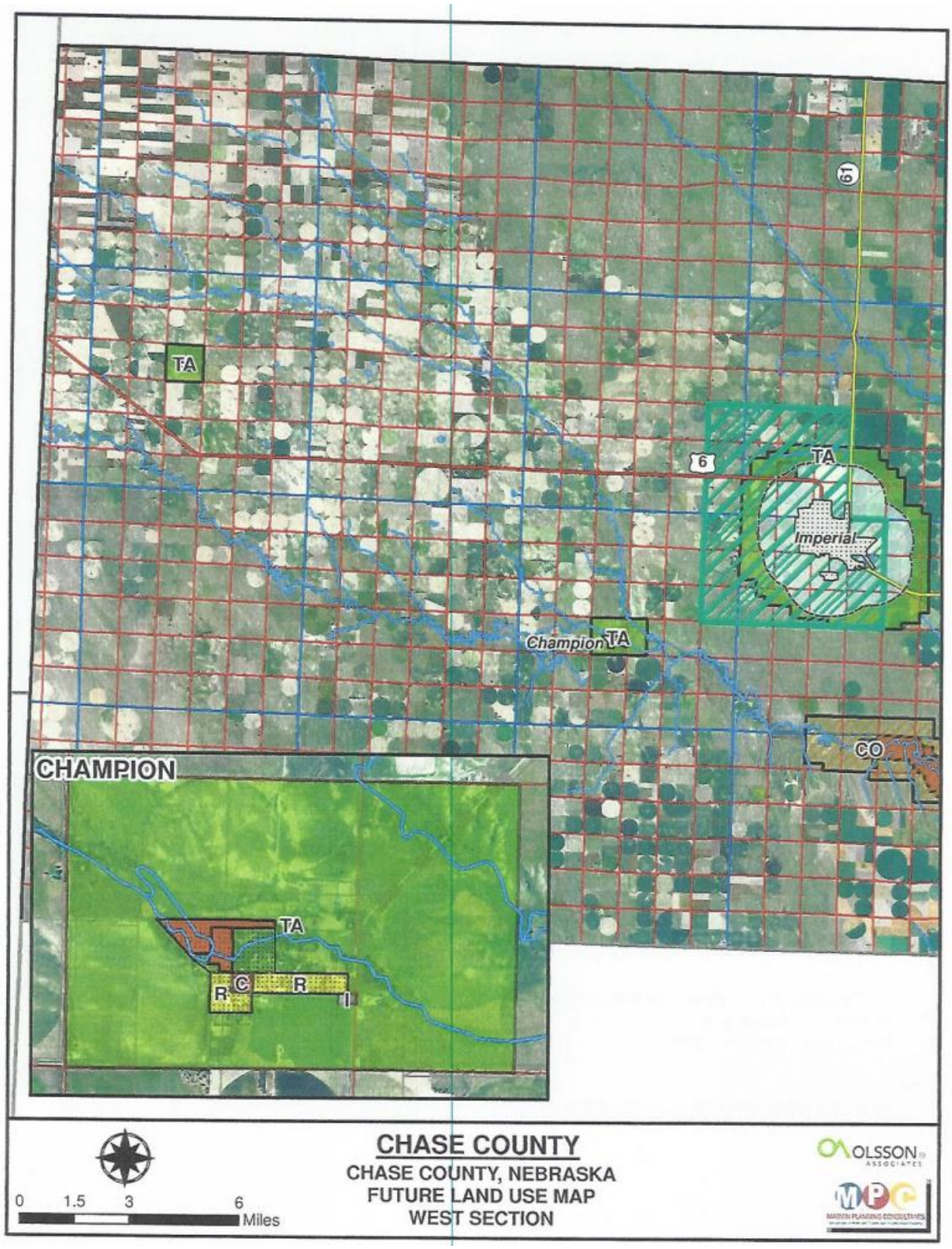
Source: Chase County Assessor, 2018

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

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

CCO.3: Future Land Use Map

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FUTURE LAND USE MAP
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OLSSON
ASSOCIATES
MPC

Critical Infrastructure

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are a total of six chemical storage sites in the unincorporated areas of Chase County. The table below lists the name, location of the site, and whether they are in the floodplain.

Table CCO.7: Chemical Storage Fixed Sites

Facility Name	Address	In Floodplain (Y/N)
Daschofsky Lease	326 Avenue	N
NDOT Lamar Yard	Highway 6 W	N
Nutrien Ag Solutions	73994 314 Avenue	N
Scholl Oil & Transportation	Junction of 327 Avenue and Broadway Street	N
Tri-State Generation and Trans	Highway 6	N
YYYS Unit Tank Battery	732 Road	N

Source: Nebraska Department of Environment and Energy, 2020[8]

Critical Facilities

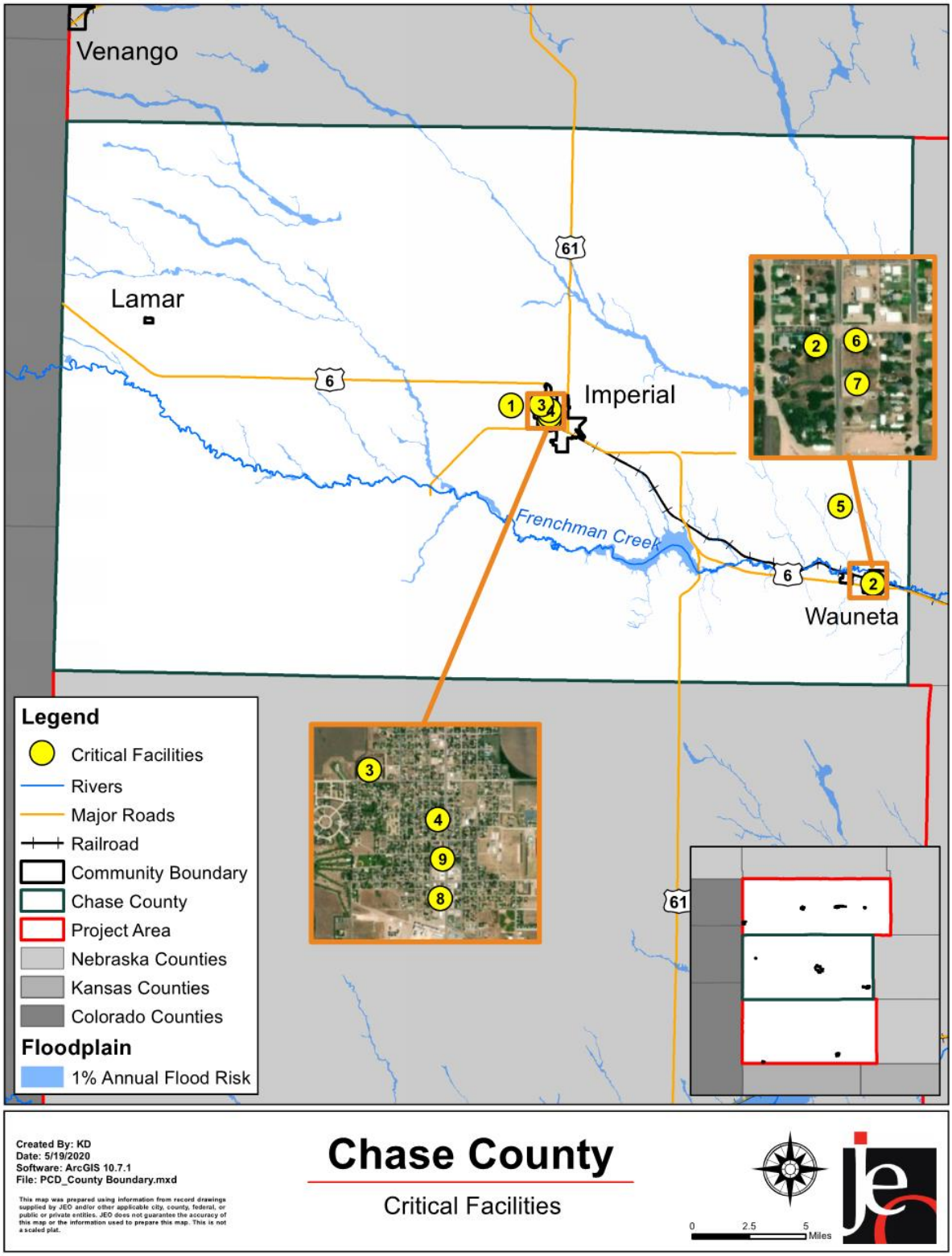
The planning team identified critical facilities necessary for Chase County's disaster response and continuity of operations. Critical facilities were identified during the 2015 planning process and revised for this plan update. The following table and figure provide a summary of the critical facilities for the county.

Table CCO.8: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	Cell Phone Tower	N	N	N
2	Chase County Clinic	N	Y	N
3	Chase County Clinic and Hospital	N	Y	N
4	Chase County Courthouse	N	Y	N
5	Communication Towers	N	Y	N
6	EMS Building	Y	Y	N
7	Fire Department	N	N	N
8	Nebraska Health and Human Services	N	N	N
9	Police Department	N	N	N

8 Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed January 2020. https://deq-iis.ne.gov/tier2/tier2Download.html.

Figure CCO.4: Critical Facilities



Historical Occurrences

The following table provides a statistical summary for hazards that have occurred in the county. These are county-specific broad estimates.

Table CCO.9: County Hazard Loss History

Hazard Type		Count	Property Damage	Crop Damage[2]
Agricultural Disease	Animal Disease[1]	12	16 animals	N/A
	Plant Disease[2]	32	N/A	$517,244
Dam Failure[5,6]		3	N/A	N/A
Drought[7,9]		434/1,498 months	$10,000,000	$23,129,715
Extreme Heat[8]		Avg. 7 days/year	N/A	$5,930,841
Flooding[9]	Flash Flood	7	$555,000	$252,903
	Flood	1	$100,000	
Hazardous Materials Release	Chemical Spills (Fixed Site)[3]	1	$0	N/A
	Chemical Spills (Transportation)[4]	2	$25	
Severe Thunderstorms[9]	Thunderstorm Wind Average: 66 mph Range: 58-89 mph	94	$992,500	$83,117,952
	Hail Average: 1.34 in Range: 0.75-4.5 in	241	$3,182,000	
	Heavy Rain	2	$0	
	Lightning	2	$100,000	
Severe Winter Storms[9]	Blizzard	8	$0	$3,278,546
	Extreme Cold/Wind chill	3	$0	
	Heavy Snow	5	$0	
	Ice Storm	0	$0	
	Winter Storm	29	$56,000	
	Winter Weather	0	$0	
Terrorism[14]		0	$0	N/A
Transportation Incidents *147 injuries, 14 fatalities*	Auto[11]	459	N/A	N/A
	Aviation[12]	5	N/A	N/A
	Highway Rail[13]	27	$17,400	N/A
Tornadoes and High Winds[9]	High Winds Average: 55 mph Range: 40-69 mph	41	$40,000	$1,348,462
	Tornadoes Average: EF0 Range: EF0-EF1	8	$436,000	
Wildfires[10] *1 injury, 1 Fatality*		209	4,623 acres	$41,268
Total		**1,190**	**$15,478,925**	**$117,616,931**

N/A: Data not available
1 - NDA, 2014 – October 2019
2 - USDA RMA, 2000 – October 2019
3 - NRC, 1990 - November 2019
4 - PHSMA, 1971 - November 2019

5 - Stanford NPDP, 1911 - 20186 – DNR Dam Inventory, February 2020
7 – NOAA, 1895 – August 2019
8 – NOAA Regional Climate Center, 1897 – September 2019
9 – NCEI, 1996 – September 2019
10 – NFS, 2000-2018
11 – DOT, 2006 – 2018
12 - DOT FRA, 2006 – 2018
13 – NTSB, 1962 – 2019
14 – University of Maryland, 1970 - 2018

The following table provides a summary of hazards that have affected or have the potential to affect each participating jurisdiction in Chase County. Each jurisdiction was evaluated for previous hazard occurrence and the probability of future hazard events on each of the 12 hazards profiled in this plan. The evaluation process was based on data collected and summarized in Table CCO.9; previous impacts or the potential for impacts to infrastructure, critical facilities, people, and the economy; and the proximity to certain hazards such as dams.

Table CCO.10: Chase County and Community Hazard Matrix

Hazard	Chase County	City of Imperial	Imperial Rural Fire District	Village of Wauneta
Ag. Disease	X	X		X
Dam Failure	X		X	X
Drought	X	X	X	X
Extreme Heat	X	X	X	X
Flooding	X	X	X	X
Hazardous Materials Release	X	X	X	X
Severe Thunderstorms	X	X	X	X
Severe Winter Storms	X	X	X	X
Terrorism	X	X	X	X
Tornadoes and High Winds	X	X	X	X
Transportation Incidents	X	X	X	X
Wildfires	X	X	X	X

County Hazard Prioritization

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the county. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the county's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Dam Failure

There are two high hazard dams located in the county. The Enders Dam and Enders Dike Dam are located at the Enders Reservoir, so they are likely one structure. Both are owned by the Bureau of Reclamation and normal storage is 44,500-acre feet. Inundation maps are not included due to security concerns, however, the Chase County LEOP estimates that approximately 16% of the population of Chase County could be affected by the failure of these or other dams.[9]

One mile north of Wauneta is the Wauneta North Dam. Although it does not typically hold water, the State of Nebraska is worried about water filling up behind it during heavy rains and washing out. If it failed, it would likely damage the downstream railroad, highway, and could result in shallow flooding of a few downstream homes. A culvert will need to be installed to allow stormwater through and reduce washout concerns.

9 Chase County Emergency Management Agency. 2017. "Chase County Nebraska Local Emergency Operations Plan"

Figure CCO.5: Dam Locations

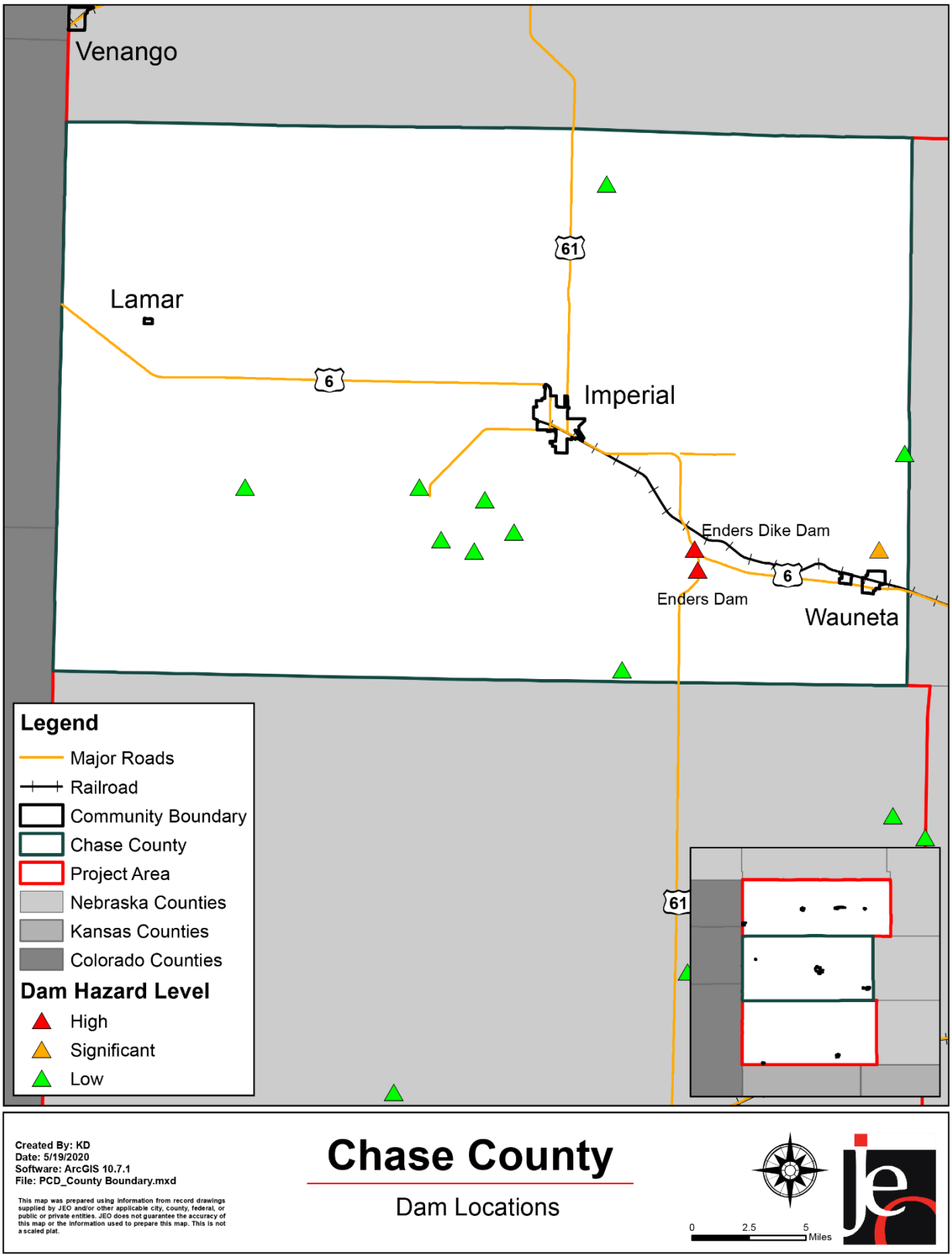
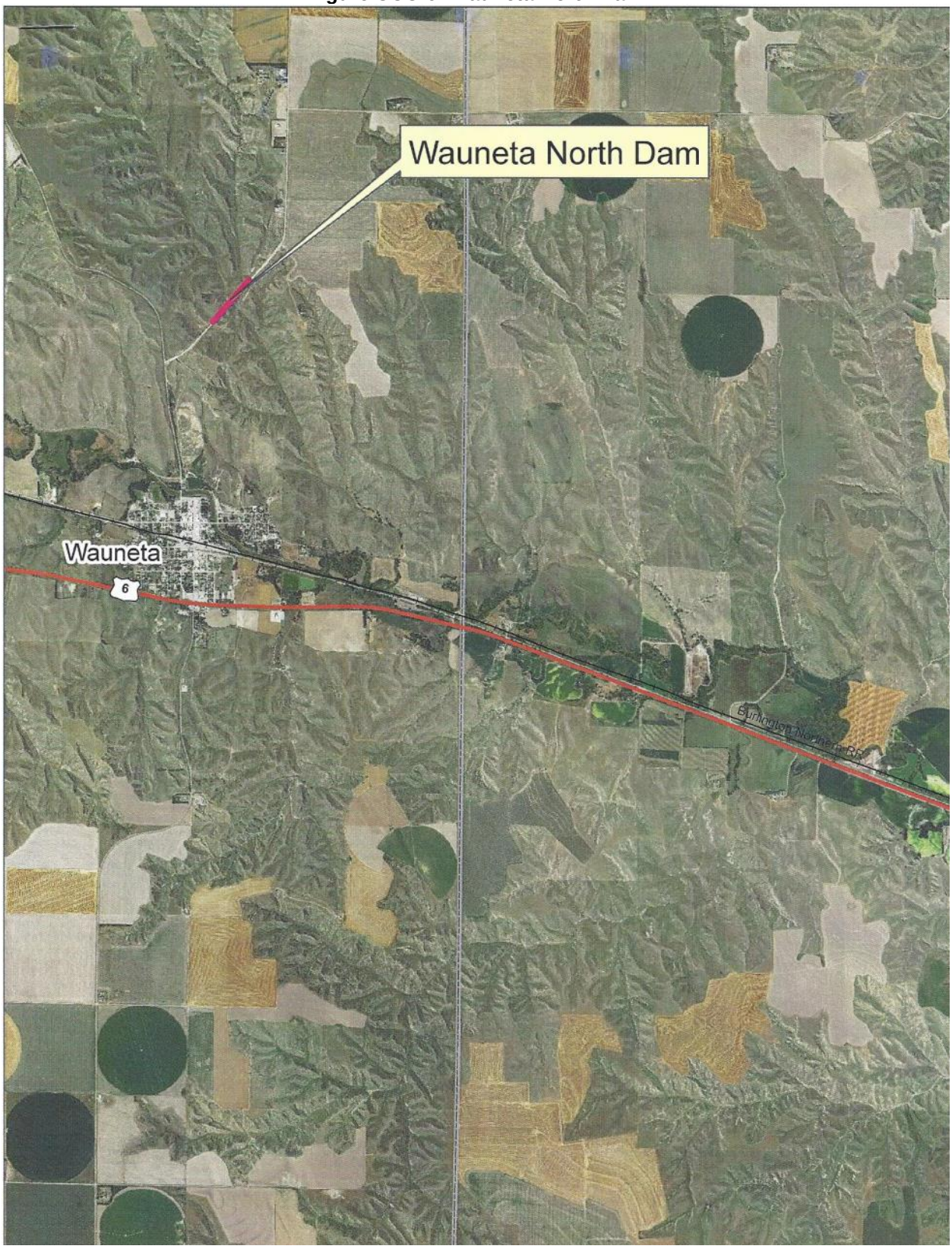


Figure CCO.6: Wauneta North Dam



Drought

The county conducts local drought monitoring but does not have a drought monitoring board or a drought response plan. Additionally, the county has a water supply system, which is sufficient for its purposes. Specific vulnerability or concerns related to drought are linked to the amount of agricultural operations in the county. Most agricultural operations purchase insurance to defer risk to the insurers. Also, drought can exacerbate flooding impacts and stream bank erosion and degradation. Efforts to reduce flooding impacts, wildfire, and extreme heat will help increase the county's resilience to drought.

Extreme Heat

It is understood that heat is part of a Nebraska summer and this is no different in Chase County. July is typically the hottest month with an average high temperature above 90°F, but summertime temperatures can be much warmer than that.

High temperatures combined with humidity can produce unsafe conditions. This is especially true for children and elderly residents. During daytime hours, residents can use public buildings such as the library for a cooling area if needed. The county has expressed that the local public power district has a program in place with other public power districts to address overload on the electric grid during extreme heat.

Flooding

The Village of Wauneta has flooded in the past from runoff out of the canyons. Frenchman River has also flooded which has washed out roads across the county. Other bodies of water that are likely to flood include Spring Creek, Stinking Water Creek, and Sand Draw Creek. In addition, the main street in the City of Imperial has poor stormwater drainage, which can cause water to back up. In order to mitigate the impacts of flooding, the county has upgraded bridges and installed new tubes under roadways to convey stormwater. This helps keep roads and streets from washing out during heavy rain events. The Chase County LEOP estimates that 6% of the county's population resides within the one percent annual chance floodplain.[9] However, over 10% of parcel improvements are located within flood risk areas (Table CCO.6).

Severe Thunderstorms

Severe thunderstorms occur in Chase County on an annual basis, but no specific storm events were discussed as part of the planning process. The NCEI did report a severe thunderstorm with losses in October 2013. The event included large hail and strong winds across the county. Impacts of this storm included tree damage (mostly in the City of Imperial), hay bales blown across the highway, and an overturned center pivot system. Losses resulting from this event were estimated at $60,000 in property damages.

The county has worked to reduce vulnerability to severe thunderstorms over recent years. There has been an effort bury power lines, primarily within the corporate boundaries of Imperial and Wauneta. At this point, an estimated 10 percent of power lines in Imperial have been buried with priority given to service and distribution lines which serve critical facilities such as the hospital and long-term care facility. The county also maintains a tree board who is responsible for overseeing tree care, removing dangerous or dying trees and branches especially those which threaten power lines and other critical infrastructure. To help educate community members and increase hazard awareness, Chase County Emergency Management conducts a storm spotter class regularly. Chase County Emergency Management also offers text notifications for severe weather events to residents of the county and even property owners living outside the county that may

experience losses. The county will continue to care for trees and remove hazardous trees and limbs. The county planning team reports that they do currently have a data back-up protocol.

Severe Winter Storms

The county planning team expressed multiple concerns related to severe winter storms. Given the rural nature of the county, maintaining roadways and transportation routes is very important. The county works collaboratively with communities to clear and maintain roadways during winter storm events. The county is responsible for maintaining the county roads especially in rural areas. Property owners, ranchers, and farmers in unincorporated areas do, at times, assist with clearing roadways. The county planning team reported that currently there is sufficient equipment to clear and maintain roadways. In addition, living snow fences are utilized throughout the county when possible, for example, the roadway along the Enders Reservoir serves as a living snow fence. Evergreen trees are planted along roadways to help reduce blowing and drifting snow. The Upper Republican Natural Resources District assists property owners in this effort.

The county planning team also shared concerns related to power outages during winter storm events. Winter storms, especially those with ice accumulations, can down power poles and power lines, resulting in widespread outages. Many residents living and working in rural areas have back-up power generators to maintain power in farming and ranching operations, especially livestock operations. The county has also added back-up power generators to a number of facilities, as has the City of Imperial.

Tornadoes and High Winds

The most recent tornadic event with reported losses occurred in June of 2008. This event included multiple tornado sightings (three reported funnel clouds) with more than $150,000 reported in damages. Damages included downed trees and power poles, three overturned pivot irrigation systems, destruction of small buildings on farming operations, a roof torn from a garage, and damages to multiple homes. One home received holes in metal siding resulting from baseball-sized hail as a part of the EF0 tornado.

The county has worked to reduce vulnerability to tornadoes by installing back-up power generators, burying power lines, maintaining trees, and instituting data-backups protocols. The county has also started phasing out mobile home parks. While mobile home parks have been discouraged, this change has not been codified thus far. Chase County Emergency Management also maintains outdoor warning sirens which are primarily located within communities rather than in rural areas. The county offers text notification to rural residents for severe weather events. The county also maintains mutual aid agreements with neighboring counties in both Nebraska and Colorado. The county reports that may residents, especially those in rural areas, have homes with basements which offer some protection during tornadic events.

Wildfires

Given the amount of range and agricultural lands throughout the county, it is impossible to prevent all fires. The planning team for the county discussed the capabilities of local fire departments and feel that, at this time, fire departments are well equipped to meet most of the demands placed on them. This examination did factor in the existing mutual aid agreements currently in place.

Although the fire departments are prepared to respond to wildfires, the county has worked to reduce wildfire vulnerability. It is common that agricultural buildings are constructed using metal siding and roofs, and some residential structures utilize metal roofing materials. In addition, many of the county-owned critical facilities are brick-built structures. Brick is less likely to ignite during

fire events than wood-sided structures. Local fire departments also have and maintain public education and outreach programs. Fire departments meet with stakeholders and community members when possible (classrooms, county fairs, etc.) to share information and create community awareness related to this threat.

Governance

The county's governmental structure impacts its capability to implement mitigation actions. Chase County is governed by a three-person commission. The county also has the following offices and departments:

- County Clerk
- County Assessor
- County Treasurer
- County Attorney
- Emergency Manager
- Highway Superintendent
- Planning & Zoning
- Sheriff
- Surveyor
- Tree Park Board
- Treasurer
- Weed Superintendent
- Utility Department

Capability Assessment

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

Table CCO.11: Capability Assessment

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

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

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

Plan Integration

Chase County has several plans and ordinances that relate to or directly discuss hazards and hazard mitigation. The county's comprehensive plan was last updated in 2015. It contains goals aimed at safe growth, directs development away from the floodplain, encourages infill, directs development away from chemical storage facilities, encourages clustering of development, directs development away from major transportation routes, encourages elevation of structures in the floodplain, encourages preservation of open space, and identifies areas that need emergency shelters. The floodplain ordinance, zoning ordinance, and subdivision regulations were all last updated in 2019. These documents prohibit development within the floodplain, prohibit filling of wetlands, include well setback requirements, discourage development near chemical sites and transportation routes, and restrict the subdivision of land within the floodplain. The County Emergency Manager also creates the Chase County Local Emergency Operations Plan, which was last updated in 2017. This provides emergency information to local officials regarding direction and control, communications and warning, damage assessment, emergency public information, evacuation, fire services, health and human services, law enforcement, mass care, and resource management. This plan is regularly updated and distributed to all the communities and fire departments. There are also several wellhead protection plans in the county. No other examples of plan integration were identified. The county will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates.

Mitigation Strategy

Ongoing and New Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Provide a portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations, critical facilities, and EOC.
Hazard(s) Addressed	All Hazards
Estimated Cost	$15,000 - $30,000 per generator
Funding	General Budget
Timeline	2-5 Years
Priority	High
Lead Agency	Emergency Management
Status	Not Started. A generator is needed for the emergency operations center.

Mitigation Action	Civil Service Improvements
Description	Improve emergency rescue and response equipment and facilities by providing additional or updating existing emergency response equipment. This could include fire trucks, ATVs, water tanks/truck, snow removal equipment, etc. This would also include developing backup systems for emergency vehicles, identifying and training additional personnel for emergency response, and improving surge protection on critical electrical equipment.
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies
Funding	General Budget
Timeline	Ongoing
Priority	High
Lead Agency	Emergency Management
Status	Ongoing. Equipment is purchases as needed. Additional communication equipment is needed.

Mitigation Action	Community Education/Awareness
Description	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, purchase education equipment such as overhead projectors and laptops.
Hazard(s) Addressed	All Hazards
Estimated Cost	$5,000+
Funding	General Budget, Local Community Funds
Timeline	Ongoing
Priority	Medium
Lead Agency	Emergency Management
Status	Ongoing. Public education is done on an annual basis through mailings, the newspaper, and social media.

Mitigation Action	Comprehensive Disaster / Emergency Response Plan
Description	Update Comprehensive Disaster and Emergency Response Plan.
Hazard(s) Addressed	All Hazards
Estimated Cost	Staff Time
Funding	General Budget
Timeline	Ongoing
Priority	High
Lead Agency	Emergency Management
Status	Ongoing. The Chase County LEOP is reviewed annually and updated every five years.

Mitigation Action	Emergency Communications
Description	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish interoperable communications.
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000+
Funding	General Budget, Local Community Funds
Timeline	5+ Years
Priority	High
Lead Agency	Emergency Management
Status	Not Started.

Mitigation Action	Hazardous Tree Removal
Description	Identify and remove hazardous limbs and/or trees.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds
Estimated Cost	$100+ per tree
Funding	General Budget
Timeline	Ongoing
Priority	Low
Lead Agency	Roads Department
Status	Ongoing. Several trees have been trimmed and removed with several others identified.

Mitigation Action	Improve/Upgrade Bridges
Description	Investigate, design, and retrofit or improve bridges to provide greater capacity and maintain or improve structural integrity during flood events.
Hazard(s) Addressed	Flooding, Dam Failure
Estimated Cost	Varies
Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Roads Department
Status	Ongoing. Several bridges have been upgraded. Currently a bridge north of Wauneta needs to be improved.

Mitigation Action	Safe Rooms and Storm Shelters
Description	Design and construct fully supplied safe rooms in highly vulnerable areas such as near mobile home and slab-built homes, campgrounds, school, and other areas. A safe room is planned to be at 1324 Broadway Street in Imperial.
Hazard(s) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	$350 per square foot
Funding	General Budget, Local Community Funds
Timeline	1 Year
Priority	Medium
Lead Agency	Emergency Management, Mid Plains Community College
Status	In Progress. A location for the safe room has been identified.

Mitigation Action	Stormwater System and Drainage Improvements
Description	The county has experienced roadway damages during rain events with above average accumulations. In areas where drainage systems are insufficient to handle the volume of water, flooding is more likely to occur. Drainage improvements may include ditch upsizing, ditch cleanout and culvert improvements, and installation of culverts and box culverts. A culvert is needed at the Wauneta North Dam to allow stormwater through and reduce washout concerns.
Hazard(s) Addressed	Flooding, Dam Failure
Estimated Cost	$10,000+
Funding	General Budget
Timeline	Ongoing
Priority	Medium
Lead Agency	Roads Department
Status	Ongoing. Culvert improvements have been made near several roadways. A culvert is needed at the Wauneta North Dam.

Mitigation Action	Stream Bank Stabilization / Grade Control Structures / Channel Improvements
Description	Stream bed degradation can occur along many rivers and creeks. Grade control structures including sheet-pile weirs, rock weirs, ponds, road dams, etc. Can be implemented and improved to maintain the channel bed.
Hazard(s) Addressed	Flooding
Estimated Cost	$100,000+
Funding	General Budget
Timeline	5+ Years
Priority	Low
Lead Agency	Roads Department
Status	Not Started.

Mitigation Action	Surge Protectors
Description	Purchase and install surge protectors on sensitive equipment in critical facilities.
Hazard(s) Addressed	Severe Thunderstorms
Estimated Cost	Varies
Funding	General Budget, Local Community Funds
Timeline	5+ Years
Priority	Low
Lead Agency	All County Departments, Local Communities
Status	Not Started.

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) Addressed	All Hazards
Estimated Cost	$5,000+
Funding	General Budget
Timeline	5+ Years
Priority	High
Lead Agency	Emergency Management
Status	Not Started

Removed Mitigation Actions

Mitigation Action	Maintain Good Standing with National Flood Insurance Program (NFIP)
Hazard(s) Addressed	Flooding
Reason for Removal	While the county will continue to participate and maintain compliance in the NFIP, this project is no longer considered a mitigation action by FEMA.

Community Profile

City of Imperial

Perkins, Chase, and Dundy Counties
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table IML.1: City of Imperial Local Planning Team

Name	Title	Jurisdiction
Pat Davison	Director of Public Works	City of Imperial
Billie Hayes	E.S Manager	Imperial Manor Parkview Heights
Abigail Cyboron	Interim CEO	Chase County Community Hospital

Location and Geography

The City of Imperial is in central Chase County and covers an area of 3.03 square miles. The land use surrounding the community is mainly agricultural crops with some ranching. Frenchman Creek is located seven miles to the south of the city and Spring Creek is located seven miles to the north of the city. Enders Reservoir and State Recreation Area are located ten miles southeast of Imperial.

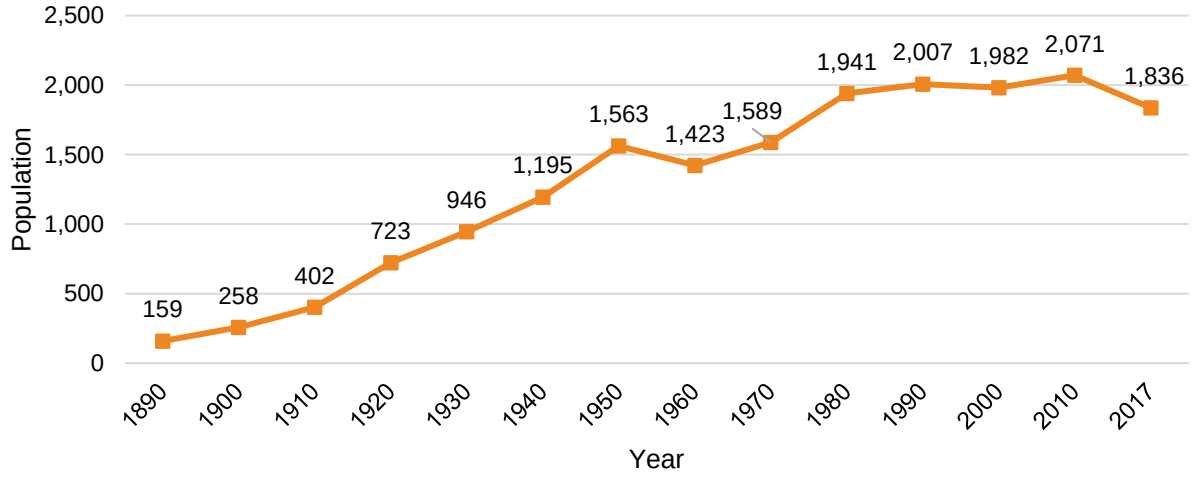
Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community and areas more at risk of transportation incidents. Imperial's major transportation corridors are US Highway 6, State Highway 15A. US Highway 6 is traveled by an average of 2,625 vehicles daily, 345 of which are trucks. Highway 15A is traveled by an average of 965 vehicles daily, 100 of which are trucks.[10] The city has one Nebraska Kansas Colorado Railway line traveling through the community. There is also one municipal airport located on the southeastern corner of the community.

Demographics

The City of Imperial's population has declined since 2010 to about 1,836 people in 2017. A declining population may lead to a decreasing tax base makes funding mitigation projects more difficult. Imperial's population accounted for 48.3% of Chase County's population in 2017.[11]

Figure IML.1: Population

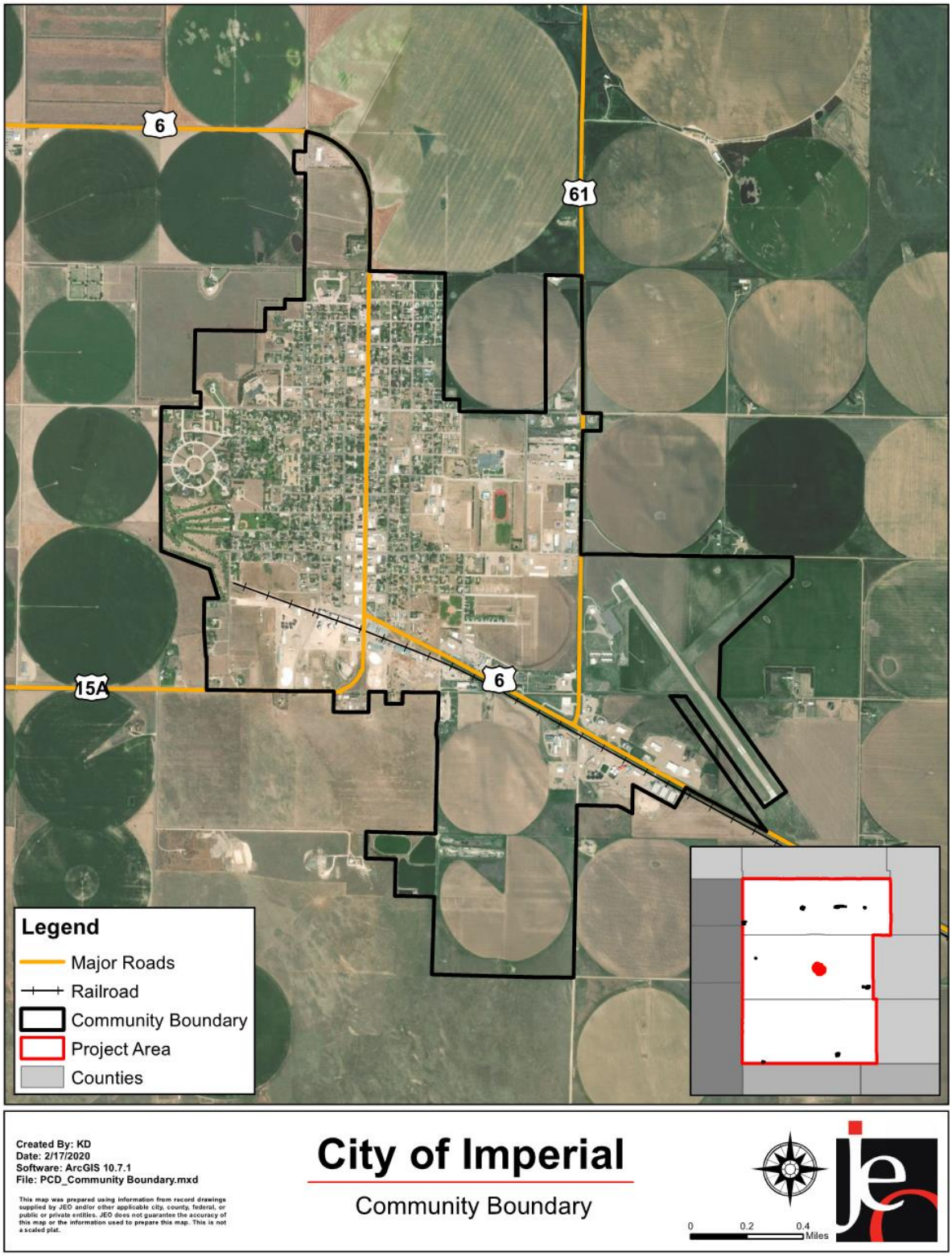


Source: U.S. Census Bureau, 1890 – 2017

10 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map]. https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34.

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

Figure IML.2: City of Imperial



The young, elderly, minority, and low-income populations may be more vulnerable to certain hazards than other groups. In comparison to the county, Imperial's population was:

- **Similarly aged.** The median age of Imperial was 44.7 years old in 2017, compared with Chase County's median of 44.4 years. Imperial's population grew older since 2010, when the median age was 41 years old.[11]
- **More ethnically diverse**. Since 2010, Imperial became less ethnically diverse. In 2010, 16% of Imperial's population was Hispanic or Latino. By 2017, about 12.9% was Hispanic or Latino. During that time, the Hispanic population in the county grew from 9.3% in 2010 to 10.5% in 2017.[11]
- **More likely to be below the federal poverty line.** The poverty rate in the City of Imperial (9.1% of people living below the federal poverty line) was higher than the county's poverty rate (8%) in 2017.[12]

Employment and Economics

In comparison to Chase County, Imperial's economy had:

- **Similar mix of industries.** Imperial's major employment sectors, accounting for 10% or more of employment each, were: construction; retail trade; and education.[12]
- **Higher median household income.** Imperial's median household income in 2017 ($55,947) was about $1,379 higher than the county ($54,568).[12]
- **Fewer long-distance commuters.** About 80.6% of workers in Imperial commuted for fewer than 15 minutes, compared with about 68.1% of workers in Chase County. About 8.7% of workers in Imperial commuted 30 minutes or more to work, compared to about 13.3% of county workers.[13]

Major Employers

Major employers in the community include Frenchman Valley Co-op, Chase County Hospital, Chase County Schools, Imperial Manor, and Parkview Heights. The local planning team indicated that a large percentage of residents commute to Grant and Holyoke, CO, for employment.

Housing

In comparison to Chase County, the City of Imperial's housing stock was:[14]

- **Similarly aged.** Imperial had a similar share of housing built prior to 1970 than the county (54.4% compared to 53.6%).
- **More mobile and manufactured housing.** The City of Imperial had a larger share of mobile and manufactured housing (13.7%) compared to the county (10.9%).
- **Slightly less renter-occupied**. About 18.6% of occupied housing units in Imperial were renter-occupied compared with 19.5% of occupied housing in Chase County.
- **More occupied.** Approximately 10.6% of Imperial's housing units were vacant compared to 13.8% of units in Chase County.

12 United States Census Bureau. "American Fact Finder: DP03: Selected Economic Characteristics." [database file]. https://factfinder.census.gov/.
13 United States Census Bureau. "American Fact Finder: S0802: Means of Transportation to Work by Selected Characteristics." [database file]. https://factfinder.census.gov/.
14 United States Census Bureau. "American Fact Finder: DP04: Selected Housing Characteristics." [database file]. https://factfinder.census.gov/.

The age of housing may indicate which housing units were built prior to the development of state building codes. Homes built within a flood hazard area before the adoption of their community's Flood Rate Insurance Map (FIRM) are not likely to be built above the 1% annual chance floodplain. Older and vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms if those homes are not anchored correctly. Mobile homes are spread out across Imperial. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have renter's insurance or flood insurance, or to know their risks to flooding and other hazards.

Future Development Trends

Over the past five years, a new housing development was built along east 4th Street and a few new businesses moved into the city. According to the 2017 American Community Survey estimates, Imperial's population is declining. This could lead to a decreasing tax base, which may make implementing mitigation actions more difficult. The local planning team attributed the decline to younger individuals and families leaving the community for other opportunities in larger population centers. Municipal funds are limited to maintaining current facilities and systems and have stayed the same over recent years. In the next five years, new houses are planned in a development on the southeast part of the city. The development is located outside the one percent annual chance floodplain.

Parcel Improvements and Valuation

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

Table IML.2: Parcel Improvements and Value in the Floodplain

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
937	$143,978,545	0	$0	0%

Source: Chase County Assessor, 2018

Critical Infrastructure

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are a total of eight chemical storage sites near Imperial. The table below lists the name and location of the sites and whether they are in the floodplain.

Table IML.3: Chemical Storage Fixed Sites

Facility Name	In Floodplain (Y/N)
Frenchman Valley Co-op Aerial	N
Frenchman Valley Farmers Co-op	N
Frenchman Valley Farmers Co-op	N
Helena Agri-Enterprises LLC	N
Midwest Custom Ag Aviation	N
NDOT Imperial Yard	N
Nutrien Ag Solutions	N
Titan Machinery Inc	N

Source: Nebraska Department of Environment and Energy[15]

Critical Facilities

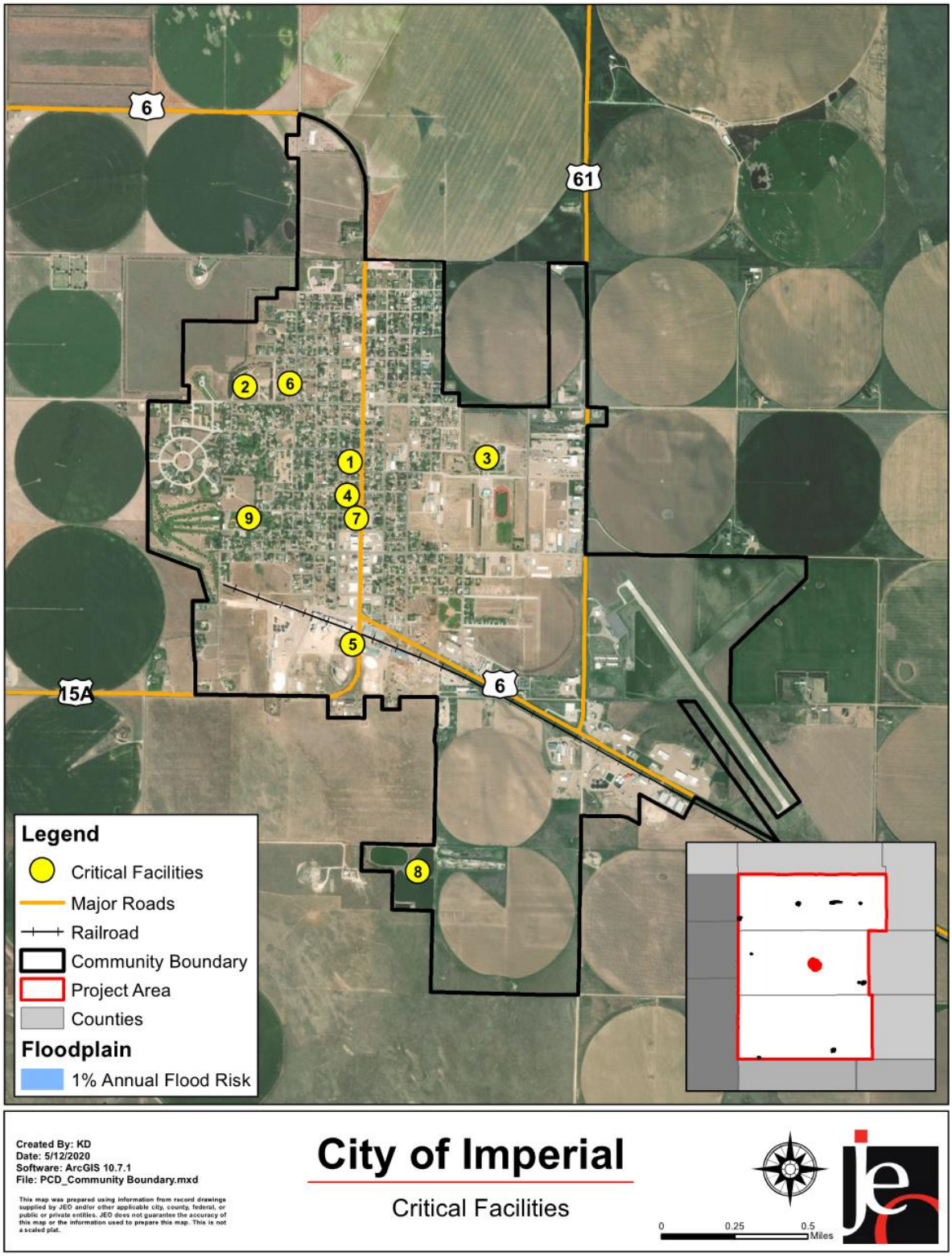
The planning team identified critical facilities necessary for the City of Imperial's disaster response and continuity of operations. The following table and figure provide a summary of the critical facilities for the community.

Table IML.4: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	Chase County Courthouse	N	Y	N
2	Chase County Hospital	N	Y	N
3	Chase County Schools	Y	N	N
4	City Offices	Y	N	N
5	City Shop	N	N	N
6	EMS and County EM Building	Y	Y	N
7	Fire Hall	N	N	N
8	Wastewater Lagoons	N	Y	N
9	Water Tower	N	Y	N

[15] Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed January 2020. https://deq-iis.ne.gov/tier2/tier2Download.html.

Figure IML.3: Critical Facilities



Historical Occurrences

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

Hazard Prioritization

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

Drought

The city identified drought as a top hazard of concern for the community. The primary concern related to drought is a lack of water due to water tables and an arid climate. Past drought events have not caused any impacts for the city. Imperial has five wells that are monitored weekly and drawdowns are done monthly. With low nitrate levels, water quality is not an issue. In the event of a prolonged drought event, the city has an ordinance in place to restrict water use based on triggers.

Extreme Heat

The nursing home in the community identified extreme heat as a top hazard of concern. Extreme heat can cause individuals to have difficulty cooling, increasing the risk of heat stroke. The elderly are at an elevated risk due to preexisting conditions. If power were to go out for an extended period of time, residents may need to be moved to a cooling center with backup power.

Flooding

Both the hospital and nursing home identified flooding as a top hazard of concern. Although there is no one percent annual chance floodplain located in the city, stormwater drainage can be issue during larger rain events. Past heavy rain events have caused flooding in basements and have impacted travel due to flooded streets.

Hazardous Materials Release

Both the hospital and nursing home identified hazardous materials release as a top hazard of concern. Both buildings are located near Highway 6 which regularly transports chemicals. Both stakeholders house vulnerable populations with potential mobility issues. If a large spill were to occur and wind conditions were right, the buildings may need to be evacuated which would be difficult.

Severe Thunderstorms

The nursing home in the community identified severe thunderstorms as a top hazard of concern. A large hail event could damage the facility and cause power loss if power lines were downed. Power loss could potentially impact vulnerable residents who require medical equipment not on a battery.

Severe Winter Storms

The nursing home and city identified severe winter storms as a top hazard of concern. Potential impacts include travel disruptions and power loss. No recent winter storms caused damages in the city. The local planning team indicated that approximately 30% of power lines are buried in the city. The rest are susceptible to downed lines due to fallen tree limbs, heavy snow, and ice.

Snow removal in the community is done by the city using three trucks, a motor grader, a loader, and a backhoe. This equipment is sufficient for most winter storms.

Tornadoes and High Winds

Both stakeholders and the city identified tornadoes as a top hazard of concern. In May 2019, three tornadoes touched down seven to ten miles outside of the city causing damage to center pivot irrigation systems. Although a tornado has not impacted the city, if one was to touch down within city limits, it could potentially cause large amounts of damage. Warning sirens are located across the city and can be activated by the Chase County Dispatch. The county also offers text alerts for those that sign up. There are no safe rooms in the community. Options for those seeking shelter include basements, the school, city shop, city offices, and the county courthouse. In the event of a disaster, the city has mutual aid agreements in place.

Wildfires

Both the nursing home and hospital identified wildfires as a top hazard of concern. With agricultural fields and range land surrounding the community, a wildfire has the potential to impact the city. Both stakeholders house vulnerable populations with potential mobility issues and are located near the edge of the community. If a wildfire were to impact the community, both buildings may need to be evacuated which would be difficult and require significant time and resources.

Governance

The City of Imperial is governed by a four-member city council; other governmental offices and departments are listed below. The community government will oversee the implementation of hazard mitigation projects.

- Administrator/Clerk/Treasurer
- Mayor
- Attorney
- Director of Public Works
- Utility Superintendent
- Fire Chief
- Street Superintendent
- Planning Commission
- Community Development
- Water Department
- Street Department
- Electrical Department
- Building Inspector
- Engineer

Capability Assessment

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

Table IML.5: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Economic Development Plan	Yes
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes

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

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

Plan Integration

Imperial's comprehensive plan was last updated in 2014 and there is currently no update timeline. The plan contains goals aimed at safe growth, directs development away from chemical storage facilities, limits density in known hazardous areas, and encourages the preservation of open space. The city's zoning ordinance subdivision regulations, and floodplain ordinance discuss new construction requirements in the floodplain. Imperial's building code outlines proper sump pump installation and discusses high winds and snow load. The city is an annex in the 2017 Chase County Local Emergency Operations Plan. It contains information regarding disaster operations, incident command, first responders, and the emergency operations center. This plan is updated regularly by the Chase County Emergency Management Agency. Imperial also has a wellhead protection plan that includes discussion of drought and water conservation. No other examples of plan integration were identified. The community will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates. Specifically, the community plans to update the wellhead protection plan in the next three to five years and the goals, objectives, and mitigation actions of the HMP should be integrated in that update.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Assess Vulnerability to Drought Risk
Description	The jurisdiction will review relevant plans and systems to identify factors which may increase drought impacts or gaps in planning and service delivery. This may include but is not limited to: assessing water distribution system(s), reviewing well levels and identifying alternative water sources (if needed), examining water intensive consumers, review of water pricing structures, considering the need for municipal water meters, and other locally appropriate actions.
Hazard(s) Addressed	Drought
Estimated Cost	$10,000+
Funding	Water Department Budget
Timeline	5+ Years
Priority	Medium
Lead Agency	Water Department
Status	New Action. Not Started.

Mitigation Action	Clean and Expand Stormwater Retention Ponds
Description	Clean trees and debris from retention ponds so they are able to hold additional stormwater runoff.
Hazard(s) Addressed	Flooding
Estimated Cost	$10,000
Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Street Department
Status	New Action. Not Started.

Mitigation Action	Comprehensive Disaster / Emergency Response Plan
Description	Develop and/or update a Comprehensive Disaster and Emergency Response Plan.
Hazard(s) Addressed	All Hazards
Estimated Cost	$15,000
Funding	General Budget
Timeline	3-5 Years
Priority	Low
Lead Agency	City Administrator, All Departments, County Emergency Manager
Status	New Action. Not Started.

Mitigation Action	Continuity Plans
Description	Develop continuity plans for critical community services. Develop continuity plans for critical services in order to increase resiliency after a hazardous event. Encourage businesses to develop continuity plans.
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000+
Funding	Utilities Fund
Timeline	5+ Years
Priority	Low
Lead Agency	Utility Superintendent
Status	New Action. Not Started.

Mitigation Action	Cooling Station Database
Description	Work with the public to maintain a list of sites available for public use during extreme heat events. These sites should be available 24 hours per day or be made available after normal business hours.
Hazard(s) Addressed	Extreme Heat
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	5+ Years
Priority	Low
Lead Agency	City Administrator
Status	New Action. Not Started.

Mitigation Action	Evaluate Water Supply
Description	Evaluate and locate new sources of ground and/or surface water to ensure adequate supplies to support the existing community and any additional growth which may occur.
Hazard(s) Addressed	Drought
Estimated Cost	$10,000
Funding	Water Department Budget
Timeline	3-5 Years
Priority	Low
Lead Agency	Water Department
Status	New Action. Not Started.

Mitigation Action	Facility Monitoring
Description	Install security cameras in/around critical facilities and key infrastructure.
Hazard(s) Addressed	Terrorism
Estimated Cost	$100 per unit
Funding	General Budget
Timeline	5+ Years
Priority	Low
Lead Agency	Utility Superintendent
Status	New Action. Not Started.

Mitigation Action	Hazardous Tree Removal
Description	Conduct tree inventory. Develop and implement tree maintenance and trimming program to remove hazardous limbs and trees.
Hazard(s) Addressed	Severe Thunderstorms, Severe Winter Storms, Tornadoes and High Winds
Estimated Cost	$20,000
Funding	Electrical Department Budget
Timeline	3-5 Years
Priority	Medium
Lead Agency	Electrical Department
Status	New Action. Not Started.

Mitigation Action	Improve/Revise Snow and Ice Removal Program
Description	As needed, continue to revise and improve the snow and ice removal program for streets. Revisions should address situations such as plowing snow, ice removal, parking during snow and ice removal, removal of associated storm debris, and rescuing those stranded during winter weather events.
Hazard(s) Addressed	Severe Winter Storms
Estimated Cost	Varies
Funding	Street Department Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Street Department
Status	New Action. Not Started.

Mitigation Action	Improve Construction Standards and Building Survivability
Description	Evaluate building standards/codes/requirements. Implement new or improved building standards/codes/requirements. Promote use of higher codes and standards, such as fortified for Safer Living Standard, in order to provide greater protection for any new construction or building retrofits.
Hazard(s) Addressed	All Hazards
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	5+ Years
Priority	Low
Lead Agency	Building Inspector
Status	New Action. Not Started.

Mitigation Action	Install Vehicular Barriers
Description	Install vehicular barriers to protect critical facilities and key infrastructure where possible.
Hazard(s) Addressed	Terrorism
Estimated Cost	$500 per concrete barrier $20 per linear foot of chain linked fence
Funding	Street Department Budget
Timeline	5+ Years
Priority	Low
Lead Agency	Street Department
Status	New Action. Not Started.

Mitigation Action	Safe Rooms and Storm Shelters
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) Addressed	Tornadoes and High Winds, Severe Thunderstorms
Estimated Cost	$350+ per square foot
Funding	General Budget
Timeline	5+ Years
Priority	Low
Lead Agency	City Council
Status	New Action. Not Started.

Mitigation Action	Snow Fences
Description	Construct snow fences to protect main transportation routes and critical facilities from excessive snow drifting and road closure.
Hazard(s) Addressed	Severe Winter Storms
Estimated Cost	$100 per linear foot
Funding	Street Department Budget
Timeline	2-4 Years
Priority	Low
Lead Agency	Street Department
Status	New Action. Not Started.

Mitigation Action	Street Repairs
Description	Repair streets from water and ice damage.
Hazard(s) Addressed	Flooding, Severe Winter Storms, Severe Thunderstorms
Estimated Cost	$30,000
Funding	Street Department Budget
Timeline	3-5 Years
Priority	Low
Lead Agency	Street Department
Status	New Action. Not Started.

Mitigation Action	Update Comprehensive Plan
Description	Update comprehensive plan. Integrate plan with Hazard Mitigation Plan components.
Hazard(s) Addressed	All Hazards
Estimated Cost	$15,000+
Funding	General Budget
Timeline	5+ Years
Priority	Low
Lead Agency	Engineer
Status	New Action. Not Started.

Community Profile

Village of Wauneta

Perkins, Chase, and Dundy Counties
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table WAN.1: Village of Wauneta Local Planning Team

Name	Title	Jurisdiction
Evelyn Skelton	Clerk/Treasurer	Village of Wauneta

Location and Geography

The Village of Wauneta sits in the southeastern corner of Chase County directly west of the Hayes County border and covers 621 acres. The land use surrounding the community is mainly agricultural crops with some ranching. Frenchman Creek runs west to east through the community. Enders Reservoir and State Recreation Area are located eight miles west of the community.

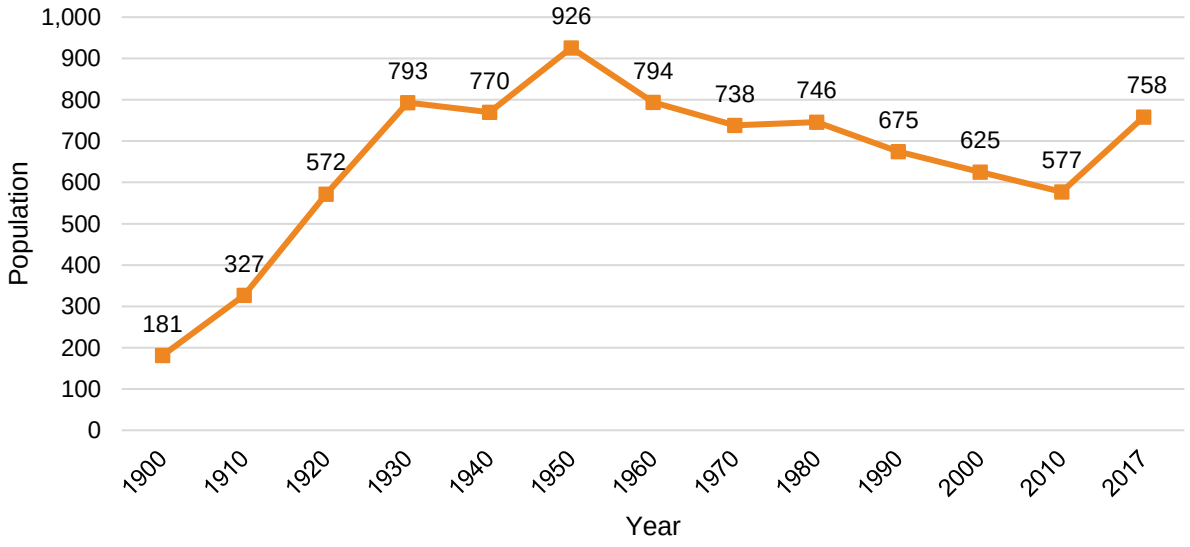
Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community and areas more at risk of transportation incidents. Wauneta's major transportation corridor is US Highway 6. It is traveled by an average of 1,455 vehicles daily, 260 of which are trucks.[16] The village has one Nebraska Kansas Colorado Railway line traveling east to west on the community's southern edge.

Demographics

The Village of Wauneta's population has increased since 2010 to about 758 people in 2017. A growing population leads to an increasing tax base that could making funding mitigation projects easier. Wauneta's population accounted for 19.9% of Chase County's population in 2017.[17]

Figure WAN.1: Population

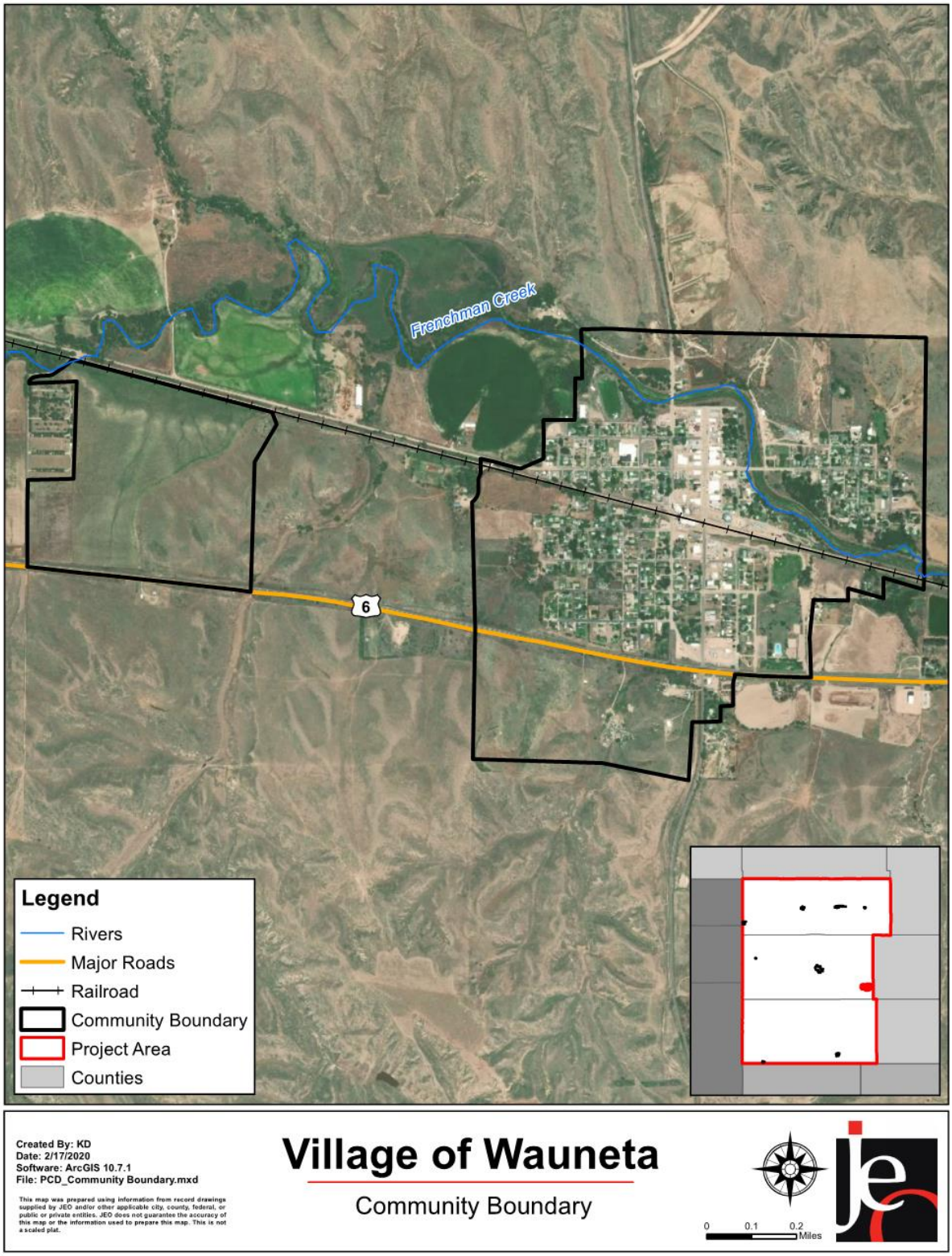


Source: U.S. Census Bureau, 1900 – 2017

16 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map]. https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34.

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

Figure WAN.2: Village of Wauneta



The young, elderly, minority, and low-income populations may be more vulnerable to certain hazards than other groups. In comparison to the county, Wauneta's population was:

- **Younger.** The median age of Wauneta was 41.9 years old in 2017, compared with Chase County's median of 44.4 years. Wauneta's population grew younger since 2010, when the median age was 50.4 years old.[17]
- **Equally ethnically diverse**. Since 2010, Wauneta grew more ethnically diverse. In 2010, 5.4% of Wauneta's population was Hispanic or Latino. By 2017, about 10.2% was Hispanic or Latino. During that time, the Hispanic population in the county grew from 9.3% to 10.5% in 2017.[17]
- **More likely to be below the federal poverty line.** The poverty rate in the Village of Wauneta (14.1% of people living below the federal poverty line) was higher than the county's poverty rate (8%) in 2017.[18]

Employment and Economics

In comparison to Chase County, Wauneta's economy had:

- **Similar mix of industries.** Wauneta's major employment sectors, accounting for 10% or more of employment each, were: agriculture; construction; retail trade; and edcuation.[18]
- **Lower median household income.** Wauneta's median household income in 2017 ($45,000) was about $9,500 lower than the county ($54,568).[18]
- **Similar long-distance commuters.** About 61.2% of workers in Wauneta commuted for fewer than 15 minutes, compared with about 68.1% of workers in Chase County. About 13.3% of workers in Wauneta commuted 30 minutes or more to work, compared to about 13.3% of county workers.[19]

Major Employers

Major employers in the community include Wauneta Care and Therapy Center, Wauneta School, Harchelroad Motors, and Frenchman Valley Coop. The local planning team indicated that approximately 10% of residents commute to Palisade and Imperial for employment.

Housing

In comparison to Chase County, the Village of Wauneta's housing stock was:[20]

- **Older.** Wauneta had a larger share of housing built prior to 1970 than the county (64.5% compared to 53.6%).
- **Less mobile and manufactured housing.** The Village of Wauneta had a smaller share of mobile and manufactured housing (4.4%) compared to the county (10.9%).
- **Less renter-occupied**. About 16.9% of occupied housing units in Wauneta were renter-occupied compared with 19.5% of occupied housing in Chase County.
- **Similarly occupied.** Approximately 14.2% of Wauneta's housing units were vacant compared to 13.8% of units in Chase County.

18 United States Census Bureau. "American Fact Finder: DP03: Selected Economic Characteristics." [database file]. https://factfinder.census.gov/.
19 United States Census Bureau. "American Fact Finder: S0802: Means of Transportation to Work by Selected Characteristics." [database file]. https://factfinder.census.gov/.
20 United States Census Bureau. "American Fact Finder: DP04: Selected Housing Characteristics." [database file]. https://factfinder.census.gov/.

The age of housing may indicate which housing units were built prior to the development of state building codes. Homes built within a flood hazard area before the adoption of their community's Flood Rate Insurance Map (FIRM) are not likely to be built above the 1% annual chance floodplain. Older and vacant housing stock may also be more vulnerable to hazard events if it is poorly maintained. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms if those homes are not anchored correctly. Mobile homes are located throughout the community, but most densely populated in Wauneta's southeastern portion. Renter-occupied housing depends on the initiative of landlords for proper maintenance and retrofitting to be resilient to disasters. They are less likely than homeowners to have renter's insurance or flood insurance, or to know their risks to flooding and other hazards.

Future Development Trends

Over the past five years, two new businesses (home décor and hair salon) moved into buildings on Main Street and one business closed. One new home was built in 2018. According to the 2017 American Community Survey estimates, Wauneta's population is increasing. An increasing population may lead to a growing tax base which can making implementing mitigation projects easier. The local planning team attributes the growth to young families moving in. Municipal funds are limited to maintain current facilities and have decreased over recent years. In the next five years, no housing or commercial developments are planned.

Parcel Improvements and Valuation

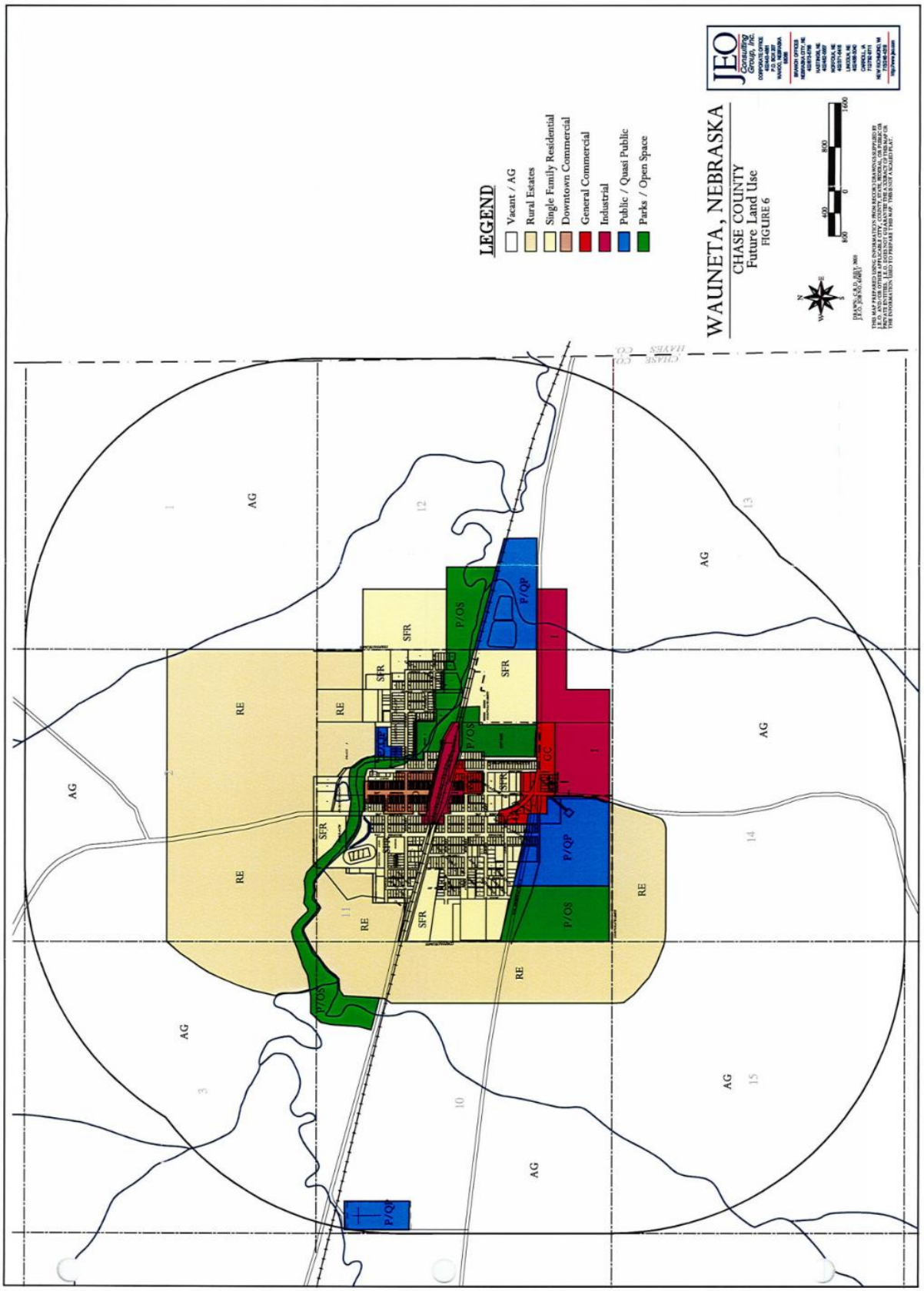
The planning team acquired GIS parcel data from the County Assessor to analyze the location, number, and value of property improvements (e.g. buildings, garages, sheds etc.) at the parcel level. The data did not contain the number of structures on each parcel. A summary of the results of this analysis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

Table WAN.2: Parcel Improvements and Value in the Floodplain

Number of Improvements	Total Improvement Value	Number of Improvements in Floodplain	Value of Improvements in Floodplain	Percentage of Improvements in Floodplain
371	$17,146,521	9	$253,641	2.4%

Source: Chase County Assessor, 2018

Figure WAN.3: Future Land Use Map



Critical Infrastructure

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are a total of two chemical storage sites in and around Wauneta. The table below lists the name and location of the sites and whether they are in the floodplain.

Table WAN.3: Chemical Storage Fixed Sites

Facility Name	In Floodplain (Y/N)
NDOT Wauneta Yard	N
Wauneta Crossroads LLC	N

Source: Nebraska Department of Environment and Energy[21]

Critical Facilities

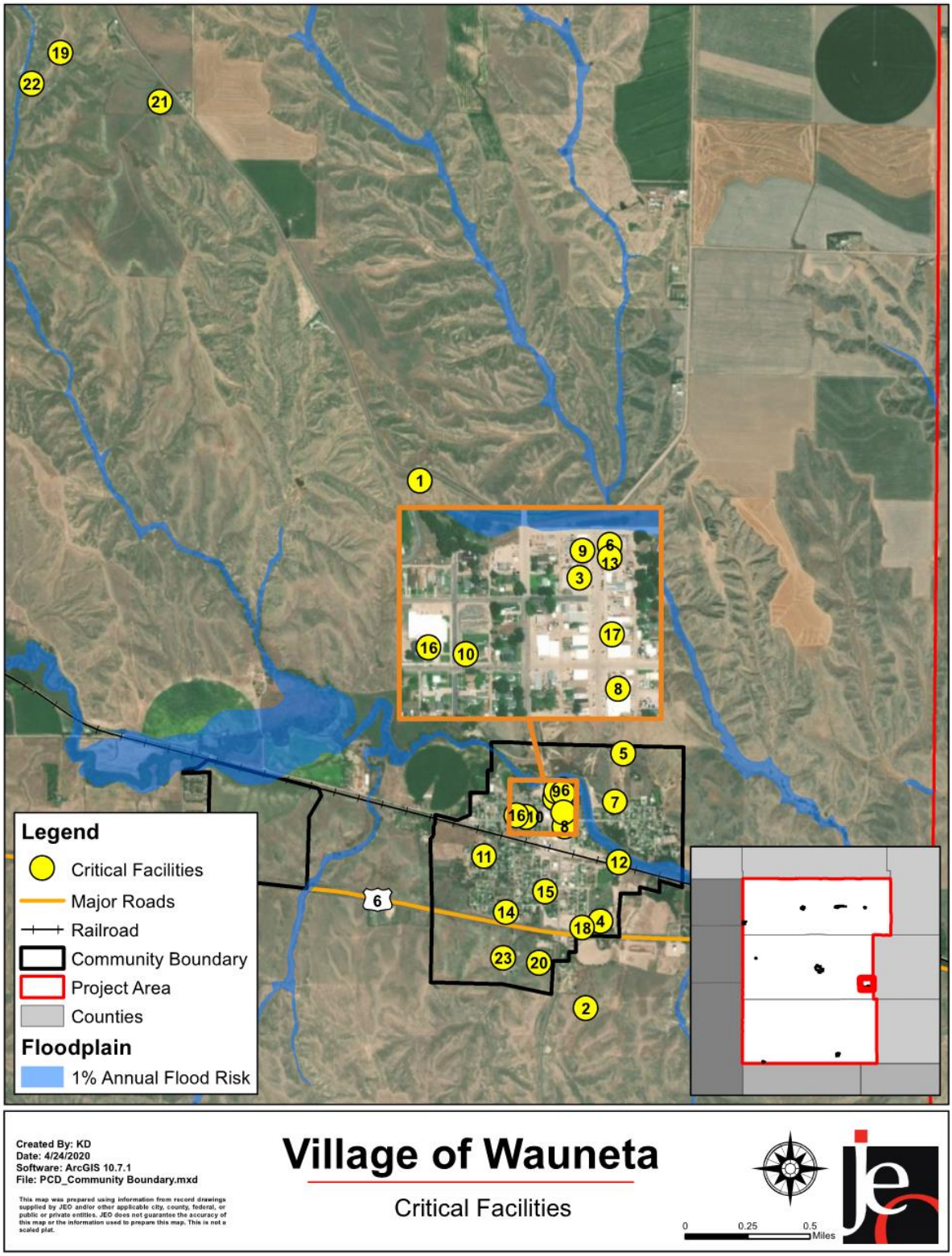
The planning team identified critical facilities necessary for the Village of Wauneta's disaster response and continuity of operations. The following table and figure provide a summary of the critical facilities for the community.

Table WAN.4: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	BW Telcom Tower	N	Y	N
2	Cell Phone Tower	N	Y	N
3	Chase County Clinic	N	N	N
4	City Park	N	N	N
5	Communication Towers	N	N	N
6	Community Building	Y	N	N
7	Electrical Sub Station	N	N	N
8	EMS Building	N	N	N
9	Fire Department	N	N	N
10	First United Methodist Church	N	N	N
11	Immanuel Mission Church	N	N	N
12	Lift Station	N	Y	N
13	Municipal Building	Y	N	N
14	Nursing Home	N	Y	N
15	Redeemer Lutheran Church	N	N	N
16	School	Y	N	N
17	Senior Center	Y	N	N
18	St. John's Catholic Church	Y	N	N
19	Water Reservoir	N	Y	N
20	Water Tower	N	Y	N
21	Well #1	N	Y	N
22	Well #2	N	Y	N
23	Well #3	N	Y	N

[21] Nebraska Department of Environment and Energy. "Search Tier II Data." Accessed January 2020. https://deq-iis.ne.gov/tier2/tier2Download.html.

Figure WAN.4: Critical Facilities



Historical Occurrences

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

Hazard Prioritization

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

Dam Failure

Although not identified as top hazard of concern by the local planning team, the National Dam Inventory indicates there are two high hazard dams located directly upstream from the community. However, they are co-located 13 miles west of the village at the Enders Reservoir. The Enders Dam and Enders Dike Dam are owned by the Bureau of Reclamation and normal storage is 44,500-acre feet total for both. Dam inundation maps are not shown due to security concerns, but the Chase County LEOP does identify key facilities in inundation areas.

Flooding

Past flood events which impacted the community occurred in June 2008, August 2015, and the summer of 2019. In all three events, heavy rains caused considerable water to flow through the village, washing out trees and debris. This debris in turn damaged vehicles when it became lodged underneath. Frenchman Creek runs through the north portion of the village and that is where most of the floodplain comes from. Drainage on the south end of the community is also poor which can lead to additional flooding. No critical facilities have been damaged by past flooding. The village has added a generator for the lift station in the event of pump failure. As listed in Table WAN.2, more than 2% of parcels are located in the floodplain.

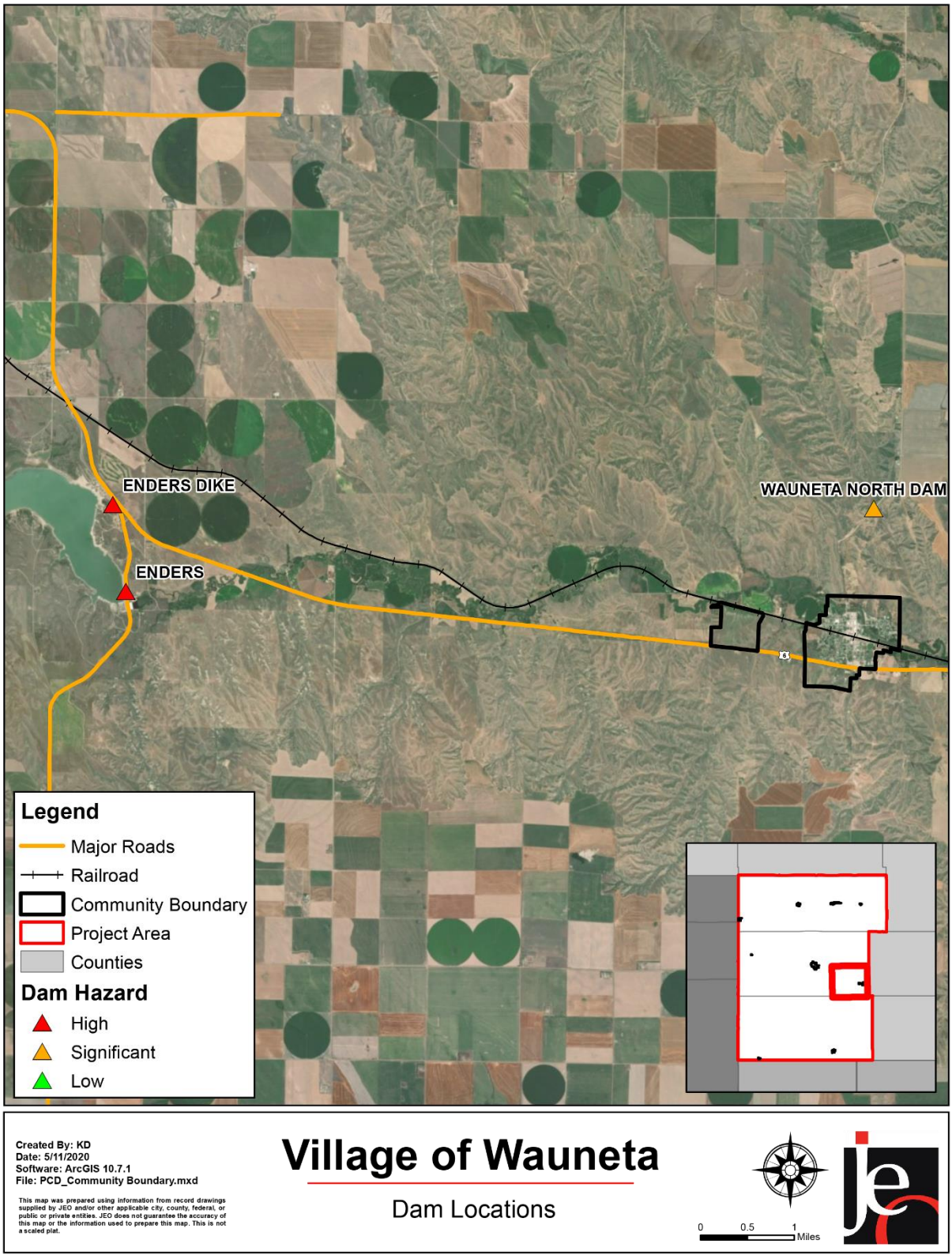
Severe Thunderstorms

Primary concerns regarding severe thunderstorms are damage to power lines and power outages. In 2017, the water well submersible pump and VFD were struck by lightning and needed to be replaced. The replacement cost was approximately $21,000. In August 2019, a hail event caused damage to crops, vehicles, and private property. Critical facilities are insured against hail damage. In the event of power surges and power outages, village computers are backed up manually each week and surge protectors are used. To mitigate the impacts of severe thunderstorms, the village removes and trims hazardous trees, replaces weakened power poles, and upgrades power lines.

Severe Winter Storms

The last significant winter storm to impact the community occurred in 2007. An ice storm caused downed tree limbs and power lines. The local planning team estimated that only three percent of power lines in the community are buried. Overhead power lines are at higher risk of ice buildup causing power outages. Snow removal in the community is done by a village crew who uses a dump truck with a snow blade, skid steer with a blade, and loader/dump trucks. In order to mitigate the impacts of severe winter storms, the village trims tree branches around power lines and is in the process of burying and upgrading electric service lines.

WAN.5: Dam Locations



Tornadoes and High Winds

Past events include a tornado in April 2007, a tornado in June 2008, and high wind in August 2019. These events caused power outages, downed power lines and poles, roof damage, window damage, and siding damage to residences and businesses. For notification of severe weather, Chase County Emergency Management offers text alerts through RAVE. In addition, warning sirens can be activated by the Chase County dispatcher. There are no safe rooms in the community and residents must use basements, churches, or the village office for shelter. The village does not conduct educational outreach for tornadoes, but some is done through the local school district. In the event of a disaster, mutual aid agreements are in place through the Frenchman Valley Mutual Aid Association and Nebraska WARN.

Governance

The Village of Wauneta is governed by a five-member village board of trustees; other governmental offices and departments are listed below. The community government will oversee the implementation of hazard mitigation projects.

- Clerk/Treasurer
- Attorney
- Utility Superintendent
- Fire Chief
- Sewer/Water/Street Superintendent
- Planning Commission
- Parks & Recreation
- EMS

Capability Assessment

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

Table WAN.5: Capability Assessment

Survey Components/Subcomponents		Yes/No
Planning & Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes (Not a formal written plan)
	Economic Development Plan	Yes
	Local Emergency Operations Plan	Yes
	Floodplain Management Plan	No
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	No
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	Wellhead Protection Plan

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

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

Plan Integration

Wauneta has several plans in place that discuss or relate to hazard mitigation. The comprehensive plan was last updated in 2004 and directs development away from the floodplain, chemical storage facilities, and transportation routes. In addition, it also limits density in areas adjacent to known hazards, encourage elevation of structures in the floodplain, encourages the preservation of open space, and identifies areas that need emergency shelters. The zoning ordinance, subdivision regulations, and floodplain regulations were all last updated in 2004. These documents prohibit development in the floodplain, discourage development near chemical sites, prohibit the filling of wetlands, discourage development along major transportation routes, include well setback requirements, and include the ability to implement water restrictions. Wauneta is an annex in the 2017 Chase County Local Emergency Operations Plan. It contains information regarding incident command, warning, law enforcement, fire department, emergency medical services, public works, emergency operations center, emergency public information, sheltering, and damage assessment. The village also has a wellhead protection plan that includes discussion of drought and water conservation. No other examples of plan integration were identified. The community will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates. Specifically, the community plans to update the comprehensive plan, zoning ordinance, subdivision regulations, wellhead protection plan, and floodplain regulations in the next two to five years and should incorporate the hazard mitigation plan during the update.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Identify and evaluate current backup and emergency generators. Obtain additional generators based on identification and evaluation. Provide portable or stationary source of backup power to the lift station, community building, and village office.
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies by size
Funding	General Fund
Timeline	2-5 Years
Priority	High
Lead Agency	Utility Superintendent, Village Board of Trustees
Status	New Action. Not Started.

Mitigation Action	Backup Records
Description	Develop protocol for backing up critical records onto a portable storage device or service. Maintain routine backup of records.
Hazard(s) Addressed	All Hazards
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	1 Year
Priority	High
Lead Agency	Village Clerk
Status	New Action. Not Started.

Mitigation Action	New Municipal Well
Description	Perform evaluation of current well capacity and determine appropriate timeline and actions needed to drill a new municipal well.
Hazard(s) Addressed	Drought
Estimated Cost	$1,000,000
Funding	General Fund
Timeline	1 Year
Priority	High
Lead Agency	Utility Superintendent, Village Board of Trustees
Status	New Action. In progress, the village is currently adding an additional municipal well and transmission line.

Mitigation Action	Update Comprehensive Plan
Description	Update comprehensive plan. Integrate plan with Hazard Mitigation Plan components.
Hazard(s) Addressed	All Hazards
Estimated Cost	$15,000+
Funding	General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	Village Board of Trustees
Status	New Action. Not Started.

District Profile

Imperial Rural Fire District

Perkins, Chase, and Dundy Counties
Multi-Jurisdictional Hazard Mitigation Plan Update

2020

Local Planning Team

Table IFD.1: Imperial Rural Fire District Local Planning Team

Name	Title	Jurisdiction
Doug Mitchell	Fire Chief	Imperial Volunteer Fire Department

Location and Geography

The Imperial Rural Fire District covers most of Chase County, including the City of Imperial, the Village of Lamar, and the northern portion of Dundy County. It is made up of the Imperial Volunteer Fire Department and the Lamar Volunteer Fire Department. The fire district mainly addresses grass and wildfire in the region's rural area. The district covers 897 square miles. The Rural Fire Board funds the Lamar Volunteer Fire Department and the Imperial Fire Department is funded by both the Rural Fire Board and City of Imperial through an interlocal agreement.

Transportation

Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors and areas more at risk of transportation incidents. US Highway 6 and Nebraska State Highway 61 both travel through the fire district. US Highway 6 is traveled by a total annual average of 2,675 vehicles daily, 345 of which are trucks. Nebraska State Highway 61 is traveled by a total annual average of 740 vehicles daily, 115 of which are trucks.[22] A Nebraska Kansas Colorado Railway line runs through the eastern part of the district.

Demographics

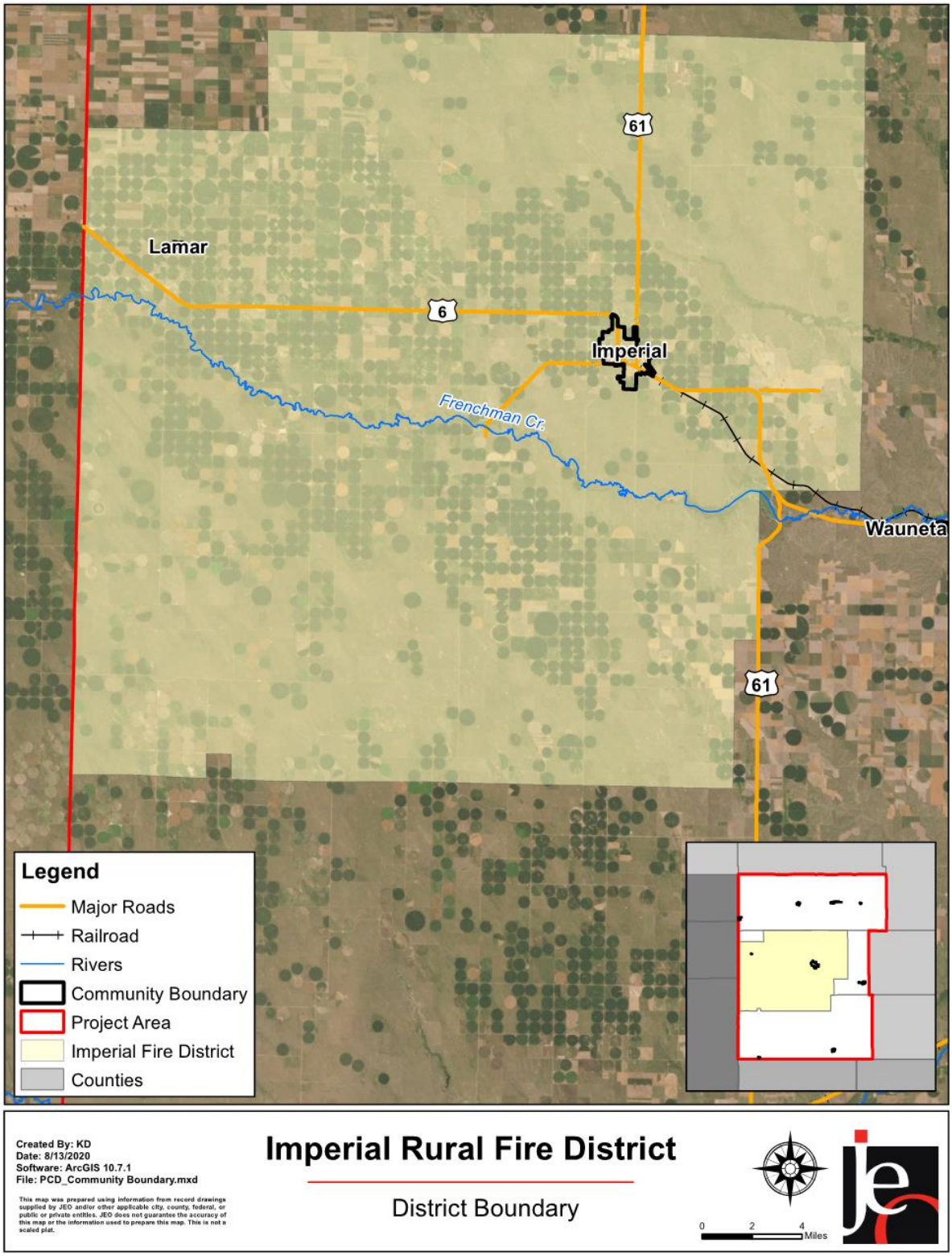
See the City of Imperial, Chase County, and Dundy County profiles for regional demographic information. The district serves approximately 4,000 people.

Future Development Trends

In 2020 the Imperial Volunteer Fire Department moved into a new fire hall. The main structure is 100 x 140 feet long with seven overhead doors. There are two additional buildings on the site which are used for dry storage and health and wellness. The new site was funded in part by the City of Imperial. There have been no changes with the Lamar Volunteer Fire Department. Over the next five years, no large developments are planned at this time.

22 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map]. https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34.

Figure IFD.1: Imperial Rural Fire District



Critical Infrastructure

Chemical Storage Fixed Sites

Information on chemical storage sites can be found in the City of Imperial, Dundy County, and Chase County profiles. The primary concern regarding fixed chemical sites is an agricultural chemical or fertilizer spill.

Critical Facilities

The planning team identified critical facilities necessary for the fire district's disaster response and continuity of operations. The following table and figure provide a summary of the critical facilities for the Imperial Rural Fire District.

Table IFD.2: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	In Floodplain (Y/N)
1	Imperial Volunteer Fire Department	N	N	N
2	Lamar Volunteer Fire Department	N	N	N

Historical Occurrences

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

Hazard Prioritization

The hazards discussed in detail below were selected by the local planning team from the regional hazard list as the relevant hazards for the district. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the district's capabilities. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

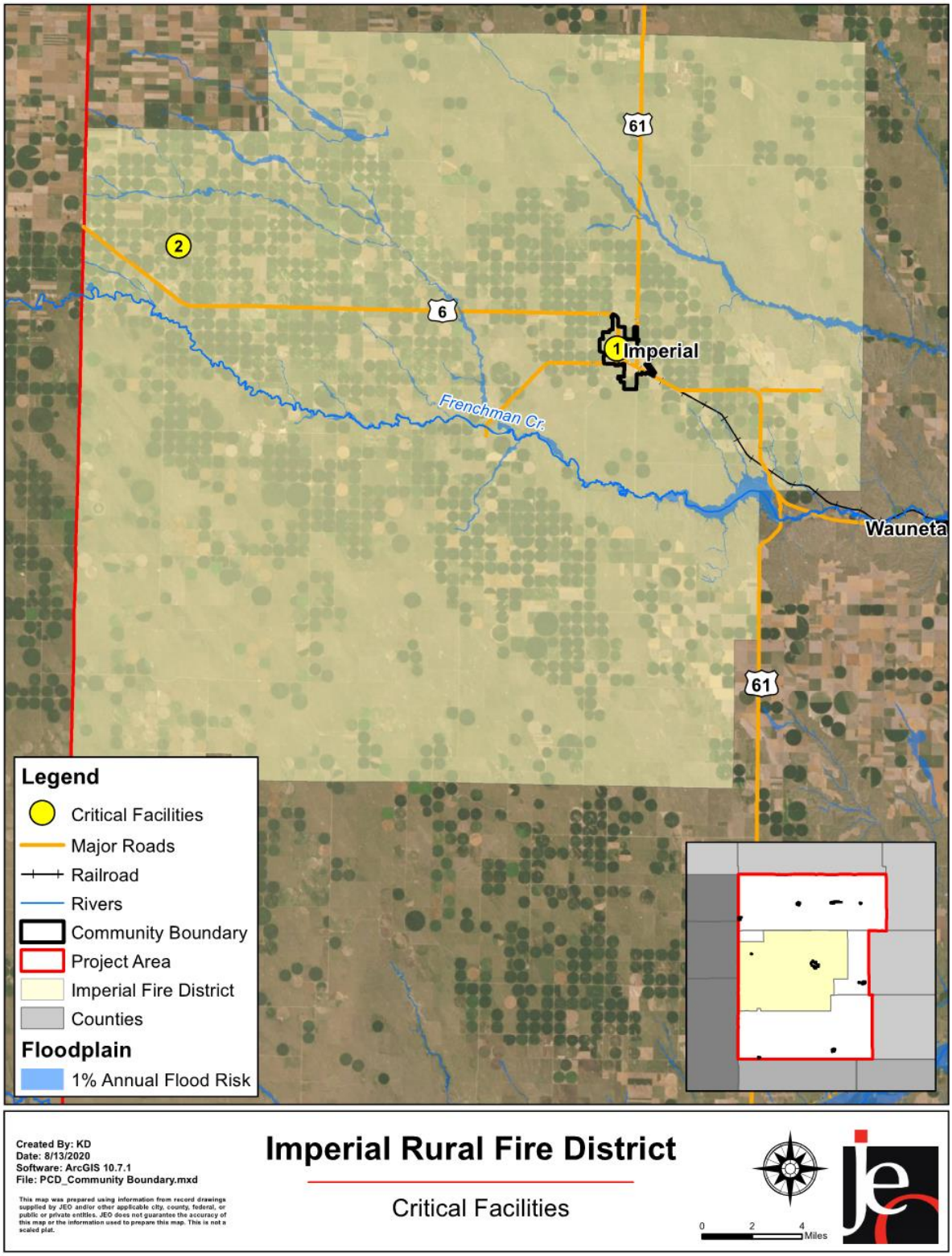
Flooding

There has not been a lot of flooding within the district due to minimal floodplain areas. Flash flooding is a larger concern as the City of Imperial's stormwater drainage is unable to keep up with rains larger than two inches. Flooding has the potential to impact county roadways, which could slow response times for both fire departments. If a large flooding event were to occur, the departments would assist in sandbagging and evacuation if necessary.

Tornadoes and High Winds

In 2019 there was a high wind event north of Imperial that damaged some rural structures. Neither fire department building has been damaged due to past high wind or tornado events. Warning sirens are located in different places across the City of Imperial and Village of Lamar. They can be activated by the Chase County Dispatch. In the event of a disaster, the fire district is part of the Southwest Mutual Aid District and the Frenchman Valley Mutual Aid District.

Figure IFD.2: Critical Facilities



Wildfire

The fire district deals with wildfires across the district. In 2019 approximately 2,000 acres of pasture burned in the southwest part of the county. The local planning team indicated that there are several shelterbelts with cedar trees and tall CRP grass in the county at high risk of causing and spreading a wildfire. In addition, the Enders Lake Area is also at high risk due to an overgrowth of cedar and other trees. There is no Wildland-Urban Interface code, but the department does encourage defensible open space around all structures. Controlled burns are beginning as of 2019. The Imperial Volunteer Fire Department has worked with local farmers and a plan is in place to conduct a controlled burn at Enders Lake State Recreation Area. Training for response includes monthly fire training and meetings. Response equipment for the Imperial Volunteer Fire Department includes a rural pumper, a city pumper, three tankers, two rescue trucks, two grass trucks, and a command truck. The Lamar Volunteer Fire Department rescue equipment includes two grass trucks and two tankers. The district teaches fire safety in local schools and children visit the Imperial station for safety education.

Staffing

The Imperial Rural Fire District is supervised by two fire chiefs and a five-member rural fire board who oversee the implementation of hazard mitigation projects. Other offices are listed below. There is a total of 35 individuals on the Imperial roster and nine individuals on the Lamar roster.

- Assistant Fire Chiefs
- Treasurer
- Secretary
- 1st Assistant Chief
- 2nd Assistant Chief
- 1st Lieutenant
- 2nd Lieutenant
- Sargent at Arms
- Training Officer

Capability Assessment

Due to the unique structure of fire districts, the typical capability assessment table was not used. The following table summarizes the district's overall capabilities. The Imperial Volunteer Fire Department will continue to utilize existing relationships with local, county, state, and federal agencies in the implementation of mitigation projects.

Table IFD.3: Overall Capability Assessment

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

Plan Integration

The district does not have any formal planning documents, but each department does have Standard Operations Guidelines (SOGs). These SOGs identify the district's response for a variety of calls that could be received. No other examples of plan integration were identified. The district will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates.

Mitigation Strategy

New Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Purchase a backup generator for the newly constructed fire hall.
Hazard(s) Addressed	All Hazards
Estimated Cost	$30,000+
Funding	General Budget, Donations
Timeline	2-5 Years
Priority	Medium
Lead Agency	Fire Chief, Rural Fire Board
Status	New Action. Not Started.

Mitigation Action	Civil Service Improvements
Description	Improve emergency rescue and response equipment and facilities by providing additional or updating existing equipment. For example: backup systems for emergency vehicles, training additional personnel, upgrading radio systems, etc.
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies
Funding	General Budget, Donations
Timeline	5+ Years
Priority	High
Lead Agency	Fire Chief, Rural Fire Board
Status	New Action. Not Started.