

KEITH COUNTY



Twin Platte Natural Resources District Multi-Jurisdictional Hazard Mitigation Plan Update

INTRODUCTION

The 2016 Twin Platte NRD (TPNRD) Multi-Jurisdictional Hazard Mitigation Plan (HMP) is an update to the plan that was adopted by TPNRD and Keith County in August 2011. This HMP includes two primary sections: the Regional Hazard Mitigation Plan and the Community (i.e. County, Municipality, and School District) Profiles. Community Profiles include similar information to that provided in the Regional Section, but also specific information for the County, including the following elements:

- Participation
- Location/Geography
- Climate
- Demographics
- Transportation
- Future Development Trends
- Parcel Improvements and Valuations
- Critical Infrastructure and Key Resources
- Historical Hazard Events
- Hazard Identification and Risk Assessment
- Governance
- Capability Assessment
- Plan Integration
- Mitigation Actions

PARTICIPATION

Local Planning Team

Table KC 1 provides the list of participating community members that comprised the Keith County local Planning Team. Members of the Planning Team attended Round 1 and Round 2 meetings and provided important information including, but not limited to: confirming demographic information, critical facilities, structural inventory, future development trends, hazard history and impacts, identifying hazards of greatest concern for the community, and prioritization of mitigation actions that address the hazards at risk to the community.

Table KC 1: The Keith County Local Planning Team

Name	Title
Pete Peterson	Emergency Manager
Caleb Johnson	Keith County Commissioner
Jack Quinlivan	Keith County Zoning/Planning/ Floodplain Administrator

Public Participation

The local Planning Team made several efforts to notify the public of this planning process and how they could participate in the development of the plan update. The following table identifies the dates and types of public outreach notifications. Other efforts may have been made despite it not being recorded.

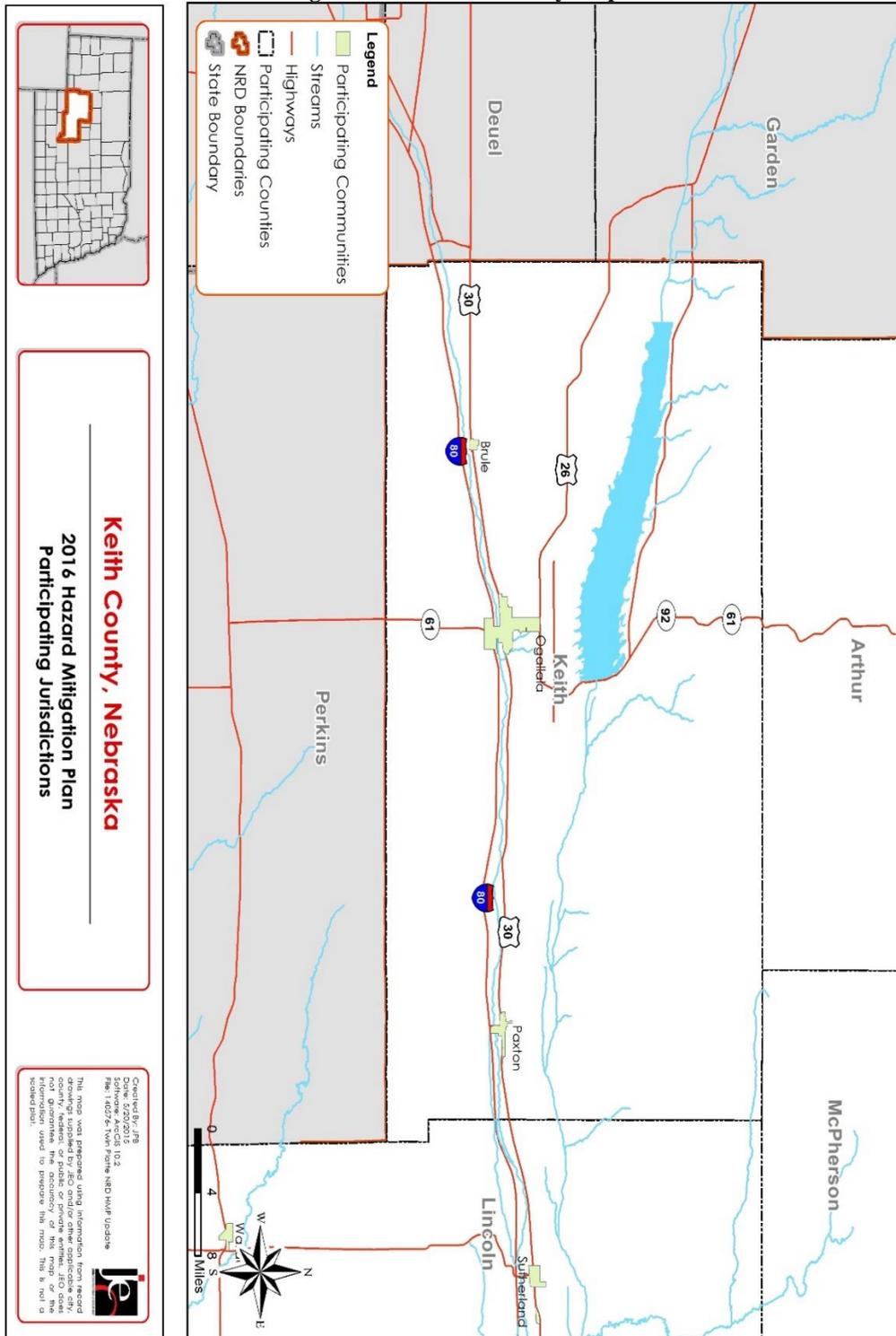
Table KC 2: Public Notification Efforts

Date	Notification	Location
May 28, 2015	Project Website	http://jeo.com/tphmp/
March 17, 2016	Community Profile available for public comment and review	https://jeo.com/tphmp

LOCATION AND GEOGRAPHY

Keith County is located in southwestern Nebraska and is bordered by Arthur, McPherson, Lincoln, Perkins, Deuel, and Garden counties. The total area of the County is 1,110 square miles. Major waterways within the County include the North and South Platte Rivers and Lake McConaughy.

Figure KC 1: Keith County Map



Keith County, Nebraska
 2016 Hazard Mitigation Plan
 Participating Jurisdictions

Created by: BVR/SJS
 Software: ArcGIS 10.2
 File: 140276-Twin Platte NRD NMMP Update
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CLIMATE

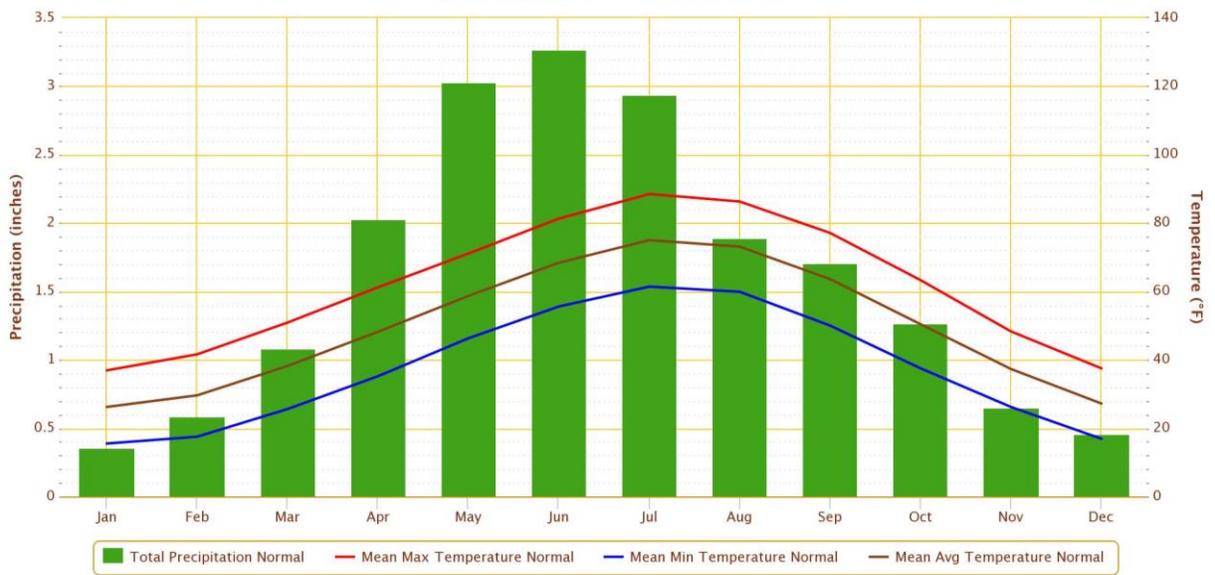
For Keith County, the normal high temperature for the month of July is 81.3 degrees. The normal low temperature for the month of January is 15.5 degrees. On average, Keith County gets 19.28 inches of rain and 30.2 inches of snowfall per year. The following table compares these climate indicators with those of the entire state. Climate data are helpful in determining if certain events are higher or lower than normal.

Table KC 3: Climate Data for Keith County

	Keith County	State of Nebraska
July Normal High Temp	81.3°F	88.0°F
January Normal Low Temp	15.5°F	12.0°F
Annual Normal Precipitation	19.28 inches	30.3 inches
Annual Normal Snowfall	30.2 inches	25.9 inches

Source: NCDC Climate Data Online, 1981-2010 Climate Normals

Figure KC 2: Monthly Climate Normals



Source: NOAA ACIS

TRANSPORTATION

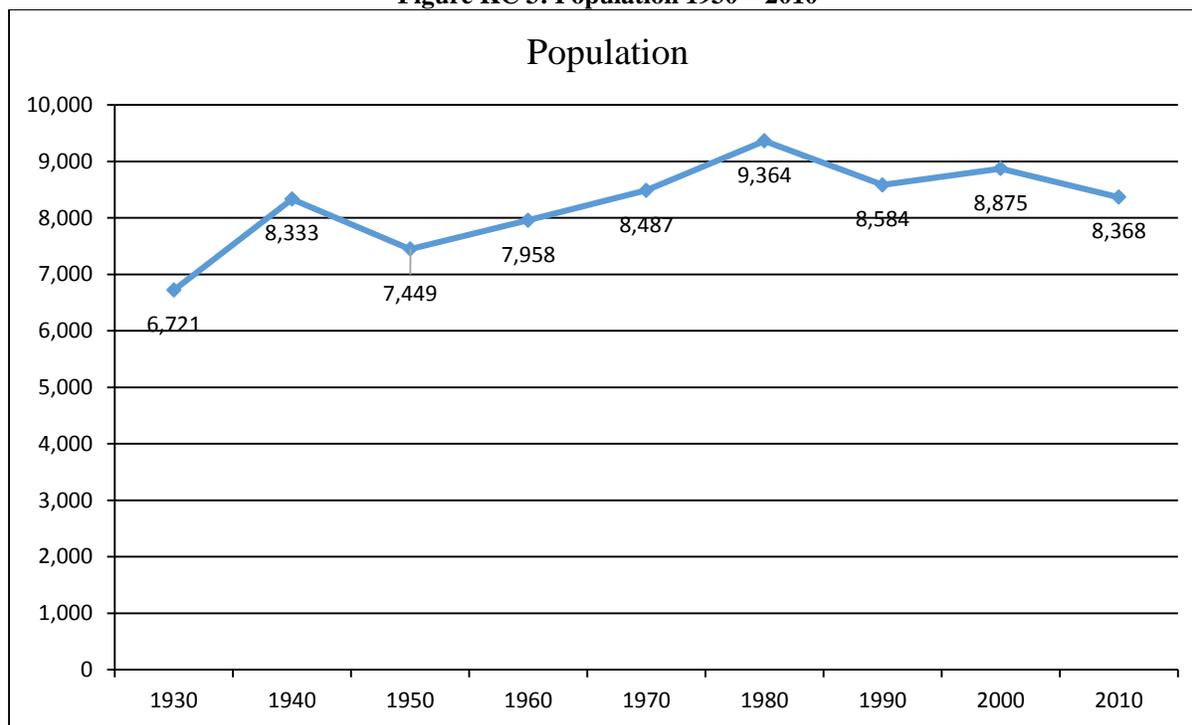
Keith County’s major transportation corridors include Interstate 80, U.S. Highways 26 and 30, and Nebraska Highway 61 and 92. Interstate 80 on average has over 13,000 vehicles traveling through the County with over 6,500 of those vehicles being heavy commercial. Highways 26 and 30 on average have over 1,500 vehicles per day with over 200 heavy commercial vehicles. The Union Pacific Railroad also has two major rail lines that travel through the County. One line is located from the northwest portion of the County, and the other line travels from the southwest to the east-central portion of the County. There is also an airport located near Ogallala called Searle Field. This information is important for hazard mitigation plans insofar as it suggests possible evacuation corridors in the County, as well as areas more at risk to transportation incidents.

DEMOGRAPHICS

The following figure displays the historical population trend from 1930 to 2010. This figure indicates that the population of Keith County has experienced periods of growth and decline since 1980. However, between 2000 and 2010, the population has declined. This is notable for hazard mitigation because

communities with declining population may also have a higher level of unoccupied housing that is not being up kept. Areas with declining population will be less prone to pursuing residential/commercial development in their areas, which may reduce the number of structures vulnerable to hazards in the future. Decreasing populations can also represent decreasing tax revenue for the County, which could make implementation of mitigation actions more fiscally challenging.

Figure KC 3: Population 1930 – 2010



Source: U.S. Census Bureau

The following table indicates that the State of Nebraska has a higher percentage of people under the age of 5 when compared to Keith County. However, there is a higher percentage of residents over the age of 64 in the County than the rest of the state. Elderly populations may be more vulnerable to certain hazards than other population groups. For a more elaborate discussion of this vulnerability, please see *Section Four: Risk Assessment*.

Table KC 4: Population by Age

Age	Keith County	State of Nebraska
<5	4.5%	7.2%
5-64	73.2%	79.2%
>64	22.3%	13.6%
Median	48.5%	36.2

Source: U.S. Census Bureau, 2010, Table DP-1

The following table indicates that the median household income is almost \$10,000 less than that of the state's as a whole. Keith County also has a lower per capita income, median home value, and median rent compared to 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 resiliency during hazardous events.

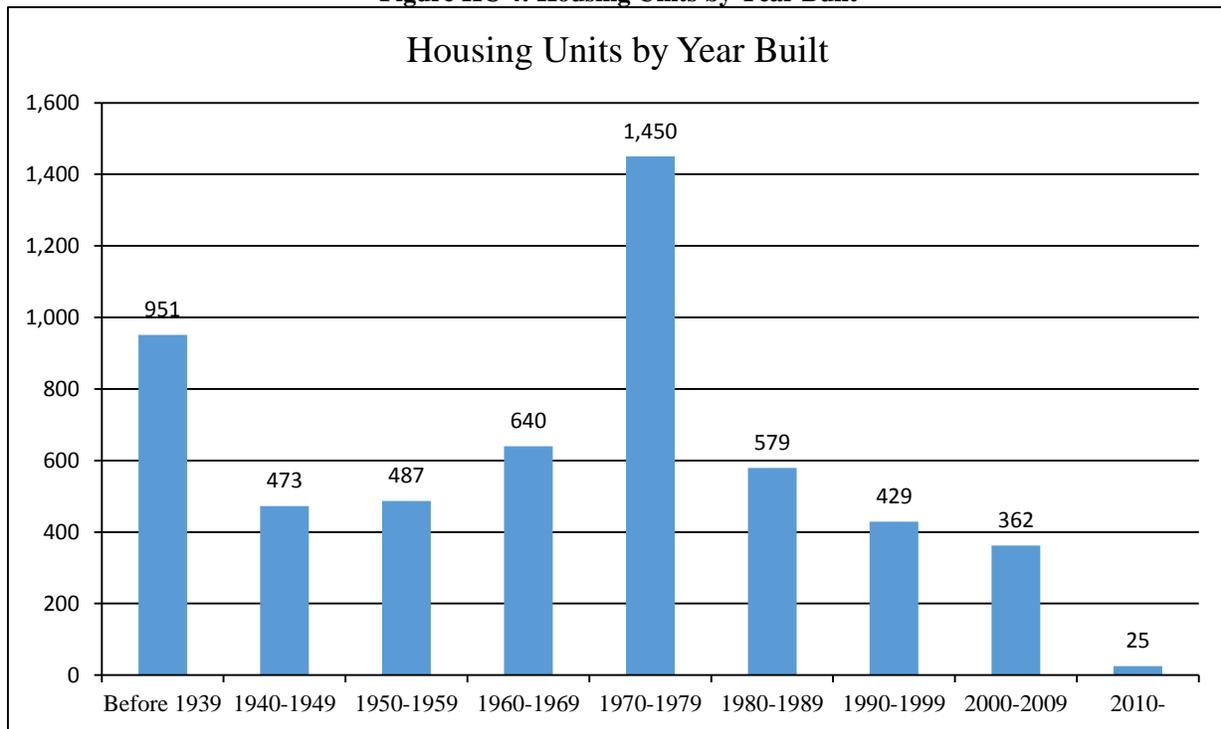
Table KC 5: Housing and Income

	Keith County	State of Nebraska
Median Household Income	\$41,970	\$51,672
Per Capita Income	\$25,097	\$26,899
Median Home Value	\$91,500	\$128,000
Median Rent	\$601	\$706

Source: U.S. Census Bureau, 2009-2013 American Community Surveys 5-year Estimates, Table DP03 and DP04

The following figure indicates that the majority of the housing in Keith County was built prior to 1980. According to 2009-2013 ACS 5-year estimates, the County has 5,396 housing units with 70.2 percent of those units occupied. There are approximately 1,092 mobile homes in the County and 74.1 percent of the County’s housing was built before 1980. The initial Flood Insurance Rate Map (FIRM) was developed in September 1985. Housing built prior to 1985 may not be constructed above the base-flood elevation requirements and may be at risk to flooding. Furthermore, 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, tornados, and severe winter storms. Mobile home parks in Keith County are located in northeast areas of Lake McConaughy and along the south bank north of Brule.

Figure KC 4: Housing Units by Year Built



Source: Source: U.S. Census Bureau, 2009-2013 American Community Surveys 5-year Estimates, Table DP04

Table KC 6: Housing Units

Jurisdiction	Total Housing Units				Occupied Housing Units			
	Occupied		Vacant		Owner		Renter	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Keith County	3,786	70.2%	1,610	29.8%	2,649	70.0%	1,137	30.0%
Nebraska	725,787	90.7%	74,490	9.3%	486,533	67.0%	239,254	33.0%

Source: Selected Housing Characteristics: 2009 - 2013 ACS 5-year estimate

Major Employers

According to 2012 Census Data, Keith County had 359 business establishments. The following table presents the number of establishments, number of paid employees, and the annual pay role in thousands of dollars. This information is relevant to hazard mitigation insofar as it indicates the diversification of industry. 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 KC 7: Business in Keith County

	Total Businesses	Number of Paid Employees	Annual Payroll (in thousands)
Total for all Sectors	359	2,698	70,638

Source: U.S Census 2012, Table CBI200A11

Agriculture is also important to the economic fabric of Keith County, and the state of Nebraska as a whole. Keith County's 388 farms cover 541,266 acres of land. Crop and livestock production are the visible parts of the agricultural economy. In addition, 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 KC 8: Keith County Agricultural Inventory

Keith County Agricultural Inventory	
Number of Farms	388
Land in Farms	541,266 acres

Source: USDA 2012 Census of Agriculture

FUTURE DEVELOPMENT TRENDS

In the past five years, Keith County has experienced some commercial development. These additions include a storage business along Highway 30 just west of the Ogallala airport, a grain storage along the west side of Highway 61 near the Keith and Perkins County line, and a Wal-Mart. Keith County is planning on further developing wind power generation and dairy operations throughout the County. Additional commercial development is expected in the next five years, including an O'Reilly's Auto Parts store in the summer of 2016.

Figure KC 5: Land Cover

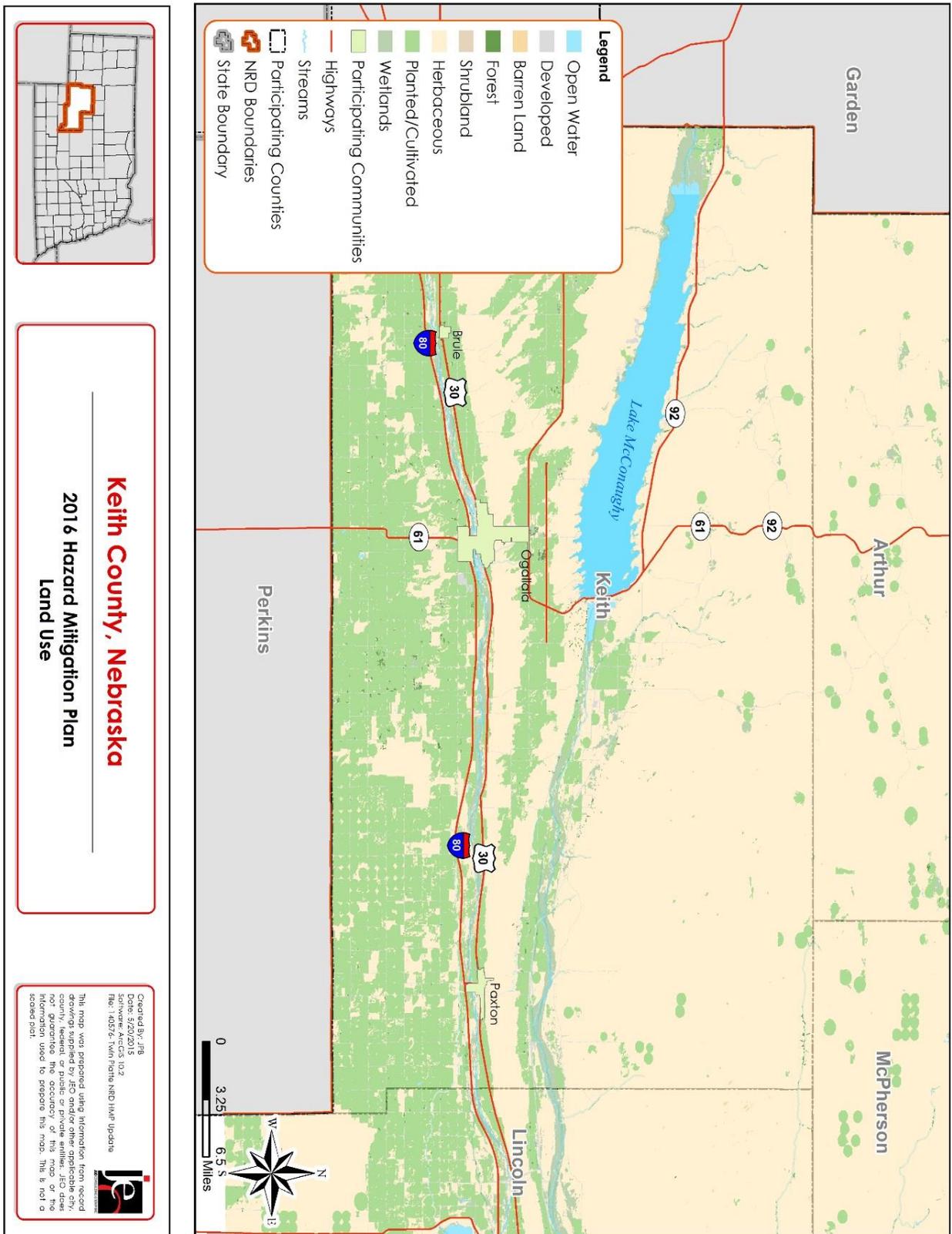
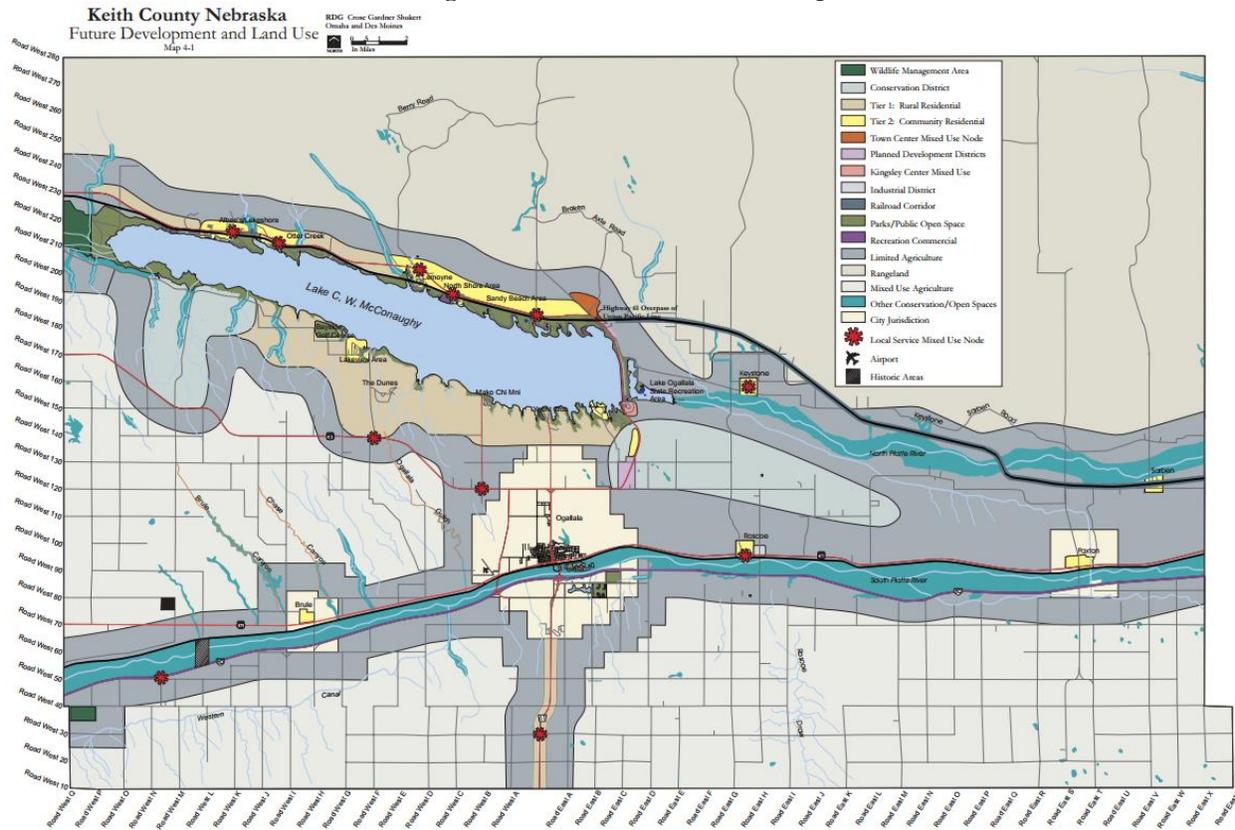


Figure KC 6: Future Land Use Map



STRUCTURAL INVENTORY AND VALUATION

The Planning Team requested GIS parcel data from the County Assessor. 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 KC 9: Structural Inventory/Parcel Improvements

Number of Improvements	Total Improvement Value	Mean Value of Improvements Per Parcel	Number of Improvements in Floodplain	Value of Improvements in Floodplain
1,166	\$47,618,930	\$40,839	242	\$17,886,425

CRITICAL INFRASTRUCTURE/KEY RESOURCES

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environmental Quality, there are a total of 18 chemical storage sites in Keith County, and 9 of these house materials that are categorized as hazardous. The following table only lists facilities that house hazardous materials.

Table KC 10: Chemical Storage Fixed Sites

Facility	Address	Hazardous Material
Hi-Line Co-op Inc.	209 S. State Street, Brule	Counter
AT&T Interstate 6080	Road East 60, Ogallala	Sulfuric Acid
CenturyLink	218 W A Street, Ogallala	Sulfuric Acid

Facility	Address	Hazardous Material
Ogallala Electronics	601 W. 1 st Street, Ogallala	Nitric Acid, Sodium Cyanide, Aluminum and Steel Alloys
Sprint Nextel Ogallala Regen	Highway 30 W, Ogallala	Sulfuric Acid
Union Pacific Railroad	711 E Riverdale Drive, Ogallala	Sulfuric Acid
Winfield Solutions LLC	312 W. O Street, Ogallala	Rozol Prairie Dog Bait, WF Dimate, Kaput Prairie Dog Bait, Lannate LV, Gramoxone SL, Thimet 20G, Counter 20G, Vydate CLV,
AT&T	Road East N S, Paxton	Battery Acid
AT&T	151 Road East O S, Paxton	Sulfuric Acid

Source: Nebraska Department of Environmental Quality

Historic Sites

According to the National Register of Historic Places for Nebraska, there are seven historic sites located in rural areas of Keith County.

Table KC 11: National Historic Registry

Site Name	Date Listed	In Floodplain?
Diamond Springs Stage Station	10/15/1970	Yes
Beauvais' Ranche Archeological Site	2/20/1975	Unknown
Big Blowout Site	12/4/2001	Unknown
Meismer Bison Kill Site	12/4/2001	Unknown
California Hill	7/1/1974	No
Roscoe State Aid Bridge	6/29/1992	Yes
Dr. Burdette L. Gainsforth House	12/5/2002	No

Source: Nebraska State Historical Society

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. 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. Critical facilities for Keith County are located primarily in the County's incorporated communities.

Table KC 12: List of Critical Facilities in Keith County

CF Number	Name	Address	In Floodplain?
1	Emergency Management Office	501 N Spruce Street, Ogallala	No
2	Jail	103 East 5 th Street Ogallala	No
3	Keith County Courthouse	511 N. Spruce Street, Ogallala	No
4	Kingsley Dam	North Platte River, Keystone	N/A
5	Brule Creek 1-A	Brule Canyon Creek, Brule	N/A
6	Cure Creek 1-A	South Platte River, Ogallala	N/A
7	Ogallala No 6 (West Dam)	South Platte River, Ogallala	N/A
8	Ogallala No 7 (East Dam)	South Platte River, Ogallala	N/A

HISTORICAL OCCURRENCES

The events recorded by NCDC are broken down by two types: county-based and zone-based events. The county-based records are events that affect the jurisdictions within the county. The zone-based records are those affecting the zone that include the county as part of the affected zone. Please refer to specific villages or cities within the county for the previous county-based severe weather events retrieved from NCDC. For zone-based events, there are 408 recorded events from January 1996 to December 2014. Table KC 13 summarizes these events.

The property and crop damage from the NCDC Storm Events Database should only be considered as broad estimates. The National Weather Service makes a best guess on these amounts at the time of the publication from a variety of sources. 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.

Table KC 13: NCDC Severe Weather Events

Date	Hazard	Events	Deaths	Injuries	Property Damage
1/17/1996 - 2/22/2014	Severe Winter Storm	33	0	0	\$4,000
8/10/1999 – 6/27/2014	Flood	10	1	0	\$1,261,000
6/5/1996 – 8/9/2011	Tornado <i>Average: EF0</i> <i>Largest: EF1</i>	20	0	0	\$872,000
5/15/1996 – 6/27/2014	Hail <i>Average: 1.20 in</i> <i>Largest: 4.25 in</i> <i>Smallest: 0.75 in</i>	265	0	0	\$1,950,000
7/15/1996 – 8/23/2014	Severe Thunderstorm <i>Average: 53 kts. MG</i> <i>Largest: 91 kts. EG</i> <i>Smallest: 50 kts. MG</i>	80	0	6	\$667,500
	Total	408	1	6	\$4,754,500

Source: 1996-2014 National Climatic Data Center

kts = knots; MG = Measured Gust; EG = Estimated Gust; E=Estimate

The USDA Risk Management Agency provides data for crop insurance claims due to hazardous events. The following table provides claim information due to hazards from January 2000 through December 2014.

Table KC 14: USDA RMA Severe Weather Claims

Hazard	Number of Claims	Total Crop Damage	Average Annual Damage	Average Damage Per Event
Plant Crop Disease	37	\$547,394.40	\$36,492.96	\$19,549.80
Drought	181	\$21,694,349.17	\$1,446,289.94	\$119,858.28
Extreme Heat	81	\$2,538,765.35	\$169,251.02	\$31,342.78
Flooding	13	\$156,402.00	\$10,426.80	\$12,030.92
Severe Winter Storms	152	\$13,947,229.33	\$929,815.29	\$91,758.09
Severe Thunderstorms	82	\$4,880,604.10	\$325,373.61	\$59,519.56
Hail	86	\$1,179,137.20	\$78,609.15	\$13,710.90
Tornado	76	\$1,361,725.80	\$90,781.72	\$17,917.44
Totals	708	\$46,305,607.35	\$3,087,040.49	\$65,403.40

Source: 2000-2014 USDA RMA

RISK ASSESSMENT**Hazard Identification**

The following table is a localized risk assessment of hazards identified specifically for Keith County. Refer to *Section Four: Risk Assessment* for an explanation of this methodology.

Table KC 15: Risk Assessment

HAZARD TYPE	PREVIOUS OCCURRENCE Yes/No	LOCAL LOSSES	SPECIFIC CONCERNS IDENTIFIED
Agricultural Animal Disease*	No	-	Economic impacts, public health risks
Agricultural Plant Disease	Yes	\$547,394	None
Chemical Spills (Fixed Site)	Yes	-	None
Chemical Spills (Transportation)*	Yes	-	High volume of chemicals transported through County
Dam Failure*	No	-	Property damages and loss of life
Drought	Yes	\$21,694,349	None
Earthquakes	No	-	None
Extreme Heat	Yes	\$2,538,765	None
Flooding*	Yes	\$1,417,402	Public safety, damage to public infrastructure, over-vegetation
Grass/Wildfires	Yes	-	None
Hail	Yes	\$3,129,137	None
High Winds	Yes	-	None
Levee Failure	No	-	None
Severe Thunderstorms	Yes	\$5,548,104	Property damages, power outages
Severe Winter Storms*	Yes	\$4,000	Power outages, mobility issues, public safety
Terrorism	No	-	None
Tornados*	Yes	\$2,233,725	Property damages, loss of life, lack of storm shelters

*Identified by the Planning Team as a top concern for the jurisdiction

For more information regarding these area wide hazards, please see *Section Four: Risk Assessment*. The following provides County specific information, reported in Keith County's Risk Assessment Summary that is relevant to each hazard.

Agricultural Animal Disease

The local Planning Team identified agricultural animal disease as a significant concern for the County due to the long term economic and potential public health risks of a potential outbreak. In the event of an outbreak, the public would be notified by Code Red, local media, local officials and response organizations. The Agricultural Disease Emergency Response Plan will continue to be updated as necessary.

Implemented mitigation actions:

- Code Red warning system
- LEOP includes Agricultural Disease Emergency Response Plan

Chemical Spills (Transportation)

Several significant transportation events have recently occurred in the County on I-80. On July 29, 2015, a semi-truck carrying explosive and corrosive hazardous materials was involved in a two vehicle traffic accident that resulted in one fatality. In 2013, flash flooding washed out both eastbound and westbound lanes of I-80 for nearly a week. This flooding led to a number of accidents.

Anhydrous tanks are located near railroad tracks in the unincorporated town of Roscoe. Highway 30, Union Pacific Railroad, and I-80 all run parallel and close together. The County also has various buried pipelines including the Tallgrass Interstate Gas Transmission pipeline north of Highway 30, and the Platte Pipeline in the southwest corner of the County.

The LEOP, which addresses Hazardous Materials Response will continue to be updated as necessary.

Implemented mitigation actions:

- Code Red warning system
- LEOP addresses Hazardous Materials Response

Dam Failure

There are eight dams in Keith County. Of these, five dams have been identified as high hazard dams. According to NDNR, if one of the high hazard dams were to fail, the loss of human life is probable. Dam failure would also lead to economic impacts from loss of tourism, and the destruction of agricultural and non-agricultural properties. According to the Keith County LEOP, approximately twenty percent of the County population could be affected by the failure of one or another of these dams.

Table KC 16: Dams in Keith County

	Number of Dams	Low	Significant	High
Keith County	8	3	0	5

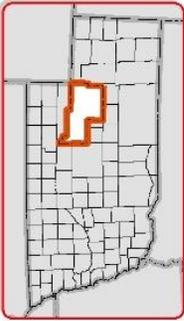
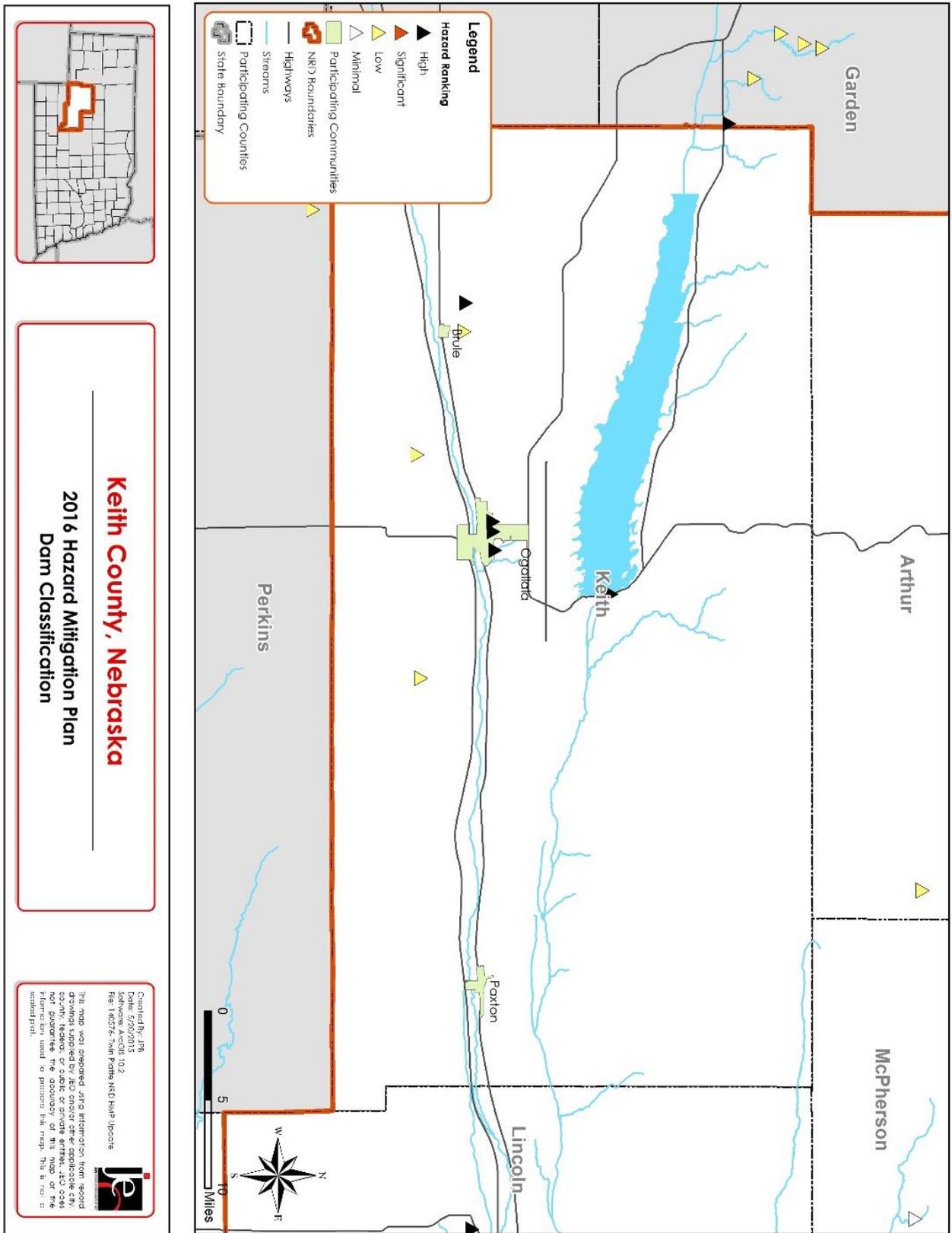
Source: NDNR

Table KC 17: High Hazard Dams

NIDID	Dam Name	Location	Name of Stream	Owner
NE01048	Kingsley Dam	Keystone	North Platte River	Central Nebraska Public Power & Irrigation District
NE00211	Brule Creek 1-A	Brule	Brule Canyon Creek	Twin Platte NRD
NE00210	Cure Creek 1-A	Ogallala	South Platte River	City of Ogallala
NE02331	Ogallala No 6 (West Dam)	Ogallala	South Platte River	City of Ogallala
NE0334	Ogallala No 7 (East Dam)	Ogallala	South Platte River	City of Ogallala

Source: NDNR

Figure KC 8: Map of Dams in Keith County



Keith County, Nebraska
2016 Hazard Mitigation Plan
Dam Classification

Created By: JRM
 Date: 3/26/2016
 File: 14575_Twin Platte NRD HMP Update

This map was prepared using information from local, state, federal, or other sources. The user assumes all liability for any errors or omissions. The user also warrants that the information used to prepare this map is true and accurate.

Implemented mitigation actions:

- Code Red warning system
- Emergency Preparedness Plan for high hazard dams
- Dam failure evacuation plan within LEOP
- Emergency exercises

Flooding

Unincorporated areas of Keith County has 10 NFIP policies in-force for \$754,600. There are no repetitive flood loss properties in unincorporated areas. Local concerns regarding flooding include: public safety, damage to public infrastructure, and over-vegetation.

Significant past events include flash flooding in 2002, and high water events from the South Platte River in 2013 and 2015. The flash flood event in 2002 took the life of an individual. The individual was killed as a bridge approach collapsed on Interstate 80. A large thunderstorm hit the area dropping 8 to 11 inches of rain. One bridge and numerous roads were damaged or washed out. Many homes were damaged in the area as well.

Poor stormwater drainage was identified in an area southwest of Ogallala that proceeds north through the Ogallala Interchange and under I-80 to the South Platte River. According to NCDC and RMA data, flooding has led to approximately \$1,417,402 in damages within Keith County from 1996 to 2014.

Implemented mitigation actions:

- Adopted floodplain regulations
- Participant in NFIP program

Identified mitigation actions:

- Continue to regulate development in floodplain
- Evaluate measures to reduce flooding damages
- Implement measures to reduce risk of flooding due to channel constrictions

Severe Winter Storms

Severe winter weather is a regular occurrence for Keith County and the rest of the planning area. Local concern regarding severe winter storms include the potential for power outages, mobility issues, and public safety. Snow fences are not currently used but may be incorporated in the future. Snow removal resources are sufficient for local events, as the County has contracts with private companies to increase response time.

Implemented mitigation actions:

- Secured appropriate snow removal equipment
- Contract private companies to improve snow removal response

Identified mitigation actions:

- Bury power lines

Tornados

According to NCDC data, there have been twenty tornadic events in Keith County since 1996. These events have resulted in \$872,000 in reported property damages. Primary damages have been to outbuildings and agricultural fields. Tornadic events have the potential to cause significant damages and loss of life. The County does not have any storm shelters. Educational outreach is done through the schools and public service announcements.

Implemented mitigation actions:

- Installed additional warning sirens in 2013
- Code Red warning system

GOVERNANCE

A community's governance structure impacts its capability to implement mitigation actions. Keith County is governed by a five member Board of Commissioners. The County also has the following offices and departments that can assist in implementing mitigation actions:

- County Clerk
- County Assessor
- County Roads Department
- County Sheriff's Department
- Planning & Zoning
- County Treasurer
- Emergency Management
- Veteran's Service
- County Attorney
- Surveyor

CAPABILITY ASSESSMENT

The capability assessment consisted of two main components: a Capability Assessment Survey completed by the jurisdiction, and a review of local existing policies, regulations, plans, and 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 KC 19: Capability Assessment

Survey Components/Subcomponents		Existing (Yes/No)
Planning and Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	No
	Hazard Mitigation Plan	Yes
	Economic Development Plan	Yes
	Emergency Operational Plan	Yes
	Natural Resources Protection Plan	No
	Open Space Preservation Plan	Yes
	Floodplain Management Plan	Yes
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes
	National Flood Insurance Program	Yes
	Community Rating System	No
Other (if any)		
Administrative and Technical Capability	Planning Commission	Yes
	Hazard Mitigation Planning Commission	No
	Floodplain Administration	Yes
	Emergency Manager	Yes
	GIS Coordinator	No
	Chief Building Official	Yes
	Civil Engineering	No
	Staff Who Can Assess Community's Vulnerability to Hazards	Yes
	Grant Manager	Yes
	Other (if any)	
Fiscal Capability	Capital Improvement Project Funding	No
	Community Development Block Grant	Yes
	Authority to Levy Taxes for Specific Purposes	Yes
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	No
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
Other (if any)		
Education and Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	Yes
	Firewise Communities Certification	No
	Public-private partnership initiatives addressing disaster-related issues	Yes
	Other (if any)	

PLAN INTEGRATION

Building safe and strong communities can be accomplished through effective Plan Integration. Integrating hazard mitigation principles into other local planning mechanisms, such as plans addressing land use, transportation, climate change, sustainability, natural and cultural resource protection, watershed management, economic development and others can greatly increase an area’s level of resiliency. While this HMP planning period involved interdepartmental coordination at the local level, this planning process also sought to analyze how existing planning mechanisms were presently integrated and identify opportunities for further integration. The plans listed in the preceding table were analyzed using guidance from FEMA’s 2014 *Plan Integration Guide*. The following paragraph presents a summary of the findings of this analysis.

Keith County has a Local Emergency Operations Plan that was last updated in 2012. The plan addresses a number of hazards including: flood, dam failure, fire, hazardous materials, agricultural disease, and terrorism. The LEOP mitigates the impacts of these hazards by increasing the local officials’ awareness of the assigned responsibilities and appropriate response.

The Keith County Comprehensive Plan updated in 2003 addresses flooding. The plan discourages development within the floodplain. The Comprehensive Plan also discusses drought and soil vulnerability. Additional plans and/or policies that have integrated hazard mitigation have not been identified.

Although it is identified in the capability assessment that Keith County has some plans and ordinances in place, they are not currently integrated with the hazard mitigation plan. When the county does update local planning mechanisms, Keith County will work to integrate the goals and objectives of the hazard mitigation plan within them (as appropriate). Currently there is not a plan or schedule related to the update of other (non-HMP) local planning mechanisms, thus there is no formal strategy for plan integration at this time. Further, the priorities and mitigation strategies included in this plan will be revisited annually, as established in the plan review section of this document, for consideration during the development of the annual budget. As resources are available mitigation projects will be implemented.

Summary

Keith County has the administrative staff and technical and fiscal capabilities to implement some mitigation projects without assistance. Larger projects, such as drainage improvements, may require that the County look to partner with local jurisdictions, TPNRD, and other regional and state agencies. Through this update process, the Planning Team reviewed previously identified mitigation projects and added new projects as well.

MITIGATION STRATEGY

Completed Mitigation Actions

Action	Improve warning systems
Action Items	<ol style="list-style-type: none"> 1. Evaluate current warning systems 2. Improve warning systems/develop new warning system 3. Obtain/upgrade warning system equipment and methods, including alert sirens 4. Identify locations of weather warning radios 5. Improve weather radio system 6. Obtain/upgrade weather radios
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All hazards
Status	This project was completed in 2013
Lead Agency	Emergency Manager, County Board

Ongoing and New Mitigation Actions

Action	
Action Items	Improve electrical service <ol style="list-style-type: none"> 1. Evaluate hardening, retrofitting, looping and/or burying of power lines and related infrastructure and/or comparable protection measures 2. Implement measures to improve electrical service 3. Bury power lines for future construction
Goal/Objective	Goal2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms, Hail
Estimated Cost	Approximately \$1 million per mile
Potential Funding	Public Power Districts, County Funds
Timeline	5+ Years
Priority	Low
Status	Not yet started
Lead Agency	County Board, Public Power Districts

Action	
Action Items	Reduce flow restrictions <ol style="list-style-type: none"> 1. Evaluate measures to prevent or reduce damage from flooding 2. Implement appropriate nonstructural or structural methods on an emergency or permanent basis (such as monitoring, ice jam dusting, or other flow improvements)
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	Flood
Estimated Cost	\$10,000 to \$50,000 for studies; \$10,000 to \$100,000+ for infrastructure/structural improvements
Potential Funding	HMGP, PDM, County funds, Twin Platte NRD
Timeline	5+ Years
Priority	Medium
Status	Twin Platte NRD evaluates water levels and risk to flooding; Identified the area of need as south and southwest of Ogallala
Lead Agency	County Board, Twin Platte NRD, Emergency Manager

Action	
Action Items	Maintain Status in NFIP <ol style="list-style-type: none"> 1. Continue to regulate development in floodplain areas 2. Adopt future floodplain maps when available 3. Conduct additional floodplain mapping/remapping
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flood
Estimated Cost	Existing staff
Potential Funding	County budget
Timeline	Ongoing
Priority	High
Status	This is a continuous action
Lead Agency	Floodplain administrator

Action	
Action Items	Reduce fire damage <ol style="list-style-type: none"> 1. Identify vulnerable areas and combustion sources 2. Evaluate fire resistant roofing 3. Develop plan to reduce wildfire impact and reduce combustion materials 4. Reduce combustible material by removal or other methods 5. Enact building codes/ordinances for fire resistant roofing
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Addressed	Wildfire
Estimated Cost	\$500 to \$5,000
Potential Funding	County funds
Timeline	5+ Years
Priority	Low
Status	Not yet started
Lead Agency	Fire Department, Chief Building Official

Removed Mitigation Actions

Action	
Action Items	Reduce water demand/drought education <ol style="list-style-type: none"> 1. Develop/improve public awareness program 2. Develop or obtain materials and conduct multi-faceted public education
Hazard(s) Addressed	Drought

Action	Reduce water demand/drought education
Reason for removal	No longer needed. Twin Platte NRD leads education efforts

VILLAGE OF BRULE



Source: <http://www.ci.brule.ne.us/>

Twin Platte Natural Resources District Multi-Jurisdictional Hazard Mitigation Plan Update

INTRODUCTION

The 2016 Twin Platte NRD (TPNRD) Multi-Jurisdictional Hazard Mitigation Plan (HMP) is an update to the plan that was adopted by TPNRD and the Village of Brule in August 2011. This HMP includes two primary sections: the Regional Hazard Mitigation Plan and the Community (i.e. County, Municipality, and School District) Profiles. Community Profiles include similar information to that provided in the Regional Section, but also specific information for the communities, including the following elements:

- Participation
- Location/Geography
- Demographics
- Transportation
- Future Development Trends
- Parcel Improvements and Valuations
- Critical Infrastructure and Key Resources
- Historical Hazard Events
- Hazard Identification and Risk Assessment
- Governance
- Capability Assessment
- Plan Integration
- Mitigation Actions

PARTICIPATION

Local Planning Team

Table BR 1 shows the community member that comprised the Brule local Planning Team. The member of the Planning Team attended Round 1 and Round 2 meetings, or attended makeup meetings and provided important information including, but not limited to: confirming demographic information, critical facilities, structural inventory, future development trends, hazard history and impacts, identifying hazards of greatest concern for the community, and prioritization of mitigation actions that address the hazards at risk to the community.

Table BR 1: The Village of Brule Local Planning Team

Name	Title	Department / Organization
Andrew Skorniak	Utility Superintendent	Village of Brule

Public Participation

The local Planning Team made several efforts to notify the public of this planning process and how they could participate in the development of the plan update. The following table identifies the dates and types of public outreach notifications. Other efforts may have been made despite not being recorded.

Table BR 2: Public Notification Efforts

Date	Notification	Location
May 28, 2015	Project Website	http://jeo.com/tphmp/
March 17, 2016	Community Profile available for public comment and review	https://jeo.com/tphmp

LOCATION AND GEOGRAPHY

The Village of Brule is located in the southwestern portion of Keith County and covers an area of 0.31 square miles. The major waterway in the area is the South Platte River located just south of the community.

Figure BR 1: Map of the Village of Brule



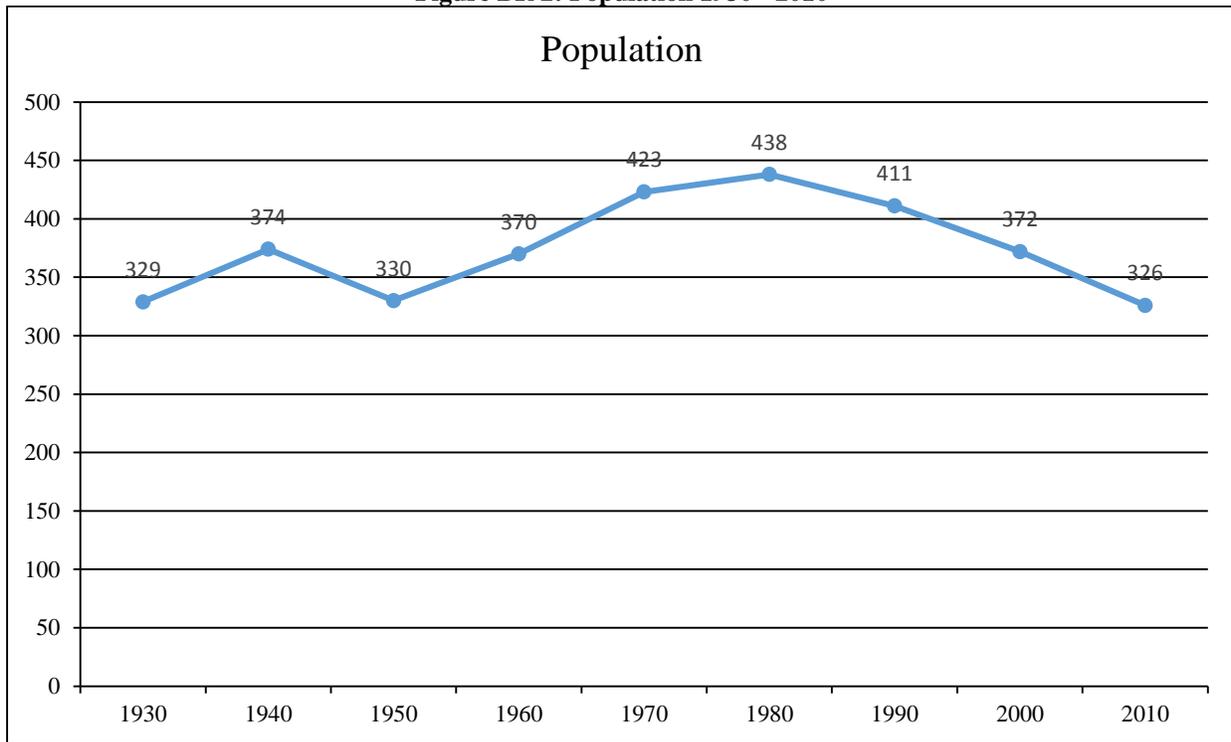
TRANSPORTATION

Brule’s major transportation corridors include U.S. Highway 30, Nebraska Highway 51A, and Interstate 80, which is located just south of the Village. Highway 30 has on average 1,320 vehicles per day with 115 of those being heavy commercial vehicles. Highway 51A has on average 1,045 vehicles with 100 heavy commercial vehicles. Interstate 80 near Brule has on average 12,975 vehicles per day with 6,505 heavy commercial vehicles. The Union Pacific Railroad has a rail line that travels through the southern portion of the community. Transportation information is important for hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk to transportation incidents.

DEMOGRAPHICS

The following figure displays the historical population trend from 1930 to 2010. This figure indicates that the population of Brule has been decreasing since 1980. A declining population can lead to more unoccupied housing that is not being maintained and is then at risk to high winds and other hazards. Furthermore with fewer residents, there is decreasing tax revenue for the community, which could make implementation of mitigation projects more fiscally challenging.

Figure BR 2: Population 1930 - 2010



Source: U.S. Census Bureau

The following table indicates that the Village of Brule has a lower percentage of children under the age of 5 when compared to the rest of the County. However, there is a higher percentage of residents over the age of 64 than the rest of the County. The median age is also significantly higher than the County and the State of Nebraska. Elderly populations may be more vulnerable to certain hazards than other population groups. For a more elaborate discussion of this vulnerability, please see *Section Four: Risk Assessment*.

Table BR 3: Population by Age

Age	Brule	Keith County	State of Nebraska
<5	1.5%	4.5%	7.2%
5-64	70.5%	73.2%	79.2%
>64	28.0%	22.3%	13.6%
Median	55.4	48.5	36.2

Source: U.S. Census Bureau, 2010, Table DP-1

The following table indicates that Brule’s median household income is over \$7,000 less than the rest of the County. Median home values and median rent are also lower when compared to the County. These economic indicators are relevant to hazard mitigation because they indicate the relative economic strength compared to the County and state as a whole. Economic indicators may also influence a community’s resiliency to hazardous events.

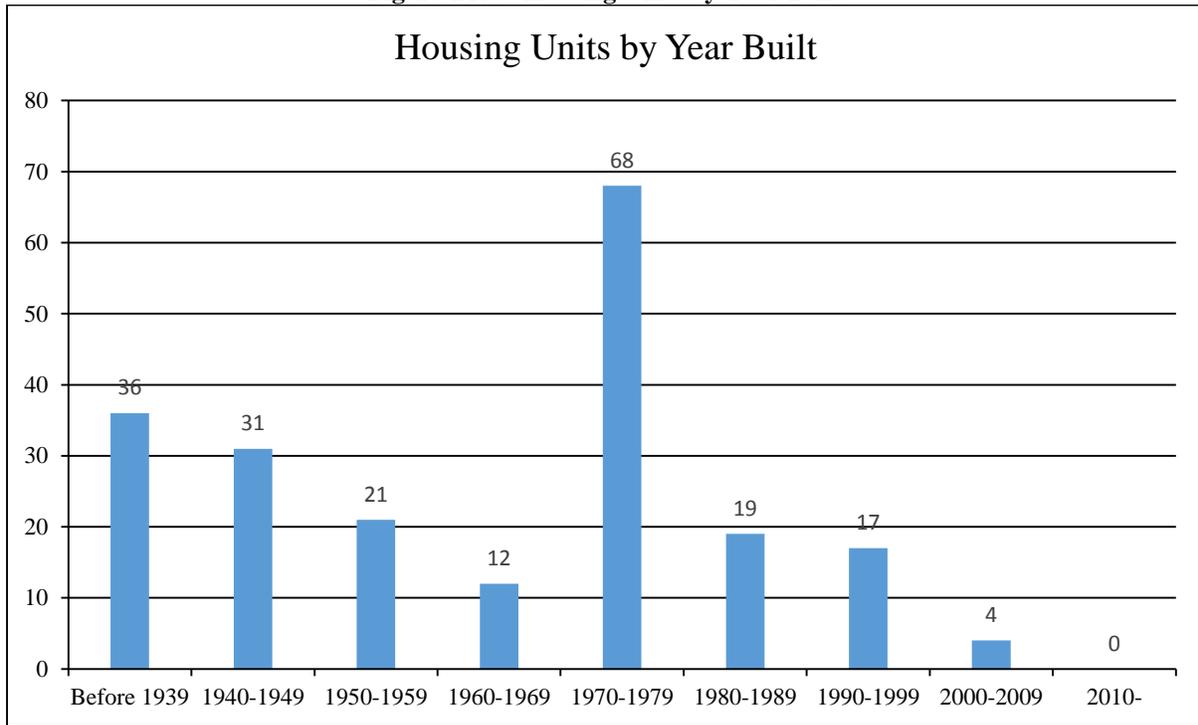
Table BR 4: Housing and Income

	Brule	Keith County	State of Nebraska
Median Household Income	\$34,792	\$41,970	\$51,672
Per Capita Income	\$24,123	\$25,097	\$26,899
Median Home Value	\$64,600	\$91,500	\$128,000
Median Rent	\$567	\$601	\$706

Source: U.S. Census Bureau, 2009-2013 American Community Surveys 5-year Estimates, Table DP03 and DP04

The following figure indicates that the majority of the housing in Brule was built prior to 1980. According to 2009-2013 ACS 5-year estimates, the community has 208 housing units with 81.3 percent of those units occupied. According to local estimates, approximately 65 percent of houses are occupied by a single person. 48.1 percent of the community’s housing was built before 1970. The initial Flood Insurance Rate Map (FIRM) was developed in September 1985. Housing built prior to 1985 may not be constructed above the base-flood elevation requirements and may be at risk to flooding. Furthermore, housing age can serve as an indicator of risk as structures built prior to state building codes may be at greater risk, and unoccupied housing may suggest that future development may be less likely to occur. According to the local Planning Team, Brule has a number of vacant houses. Finally, communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornados, and severe winter storms. There are approximately 17 mobile homes in the community.

Figure BR 3: Housing Units by Year Built



Source: U.S. Census Bureau, 2009-2013 American Community Surveys 5-year Estimates, Table DP04

Table BR 5: Housing Units

Jurisdiction	Total Housing Units				Occupied Housing Units			
	Occupied		Vacant		Owner		Renter	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Brule	169	81.3	39	18.7%	144	85.2%	25	14.8%
Keith County	3,786	70.2%	1,610	29.8%	2,649	70.0%	1,137	30.0%

Source: Selected Housing Characteristics, 2009 - 2013 ACS 5-year estimate

Major Employers

Major employers in Brule include CHS, and Hi-Line Coop. Many residents also commute to Ogallala, and Big Springs.

FUTURE DEVELOPMENT TRENDS

In the last five years, Housing and Urban Development built one house, and a couple of businesses have closed. Many families have moved away since the school closed, further contributing to the declining population. Future land use map was unavailable at this time.

STRUCTURAL INVENTORY AND VALUATION

The Planning Team requested GIS parcel data from the County Assessor. 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 BR 6: Structural Inventory/Parcel Improvements

Number of Improvements	Total Improvement Value	Mean Value of Improvements Per Parcel	Number of Improvements in Floodplain	Value of Improvements in Floodplain
19	\$4,014,340	\$211,281	6	\$3,862,930

CRITICAL INFRASTRUCTURE/KEY RESOURCES

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environmental Quality, there is one chemical storage site in Brule.

Table BR 7: Chemical Storage Fixed Sites

Facility	Address	Hazardous Material
Hi-Line Co-op Inc.	209 S. State Street, Brule	Counter

Source: Nebraska Department of Environmental Quality

Historic Sites

According to the National Register of Historic Places for Nebraska, there are no historic sites located in Brule.

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. 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 BR 8: Critical Facilities

Number	Critical Facility	In Floodplain?
1	Village Office	No
2	Well	No
3	Water Tower	No
4	Village Shop	No
5	Well	Yes
6	Wastewater Treatment Facility	Yes

Figure BR 4: Critical Facilities



HISTORICAL OCCURRENCES

The events recorded by NCDC are broken down by two types: county-based and zone-based events. The county-based records are events that affect the jurisdictions within the county. The zone-based records are those affecting the zone (or a large area) that include the county as part of the affected zone. For zone-based events, there are 68 recorded events from January 1996 to December 2014. The following table summarizes these events.

Table BR 9: NCDC Severe Weather Events

Date	Hazard	Events	Deaths	Injuries	Property Damage
6/12/2007	Flash Flood	1	0	0	\$125,000
9/18/2013	Flood	1	0	0	\$335,000
6/6/2010	Funnel Cloud	1	0	0	\$0
8/2/2012	Lightning	1	0	0	\$0
5/23/1996 - 5/7/2014	Hail Avg. Size: 0.96 in. Most Common Size: 0.88 in. Largest: 1.75 in. Smallest: 0.75 in.	55	0	0	\$30,000
5/28/2000 - 7/30/2013	Thunderstorm Wind Average: 52 kts EG Largest: 61 kts Smallest: 52 kts	9	0	0	\$11,000
Total		68	0	0	\$501,000

Source: 1996-2014 National Climatic Data Center

kts = knots; MG = Measured Gust; EG = Estimated Gust; E=Estimate

It should be noted that property and crop damage from the NCDC Storm Events Database should only be considered as broad estimates. The National Weather Service makes a best guess on these amounts at the time of the publication from a variety of sources. 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.

RISK ASSESSMENT

Hazard Identification

The following table is a localized risk assessment of hazards identified specifically for Brule. Refer to *Section Four: Risk Assessment* for an explanation of this methodology.

Table BR 10: Risk Assessment

HAZARD TYPE	PREVIOUS OCCURRENCE Yes/No	LOCAL LOSSES	SPECIFIC CONCERNS IDENTIFIED
Agricultural Animal Disease	No	-	None
Agricultural Plant Disease	No	-	None
Chemical Spills (Fixed Site)	No	-	None
Chemical Spills (Transportation)	No	-	None

HAZARD TYPE	PREVIOUS OCCURRENCE Yes/No	LOCAL LOSSES	SPECIFIC CONCERNS IDENTIFIED
Dam Failure*	No	-	Large percentage of population in inundation areas
Drought	Yes	-	None
Earthquakes	No	-	None
Extreme Heat	Yes	-	None
Flooding*	Yes	\$460,000	Property damages, poor drainage
Grass/Wildfires	Yes	-	None
Hail	Yes	\$30,000	None
High Winds	Yes	-	None
Landslides	No	-	None
Levee Failure	No	-	None
Severe Thunderstorms*	Yes	\$11,000	Property damages, power outages
Severe Winter Storms*	Yes	-	Power outages, closed transportation routes
Terrorism	No	-	None
Tornados*	No	-	Large percent of population with increased vulnerability

*Identified by the Planning Team as a top concern for the jurisdiction

For more information regarding these area wide hazards, please see *Section Four: Risk Assessment*. The following provides community specific information, reported in Brule's Risk Assessment Summary that is relevant to each hazard.

Dam Failure

The following table provides information on the high hazard dam located near Brule. According to the Keith County LEOP, 70 percent of Brule's population is in the inundation area in the event of dam failure.

Table BR 11: High Hazard Dams in Brule

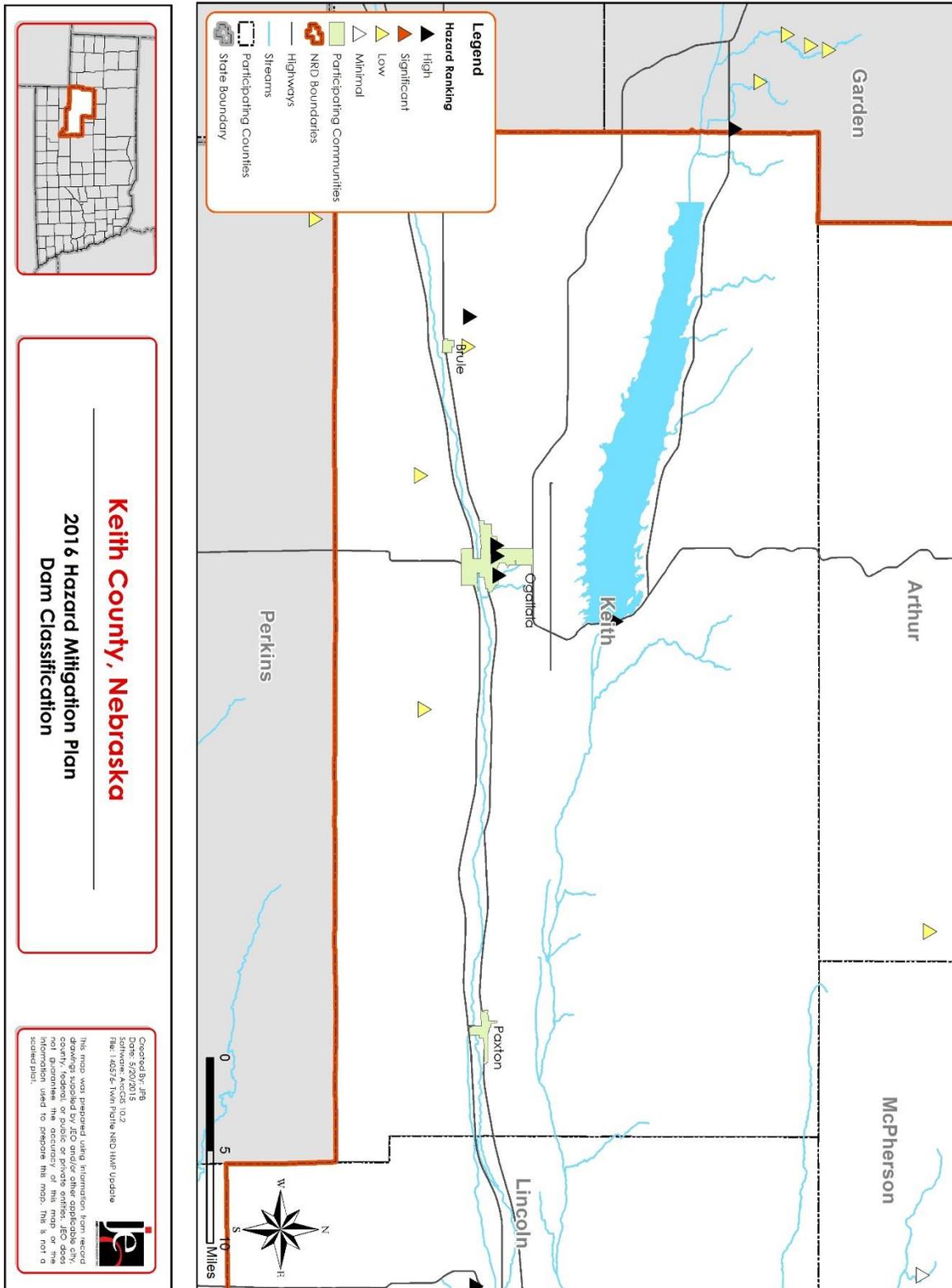
NIDID	Dam Name	Location	Name of Stream	Owner
NE00211	Brule Creek 1-A	Brule	Brule Canyon Creek	Twin Platte NRD

Source: NDNR

Implemented mitigation actions:

- Keith County LEOP addresses dam failure

Figure BR 5: Map of High Hazard Dams



Flooding

Brule is a member of the NFIP; however, there are no policies in force, and there are no repetitive flood loss properties.

Brule is in a topographical low point, and as a result, all rainwater from the north funnels there. Brule has worked to dig a series of drainage ditches on the north end of town. The northeast corner of town frequently floods. In particular, 2nd Street commonly floods, with past events resulting in 18 to 24 inches of water flooding in buildings on 2nd Street. Banks, Post Offices, and City Offices are located in this vulnerable area.

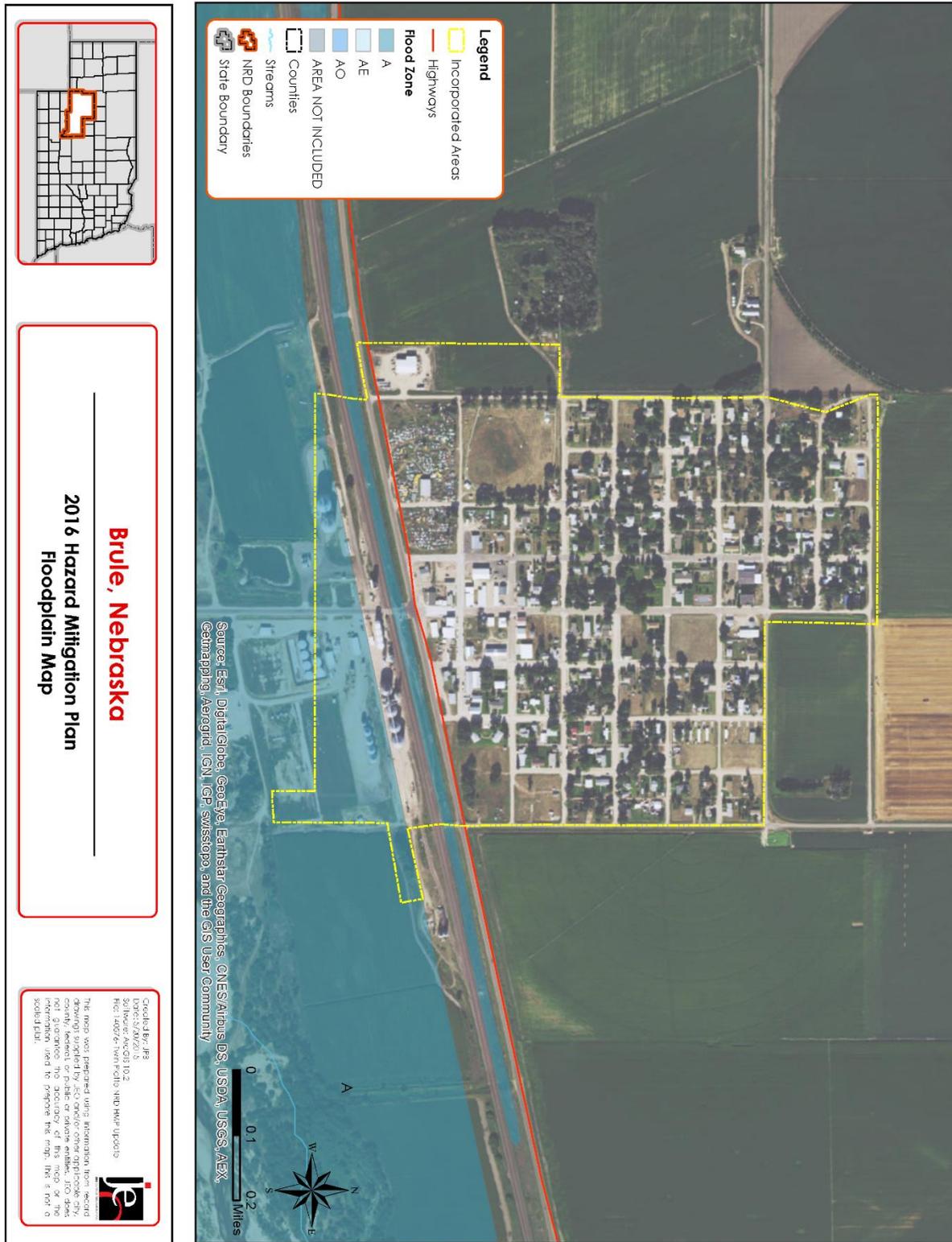
Implemented mitigation actions:

- Streets were widened to improve drainage
- Diesel generator at treatment plant
- Emergency plan in place
- Mutual aid agreements with neighboring communities
- Installed large dike system north of town

Identified mitigation actions

- Upgrade backup generators at treatment plant and lift station
- Upgrade culverts

Figure BR 6: Map of 1% Annual Chance Floodplain



Severe Thunderstorms

Severe thunderstorms are a regular part of the climate in Brule. Past events have led to extended power outages. In the 1960's, severe thunderstorms caused a power outage for 2 to 3 weeks. Recently, if there is a power outage due to a severe thunderstorm, it typically lasts for 2 to 6 hours. If there is a power outage, the Village cannot chlorinate the water. The Village has a water supply of 24 hours.

Implemented mitigation actions:

- Power company maintains trees around power lines

Identified mitigation actions:

- Upgrade backup generators at treatment plant and lift station

Severe Winter Storms

The County will help clear roadways following a severe winter storm. The Village will work to immediately clear roads for access to the Fire Department, Hospital, and Village Shop. The priority roadways are: Keith Street, State Street, 8th Street, Walnut Street, 2nd Street and Olive Street.

Implemented mitigation actions:

- Backup generator located at the Fire Department

Tornados

Tornados have the potential to cause significant property damages and loss of life. Brule has a number of mobile homes that are more vulnerable to high wind speeds. The older population may also be more vulnerable to tornados.

Implemented mitigation actions:

- There are 3 warning sirens and updated one of them in summer of 2015

GOVERNANCE

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Brule is governed by a five member Village Board led by a chairperson. The Village also has a number of offices or departments that may be involved in implementing hazard mitigation initiatives.

- Clerk/Treasurer
- Utility Superintendent
- Fire Department
- Sewage Plant Operator
- Sewer/Water/Street Commissioner
- Economic Development
- Community Improvement Group

CAPABILITY ASSESSMENT

The capability assessment consisted of two main components: a Capability Assessment Survey completed by the jurisdiction, and a review of local existing policies, regulations, plans, and 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 BR 12: Capability Assessment

Survey Components/Subcomponents		Existing (Yes/No)
Planning and Regulatory Capability	Comprehensive Plan	No
	Capital Improvements Plan	Yes
	Hazard Mitigation Plan	Yes
	Economic Development Plan	Yes
	Emergency Operational Plan	Yes
	Natural Resources Protection Plan	No
	Open Space Preservation Plan	No
	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	No
	Other (if any)	
Administrative and Technical Capability	Planning Commission	Yes
	Hazard Mitigation Planning Commission	No
	Floodplain Administration	Yes
	Emergency Manager	Yes
	GIS Coordinator	No
	Chief Building Official	Yes
	Civil Engineering	Yes
	Staff Who Can Assess Community’s Vulnerability to Hazards	Yes
	Grant Manager	No
	Other (if any)	
Fiscal Capability	Capital Improvement Project Funding	Yes
	Community Development Block Grant	Yes
	Authority to Levy Taxes for Specific Purposes	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 and Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	No
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes
	Natural Disaster or Safety related school programs	No

Survey Components/Subcomponents		Existing (Yes/No)
	StormReady Certification	No
	Firewise Communities Certification	No
	Public-private partnership initiatives addressing disaster-related issues	Yes
	Other (if any)	

PLAN INTEGRATION

Building safe and smart communities can be accomplished through effective Plan Integration. Integrating hazard mitigation principles into other local planning mechanisms, such as plans addressing land use, transportation, climate change, sustainability, natural and cultural resource protection, watershed management, economic development and others can greatly increase an area's level of resiliency. While this HMP planning period involved interdepartmental coordination at the local level, this planning process also sought to analyze how existing planning mechanisms were presently integrated and identify opportunities for further integration. The plans listed in the preceding table were analyzed using guidance from FEMA's 2014 *Plan Integration Guide*. The following paragraph presents a summary of the findings of this analysis.

Brule has an annex to the Keith County Local Emergency Operations Plan that was last updated in 2012. The plan addresses a number of hazards including: flood, dam failure, fire, hazardous materials, agricultural disease, and terrorism. The LEOP mitigates the impacts of these hazards by increasing the local officials' awareness of the assigned responsibilities and appropriate response.

Although it is identified in the capability assessment that Brule has some plans and ordinances in place, they are not currently integrated with the hazard mitigation plan. When the village does update local planning mechanisms, Brule will work to integrate the goals and objectives of the hazard mitigation plan within them (as appropriate). Currently there is not a plan or schedule related to the update of other (non-HMP) local planning mechanisms, thus there is no formal strategy for plan integration at this time. Further, the priorities and mitigation strategies included in this plan will be revisited annually, as established in the plan review section of this document, for consideration during the development of the annual budget. As resources are available mitigation projects will be implemented.

Summary

Brule has limited administrative, technical and fiscal capabilities to implement mitigation projects without assistance. Larger projects such as drainage improvements will require that Brule look to partner with the County, TPNRD, and other regional and state agencies. Brule did not participate in the previous Hazard Mitigation Plan. However, through this update process, the Planning Team identified mitigation projects to complete.

MITIGATION STRATEGY

Ongoing and New Mitigation Actions

Action	Improve/provide adequate backup and emergency generators
Action Items	1. Identify and evaluate current backup and emergency generators 2. Obtain additional generators based on identification and evaluation
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms, Flooding
Estimated Cost	\$20,000 to \$50,000 per generator
Potential Funding	HMGP, PDM, Village Funds, Private entities
Timeline	2-5 Years
Priority	High

Section Seven-Appendix C: Village of Brule

Action	Improve/provide adequate backup and emergency generators
Lead Agency	Village Board, Emergency Management

Action	Stormwater system and drainage improvements
Action Items	1. Upgrade culverts and other stormwater infrastructure
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Estimated Cost	\$2,000 to \$100,000
Potential Funding	HMGP, PDM, Village Funds, Private entities
Timeline	2-5 Years
Priority	High
Lead Agency	Village Board, Village Maintenance

CITY OF OGALLALA



Twin Platte Natural Resources District Multi-Jurisdictional Hazard Mitigation Plan Update

INTRODUCTION

The 2016 Twin Platte NRD (TPNRD) Multi-Jurisdictional Hazard Mitigation Plan (HMP) is an update to the plan that was adopted by TPNRD and the City of Ogallala in August 2011. This HMP includes two primary sections: the Regional Hazard Mitigation Plan and the Community (i.e. County, Municipality, and School District) Profiles. Community Profiles include similar information to that provided in the Regional Section, but also specific information for the communities, including the following elements:

- Participation
- Location/Geography
- Climate
- Demographics
- Transportation
- Future Development Trends
- Parcel Improvements and Valuations
- Critical Infrastructure and Key Resources
- Historical Hazard Events
- Hazard Identification and Risk Assessment
- Governance
- Capability Assessment
- Plan Integration
- Mitigation Actions

PARTICIPATION

Local Planning Team

Table OG 1 provides the list of participating community members that comprised the Ogallala local Planning Team. Members of the Planning Team attended Round 1 and Round 2 meetings and provided important information including, but not limited to: confirming demographic information, critical facilities, structural inventory, future development trends, hazard history and impacts, identifying hazards of greatest concern for the community, and prioritization of mitigation actions that address the hazards at risk to the community.

Table OG 1: The City of Ogallala Local Planning Team

Name	Title	Department / Organization
Jane Skinner	Clerk	City of Ogallala
Aaron Smith	City Manager	City of Ogallala
Pete Peterson	Emergency Manager	Keith County

Public Participation

The local Planning Team made several efforts to notify the public of this planning process and how they could participate in the development of the plan update. The following table identifies the dates and types of public outreach notifications.

Table OG 2: Public Notification Efforts

Date	Notification	Location
May 28, 2015	Project Website	http://jeo.com/tphmp/
March 17, 2016	Community Profile available for public comment and review	https://jeo.com/tphmp

LOCATION AND GEOGRAPHY

The City of Ogallala is located in the central portion of Keith County and covers an area of 5.02 square miles. Major waterways in the area include the South Platte River, which runs through the southern portion of the city, McConaughy Lake, and the North Platte River are just north of the city.

Figure OG 1: Map of the City of Ogallala



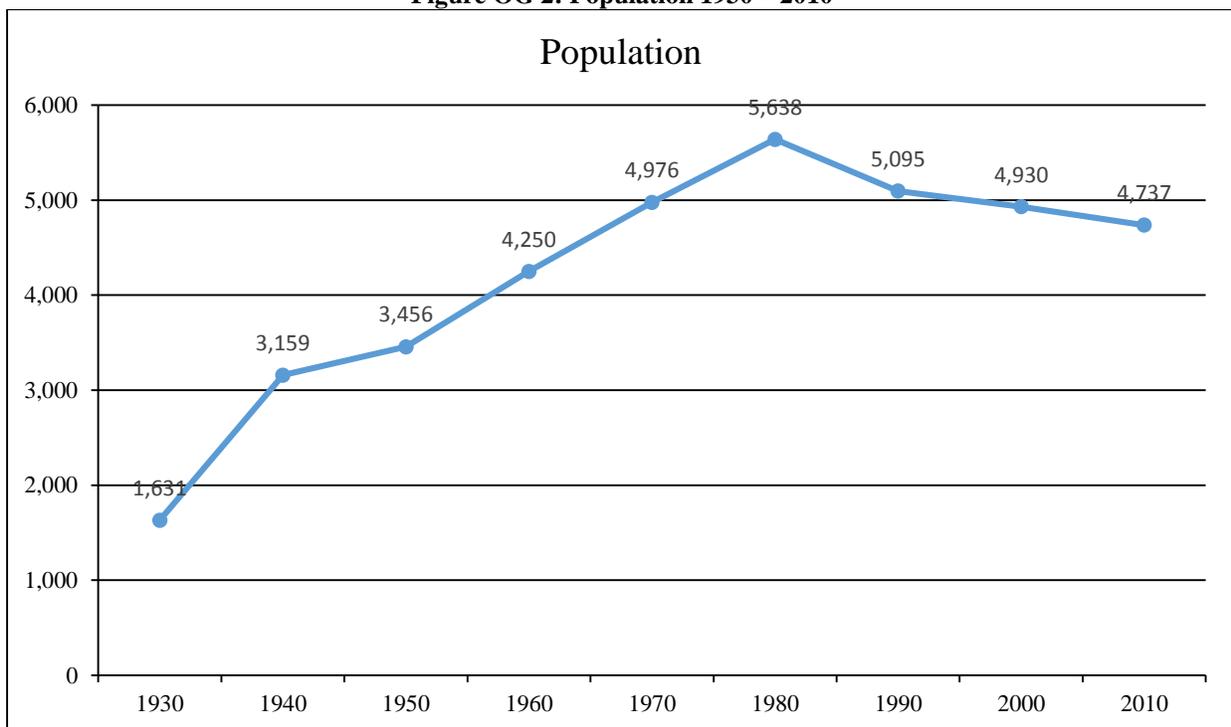
TRANSPORTATION

Ogallala’s major transportation corridors include Interstate 80, , U.S. Highways 26 and 30, and Nebraska Highway 61. For Interstate 80, there are on average 13,380 vehicles per day with 6,755 of those being heavy commercial vehicles. Highway 30 has on average 3,385 vehicles per day with 575 heavy commercial vehicles, and Highway 61 has on average 7,005 vehicles with 700 heavy commercial vehicles. The Union Pacific Railroad has a rail line that travels through the southern portion of the city. Lastly, the airport, Searle Field, is located west of the city. Transportation information is important for hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk to transportation incidents.

DEMOGRAPHICS

The following figure displays the historical population trend from 1930 to 2010. This figure indicates that the population of Ogallala has been decreasing since 1980. A declining population can lead to an increase in unoccupied housing that is not being maintained. Furthermore with fewer residents, there is decreasing tax revenue for the community, which could make implementation of mitigation projects more fiscally challenging.

Figure OG 2: Population 1930 – 2010



Source: U.S. Census Bureau

The following table indicates that the City of Ogallala has a higher percentage of children under the age of 5 compared to the rest of the County. The median age for Ogallala is about 3 years younger than the County. Young and elderly populations may be more vulnerable to certain hazards than other population groups. For a more elaborate discussion of this vulnerability, please see *Section Four: Risk Assessment*.

Table OG 3: Population by Age

Age	Ogallala	Keith County	State of Nebraska
<5	5.8%	4.5%	7.2%
5-64	73.1%	73.2%	79.2%
>64	21.1%	22.3%	13.6%
Median	45.4	48.5	36.2

Source: U.S. Census Bureau, 2010, Table DP-1

The following table indicates that Ogallala’s median household income is about \$2,500 lower when compared to the rest of the County. The per capita income, median home values, and median rent are all slightly lower than the rest of the County. These economic indicators are relevant to hazard mitigation because they indicate the relative economic strength compared to the County and state as a whole. Economic indicators may also influence a community’s resiliency to hazardous events.

Table OG 4: Housing and Income

	Ogallala	Keith County	State of Nebraska
Median Household Income	\$39,435	\$41,970	\$51,672
Per Capita Income	\$22,996	\$25,097	\$26,899
Median Home Value	\$88,700	\$91,500	\$128,000
Median Rent	\$588	\$601	\$706

Source: U.S. Census Bureau, 2009-2013 American Community Surveys 5-year Estimates, Table DP03 and DP04

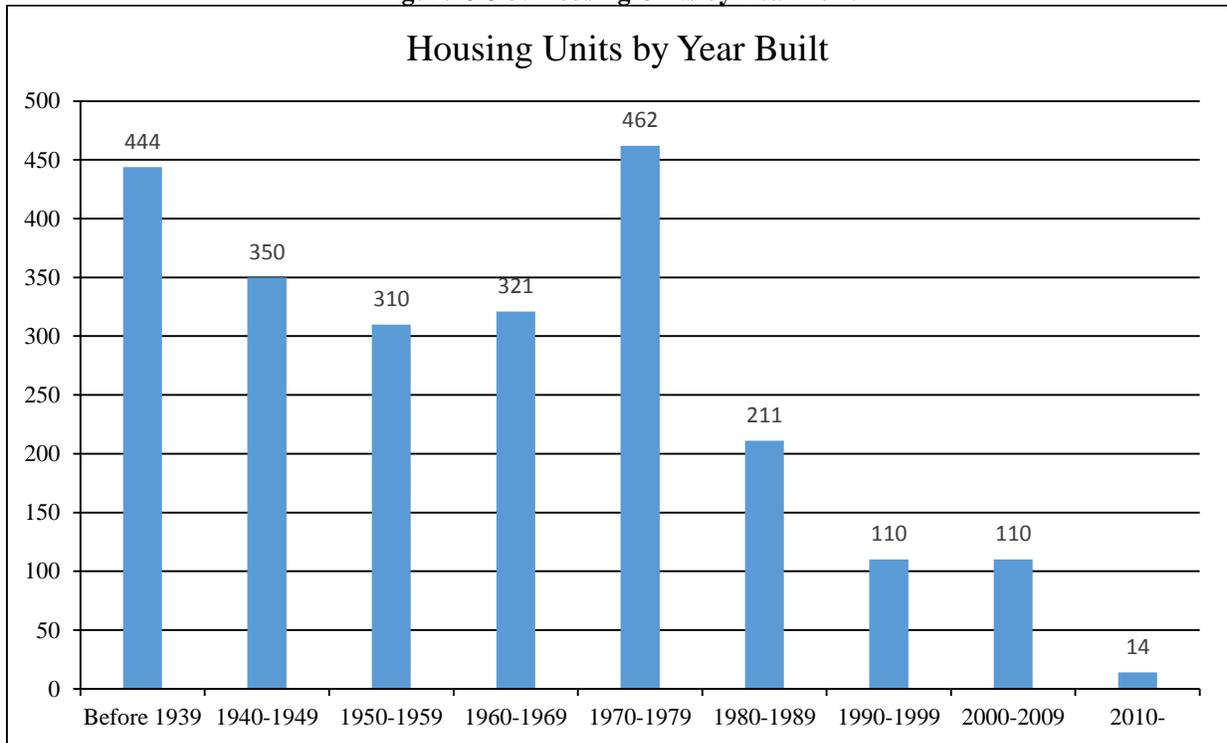
The following figure indicates that the majority of the housing in Ogallala was built prior to 1970. According to 2009-2013 ACS 5-year estimates, the community has 2,318 housing units with 91.3 percent of those units occupied. The initial Flood Insurance Rate Map (FIRM) was developed in 1987. Housing built prior to 1987 may not be constructed above the base-flood elevation requirements and may be at risk to flooding. Furthermore, housing age can serve as an indicator of risk as structures built prior to state building codes may be at greater risk, and unoccupied housing may suggest that future development may be less likely to occur.

There are approximately 154 mobile homes in the community. The locations of these mobile homes are shown in the table below. Communities with a substantial number of mobile homes may be more vulnerable to the impacts of high winds, tornados, and severe winter storms.

Table OG 5: Mobile Home Parks

Name	Address
L & L	255 Road East 85
Erlewine HMP	103 Johnson Drive
3 Pines	1109 East 4
Piper	202 East H Street
Hillcrest Mobile Home Park	102 W 32 nd Street
Hillcrest Homes	502 W 32 nd Street
Ogallala Mobile Home Park	1605 N. Spruce Street
Crum Court	225 East H Street

Figure OG 3: Housing Units by Year Built



Source: U.S. Census Bureau, 2009-2013 American Community Surveys 5-year Estimates, Table DP04

Table OG 6: Housing Units

Jurisdiction	Total Housing Units				Occupied Housing Units			
	Occupied		Vacant		Owner		Renter	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Ogallala	2,117	91.3%	201	8.7%	1,422	67.2%	695	32.8%
Keith County	3,786	70.2%	1,610	29.8%	2,649	70.0%	1,137	30.0%

Source: Selected Housing Characteristics, 2009 - 2013 ACS 5-year estimate

MAJOR EMPLOYERS

Major Employers in Ogallala include:

- Ogallala Community Hospital
- American Shizuki Corp.
- Ogallala Livestock
- Adams Bank
- Arnold Engineering
- Wal-Mart
- Bomgaars
- Sapp Brothers
- Safeway
- SunMart
- Travel Centers
- 21st Century
- City of Ogallala
- Keith County
- RCS
- Ogallala Public Schools

FUTURE DEVELOPMENT TRENDS

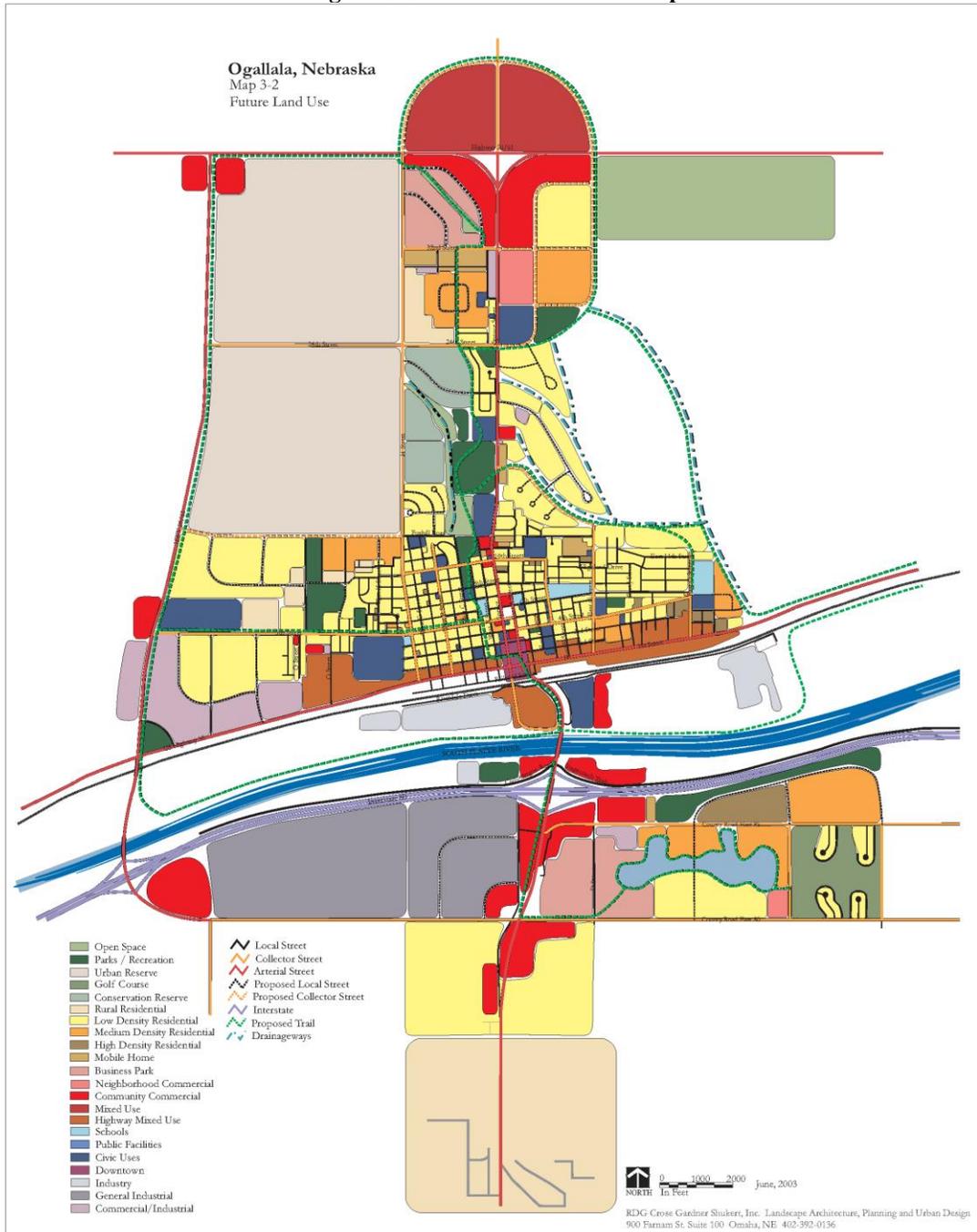
According to the census data, Ogallala’s population is declining. The local Planning Team mentioned factors that contribute to the decline include lack of housing, and agricultural businesses are changing how they operate. In the past five years, a few buildings have been demolished: Plaza Inn, Lakeway Lodge, Midwest Motel, Riverview Apartments, and Prairie View School.

In the past five years, there has been a large amount of new construction. These include:

- Wal-Mart
- Mi Ranchito
- Prairie View Addition
- Claas
- Midwest Electric
- Dickinson Land Surveyors
- WRG
- Scottie’s Potties
- Hospital addition
- 21st Century addition
- RicNic Seed
- 11 new homes
- Storage facilities
- Ace Hardware
- Dollar General
- Godfathers Pizza

There are some residential and commercial developments planned for the next five years including pocket neighborhoods and agribusiness, such as Bass Pro Shop.

Figure OG 4: Future Land Use Map



STRUCTURAL INVENTORY AND VALUATION

The Planning Team requested GIS parcel data from the County Assessor. 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 OG 7: Structural Inventory/Parcel Improvements

Number of Improvements	Total Improvement Value	Mean Value of Improvements Per Parcel	Number of Improvements in Floodplain	Value of Improvements in Floodplain
191	\$8,488,010	\$44,439	21	\$4,279,675

CRITICAL INFRASTRUCTURE/KEY RESOURCES***CHEMICAL STORAGE FIXED SITES***

According to the Tier II System reports submitted to the Nebraska Department of Environmental Quality, there are a total of 14 chemical storage sites in Ogallala, and six of these house materials that are categorized as hazardous. The following table lists facilities that only house hazardous materials.

Table OG 8: Chemical Storage Fixed Sites

Facility	Address	Hazardous Material
AT&T Interstate 6080	Road East 60, Ogallala	Sulfuric Acid
CenturyLink	218 W A Street, Ogallala	Sulfuric Acid
Ogallala Electronics	601 W. 1 st Street, Ogallala	Nitric Acid, Sodium Cyanide, Aluminum and Steel Alloys
Sprint Nextel Ogallala Regen	Highway 30 W, Ogallala	Sulfuric Acid
Union Pacific Railroad	711 E Riverdale Drive, Ogallala	Sulfuric Acid
Winfield Solutions LLC	312 W. O Street, Ogallala	Rozol Prairie Dog Bait, WF Dimate, Kaput Prairie Dog Bait, Lannate LV, Gramoxone SL, Thimet 20G, Counter 20G, Vydate CLV,

Source: Nebraska Department of Environmental Quality

Local concerns regarding chemical fixed sites focus on the potential for a fire at the site, and the hazardous response. No significant chemical spills have occurred lately. Including the facilities above, the local Planning Team is concerned with the following chemical storage facilities: Farmer's Coop, and Grainland Coop. Some critical facilities are located near chemical fixed sites. The Keith County Roads Department is 600 feet north of Winfield Solutions. Some vulnerable populations are located near chemical fixed sites such as the Senior Center near the Grainland Co-op.

HISTORIC SITES

According to the National Register of Historic Places for Nebraska, there are 3 historic sites located in Ogallala.

Table OG 9: National Historic Registry

Site Name	Date Listed	In Floodplain?
Leonidas A. Brandhoefer Mansion	10/3/1973	No
Standard Oil Red Crown Service Station	8/20/2004	No
Ogallala United States Post Office	5/11/1992	No

Source: Nebraska State Historical Society

CRITICAL FACILITIES

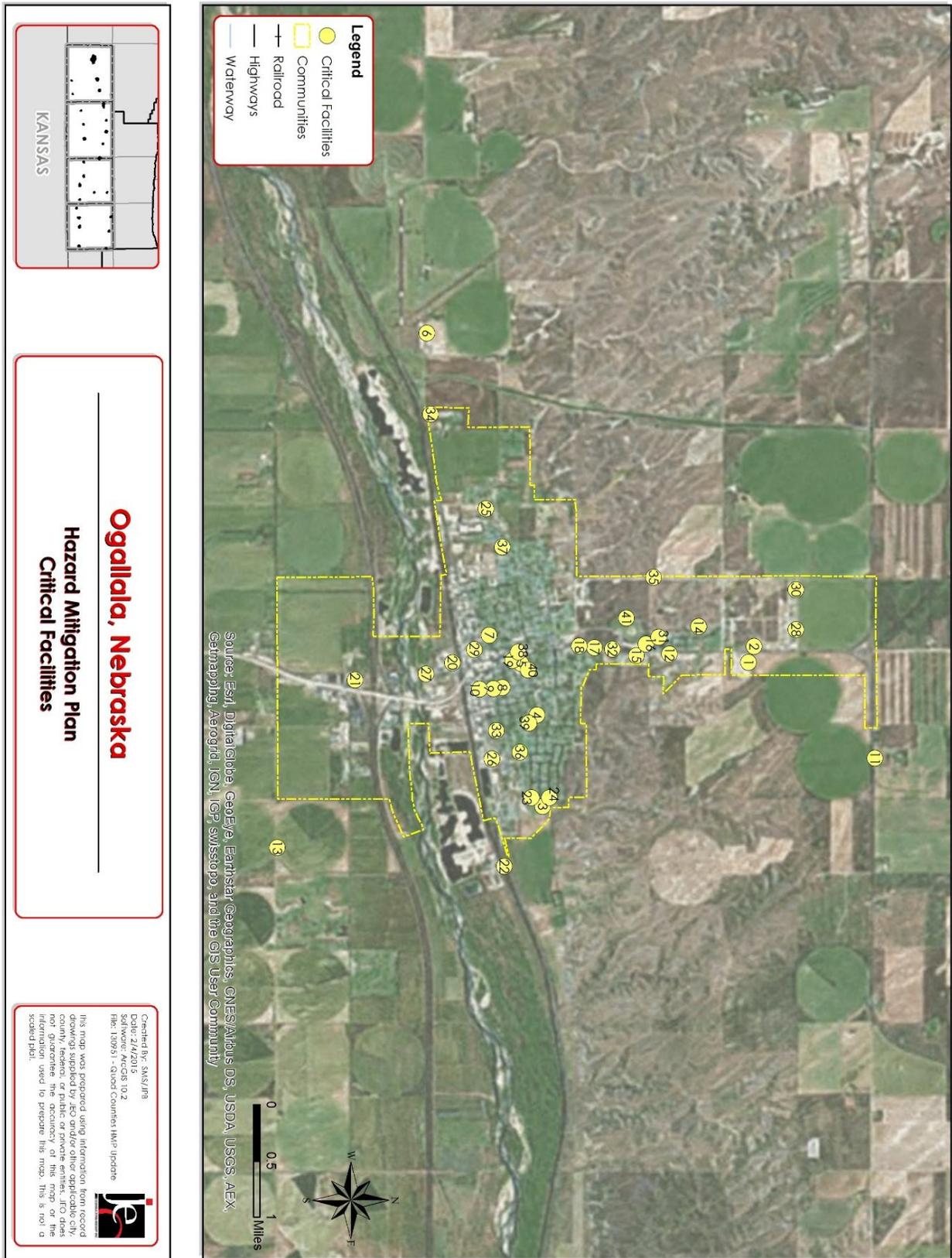
Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction’s functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated 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 OG 10: Critical Facilities

Number	Name	In Floodplain?
1	Ogallala Community Hospital	No
2	Education Service Unit 16 School	No
3	Prairie View School	No
4	Ogallala High School	No
5	Keith County Sheriff’s Department	No
6	Nebraska State Patrol	Yes
7	Saint Paul’s Lutheran School	No
8	Saint Luke’s Catholic School	No
9	Ogallala Fire Station	No
10	Ogallala Police Department	No
11	Ogallala well field	No
12	Ogallala well field	No
13	Ogallala well	No
14	Ogallala Water Storage Tank	No
15	City Well at Well Life	No
16	NPPD Substation	No
17	Keith County 911 tower	No
18	Aboveground water storage	No
19	Emergency Operation Center	No
20	NPPD Sub station	Yes
21	Ogallala Water storage tank and well	Yes
22	City Wastewater Treatment Facility	Yes
23	Kinder Morgan natural gas pumping station	No
24	NPPD Sub station	No
25	NPPD Sub station	No
26	Above ground bulk petroleum facility	Yes
27	Above ground bulk petroleum facility	Yes
28	Northwestern Mobile Home Park	No
29	Keith County Senior Center	No
30	Hillcrest Mobile Home Park	No
31	Indian Hills Manor	No
32	Ogallala Court	No
33	Piper Mobile Home Park	No
34	Erlewine Mobile Home Park	No
35	L & L Mobile Home Park	No

36	Three Pines Mobile Home Park	No
37	Warning Siren	No
38	Warning Siren	No
39	Warning Siren	No
40	Warning Siren	No
41	Warning Siren	No

Figure OG 5: Critical Facilities



HISTORICAL OCCURRENCES

The events recorded by NCDC are broken down by two types: county-based and zone-based events. The county-based records are events that affect the jurisdictions within the county. The zone-based records are those affecting the zone (or a large area) that include the county as part of the affected zone. For county-based events, which were reported for Ogallala, there are 107 reported severe weather events from January 1996 to December 2014. Table OG 11 is a summary of those events.

It should be noted that property and crop damage from the NCDC Storm Events Database should only be considered as broad estimates. The National Weather Service makes a best guess on these amounts at the time of the publication from a variety of sources. 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.

Table OG 11: NCDC Severe Weather Events

Date	Hazard	Events	Deaths	Injuries	Property Damage
7/6/2002 – 6/27/2014	Flash Flood	2	0	0	\$0
6/6/2010	Funnel Cloud	1	0	0	\$0
7/29/2001	Lightning	1	0	1	\$0
5/15/1996 - 6/27/2014	Hail Avg. Size: 1.18 in. Largest: 4.0 in. Smallest: 0.75 in.	67	0	0	\$1,432,000
7/15/1996 - 8/23/2014	Thunderstorm Wind Most Common Size: 52 kts Largest: 91 kts Smallest: 50 kts	26	0	0	\$265,000
6/5/1996 - 3/28/2007	Tornado Most Common Speed: EF0 Largest: EF1 Smallest: EF0	10	0	0	\$855,000
	Total	107	0	1	\$2,552,000

Source: 1996-2014 National Climatic Data Center

kts = knots; MG = Measured Gust; EG = Estimated Gust; E=Estimate

RISK ASSESSMENT

Hazard Identification

The following table is a localized risk assessment of hazards identified specifically for Ogallala. Refer to *Section Four: Risk Assessment* for an explanation of this methodology.

Table OG 12: Risk Assessment

HAZARD TYPE	PREVIOUS OCCURRENCE Yes/No	LOCAL LOSSES	SPECIFIC CONCERNS IDENTIFIED
Agricultural Animal Disease	Yes	-	None
Agricultural Plant Disease	Yes	-	None
Chemical Spills (Fixed Site)	No	Yes	None
Chemical Spills (Transportation)*	Yes	-	Property damages, injuries, loss of life
Dam Failure	No	-	None
Drought	Yes	-	None
Earthquakes	No	-	None
Extreme Heat	Yes	-	None
Flooding*	Yes	-	Property damages, injuries, loss of life
Grass/Wildfires*	Yes	-	Property damages, loss of life
Hail*	Yes	\$1,432,000	Property damages
High Winds	Yes	-	None
Landslides	No	-	None
Levee Failure	No	-	None
Severe Thunderstorms*	Yes	\$265,000	Property damages, power outages
Severe Winter Storms*	Yes	-	Property damages, power outages
Terrorism	No	-	None
Tornados*	Yes	\$855,000	Property damages, injuries, loss of life

*Identified as a top concern by local Planning Team

For more information regarding these area wide hazards, please see *Section Four: Risk Assessment*. The following provides community specific information, reported in Ogallala’s Risk Assessment Summary that is relevant to each hazard.

Dam Failure

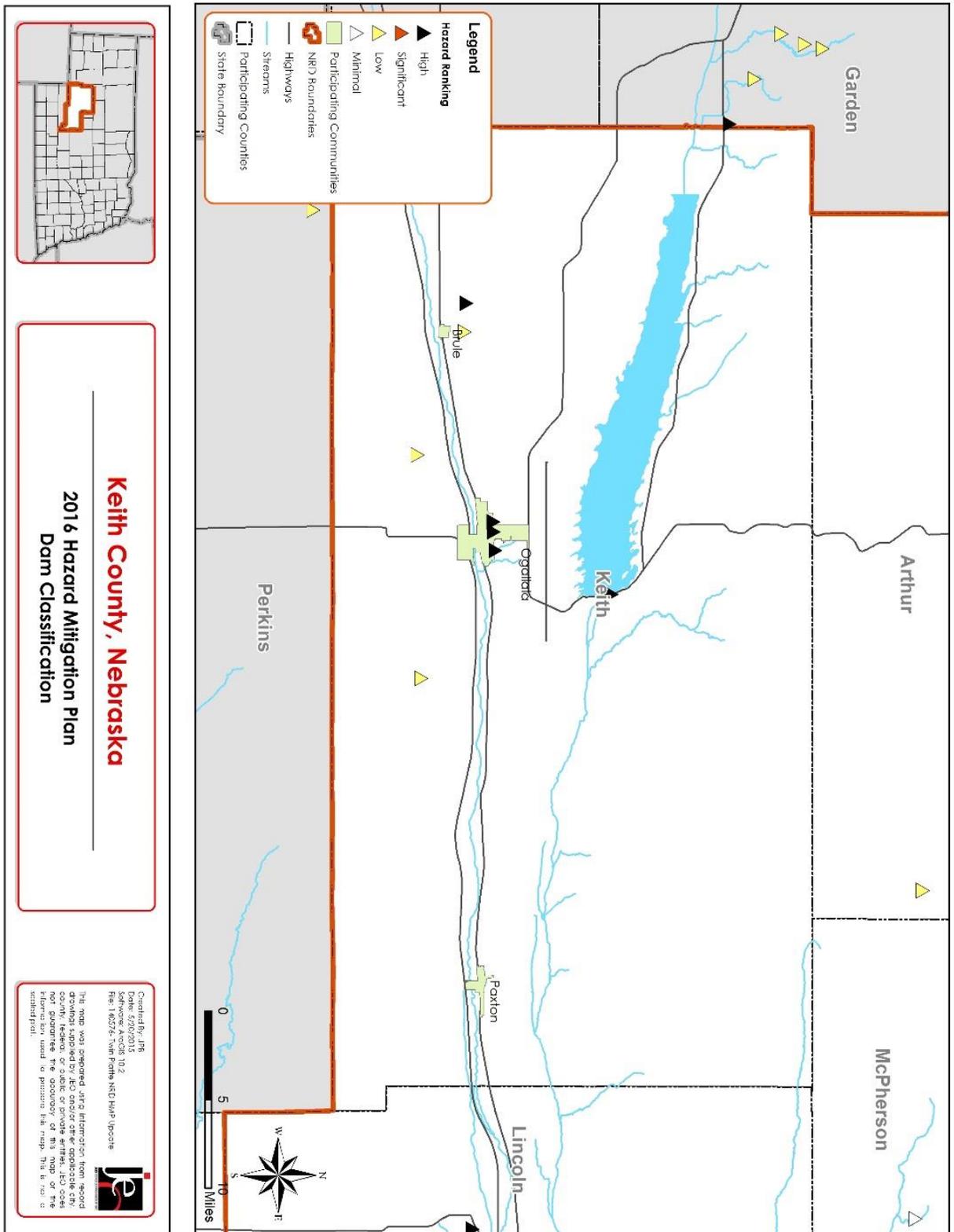
The following table provides a list of the high hazard dams located in Ogallala.

Table OG 13: High Hazard Dams

NIDID	Dam Name	Location	Name of Stream	Owner
NE00210	Cure Creek 1-A	Ogallala	Tr-South Platte River	City of Ogallala
NE02331	Ogallala No 6 (West Dam)	Ogallala	Tr-South Platte River	City of Ogallala
NE0334	Ogallala No 7 (East Dam)	Ogallala	Tr-South Platte River	City of Ogallala

Source: NDNR

Figure OG 6: Map of Dams in Keith County



According to the Keith County LEOP, a failure of one or another of the dams in Keith County could result in 15% of Ogallala's population in inundation areas. Dam failure could result in high water, significant property damages, and loss of life. Within the Keith County LEOP, there is an emergency plan for the Ogallala Dams. Also, each high hazard dam has a structure specific Emergency Action Plan. Ogallala does have an evacuation plan that will continue to be updated as necessary. The city has also determined places for emergency shelters including St. Paul's Church.

Implemented mitigation actions:

- Drafted evacuation plan
- Established locations of emergency shelters

Flooding

Ogallala has 31 NFIP policies in-force for \$9,054,200, and there are no repetitive flood loss properties. NCDC reports only two flooding events in Ogallala since 1996. The local Planning Team identified one particular flooding event in 2002 in which the Platte River flooded. Recent flooding events have damaged the effluent tube at the wastewater treatment plant.

Implemented mitigation actions:

- Ogallala participates in the NFIP

Identified mitigation actions:

- Reduce flow restrictions in Platte River
- Evaluate mitigation alternatives to improve stormwater drainage

Grass/Wildfire

Wildfire has the potential to cause loss of property and life. The local Planning Team indicated that there have been recent range fires, but they have not impacted municipal facilities. The water supply has been determined as being sufficient for firefighting.

Implemented mitigation actions:

- Sprinkler systems in some critical facilities, and are required in new construction
- Fire department has a fire prevention education program
- Mutual Aid Agreement with neighboring fire departments

Hail

Hail is a frequently occurring hazard in Ogallala and the rest of the planning area. NCDC reports that there have been 67 recorded hail events in Ogallala since 1996. The largest hail event had 4.0 inch hailstones. In total, these events have caused \$1,432,000 in property damages. The local Tree Board will continue to evaluate trees to reduce damages from hail.

Implemented mitigation actions:

- Established local Tree Board
- Municipal facilities are insured for hail

Severe Thunderstorms

Severe thunderstorms are a regular occurrence in Ogallala and the rest of the planning area. NCDC reports that there have been 26 thunderstorm wind events in Ogallala since 1996. These storms have caused a reported \$265,000 in damages. Severe thunderstorms can cause significant property damage and loss of

life. Storms can knock over trees causing power outages. There are hazardous trees sporadically across town that need to be removed.

Implemented mitigation actions:

- Critical municipal records are protected with surge protectors on electronic devices
- Hospital has backup generators
- NPPD can bring in generators if needed
- Weather radios are in hospital and nursing homes

Severe Winter Storms

Severe winter weather have the potential to cause significant damages. According to the local Planning Team, there have not been any structural damages to critical facilities from severe winter storms. There are designated snow routes. Streets are cleared by the city and removal resources are sufficient for local events.

Implemented mitigation actions:

- Established designated snow routes
- Acquired adequate snow removal equipment for local events

Tornados

Tornadic events have the potential to cause significant damages and loss of life. According to NCDC reports there have been 10 tornados and one funnel cloud within Ogallala since 1996. These storms caused \$855,000 in property damages. The local Planning Team described a recent tornadic event that blew off roofs, destroyed mobile homes, and destroyed a house. Ogallala does not have any safe rooms.

Implemented mitigation actions:

- Municipal records are backed up in the cloud
- County offers Code Red warning system
- Educational outreach activities
- Mutual Aid Agreements with neighboring fire departments

GOVERNANCE

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Ogallala is governed by a five member City Council led by a chairperson. Ogallala has a number of offices or departments that may be involved in implementing hazard mitigation initiatives.

- Clerk/Treasurer
- City Manager
- Board of Health
- Civil Service Commission
- Community Redevelopment Authority
- Housing Authority
- Library Board
- Ogallala Youth Committee
- Planning Commission
- RSVP Advisory Committee
- Tree Board
- Zoning Board of Adjustments
- Municipal Airport
- Economic Development
- Fire Department
- Parks and Recreation
- Police Department
- Street Department
- Waste Water Treatment Plant
- Water Department
- Public Transit

CAPABILITY ASSESSMENT

The capability assessment consisted of two main components: a Capability Assessment Survey completed by the jurisdiction, and a review of local existing policies, regulations, plans, and 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 OG 14: Capability Assessment

Survey Components/Subcomponents		Existing (Yes/No)
Planning and Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Hazard Mitigation Plan	Yes
	Economic Development Plan	Yes
	Emergency Operational Plan	Yes
	Natural Resources Protection Plan	No
	Open Space Preservation Plan	No
	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	No
	Other (if any)	
Administrative and Technical Capability	Planning Commission	Yes
	Hazard Mitigation Planning Commission	Yes
	Floodplain Administration	Yes
	Emergency Manager	Yes
	GIS Coordinator	Yes
	Chief Building Official	Yes
	Civil Engineering	Yes (contract)
	Staff Who Can Assess Community’s Vulnerability to Hazards	Yes
	Grant Manager	Yes (contract)
	Other (if any)	
Fiscal Capability	Capital Improvement Project Funding	Yes
	Community Development Block Grant	Yes
	Authority to Levy Taxes for Specific Purposes	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 and Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Yes
	Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Yes

Survey Components/Subcomponents		Existing (Yes/No)
	Natural Disaster or Safety related school programs	Yes
	StormReady Certification	Yes
	Firewise Communities Certification	No
	Public-private partnership initiatives addressing disaster-related issues	No
	Other (if any)	

PLAN INTEGRATION

Building safe and smart communities can be accomplished through effective Plan Integration. Integrating hazard mitigation principles into other local planning mechanisms, such as plans addressing land use, transportation, climate change, sustainability, natural and cultural resource protection, watershed management, economic development and others can greatly increase an area's level of resiliency. While this HMP planning period involved interdepartmental coordination at the local level, this planning process also sought to analyze how existing planning mechanisms were presently integrated and identify opportunities for further integration. The plans listed in the preceding table were analyzed using guidance from FEMA's 2014 *Plan Integration Guide*. The following paragraph presents a summary of the findings of this analysis.

Ogallala has an annex to the Keith County Local Emergency Operations Plan that was last updated in 2012. The plan addresses a number of hazards including: flood, dam failure, fire, hazardous materials, agricultural disease, and terrorism. The LEOP mitigates the impacts of these hazards by increasing the local officials' awareness of the assigned responsibilities and appropriate response. The Local Emergency Operations Plan also includes an emergency plan for the Ogallala Dams.

Although it is identified in the capability assessment that Ogallala has other plans and ordinances in place, they are not currently integrated with the hazard mitigation plan. When the city does update local planning mechanisms, Ogallala will work to integrate the goals and objectives of the hazard mitigation plan within them (as appropriate). Currently there is not a plan or schedule related to the update of other (non-HMP) local planning mechanisms, thus there is no formal strategy for plan integration at this time. Further, the priorities and mitigation strategies included in this plan will be revisited annually, as established in the plan review section of this document, for consideration during the development of the annual budget. As resources are available mitigation projects will be implemented.

Summary

The City of Ogallala has the administrative staff and technical and fiscal capabilities to implement some mitigation projects without assistance. Larger projects such as drainage improvements may require that the city look to partner with Keith County, TPNRD, and other regional and state agencies. Through this update process, the Planning Team reviewed previously identified mitigation projects and added new projects as well.

MITIGATION STRATEGY

Completed Mitigation Actions

Action	Improve warning systems
Action Items	<ol style="list-style-type: none"> 1. Evaluate current warning systems 2. Improve warning systems/develop new warning system 3. Obtain/upgrade warning system equipment and methods, including alert sirens

Action	Improve warning systems
	<ol style="list-style-type: none"> 4. Identify locations of weather warning radios 5. Improve weather radio system 6. Obtain/upgrade weather radios
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All hazards
Priority	Medium
Status	Completed in 2005
Lead Agency	Emergency Manager, City Council

Ongoing and New Mitigation Actions

Action	Reduce flow restrictions
Action Items	<ol style="list-style-type: none"> 1. Evaluate restrictions and measures to prevent or reduce damage from flooding 2. Implement appropriate nonstructural or structural methods on an emergency or permanent basis (such as monitoring, ice jam dusting, or other flow improvements)
Goal/Objective	Goal 2/ Objective 2.2
Hazard(s) Addressed	Flood
Estimated Cost	\$10,000 to \$50,000 for studies; \$10,000 to \$100,000+ for infrastructure/structural improvements
Potential Funding	HMGP, PDM, City funds, County funds, Twin Platte NRD
Timeline	5+ Years
Priority	Low
Status	Twin Platte NRD evaluates water levels and risk to flooding; Ogallala has contract services with consultant to identify methods to reduce flooding risk
Lead Agency	City Manager, Twin Platte NRD, Emergency Management

Action	Maintain Status in NFIP
Action Items	<ol style="list-style-type: none"> 1. Continue to regulate development in floodplain areas 2. Adopt future floodplain maps when available 3. Conduct additional floodplain mapping/remapping
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flood
Estimated Cost	Existing staff
Potential Funding	City budget
Timeline	Ongoing
Priority	Medium
Status	This is a continuous action
Lead Agency	Floodplain Administrator, Planning & Zoning

Action	Stormwater System and Drainage Improvements
Action Items	<ol style="list-style-type: none"> 1. Undersized systems can contribute to localized flooding. Improvements may include pipe upsizing and additional inlets. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Estimated Cost	\$10,000 - \$250,000
Potential Funding	HMGP, PDM, City Budget
Timeline	2-5 Years
Priority	Medium
Status	Evaluating mitigation alternatives. Currently screening potential projects for grant funding
Lead Agency	Floodplain Administrator, Planning & Zoning

Removed Mitigation Actions

Action	Improve electrical service
Action Items	<ol style="list-style-type: none"> 1. Evaluate hardening, retrofitting, looping and/or burying of power lines and related infrastructure and/or comparable protection measures 2. Implement measures to improve electrical service

Action	Improve electrical service
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms, Hail
Reason for Removal	NPPD is responsible for this action. City has limited ability to implement action

Action	Reduce fire damage
Action Items	<ol style="list-style-type: none"> 1. Identify vulnerable areas and combustion sources 2. Evaluate fire resistant roofing 3. Develop plan to reduce wildfire impact and reduce combustion materials 4. Reduce combustible material by removal or other methods 5. Enact building codes/ordinances for fire resistant roofing
Hazard(s) Addressed	Wildfire
Reason for Removal	No local support for action

Action	Update floodplain information/mapping
Action Items	<ol style="list-style-type: none"> 1. Conduct mapping/remapping of floodplain 2. Revise floodplain/insurance maps
Hazard(s) Addressed	Flood
Reason for Removal	Automatically continually updated

Action	Reduce damages in floodplain
Action Items	<ol style="list-style-type: none"> 1. Evaluate repetitive loss or potential loss structures located in floodplain 2. Acquire, relocate or elevate flood prone property 3. Elevate equipment vulnerable to flooding
Hazard(s) Addressed	Flooding
Reason for removal	No longer needed. No repetitive loss structures and new structures are built to prescribed elevations

Action	Reduce water demand/drought education
Action Items	<ol style="list-style-type: none"> 1. Develop/improve public awareness program 2. Develop or obtain materials and conduct multi-faceted public education
Hazard(s) Addressed	Drought
Reason for removal	No longer needed. Twin Platte NRD leads education efforts. Ogallala uses PSA's as needed

VILLAGE OF PAXTON



Twin Platte Natural Resources District Multi-Jurisdictional Hazard Mitigation Plan Update

INTRODUCTION

The 2016 Twin Platte NRD (TPNRD) Multi-Jurisdictional Hazard Mitigation Plan (HMP) is an update to the plan that was adopted by TPNRD and the Village of Paxton in August 2011. This HMP includes two primary sections: the Regional Hazard Mitigation Plan and the Community (i.e. County, Municipality, and School District) Profiles. Community Profiles include similar information to that provided in the Regional Section, but also specific information for the communities, including the following elements:

- Participation
- Location/Geography
- Climate
- Demographics
- Transportation
- Future Development Trends
- Parcel Improvements and Valuations
- Critical Infrastructure and Key Resources
- Historical Hazard Events
- Hazard Identification and Risk Assessment
- Governance
- Capability Assessment
- Plan Integration
- Mitigation Actions

PARTICIPATION

Local Planning Team

Table PX 1 shows the community member that comprised the Paxton local Planning Team. The Planning Team attended Round 1 and Round 2 meetings, or attended makeup meetings and provided important information including, but not limited to: confirming demographic information, critical facilities, structural inventory, future development trends, hazard history and impacts, identifying hazards of greatest concern for the community, and prioritization of mitigation actions that address the hazards at risk to the community.

Table PX 1: The Village of Paxton Local Planning Team

Name	Title	Department / Organization
Lori Gamet	Clerk/Floodplain Administrator	Village of Paxton

Public Participation

The local Planning Team made several efforts to notify the public of this planning process and how they could participate in the development of the plan update. The following table identifies the dates and types of public outreach notifications.

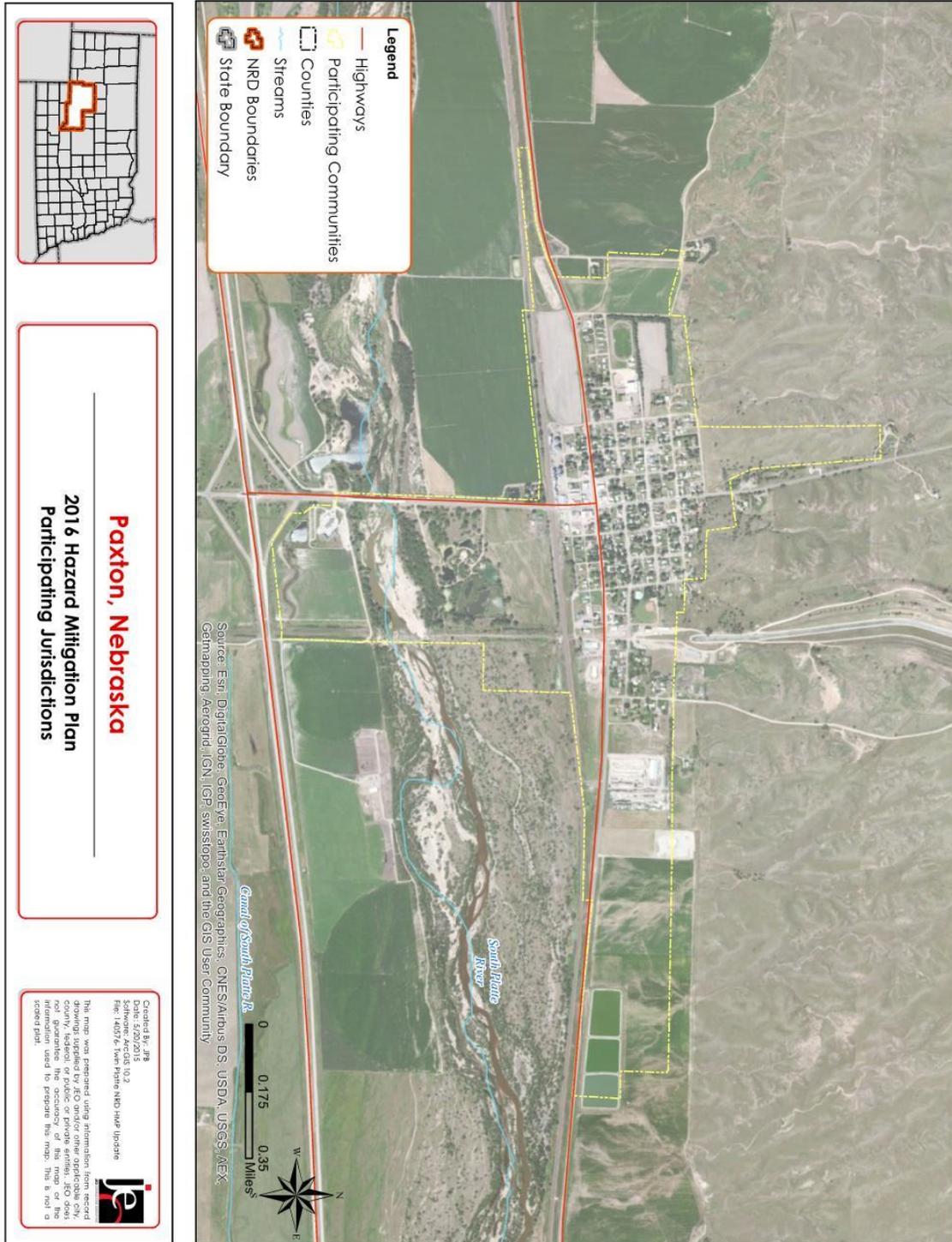
Table PX 2: Public Notification Efforts

Date	Notification	Location
May 28, 2015	Project Website	http://jeo.com/tphmp/
March 17, 2016	Community Profile available for public comment and review	https://jeo.com/tphmp

LOCATION AND GEOGRAPHY

The Village of Paxton is located in the eastern portion of Keith County and covers an area of 1.03 square miles. Major waterways in the area include the South Platte River, which runs through the far southern portion of the Village, and the North Platte River a few miles north of the Village.

Figure PX 1: Map of the Village of Paxton



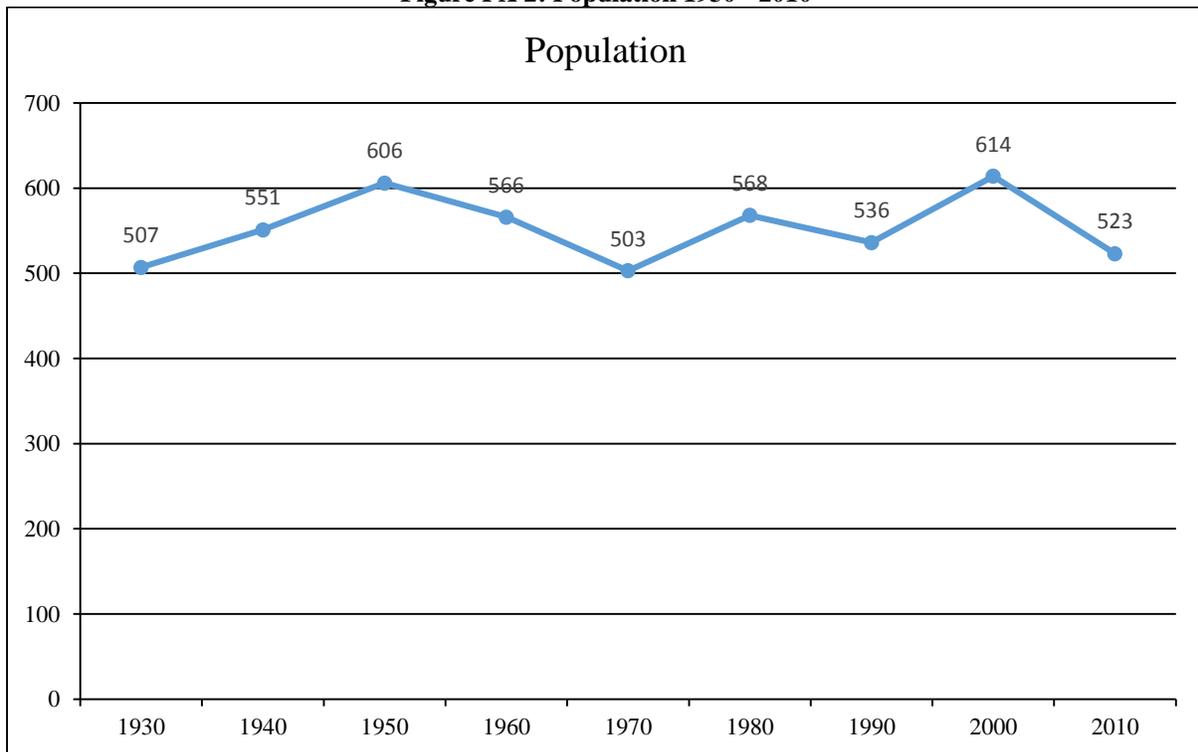
TRANSPORTATION

Paxton’s major transportation corridors include U.S. Highway 30, Nebraska Highway 51C, and Interstate 80. U.S. Highway 30 has on average 1,370 vehicles per day with 190 of those being heavy commercial vehicles. Highway 51C has on average 1,495 vehicles per day with 130 heavy commercial vehicles, and Interstate 80 has on average 13,225 per day with 6,670 of those being heavy commercial vehicles. The Union Pacific Railroad has a rail line that travels through the southern portion of the Village. Transportation information is important for hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk to transportation incidents.

DEMOGRAPHICS

The following figure displays the historical population trend from 1930 to 2010. This figure indicates that the population of Paxton has experienced periods of growth and decline since 1970. However, between 2000 and 2010, the population has declined. A decrease in population results in a decrease in tax revenue for the Village, which can make it more difficult to fiscally implement mitigation projects.

Figure PX 2: Population 1930 - 2010



Source: U.S. Census Bureau

The following table indicates that the Village of Paxton has a higher percentage of residents under the age of 5, a larger portion of residents between the ages of 5-64, but a significantly lower portion of residents over the age of 64 when compared to the rest of the County. The median age of 39.2 in Paxton is also significantly younger than the County. Young and elderly populations may be more vulnerable to certain hazards than other population groups. For a more elaborate discussion of this vulnerability, please see *Section Four: Risk Assessment*.

Table PX 3: Population by Age

Age	Paxton	Keith County	State of Nebraska
<5	7.1%	4.5%	7.2%
5-64	78.9%	73.2%	79.2%
>64	14.0%	22.3%	13.6%
Median	39.2	48.5%	36.2

Source: U.S. Census Bureau, 2010, Table DP-1

The following table indicates that Paxton’s median household income is nearly \$10,000 higher than the County’s median income. The per capita income and median home value, and median rent are lower when compared to the rest of the County. These economic indicators are relevant to hazard mitigation because they indicate the relative economic strength compared to the County and state as a whole. Economic indicators may also influence a community’s resiliency to hazardous events.

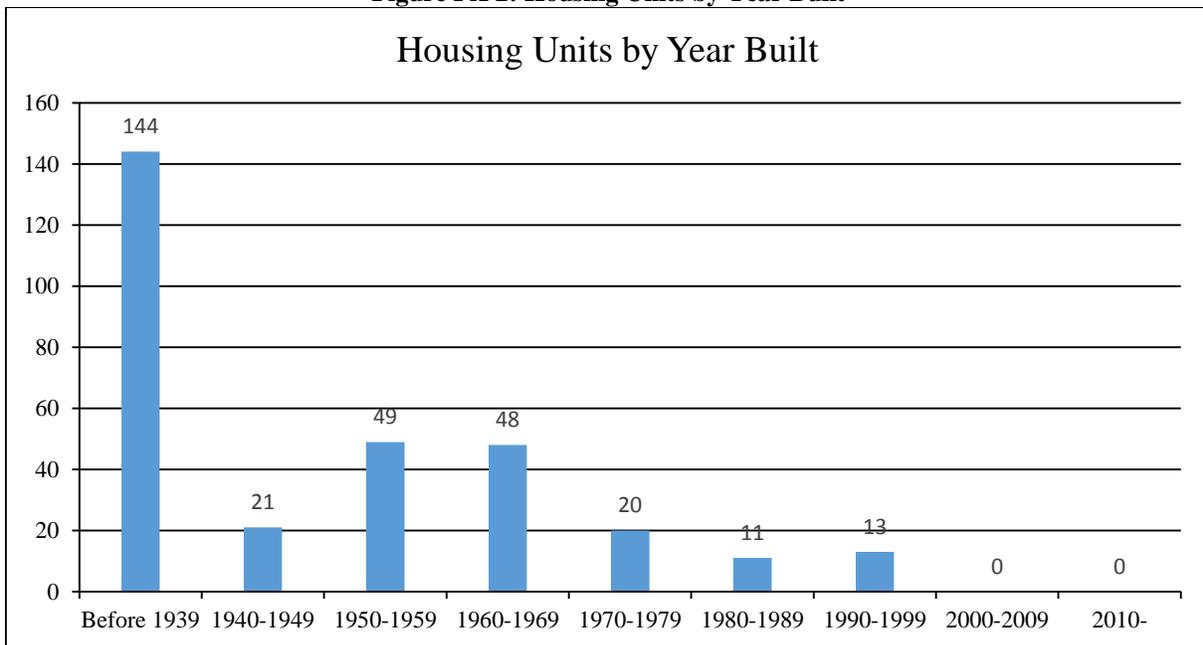
Table PX 4: Housing and Income

	Paxton	Keith County	State of Nebraska
Median Household Income	\$51,154	\$41,970	\$51,672
Per Capita Income	\$24,159	\$25,097	\$26,899
Median Home Value	\$64,300	\$91,500	\$128,000
Median Rent	\$578	\$601	\$706

Source: U.S. Census Bureau, 2009-2013 American Community Surveys 5-year Estimates, Table DP03 and DP04

The following figure indicates that the majority of the housing in Paxton was built prior to 1970. According to 2009-2013 ACS 5-year estimates, the community has 276 housing units with 92.8 percent of those units occupied. There are approximately 11 mobile homes in the community and 52.2 percent of the community’s housing was built before 1939. The initial Flood Insurance Rate Map (FIRM) was developed in September 1985. Housing built prior to 1985 may not be constructed above the base-flood elevation requirements and may be at risk to flooding. Furthermore, housing age can serve as an indicator of risk as structures built prior to state building codes may be at greater risk, and unoccupied housing may suggest that future development may be less likely to occur.

Figure PX 2: Housing Units by Year Built



Source: Source: U.S. Census Bureau, 2009-2013 American Community Surveys 5-year Estimates, Table DP04

Table PX 5: Housing Units

Jurisdiction	Total Housing Units				Occupied Housing Units			
	Occupied		Vacant		Owner		Renter	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Paxton	256	92.8%	20	7.2%	177	69.1%	79	30.9%
Keith County	3,786	70.2%	1,610	29.8%	2,649	70.0%	1,137	30.0%

Source: Selected Housing Characteristics, 2009 - 2013 ACS 5-year estimate

MAJOR EMPLOYERS

Major employers in Paxton are Paxton Consolidated Schools and Titan Industries. Many residents also commute to North Platte and Ogallala.

FUTURE DEVELOPMENT TRENDS

There has not been any construction in Paxton for quite some time. Fifteen years ago was the last time a house was built in the Village. In the past five years, the winery downtown went out of business. The community has identified that lack of available housing as a hindrance to growth. The Village recently annexed property in the northeast to add housing. The school just passed an eight million dollar bond for construction. Paxton Consolidated Schools has a great reputation and draws many students and residents to the Village. The Paxton future land use map is unavailable at this time.

STRUCTURAL INVENTORY AND VALUATION

The Planning Team requested GIS parcel data from the County Assessor. 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 PX 6: Structural Inventory/Parcel Improvements

Number of Improvements	Total Improvement Value	Mean Value of Improvements Per Parcel	Number of Improvements in Floodplain	Value of Improvements in Floodplain
34	\$466,590	\$13,723	5	\$115,130

CRITICAL INFRASTRUCTURE/KEY RESOURCES

CHEMICAL STORAGE FIXED SITES

According to the Tier II System reports submitted to the Nebraska Department of Environmental Quality, there are a total of 3 chemical storage sites in Paxton, and 2 of these house materials that are categorized as hazardous. The following table lists facilities that only house hazardous materials.

Table PX 7: Chemical Storage Fixed Sites

Facility	Address	Hazardous Material
AT&T	Road East N S, Paxton	Battery Acid
AT&T	151 Road East O S, Paxton	Sulfuric Acid

Source: Nebraska Department of Environmental Quality

HISTORIC SITES

According to the National Register of Historic Places for Nebraska, there are no historic sites located in Paxton.

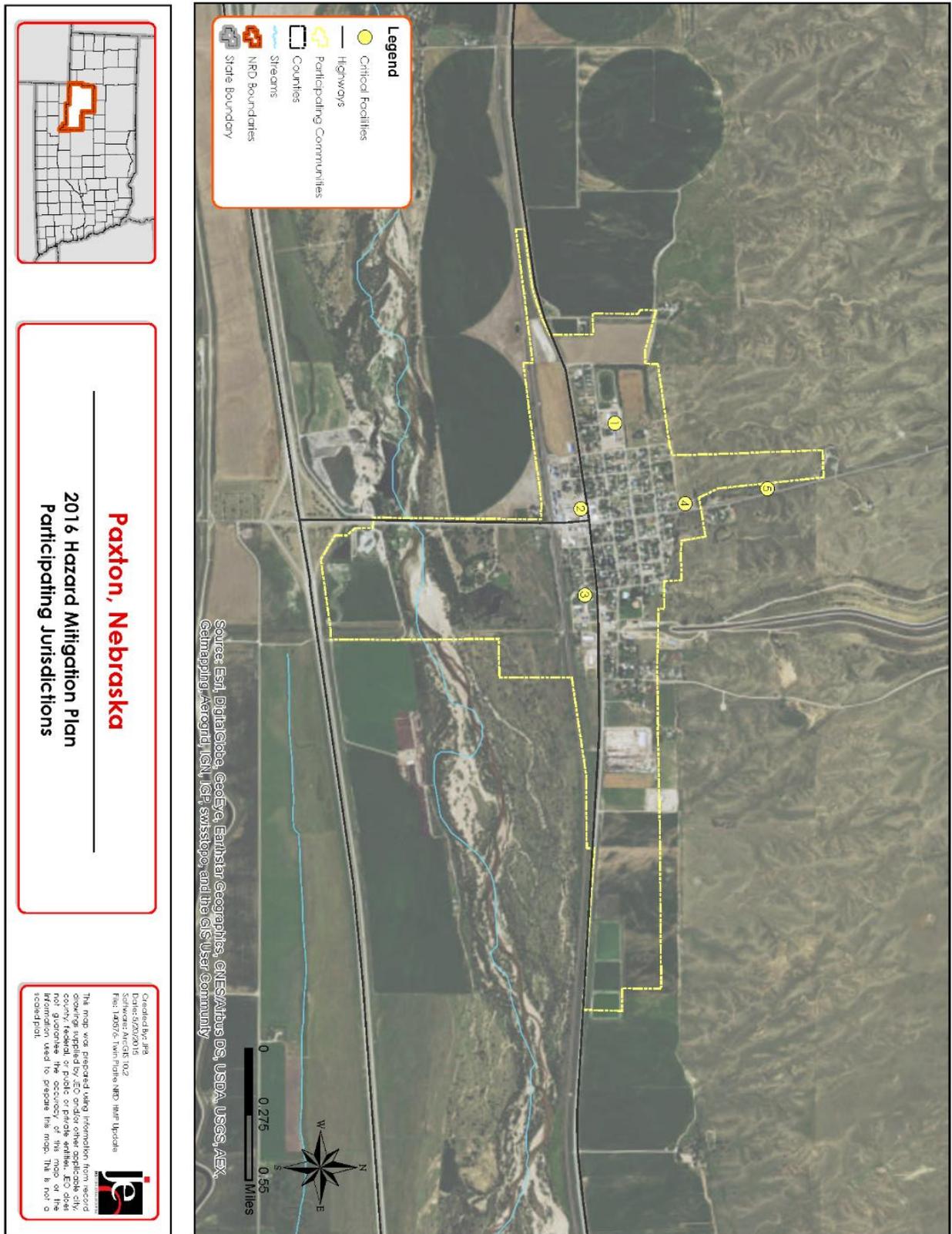
CRITICAL FACILITIES

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. 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 PX 8: Critical Facilities in Paxton

Number	Critical Facility	In Floodplain?
1	Paxton Consolidated Schools	No
2	Fire Hall & Village Office	No
3	Lift Station	No
4	Well	No
5	Water Tower	No

Figure PX 3: Critical Facilities



HISTORICAL OCCURRENCES

The events recorded by NCDC are broken down by two types: county-based and zone-based events. The county-based records are events that affect the jurisdictions within the county. The zone-based records are those affecting the zone (or a large area) that include the county as part of the affected zone.

It should be noted that property and crop damage from the NCDC Storm Events Database should only be considered as broad estimates. The National Weather Service makes a best guess on these amounts at the time of the publication from a variety of sources. 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.

Table PX 9: NCDC Severe Weather Events

Date	Hazard	Events	Deaths	Injuries	Property Damage
6/20/2011	Flash Flood	1	0	0	\$1,000
6/6/1996 - 6/18/2014	Hail Avg. Size: 1.18 in. Most Common Size: 1 in. Largest: 1.75 in. Smallest: 0.88 in.	45	0	0	\$47,000
7/25/1996 - 6/18/2014	Thunderstorm Wind Most Common Size: 52 kts EG Largest: 70 kts EG Smallest: 52 kts EG	7	0	0	\$172,000
6/5/2009	Tornado EF0	1	0	0	\$6,000
	Total	54	0	0	\$226,000

Source: 1996-2014 National Climatic Data Center
kts = knots; MG = Measured Gust; EG = Estimated Gust

RISK ASSESSMENT

HAZARD IDENTIFICATION

The following table is a localized risk assessment of hazards identified specifically for Paxton. Refer to *Section Four: Risk Assessment* for an explanation of this methodology.

Table PX 10: Risk Assessment

HAZARD TYPE	PREVIOUS OCCURRENCE Yes/No	LOCAL LOSSES	SPECIFIC CONCERNS IDENTIFIED
Agricultural Animal Disease	Yes	-	None
Agricultural Plant Disease	Yes	-	None
Chemical Spills (Fixed Site)	No	-	None
Chemical Spills (Transportation)	Yes	-	None
Dam Failure	No	-	None
Drought	Yes	-	None
Earthquakes	No	-	None
Extreme Heat	Yes	-	None

HAZARD TYPE	PREVIOUS OCCURRENCE Yes/No	LOCAL LOSSES	SPECIFIC CONCERNS IDENTIFIED
Flooding*	Yes	-	Inadequate storm water drainage
Grass/Wildfires*	Yes	-	Property damages, strain on resources and water supplies
Hail*	Yes	\$47,000	Property damages
High Winds	Yes	-	None
Landslides	No	-	None
Levee Failure	No	-	None
Severe Thunderstorms*	Yes	\$172,000	Property damages, power outages
Severe Winter Storms*	Yes	-	Power outages, closed transportation routes
Terrorism	No	-	None
Tornados	Yes	\$6,000	Property damages

*Identified by the Planning Team as a top concern for the jurisdiction

For more information regarding these area wide hazards, please see *Section Four: Risk Assessment*. The following provides community specific information, reported in Paxton’s Risk Assessment Summary that is relevant to each hazard.

Flooding

Paxton has one NFIP policy in-force for \$350,000, and there are no repetitive flood loss properties. In 2014, heavy rains led the Village to sandbag a number of Village properties including the lift station. The storm sewer system is not adequate to handle heavy rain events. The local Planning Team identified that 1st Street has particularly poor drainage.

Implemented mitigation actions:

- Paxton participates in the NFIP
- Sandbag properties when necessary

Identified mitigation actions:

- Improve stormwater drainage
- Construct retention pond

Grass/Wildfire

Wildfires were selected as a top concern by the local Planning Team. One significant wildfire occurred in 2013, burning hundreds of acres in the County. Responding to wildfires can put a strain on local resources and water supplies.

Implemented mitigation actions:

- Updated fire equipment

Identified mitigation actions:

- Purchase truck/equipment to ride over rough terrain

Hail

Hail frequently occurs in Paxton and the rest of the planning area. The NCDC reports 45 hail events in Paxton since 1996. The average reported hail stone size is 1.18 inches. Hail events have resulted in \$47,000 in property damages and millions in crop damages in the surrounding area.

Identified mitigation actions:

- Confirm municipal facilities are insured for hail

Severe Thunderstorms

Severe thunderstorms are a part of the local climate in Paxton and the rest of the planning area. Severe thunderstorms have the potential to cause other hazards such as flooding and wildfires. The NCDC reports seven severe thunderstorms in Paxton, causing \$172,000 in property damages since 1996.

Implemented mitigation actions:

- Received grant for siren in 2005
- Siren installed in 2006
- Weather radios are in critical facilities

Identified mitigation actions:

- Improve electrical lines

Severe Winter Storms

Severe winter storms are a part of the local climate in Paxton and the rest of the planning area. Severe winter storms cause power outages at least once per year in the Village. In October of 2010, the Village received 30 inches of snow over the month. The local Planning Team indicated that Paxton's snow removal equipment is inadequate for local events.

Implemented mitigation actions:

- Improved warning system

Identified mitigation actions:

- Acquire additional equipment and resources for snow removal

GOVERNANCE

A community's governance indicates the number of boards or offices that may be available to help implement hazard mitigation actions. Paxton is governed by a five member Village Board, led by a chairperson. The Village also has a number of offices or departments that may be involved in implementing hazard mitigation initiatives.

- Clerk/Treasurer
- Utility Superintendent
- Fire Department

CAPABILITY ASSESSMENT

The capability assessment consisted of two main components: a Capability Assessment Survey completed by the jurisdiction, and a review of local existing policies, regulations, plans, and 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 PX 11: Capability Assessment

Survey Components/Subcomponents		Existing (Yes/No)
Planning and Regulatory Capability	Comprehensive Plan	Yes
	Capital Improvements Plan	Yes
	Hazard Mitigation Plan	Yes
	Economic Development Plan	Yes, County
	Emergency Operational Plan	Yes, County
	Natural Resources Protection Plan	No
	Open Space Preservation Plan	No
	Floodplain Management Plan	Yes
	Storm Water Management Plan	No
	Zoning Ordinance	Yes
	Subdivision Regulation/Ordinance	Yes
	Floodplain Ordinance	Yes
	Building Codes	Yes
	National Flood Insurance Program	Yes
	Community Rating System	No
	Other (if any)	
Administrative and Technical Capability	Planning Commission	Yes
	Hazard Mitigation Planning Commission	No
	Floodplain Administration	Yes
	Emergency Manager	Yes
	GIS Coordinator	No
	Chief Building Official	Yes
	Civil Engineering	Yes
	Staff Who Can Assess Community's Vulnerability to Hazards	No
	Grant Manager	No
	Other (if any)	
Fiscal Capability	Capital Improvement Project Funding	No
	Community Development Block Grant	No
	Authority to Levy Taxes for Specific Purposes	No
	Gas/Electric Service Fees	No
	Storm Water Service Fees	No
	Water/Sewer Service Fees	Yes
	Development Impact Fees	No
	General Obligation Revenue or Special Tax Bonds	No
	Other (if any)	
Education and Outreach Capability	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, 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
	Public-private partnership initiatives addressing disaster-related issues	No
	Other (if any)	

PLAN INTEGRATION

Building safe and smart communities can be accomplished through effective Plan Integration. Integrating hazard mitigation principles into other local planning mechanisms, such as plans addressing land use, transportation, climate change, sustainability, natural and cultural resource protection, watershed management, economic development and others can greatly increase an area’s level of resiliency. While this HMP planning period involved interdepartmental coordination at the local level, this planning process also sought to analyze how existing planning mechanisms were presently integrated and identify opportunities for further integration. The plans listed in the preceding table were analyzed using guidance from FEMA’s 2014 *Plan Integration Guide*. The following paragraph presents a summary of the findings of this analysis.

Paxton has an annex to the Keith County Local Emergency Operations Plan that was last updated in 2012. The plan addresses a number of hazards including: flood, dam failure, fire, hazardous materials, agricultural disease, and terrorism. The LEOP mitigates the impacts of these hazards by increasing the local officials’ awareness of the assigned responsibilities and appropriate response.

Although it is identified in the capability assessment that Paxton has some plans and ordinances in place, they are not currently integrated with the hazard mitigation plan. When the village does update local planning mechanisms, Paxton will work to integrate the goals and objectives of the hazard mitigation plan within them (as appropriate). Currently there is not a plan or schedule related to the update of other (non-HMP) local planning mechanisms, thus there is no formal strategy for plan integration at this time. Further, the priorities and mitigation strategies included in this plan will be revisited annually, as established in the plan review section of this document, for consideration during the development of the annual budget. As resources are available mitigation projects will be implemented.

Summary

Paxton has limited administrative staff and technical and fiscal capabilities to implement some mitigation projects without assistance. Larger projects such as drainage improvements may require that Paxton look to partner with the County, TPNRD, and other regional and state agencies. Through this update process, the Planning Team reviewed previously identified mitigation projects and added new projects as well.

MITIGATION STRATEGY

Completed Mitigation Actions

Action	Improve warning systems
Action Items	<ol style="list-style-type: none"> 1. Evaluate current warning systems 2. Improve warning systems/develop new warning system 3. Obtain/upgrade warning system equipment and methods, including alert sirens 4. Identify locations of weather warning radios 5. Improve weather radio system 6. Obtain/upgrade weather radios
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All hazards
Status	Completed. Warning sirens and radios acquired since last plan
Lead Agency	Emergency Manager, Village Board

Ongoing and New Mitigation Actions

Action	
Action Items	Improve electrical service 1. Evaluate hardening, retrofitting, looping and/or burying of power lines and related infrastructure and/or comparable protection measures 2. Implement measures to improve electrical service 3. Bury power lines for future construction
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Thunderstorms, Hail
Estimated Cost	Unknown
Potential Funding	HMGP, PDM, Village funds, Midwest Electric
Timeline	5+ Years
Priority	Low
Status	Not yet started
Lead Agency	Utilities Department, Midwest Electric

Action	
Action Items	Maintain Status in NFIP 1. Continue to regulate development in floodplain areas 2. Adopt future floodplain maps when available 3. Conduct additional floodplain mapping/remapping
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flood
Estimated Cost	Existing staff
Potential Funding	City budget
Timeline	Ongoing
Priority	High
Status	This is a continuous action
Lead Agency	Floodplain administrator

Action	
Action Items	Reduce fire damage 1. Identify vulnerable areas and combustion sources 2. Evaluate fire resistant roofing 3. Develop plan to reduce wildfire impact and reduce combustion materials 4. Reduce combustible material by removal or other methods 5. Enact building codes/ordinances for fire resistant roofing 6. Purchase truck to go over rough terrain
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Addressed	Grass/Wildfire
Estimated Cost	\$500 to \$5,000
Potential Funding	Village funds, HMGP
Timeline	5+ Years
Priority	Medium
Status	Not yet started
Lead Agency	Fire Department

Action	
Action Items	Stormwater System and Drainage Improvements 1. Undersized systems can contribute to localized flooding. Improvements may include pipe upsizing and additional inlets. Retention and detention facilities may also be implemented to decrease runoff rates while also decreasing the need for other stormwater system improvements
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Flooding
Estimated Cost	\$10,000 - \$250,000
Potential Funding	HMGP, PDM, Village Funds
Timeline	2-5 Years
Priority	High
Status	Not yet started. Identified 1 st Street has area with poor drainage
Lead Agency	Maintenance Department

Action	
Action Items	Snowplow 1. Purchase additional snowplow
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Addressed	Severe Winter Storms
Estimated Cost	\$15,000
Potential Funding	Village Funds

Action	Snowplow
Timeline	1 Year
Priority	Medium
Lead Agency	Highway Superintendent

Removed Mitigation Actions

Action	Reduce water demand/drought education
Action Items	<ol style="list-style-type: none"> 1. Develop/improve public awareness program 2. Develop or obtain materials and conduct multi-faceted public education
Hazard(s) Addressed	Drought
Reason for removal	No longer needed. Twin Platte NRD leads education efforts
Lead Agency	Twin Platte NRD

PAXTON CONSOLIDATED SCHOOLS



Twin Platte Natural Resources District Multi-Jurisdictional Hazard Mitigation Plan Update

INTRODUCTION

The 2016 Twin Platte NRD (TPNRD) Multi-Jurisdictional Hazard Mitigation Plan (HMP) is an update to the plan that was adopted by TPNRD in August 2011. Paxton Consolidated Schools did not participate in the 2011 HMP. This HMP includes two primary sections: the Regional Hazard Mitigation Plan and the Community (i.e. County, Municipality, and School District) Profiles. School District Profiles include similar information to that provided in the Regional Section, but also specific information for school district.

PARTICIPATION

Local Planning Team

Table PCS 1 shows the Paxton local Planning Team. The Planning Team attended Round 1 and Round 2 meetings, or attend make-up meetings and provided important information including, but not limited to: confirming demographic information, critical facilities, structural inventory, future development trends, hazard history and impacts, identifying hazards of greatest concern for the community, and prioritization of mitigation actions that address the hazards at risk to the community.

Table PCS 1: Paxton Consolidated Schools Local Planning Team

Name	Title	Department / Organization
Del Dack	Superintendent	Paxton Consolidated Schools

Public Participation

The local Planning Team made several efforts to notify the public of this planning process and how they could participate in the development of the plan update. The following table identifies the dates and types of public outreach notifications.

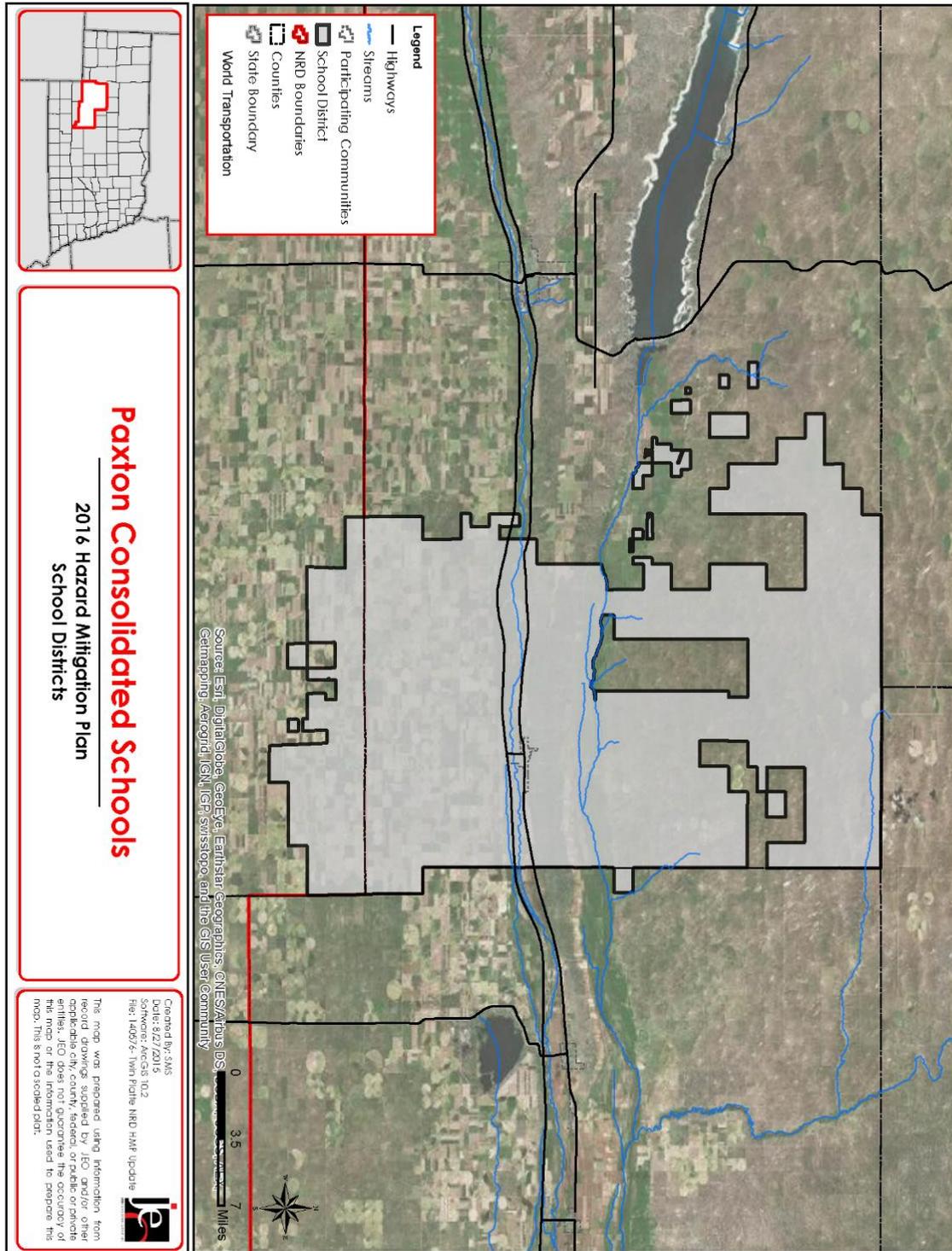
Table PCS 2: Public Notification Efforts

Date	Notification	Location
May 28, 2015	Project Website	http://jeo.com/tphmp/
March 17, 2016	Community Profile available for public comment and review	https://jeo.com/tphmp

LOCATION AND SERVICES

The Paxton Consolidated School District is a Nebraska Class III District, serving 326 square miles in Keith and Perkins counties, and is K-12 accredited by the State of Nebraska. Twenty-three certified staff members serve over two hundred thirty students from Paxton, Sarben, Ogallala, and Elsie.

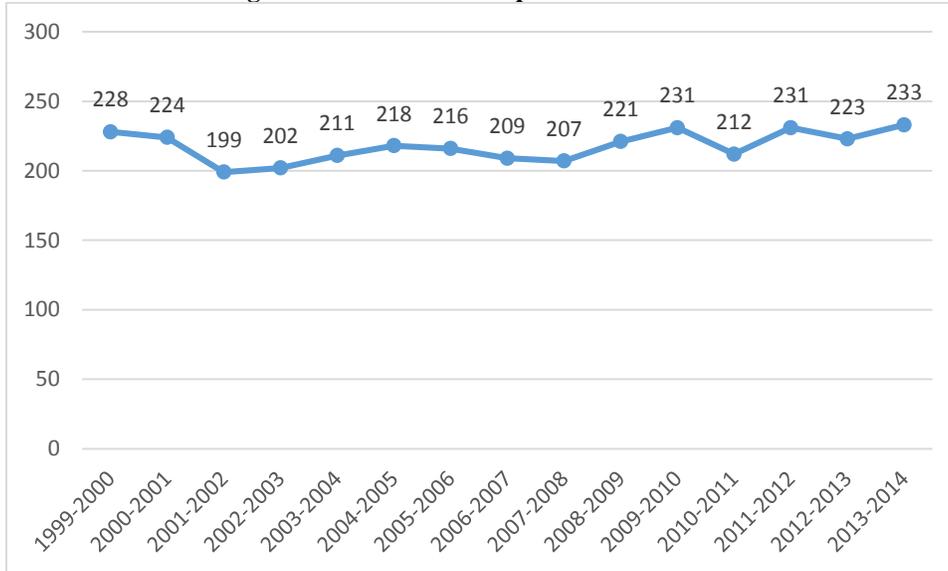
Figure PCS 1: Paxton Consolidated Schools



POPULATION

The following figure displays the historical student population trend from 1999 to 2014. This figure indicates that the Paxton student population has stayed relatively steady since 1999.

Figure PCS 2: Student Population 1999 - 2014



Source: Nebraska Department of Education

The following table indicates shows the percentages of children that have an increased vulnerability to hazards. The percentage of English Language Learners was not available, but there are fewer than ten students.

Table PCS 3: Student Vulnerability Population

	Paxton Consolidated Schools	State of Nebraska
Free/Reduced Priced Meals	41.63%	44.93%
School Mobility Rate	12.5%	12.10%
English Language Learners	*	6.04%
Special Education Students	9.38%	15.74%

*Fewer than 10 students were reported in a group

CRITICAL INFRASTRUCTURE/KEY RESOURCES

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. 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 provides a summary of the critical facilities for the school district.

Table PCS 4: List of Critical Facilities for Paxton Consolidated Schools

CF Number	Name	Address	Shelter (Y/N)	Generator (Y/N)	Weather Radio	Located in Floodplain (Y/N)	Emergency Operation Plan
1	Paxton Consolidated Schools	308 N. Elm Street, Paxton	Yes	No	Yes	No	Yes
2	Bus Barn	Highway 30	No	No	No	No	Yes

HISTORICAL OCCURRENCES

The events recorded by NCDC are broken down by two types: county-based and zone-based events. The county-based records are events that affect the jurisdictions within the county. The zone-based records are those affecting the zone (or a large area) that include the county as part of the affected zone.

It should be noted that property and crop damage from the NCDC Storm Events Database should only be considered as broad estimates. The National Weather Service makes a best guess on these amounts at the time of the publication from a variety of sources. 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.

Hazard event occurrence data specific to the school district is not available. The following data reflects the hazard events that have been reported for the Village of Paxton.

Table PCS 5: NCDC Severe Weather Events

Date	Hazard	Events	Deaths	Injuries	Property Damage	Crop Damage
6/20/2011	Flash Flood	1	0	0	\$1,000	\$0
6/6/1996 - 6/18/2014	Hail Avg. Size: 1.18 in. Most Common Size: 1 in. Largest: 1.75 in. Smallest: 0.88 in.	45	0	0	\$47,000	\$10,555,000
7/25/1996 - 6/18/2014	Thunderstorm Wind Average Size: 52 kts EG Largest: 70 kts EG Smallest: 52 kts EG	7	0	0	\$172,000	\$2,000
6/5/2009	Tornado EF0	1	0	0	\$6,000	\$0
	Total	54	0	0	\$226,000	\$10,557,000

Source: 1996-2014 National Climatic Data Center
kts = knots; MG = Measured Gust; EG = Estimated Gust

RISK ASSESSMENT**HAZARD IDENTIFICATION**

The following table is a localized risk assessment of hazards identified specifically for Paxton Schools. Refer to *Section Four: Risk Assessment* for an explanation of this methodology.

Table PCS 6: Risk Assessment

HAZARD TYPE	PREVIOUS OCCURRENCE Yes/No	SPECIFIC CONCERNS IDENTIFIED
Agricultural Animal Disease	Yes	None
Agricultural Plant Disease	Yes	None
Chemical Spills (Fixed Site)	No	None
Chemical Spills (Transportation)*	Yes	Shelter and evacuation of students
Dam Failure	No	None
Drought	Yes	None
Earthquakes	No	None
Extreme Heat	Yes	None
Flooding	Yes	None
Grass/Wildfires*	Yes	Evacuation of students, damage to school property
Hail	Yes	None
High Winds	Yes	None
Landslides	No	None
Levee Failure	No	None
Severe Thunderstorms*	Yes	Shelter of students, damage to school property, power outages
Severe Winter Storms*	Yes	Power outages, adequate snow removal
Terrorism	No	None
Tornados*	Yes	Shelter of students, property damages

**Identified as a hazard of greatest concern*

For more information regarding these area wide hazards, please see *Section Four: Risk Assessment*. The following provides community specific information, reported in Paxton School's Risk Assessment Summary that is relevant to each of the top five hazards.

Chemical Spills (Transportation)

Although there has not been a chemical spill in Paxton or near Paxton Consolidated Schools in recent history, the hazard is a concern. The location of Paxton Consolidated Schools near Interstate 80 and Highway 30 causes this hazard to be a significant concern. If a spill were to occur, the Paxton Fire & Rescue Department would respond. The North Platte Hazmat Team would also respond if the spill was serious enough. If a spill were to occur, the school district would be most concerned regarding the shelter and possible evacuation of the students. Paxton Consolidated Schools will continue to perform drills to prepare for a chemical spill.

Implemented mitigation actions:

- The school performs both evacuation and shelter in place drills twice a year
- Crisis Response Manual addresses chemical spills

Identified mitigation actions:

- Install bus radio system
- Promote first aid training for all staff
- Implement school messenger system to communicate with parents

Grass/Wildfire

Wildfires were selected as a top concern by the local Planning Team. One significant wildfire occurred in 2013, burning hundreds of acres in the County. This wildfire did not affect the school. Paxton Consolidated Schools will continue to perform fire drills to prepare for wildfire.

Implemented mitigation actions:

- The school performs 10 fire drills per year
- Involve fire and sheriff departments in all emergency planning and practice drills
- Information materials are sent home with students on emergency drills

Identified mitigation actions:

- Educate staff, students, and parents about hazard vulnerability and mitigation measures
- Promote first aid training for all staff

Severe Thunderstorms

Severe thunderstorms are a part of the local climate in Paxton and the rest of the planning area. Severe thunderstorms have the potential to cause other hazards such as flooding and wildfires. The NCDC reports seven severe thunderstorms in Paxton, causing \$172,000 in property damages in the community since 1996.

Implemented mitigation actions:

- The school performs two shelter in place drills per year
- Involve fire and sheriff departments in all emergency planning and practice drills
- Information materials are sent home with students on emergency drills
- Hail resistant roofing is used for any new construction
- School has weather radios

Identified mitigation actions:

- Obtain backup generator
- Educate staff, students, and parents about hazard vulnerability and mitigation measures

Severe Winter Storms

Severe winter storms are a part of the local climate in Paxton and the rest of the planning area. Severe winter storms cause power outages at least once per year in the Village. In October of 2010, the Village received 30 inches of snow over the month. The local Planning Team indicated that Paxton's snow removal equipment is inadequate for local events.

Implemented mitigation actions:

- School has acquired weather radios

Identified mitigation actions:

- Install bus radio system

- Obtain backup generator
- Implement school messenger system to communicate with parents

Tornados

An EF0 tornado occurred within Paxton in 2009. This tornadic event caused \$6,000 in property damages. Tornados have the potential to cause significant damages and loss of life.

Implemented mitigation actions:

- The school performs four tornado drills a year
- School regularly removes hazardous limbs and/or trees from school property
- School can be used as a shelter
- Warning sirens are evaluated quarterly
- School has continuity plan for critical services after a hazardous event
- School has weather radios

Identified mitigation actions:

- Install bus radio system
- Implement school messenger system to communicate with parents

ADMINISTRATIVE/CAPABILITY ASSESSMENT

Examining the school district's administration indicates the offices that may be available to help implement hazard mitigation actions. Paxton Consolidated Schools is led by six member School Board. Paxton Consolidated Schools also has a superintendent, principal, and elementary principal.

Paxton Consolidated Schools has the authority to levy taxes for specific purposes. The total amount is limited by statutes and some require the vote of the community.

PLAN INTEGRATION

Paxton Consolidated Schools has a Crisis Response Manual that addresses hazards such as storms, tornados, and fire. This manual mitigates the impacts of these hazards by increasing the staff's awareness of the assigned responsibilities and appropriate response. The school also conducts an annual safety audit as a requirement of Rule 10. Rule 10 are the mandated rules and procedures for accreditation by Nebraska Department of Education.

Additional plans and/or policies that have integrated hazard mitigation have not been identified. When the school district does update planning mechanisms, they will work to integrate the goals and objectives of the hazard mitigation plan within them (as appropriate). Currently there is not a plan or schedule related to the update of other (non-HMP) local planning mechanisms, thus there is no formal strategy for plan integration at this time. Further, the priorities and mitigation strategies included in this plan will be revisited annually, as established in the plan review section of this document, for consideration during the development of the annual budget. As resources are available mitigation projects will be implemented.

MITIGATION STRATEGY

Ongoing and New Mitigation Actions

Action	Improve/provide adequate backup and emergency generators
Action Items	<ol style="list-style-type: none"> 1. Identify and evaluate current backup and emergency generators 2. Obtain additional generators based on identification and evaluation
Goal/Objective	Goal 2/Objective 2.1
Hazard(s) Addressed	Tornados, High Winds, Severe Winter Storms, Severe Thunderstorms, Flooding
Estimated Cost	\$20,000 to \$50,000 per generator
Potential Funding	HMGP, PDM, Building and grounds fund
Timeline	2-5 Years
Priority	Medium
Status	Not yet started
Lead Agency	School Board, Superintendent

Action	Public Awareness/Education
Action Items	<ol style="list-style-type: none"> 1. Educate staff, students, and parents about hazard vulnerability and mitigation measures. Create educational materials
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	All hazards
Estimated Cost	\$0-\$2,500
Potential Funding	School general fund
Timeline	1 Year
Priority	High
Status	Ongoing effort to educate students and staff regarding risk reduction
Lead Agency	School Administration

Action	Emergency Communications
Action Items	<ol style="list-style-type: none"> 1. Develop/improve emergency communication action plan 2. Implement emergency communication action plan 3. Obtain/upgrade emergency communication equipment 4. Obtain/upgrade/distribute weather warning radios
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All hazards
Estimated Cost	\$5,000+
Potential Funding	School general fund
Timeline	1 Year
Priority	High
Status	In the process of installing bus radios during Fall of 2015
Lead Agency	School Administration

Action	Improve warning systems
Action Items	<ol style="list-style-type: none"> 1. Evaluate current warning systems 2. Improve warning systems/develop new warning system 3. Obtain/upgrade warning system equipment and methods, including alert sirens 4. Identify locations of weather warning radios 5. Improve weather radio system 6. Obtain/upgrade weather radios
Goal/Objective	Goal 4/Objective 4.3
Hazard(s) Addressed	All hazards
Estimated Cost	\$350,000-\$400,000
Potential Funding	School general fund
Timeline	1 Year
Priority	High
Status	Began implementing school messenger notification system in Fall of 2015.
Lead Agency	School Administration

Action	Promote First Aid
Action Items	<ol style="list-style-type: none"> 1. Promote first aid training for all staff
Goal/Objective	Goal 1/Objective 1.1
Hazard(s) Addressed	All hazards
Estimated Cost	\$100 per person
Potential Funding	School general fund

Action	Promote First Aid
Timeline	2-5 Years
Priority	Medium
Status	Many staff members have first aid training
Lead Agency	School Administration