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County Profile

Region 24 Emergency Management Agency

Region 24 Emergency Management
Multi-Jurisdictional Hazard Mitigation Plan Update

2021

Local Planning Team

Table EMA.1: Region 24 Emergency Management Agency Local Planning Team

Name	Title	Jurisdiction
Doug Fox	Director	Region 24 Emergency Management Agency
Kalli Kieborz	Executive Director	Niobrara Council

Location, Geography, and Climate

The mission of the Region 24 Emergency Management Agency (EMA) is to protect the lives and property of the citizens in the agency area by analyzing the hazards, assessing the capabilities, planning for the potential events, then responding to, recover from, and mitigate against the emergency or disaster. Region 24 Emergency Management Agency was formed in 2000 by the counties of Brown, Boyd and Rock Counties for the purpose of consolidating and becoming compliant in the Nebraska Emergency Management Act. In June of 2001 an interlocal agreement between the three counties was signed and Governing Rules were set up. In April of 2008 Cherry and Keya Paha Counties joined the agency. At this time the main office is located in the Rock County Courthouse with a part time office in Cherry County. The fiscal county for the agency is Rock County.

Rivers within the five-county agency include: the Missouri River, the Niobrara River, the Keya Paha River, the North Loup River, the Middle Loup River, the Snake River, the Calamus River, and the Elkhorn River. The Samuel McKelvie National Forest, Fort Niobrara National Wildlife Refuge, and Valentine National Wildlife Refuge are also located in agency's boundary. The Niobrara National Scenic River, which is managed by the National Park Service and Niobrara Council, is located within the district. The river draws tens of thousands of visitors each year to Cherry, Brown, Rock, and Keya Paha Counties for river-related activities.

Transportation

Region 24 Emergency Management Agency's major transportation corridors include US Highway 20, 83, 183, and 281 and Nebraska State Highways 7, 11,12, 47, 61, 97, and 137. There are no rail lines but there are five air landing strips in the agency's boundaries. Transportation routes of most concern include Highway 20, 137, and 183 due to the high volume of traffic and the various chemicals that are carried on them. No large volume chemical spills have occurred, but several small vehicle crashes occur annually. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors, as well as areas more at risk of transportation incidents.

Demographics, Economics, and Housing

The following figure displays the historical population trend of the five counties from 1890 to 2018.[1] This figure indicates that the population covered by the Region 24 Emergency Management Agency has been decreasing since 1920. 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 five counties, which could make implementation of mitigation projects more fiscally challenging.

1 United States Census Bureau. 2018. "S0101: Age and Sex." [database file]. https://data.census.gov/cedsci/.

Figure EMA.1: Region 24 Emergency Management Agency

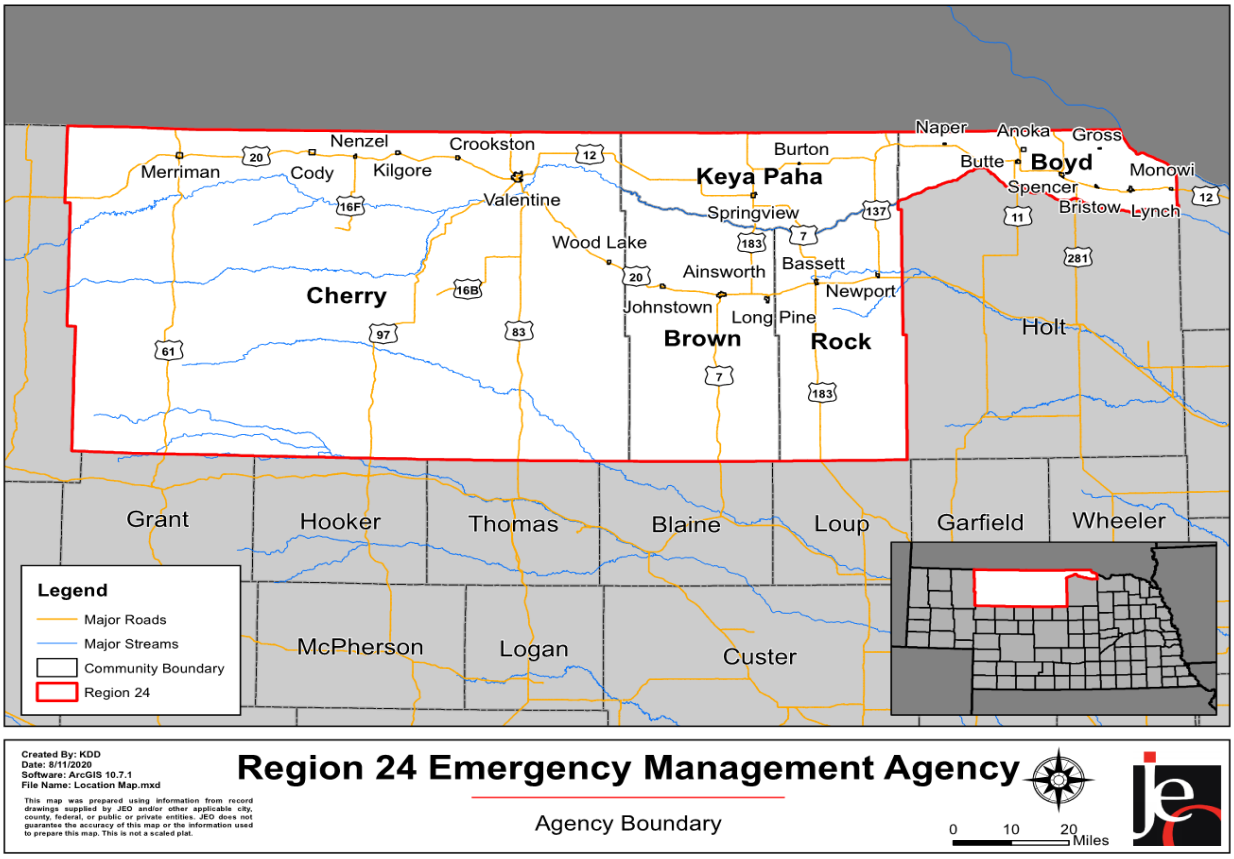
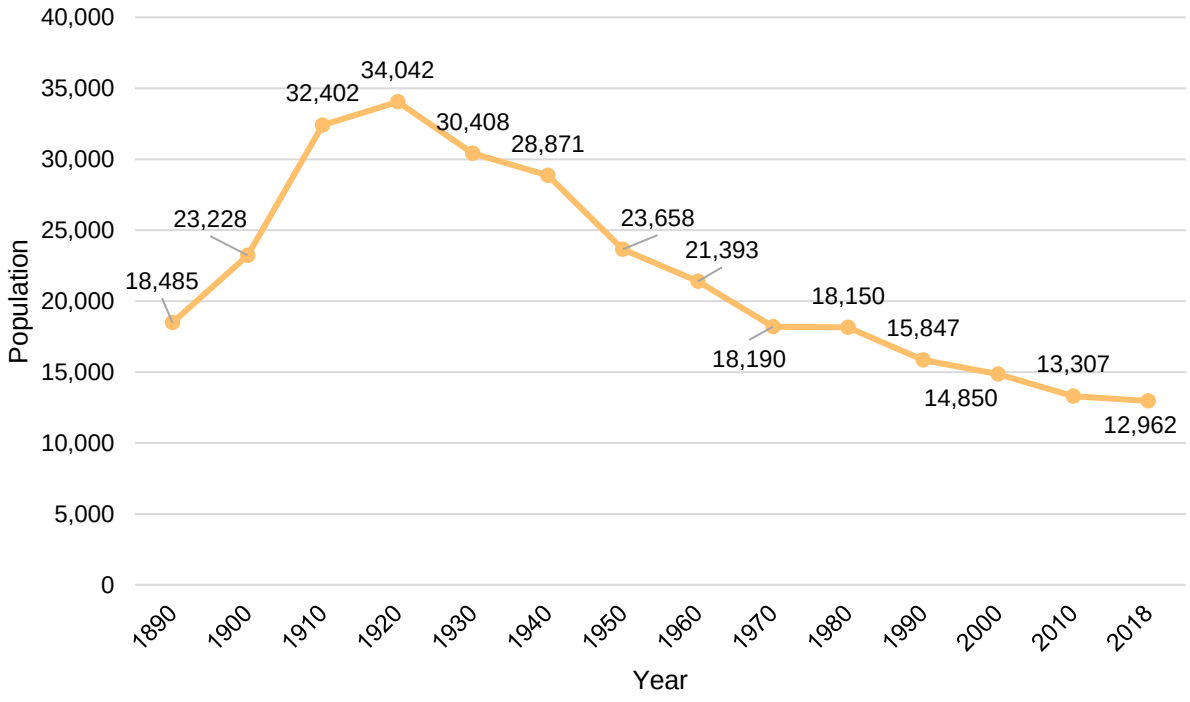


Figure EMA.2: Population 1890 - 2018



Source: U.S. Census Bureau

The following table indicates the counties within the Region 24 Emergency Management Agency have a lower percentage of people under the age of five and a higher percentage over the age of 64. This is relevant to hazard mitigation because the very young and elderly populations may be at greater risk from certain hazards than others. For a more elaborate discussion of this vulnerability, please see Section Four: Risk Assessment.

Table EMA.2: Population by Age

Age	Region 24 Emergency Management Agency	State of Nebraska
<5	5.9%	6.9%
5-64	69.9%	78.1%
>64	24.2%	15.0%

Source: U.S. Census Bureau[2]

According to 2018 ACS 5-year estimates, the five counties have 7,914 housing units with 74.0% percent of those units occupied. There are approximately 759 mobile homes in the five-county region. Most mobile homes are located within incorporated villages and cities. Housing age can serve as an indicator of risk, as structures built prior to the development of state building codes may be at greater risk. Finally, residents that live in mobile homes may be more vulnerable to the impacts of high winds, tornadoes, and severe winter storms if not anchored correctly.

Table EMA.3: Housing Units

Jurisdiction	Total Housing Units				Occupied Housing Units			
	Occupied		Vacant		Owner		Renter	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Region 24 Emergency Management Agency	5,855	74.0%	2,059	26.0%	4,065	69.4%	1,790	30.6%
Nebraska	754,063	90.8%	76,686	9.2%	498,567	66.1%	255,496	33.9%

Source: U.S. Census Bureau[3]

Major Employers

According to 2016 Business Patterns Census Data, the five counties within the Region 24 Emergency Management Agency had 503 business establishments. The following table presents the number of establishments, number of paid employees, and the annual payroll in thousands of dollars.

Table EMA.4: Business in Region 24 Emergency Management Agency

	Total Businesses	Number of Paid Employees	Annual Payroll
Total for All Sectors	503	3,201	$94,170,000

Source: U.S Census Bureau[4]

Agriculture is important to the economic fabric of the State of Nebraska. 1,063 farms location in the Region 24 Emergency Management Agency's boundaries cover 722,040 acres of land, about 11.8% of the five counties total area. Crop and livestock production are the visible parts of the agricultural economy, but many related businesses contribute to agriculture by producing,

2 United States Census Bureau. 2018. "S0101: Age and Sex." [database file]. https://data.census.gov/cedsci/.
3 United States Census Bureau. 2018. "DP04: Selected Housing Characteristics." [database file]. https://data.census.gov/cedsci/.
4 United States Census Bureau. "2016 County Business Patterns and 2016 Nonemployer Statistics" [database file]. https://data.census.gov/cedsci/.

processing and marketing farm products. These businesses generate income, employment and economic activity throughout the region.

Table EMA.5: Agricultural Inventory

	Agricultural Inventory
Number of Farms with Harvested Cropland	1,063
Acres of Harvested Cropland	722,040

Source: USDA Census of Agriculture, 2017[5]

Future Development Trends

Over the past five years, most of the communities demolished several old and dilapidated houses. Very few communities experienced new housing growth other than the City of Valentine and the City of Bassett. No major new industries were added to the region. According to the 2018 American Community Survey estimates, the population covered by the EMA is declining. The local planning team attribute this to an aging population and younger individuals moving away and not coming back to the area. In the next five years, additional housing is planned in the Village of Lynch, City of Bassett, City of Valentine, and Boyd County. Safe rooms and backup power generators have been considered when updating fire stations and county court houses.

Parcel Improvements and Valuation

See the county profiles for parcel improvements and valuation.

Community Lifelines

Chemical Storage Fixed Sites

According to the Tier II System reports submitted to the Nebraska Department of Environment and Energy, there are a total of 33 chemical storage sites throughout the Region 24 Emergency Management Agency region. For the names, locations, and whether they are in the floodplain see the individual county profiles. Concerns regarding fixed site chemical spills include dyke leaks and wind issues forcing evacuations because of chemical plumes. Most residents located near fixed chemical sites are educated about the threat and appropriate response to a spill but not all.

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

Critical Facilities

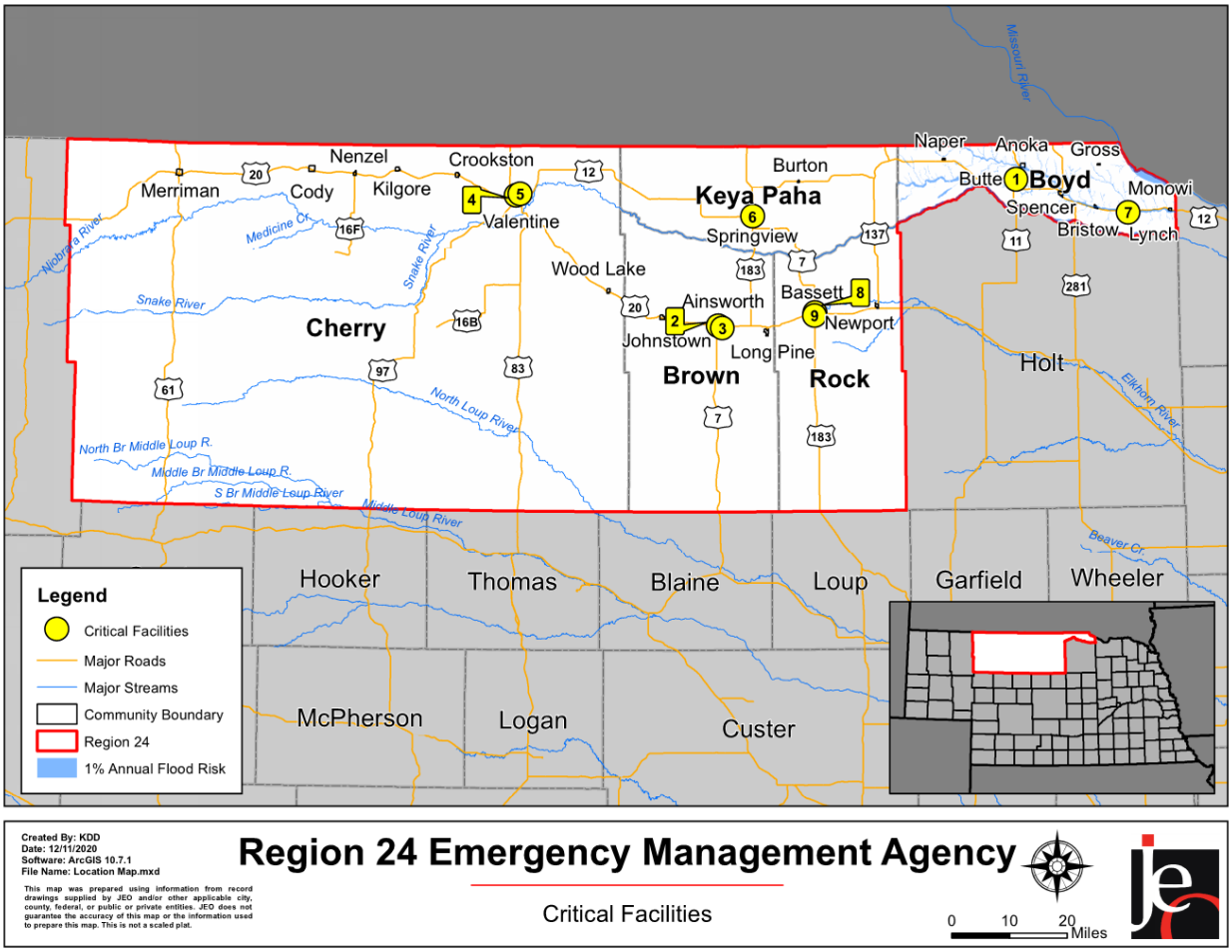
Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during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

Table EMA.6: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Boyd County Courthouse	N	N	N
2	Brown County Courthouse	N	Y	N/A
3	Brown County Hospital	N	Y	N/A
4	Cherry County Courthouse	N	Y	N/A
5	Cherry County Hospital	N	Y	N/A
6	Keya Paha County Courthouse	N	Y	N/A
7	Niobrara Hospital	N	Y	N
8	Rock County Courthouse	N	Y	N/A
9	Rock County Hospital	N	Y	N/A

N/A: The county that the critical facility is located in does not have a mapped floodplain. Therefore, it is not known if the facilities are located in the floodplain.

Figure EMA.3: Critical Facilities



Historical Occurrences

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

Table EMA.7: County Hazard Loss History

Hazard Type		Count	Property Damage	Crop Damage[2]
Agricultural Disease	Animal Disease[1]	48	2,712 animals	N/A
	Plant Disease[2]	10	N/A	$82,790
Chemical and Radiological Hazards (Fixed Site)[3]		1	$0	N/A
Chemical and Radiological Hazards (Transportation)[4]		3	$330	N/A
Civil Disorder		0	$0	N/A
Dam Failure[5,6]		10	N/A	N/A
Drought[7]		432 of 1,502 months	$72,000,000	$35,047,100
Earthquakes[17]		16	$0	N/A
Extreme Heat[8]		Avg. 5 days a year	N/A	$6,271,141
Flooding[9]	Flash Flood 1 Fatality	33	$13,602,000	$327,796
	Flood	19	$11,070,000	
Grass/Wildfires[10] 5 injuries		723	130,379 acres	$116,359
Hail[9] Average: 1.21 inches Range: 0.02 – 5 inches		1,427	$4,681,600	$24,192,791
High Wind[9] Average: 54 mph Range: 40 – 77 mph		118	$91,000	$3,510,436
Landslides[15]		57	$0	N/A
Levee Failure[16]		0	$0	N/A
Public Health Emergency		Unknown	N/A	N/A
Severe Thunderstorms[9]	Thunderstorm Wind Average:66 mph Range: 58 – 119 mph	412	$4,075,600	$15,453,591
	Heavy Rain	13	$0	
	Lightning 1 injury	8	$49,850	
Severe Winter Storms[9]	Blizzard 1 Fatality	77	$500,000	$3,236,582
	Extreme Cold/Wind chill	85	$0	
	Heavy Snow	26	$0	
	Ice Storm	5	$0	
	Winter Storm	241	$10,223,000	
	Winter Weather	0	$0	
Terrorism[14]		0	$0	N/A
Tornadoes[9] Average: EF0		88	$2,215,750	$0

Hazard Type		Count	Property Damage	Crop Damage[2]
Range: EF0 - EF3 1 injury				
Transportation Incidents	Auto[11] 58 fatalities, 932 injuries	2,342	N/A	N/A
	Aviation[12] 14 fatalities, 18 injuries	65	N/A	N/A
	Highway Rail[13] 10 injuries	20	$45,400	N/A
Total		**5,847**	**$118,554,530**	**$88,238,856**

N/A: Data not available
1 - NDA, 2014 – March 2020
2 - USDA RMA, 2000 – June 2020
3 - NRC, 1990 – February 2020
4 - PHSMA, 1971 – June 2020
5 - Stanford NPDP, 1890 – 2018
6 – DNR Dam Inventory, July 2020
7 - NOAA, 1895 – May 2020
8 – NOAA Regional Climate Center, 1893 – May 2020
9 – NCEI, 1996 – March 2020
10 – NFS, 2000 – April 2020
11 – NDOT, 2006 – 2018
12 – NTSB, 1962 – June 2020
13 – DOT FRA, 1975 – 2020
14 – University of Maryland, 1970 – 2018
15 – University of Nebraska, 1960 – 2013
16 – USACE NLN, 1900 – June 2020
17 – USGS, 1900 – June 2020

The following table provides a summary of hazards that have or have the potential to affect the Region 24 Emergency Management Agency. Each jurisdiction was evaluated for previous hazard occurrence and the probability of future hazard events on each of the 20 hazards profiled in this plan. The evaluation process was based on data collected and summarized in Table EMA.7; previous impacts or the potential for impacts to infrastructure, critical facilities, people, and the economy; and the proximity to certain hazards such as dams and levees.

Table EMA.8: Region 24 Emergency Management Agency Hazard Matrix

Hazard	Region 24 Emergency Management Agency
Ag. Disease	X
Chemical (Fixed Site)	X
Chemical (Transportation)	X
Civil Disorder	X
Dam Failure	X
Drought	X
Earthquakes	X
Extreme Heat	X
Flooding	X
Grass/Wildfires	X
Hail	X
High Wind	X
Landslides	X
Levee Failure	
Public Health Emergency	X
Severe Thunderstorms	X
Severe Winter Storms	X
Terrorism	X
Tornadoes	X
Transportation Incidents	X

Hazard Prioritization

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

- Agricultural Disease
- Drought
- Earthquakes
- Grass/Wildfires
- Severe Thunderstorms
- Tornadoes

The Niobrara Council stakeholder group identified tornadoes as the hazard of greatest concern. The Niobrara Council has constructed four toilet facilities along the Niobrara River with the intention that they could someday also function as safe rooms if needed by campers. These facilities are not currently FEMA accredited safe rooms. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Governance

Region 24 Emergency Management Agency is governed by a board of directors. The agency also has the following positions:

- Emergency Management Director
- Administrative Assistant
- Deputy Directors

Capability Assessment

The capability assessment consisted of a review of local existing policies, regulations, plans, and programs with hazard mitigation capabilities. In the past five years the Region 24 EMA has applied for and been awarded siren grants for several communities and a housing grant for the Village of Lynch. Funds for the agency are sufficient to pursue new projects but have slightly decreased over recent years. The following table summarizes the agency's overall capability to implement mitigation projects.

Table EMA.9: Overall Capability

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

Plan Integration

Region 24 Emergency Management Agency does not have any formal planning documents other than the hazard mitigation plan. The agency also helps in the creation and update of the local emergency operations plans for each of the five counties. The local emergency operations plans establish standardized policies, plans, guidelines and procedures for emergency resources and

governmental entities to respond and recover when a disaster event occurs. They contain information regarding, direction and control, communications and warning, damage assessment, emergency public information, evacuation, fire services, health and human services, law enforcement, mass care, protective shelters, and resource management. The plans are updated every five years.

Mitigation Strategy

Continuing Actions

Mitigation Action	Alert/Warning Sirens
Description	Perform an evaluation of existing alert sirens in order to determine sirens which should be replaced or upgraded. Install new sirens where lacking and remote activation.
Hazard(s) Addressed	Tornadoes, High Winds, Severe Thunderstorms
Estimated Cost	$15,000+
Funding	General Budget
Timeline	2-5 Years
Priority	High
Lead Agency	County E911, Director
Status	In Progress. Two sirens were added in Long Pine and one siren was added in Kilgore. Still assessing which other entities need sirens replaced.

Mitigation Action	Backup and Emergency Generators
Description	Provide a portable or stationary source of backup power to redundant power supplies, county wells, lift stations, and other critical facilities and shelters.
Hazard(s) Addressed	All Hazards
Estimated Cost	$15,000 - $30,000+ per generator
Funding	General Budget
Timeline	2-5 Years
Priority	High
Lead Agency	Director
Status	In Progress. Backup generators have been installed at many of the county courthouses and several fire stations.

Mitigation Action	Civil Service Improvements
Description	Improve emergency rescue and response equipment and facilities by providing additional or updating existing emergency response equipment. This could include fire equipment, ATVs, water tanks/truck, snow removal equipment, pumps, etc. This would also include developing backup systems for emergency vehicles, identifying and training additional personnel for emergency response, or continuing educational opportunities for current personnel.
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies
Funding	General Budget
Timeline	2-5 Years
Priority	High
Lead Agency	Director
Status	Not Started. The agency is continuing to look for funding sources.

Mitigation Action	Emergency Communications
Description	Establish an action plan to improve communication between agencies to better assist residents and businesses during and following emergencies. Establish inner-operable communications.
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000+
Funding	General Budget
Timeline	2-5 Years
Priority	High
Lead Agency	Director
Status	In progress through PET Region and MOVs.

Mitigation Action	Expand Water Storage Capacity / Emergency Water Supplies / Dry Hydrants
Description	Evaluate the need to expand water storage capacity through a new water tower, standpipe, etc. to provide a safe water supply for the community and additional water for fire protection. Establish emergency water supplies such as dry hydrants and individual or community cisterns for defending structures from wildland fires.
Hazard(s) Addressed	Drought, Grass/Wildfires
Estimated Cost	$30,000+
Funding	CDBG, General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Director
Status	Planning Stage

Mitigation Action	Firewise Community
Description	Support communities in becoming a Firewise Community/USA participant through the Nebraska Forest Service and US Forest Service in order to educate homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire. The Firewise Communities approach emphasizes community responsibility for planning in the design of a safe community as well as effective emergency response, and individual responsibility for safer home construction and design, landscaping, and maintenance.
Hazard(s) Addressed	Grass/Wildfire
Estimated Cost	$20,000
Funding	General Budget
Timeline	5+ Years
Priority	High
Lead Agency	Director, Individual Communities, Nebraska Forest Service
Status	In Progress. Working with the Nebraska Forest Service.

Mitigation Action	Hazardous Fuels Reduction
Description	The Nebraska Forest Service Forest Fuels Reduction Program creates strategically located corridors of thinned forests across the landscape, reduces fire intensity, improves fire suppression effectiveness, increases firefighter safety, and better protects lives and property.
Hazard(s) Addressed	Grass/Wildfire
Estimated Cost	$300 per acre
Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Director
Status	In Progress. Fuels reduction is encouraged where needed and funded.

Mitigation Action	Power, Service, Electrical, and Water Distribution Lines
Description	Communities can work with KBR Public Power District to identify vulnerable transmission and distribution lines and plan to bury lines underground, upgrade, or retrofit existing structures to be less vulnerable to storm events. Electrical utilities shall be required to use underground construction methods where possible for future installation of power lines. Rural Water Districts can work with their County or NRD to identify vulnerable distribution lines near river crossings or creek beds and plan to place lines underground to reduce vulnerability from storm events and erosion.
Hazard(s) Addressed	Tornadoes, High Winds, Severe Winter Storms, Severe Thunderstorms, Flooding
Estimated Cost	$50,000 - $70,000
Funding	General Budget, Local Budges
Timeline	2-5 Years
Priority	Medium
Lead Agency	Director, Individual Communities
Status	Not Started

Mitigation Action	Public Awareness/Education
Description	Through activities such as outreach projects, distribution of maps and environmental education increase public awareness of natural hazards to both public and private property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. Also, educate citizens on water conservation methods, evacuation plans, etc. In addition, purchasing education equipment such as overhead projectors and laptops.
Hazard(s) Addressed	All Hazards
Estimated Cost	$0 - $5,000+
Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Director
Status	In Progress. Agency website, Facebook, and programs in communities are used for outreach.

Mitigation Action	Safe Rooms and Storm Shelters
Description	Assess, design and construct fully supplied safe rooms in highly vulnerable urban and rural areas such as mobile home parks, campgrounds, schools, and other such areas throughout the planning area. Assess the adequacy of current public buildings to be used as safe rooms. Construct safe rooms in areas of greatest need, either as new construction or retrofitting. The Niobrara Council would like the four permanent restrooms (Berry Bridge, Brewer Bridge, Stan's Landing, and Meadville Park) to be safe rooms as well.
Hazard(s) Addressed	Tornadoes, High Winds, Severe Thunderstorms
Estimated Cost	$200 - $300 per square foot
Funding	General Budget
Timeline	2-5 Years
Priority	High
Lead Agency	Director, Niobrara Council
Status	Planning Stage. Currently going through public input.

Mitigation Action	Sheltering in Place Outreach
Description	Ensure that all critical facilities, businesses, and residents located near major transportation corridors and near fixed site chemical facilities are aware of how to safely shelter in place in the event of a chemical incident.
Hazard(s) Addressed	All Hazards
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	5+ Years
Priority	High
Lead Agency	Director
Status	In Progress. Currently use CodeRed and public information.

Mitigation Action	Vulnerable Population Support Database
Description	Work with stakeholders to develop a database of vulnerable populations and the organizations which support them.
Hazard(s) Addressed	All Hazards
Estimated Cost	Staff Time
Funding	Staff Time
Timeline	5+ Years
Priority	Medium
Lead Agency	Director
Status	In Progress. Currently working with communities and counties to determine who they are.

Mitigation Action	Warning Systems
Description	Improve city cable TV interrupt warning system and implement telephone interrupt system such as Reverse 911.
Hazard(s) Addressed	All Hazards
Estimated Cost	$10,000+
Funding	General Budget
Timeline	2-5 Years
Priority	Medium
Lead Agency	Director
Status	Not Started. Currently using 911 and CodeRed.

Removed Mitigation Actions

Mitigation Action	Business Continuity Plans
Description	Educate local businesses on the value of continuity planning.
Hazard(s) Addressed	All Hazards
Reason for Removal	The agency would like to focus on other projects.

Mitigation Action	Community Continuity Plan
Description	Develop continuity plans for critical community services.
Hazard(s) Addressed	All Hazards
Reason for Removal	The agency would like to focus on other projects.

Mitigation Action	Drought Monitoring Plan and Procedures
Description	Develop and implement a plan/program to monitor the effects of drought.
Hazard(s) Addressed	Drought
Reason for Removal	The agency would like to focus on other projects.

Mitigation Action	Facilities for Vulnerable Populations
Description	Ensure that all critical facilities, businesses, and residents located near major transportation corridors and near fixed site chemical facilities are aware of how to safely shelter in place in the event of a chemical incident.
Hazard(s) Addressed	All Hazards
Reason for Removal	The agency would like to focus on other projects.

Mitigation Action	Weather Radios
Description	Conduct an inventory of weather radios at schools and other critical facilities and provide new radios as needed.
Hazard(s) Addressed	All Hazards
Reason for Removal	The agency would like to focus on other projects.

NRD Profile

Lower Niobrara Natural Resources District

Region 24 Emergency Management
Multi-Jurisdictional Hazard Mitigation Plan Update

2021

Local Planning Team

Table LND.1: Lower Niobrara NRD Local Planning Team

Name	Title	Jurisdiction
Terry Julesgard	General Manager	Lower Niobrara NRD

Location and Geography

The Lower Niobrara Natural Resources District (NRD) is located in north-central Nebraska and covers 1,699,200 acres. It is comprised of all of Boyd and parts of Keya Paha, Holt, Knox, and Rock Counties. Major waterways in the area include the Niobrara River, Missouri River, and Verdigre Creek. The Lower Niobrara NRD topographic regions include sand hills, bluffs and escarpments, dissected plains, plains, and valleys.[6] The office for the NRD is located in the Village of Butte. The Lower Niobrara NRD also owns and operates the West Knox Rural Water System. The current system supplies water to Village of Verdigre, Village of Winnetoon, and 244 rural customers.

Transportation

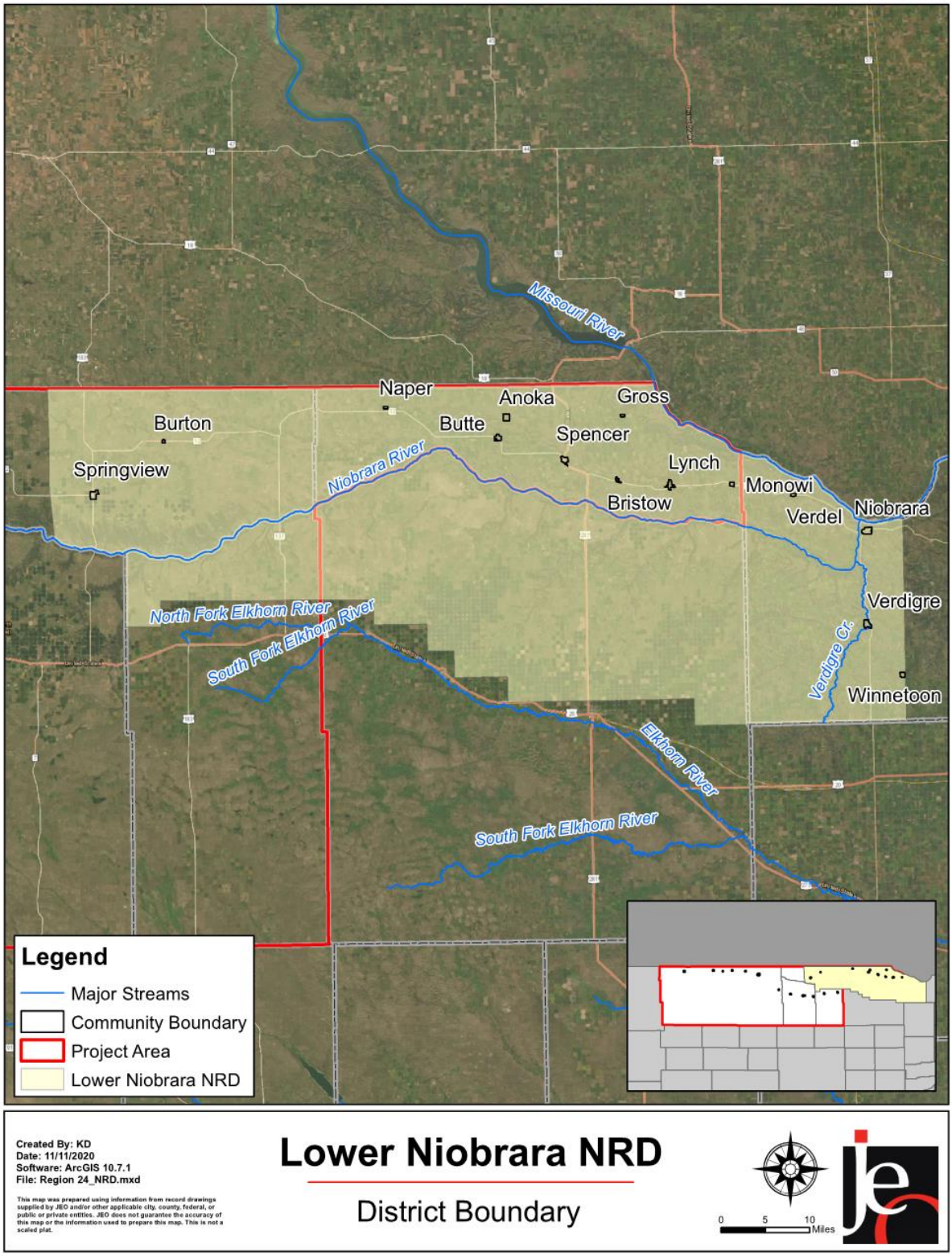
The Lower Niobrara NRD's major transportation corridors include US Highway 183, 281 and State Highway 7, 11, 12, 14, 137. The most traveled route is Highway 281 with an average of 1,790 vehicles daily, 300 of which are trucks.[7] Highway 281 is the primary north/south route through the district and Highway 12 is the primary east/west route. Highways 11 and 137 and county roads 470, 503, and 514 are also vital to the NRD as they connect communities. There are no rail lines traveling through the district. In March 2019 the Niobrara Bridge was washed out and is currently being rebuilt. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Demographics

Incorporated communities in the district include: Springview, Burton, Naper, Anoka, Butte, Gross, Spencer, Bristow, Lynch, Monowi, Verdel, Niobrara, Verdigre, and Winnetoon. The U.S. Census Bureau does not recognize the NRD as a distinct unit and as a result, there is no population data generated specifically for the NRD. The local planning team indicated that the popualtion served by the NRD in 2010 was 6,985 but they anticipate that number to have decreased in the 2020 census. For information regarding population data, please refer to a specific jurisdiction's community profile or to *Section Three: Demographics and Asset Inventory.*

6 Center for Applied Rural Innovation. "Topographic Regions Map of Nebraska." 2001. http://digitalcommons.unl.edu/caripubs/62.
7 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map]. https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34.

Figure LND.1: Lower Niobrara NRD



Future Development Trends

Over the last five years, the major change that affected the NRD was the 2019 floods. Flooding along the Niobrara River resulted in the loss of a public recreation area, loss of bridges, roads, and fencing. There are plans to clean-up the old power plant, but the recreation area future is unclear. Most of the bridges and roads have been rebuilt and some are still under construction. The flood event produced a new access point into the Niobrara/Missouri River near the Village of Niobrara. A new parking area and small boat launching area is being created on the west bank of the Mormon Chute.

In 2017 the West Knox Rural Water System added two new supply wells to the system. These wells are located one mile south of the existing system on 80 acres purchased by the NRD. In addition to the wells, over two miles of mainline, three meter pits, and a completely updated monitoring system was installed. The system adds two to six rural homes, cabins, or feeding operations hookups each year.

Parcel Improvements and Valuation

Please refer to the individual community and county profiles for information regarding parcel improvements, valuation, and discussion for specific jurisdictions across the planning area.

Community Lifelines

Critical Facilities

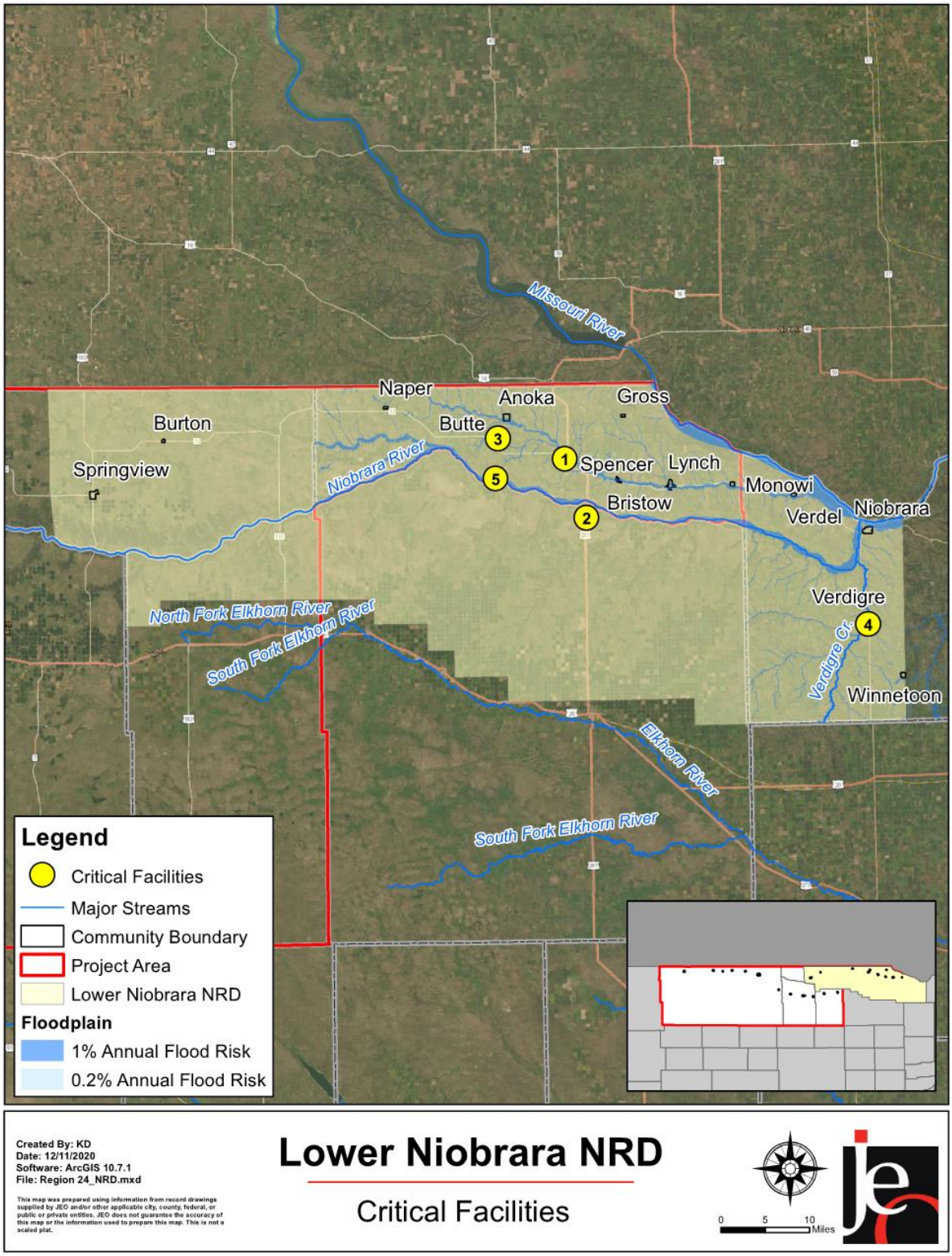
Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during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

Table LND.2: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Boyd County Rural Water District #2 – Office	N	N	N
2	Boyd County Rural Water District #2 – Wells	N	Y	N/A
3	NRD Office	N	N	N
4	West Knox Rural Water System	N	N	N
5	Village of Butte – Well	N	Y	Y

N/A: County does not have a mapped floodplain, so it is not known if the facility is located in the floodplain.

Figure LND.2: Critical Facilities



Historical Occurrences

See the Keya Paha, Boyd, Holt, Knox, and Rock County profiles for historical hazard events, including the number of events, damages, and any fatalities or injuries.

The following table provides a summary of hazards that have or have the potential to affect the Lower Niobrara NRD. The district was evaluated for previous hazard occurrence and the probability of future hazard events on each of the 20 hazards profiled in this plan. The evaluation process was based on hazard data collected; previous impacts or the potential for impacts to infrastructure, critical facilities, people, and the economy; and the proximity to certain hazards such as dams and levees.

Table LND.3: Lower Niobrara NRD Hazard Matrix

Hazard	Lower Niobrara NRD
Ag. Disease	X
Chemical (Fixed Site)	X
Chemical (Transportation)	X
Civil Disorder	X
Dam Failure	X
Drought	X
Earthquakes	X
Extreme Heat	X
Flooding	X
Grass/Wildfires	X
Hail	X
High Wind	X
Landslides	X
Levee Failure	
Public Health Emergency	X
Severe Thunderstorms	X
Severe Winter Storms	X
Terrorism	X
Tornadoes	X
Transportation Incidents	X

Hazard Prioritization

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

Chemical & Radiological – Fixed Site

Within the district boundaries, there is one farm supply location which handles agricultural chemicals and fertilizers. No large, fixed site chemical spills have occurred in the past. The district has course soil and shallow aquifers which increase the chances for groundwater contamination in the event of a spill. There is little the NRD can do to mitigate chemical spills as all chemical storage locations are within community boundaries and therefore under their or the Nebraska Department of Environment and Energy's jurisdiction. Depending on the size of the spill the district may need to monitor the aquifer in the area for possible changes in water quality.

Chemical & Radiological – Transportation

A majority of the transported chemicals enter the district from the south. Highways 281 and 12 cause the most concern for a possible spill. Highway 281 because of the amount of truck traffic and Highway 12 because of the hilly terrain and curves. Most agricultural chemicals including fertilizer, insecticides, and herbicides are transported on local routes. No large, transportation chemical spills have occurred in the past. If a large spill were to occur, the Nebraska Department of Environment and Energy would handle the cleanup. The NRD would need to monitor the cleanup and possibly do additional water quality testing in the area to make sure the spill did not affect the ground or surface water.

Drought

Drought is always a concern because agriculture is the primary driver of the economy in the district. With irrigated agriculture, drought is less of an issue unless it is prolonged. The district has Rules and Regulations regarding declines in aquifer levels and steps to take in the event of a prolonged drought to help preserve the aquifer as much as possible (Rule 17). The last major drought in the district occurred in 2012. Aquifer declines across the entire NRD caused the district to stop allowing new irrigated acres to be developed. Areas on the outer edges of the aquifer were being affected because they were pumping too much air. Pumps had to be modified to reduce the gallons per minute pumped. During this time The Rules and Regulations were updated with Rule 17 to address aquifer declines. Large rain events in 2018 and 2019 have helped aquifer levels return to or be greater than pre-2012 levels. The U.S. Drought Monitor is used to define drought conditions in the area. Localized areas are further monitored using dedicated monitoring wells. An additional twenty new monitoring wells are currently in the process of being added. The district also annually measures the static water levels of 79 irrigation wells in the spring and fall. The NRD is currently working on the purchase of NPPD Niobrara River Water Rights. A drought plan for the NRD has not been developed but may be discussed in the future.

Flooding

The 2019 flood caused major disruptions in transportation. For six months there were only three bridges which survived the flood. Gravel roads were also affected, and many times were nearly impassable without four-wheel drive. This greatly increased the cost of doing business for the NRD, with increases in travel time, fuel, and vehicle repairs because of the poor road conditions. In addition, the flooding took out the 12-inch mainline of the Boyd County Rural Water District #2 system and damaged several water lines in the West Knox Rural Water System. The West Knox Rural Water System was able to restore service within 10 hours, but the Boyd County system was down for eight months. Other localized flood events have occurred in the past, but most caused little damage. Riverine flooding is more of a concern in the district because the course soils help reduce flash flooding. The NRD is currently in the beginning phase of developing a watershed plan for Verdigris Creek to help manage the flows during extreme rain events.

Grass/Wildfires

Mismanagement of the eastern redcedar in the district has increased the vulnerability of the area to grass/wildfires. Past wildfires events have not directly impacted the Lower Niobrara NRD. To help mitigate the occurrence and impacts of grass/wildfires, the district encourages range and tree management, provides seedling trees to replace lost windbreaks, and provides a cost share on cross fencing and waterlines to assist in better management of range land.

Severe Thunderstorms

Primary concerns regarding severe thunderstorms are mainly associated with the West Knox Rural Water System. Loss of power or lightning damage to equipment are the main concerns. Severe thunderstorms impact the water system on almost a yearly basis. Typically impacts are minor damage to a circuit boards but larger damages to motors and pumps have occurred in the past.

Severe Winter Storms

Large amounts of snowfall late in the season in 2019 was one of the causes of the 2019 floods discussed earlier. Other past impacts include the NRD office being closed for a day or two and the West Knox Rural Water System being impacted with a power loss and waterline breaks from shifting frozen ground. The rural water system has a side by side with tracks to help access area in the event of a large snow or blizzard. The NRD would like to upgrade waterline stream crossings to reduce the risk of freezing during severe winter storms.

Tornadoes

No tornadic events have significantly impacted the NRD but that does not mean there is no risk. Most residents in the district rely on smart phones for weather information and warnings. During a tornado, the restrooms in the NRD office are designated shelter locations. In the event of a disaster, the rural water system has mutual aid agreements through WARN with the other public water supply systems across the state.

Governance

The NRD is governed by a group of 17 elected Board of Directors from eight subdistricts and one at large member. The NRD serves both incorporated and unincorporated areas within their district and has the capability to financially and administratively assist villages, cities, and counties with mitigation actions (most commonly flood control and drainage improvements). The following positions may help implement mitigation projects:

- General Manager
- Assistant Manager
- Water Resources Coordinator
- Programs Assistant
- West Knox Rural Water System

Capability Assessment

The NRD has the authority to levy taxes for specific purposes. The NRD also regularly engages in public education and information programs related to hazard mitigation in the area, and routinely works with other counties, cities, and villages within their jurisdictional boundaries. The following tables summarize the NRD's planning and regulatory capability; administrative and technical capability; fiscal capability; educational and outreach capability; and overall capability to implement mitigation projects.

Table LND.4: Overall Capability

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

Plan Integration

The NRD has two planning documents that relate to hazard mitigation and are discussed below. In addition, the NRD is doing some very preliminary work on some possible watershed plans. If they do move forward, the planning should be completed within the next five years. The district will seek out and evaluate any opportunities to integrate the results of the current HMP into other planning mechanisms and updates.

Integrated Management Plan (2019)

The purpose of the Integrated Management Plan is to maintain a desired balance between water uses and water supplies of both surface water and groundwater sources in both the near-term and long-term future. Goals include the adequate collection of data to assess water resources, development of systematic approaches for the development and sustainability of water resources, prevention of water related conflicts, and development of education opportunities and outreach materials about hydrologically connected surface and groundwater. The plan also contains several regulatory and non-regulatory action items to help achieve these goals and objectives. This plan is reviewed annually by the NRD and Nebraska Department of Natural Resources.

Rules and Regulations (2019)

The Rules and Regulations adopted by the Lower Niobrara NRD apply to matters of groundwater quality, groundwater quantity, and the prevention of conflicts between users of hydrologically connected groundwater and surface water. It does this through various regulations such as certification of irrigated acres, well permits, transfer of groundwater, and others. Rule 17 specifically relates to drought by establishing triggers for groundwater quantity protection. These rules and regulations are reviewed annually by the NRD.

Mitigation Strategy

The Lower Niobrara NRD's funds are sufficient to pursue new capital projects and have stayed the same or decreased slightly over recent years. Grant assistance may be necessary to help pay for current and future mitigation actions. The NRD has experience applying for grants and has been awarded Nebraska Environmental Trust grants in the past.

New Mitigation Actions

Mitigation Action	Backup and Emergency Generators
Description	Set up a backup generator at well #4 to be used in the event of power loss to the pumping system.
Hazard(s) Addressed	All Hazards
Estimated Cost	$75,000
Funding	General Fund
Timeline	2-5 Years
Priority	Medium
Lead Agency	General Manager, West Knox Rural Water System
Status	Planning Stage. Location has been determined, currently looking at funding options.

Mitigation Action	Stream Crossing Upgrades
Description	Use directional boring to replace the waterlines deeper in the soil profile to protect them from damage during flood events and from freezing during the winter months.
Hazard(s) Addressed	Flooding, Severe Winter Storms
Estimated Cost	$400,000
Funding	General Fund
Timeline	2-5 Years
Priority	High
Lead Agency	General Manager, West Knox Rural Water System
Status	Awaiting Funding. Currently working with FEMA on funding options.

NRD Profile

Middle Niobrara Natural Resources District

Region 24 Emergency Management
Multi-Jurisdictional Hazard Mitigation Plan Update

2021

Local Planning Team

Table MND.1: Middle Niobrara NRD Local Planning Team

Name	Title	Jurisdiction
Mike Murphy	General Manager	Middle Niobrara NRD
Zac Peterson	Assistant Manager	Middle Niobrara NRD
Chandler Schmidt	Watershed Coordinator	Middle Niobrara NRD
Rusty Osburn	County Sheriff	Cherry County
Kent Lopez	Road Superintendent	Cherry County
James Ward	Commissioner	Cherry County
Martin DeNaeyer	Commissioner	Cherry County
Tanya Storer	Commissioner	Cherry County
Gary Weaver	Deputy County Emergency Manager	Cherry County

Location and Geography

The Middle Niobrara Natural Resources District (NRD) is located in north-central Nebraska and is comprised of parts of Cherry, Brown, Keya Paha, and Rock Counties. It covers an area of 2,983,680 acres. Major waterways in the area include the Niobrara River, Snake River, and Minnechaduza Creek. The NRD topographic regions include bluffs and escarpments, plains, and valleys and a vast majority of the NRD is characterized by the sandhills region.[8] The office for the NRD is located in the City of Valentine.

Transportation

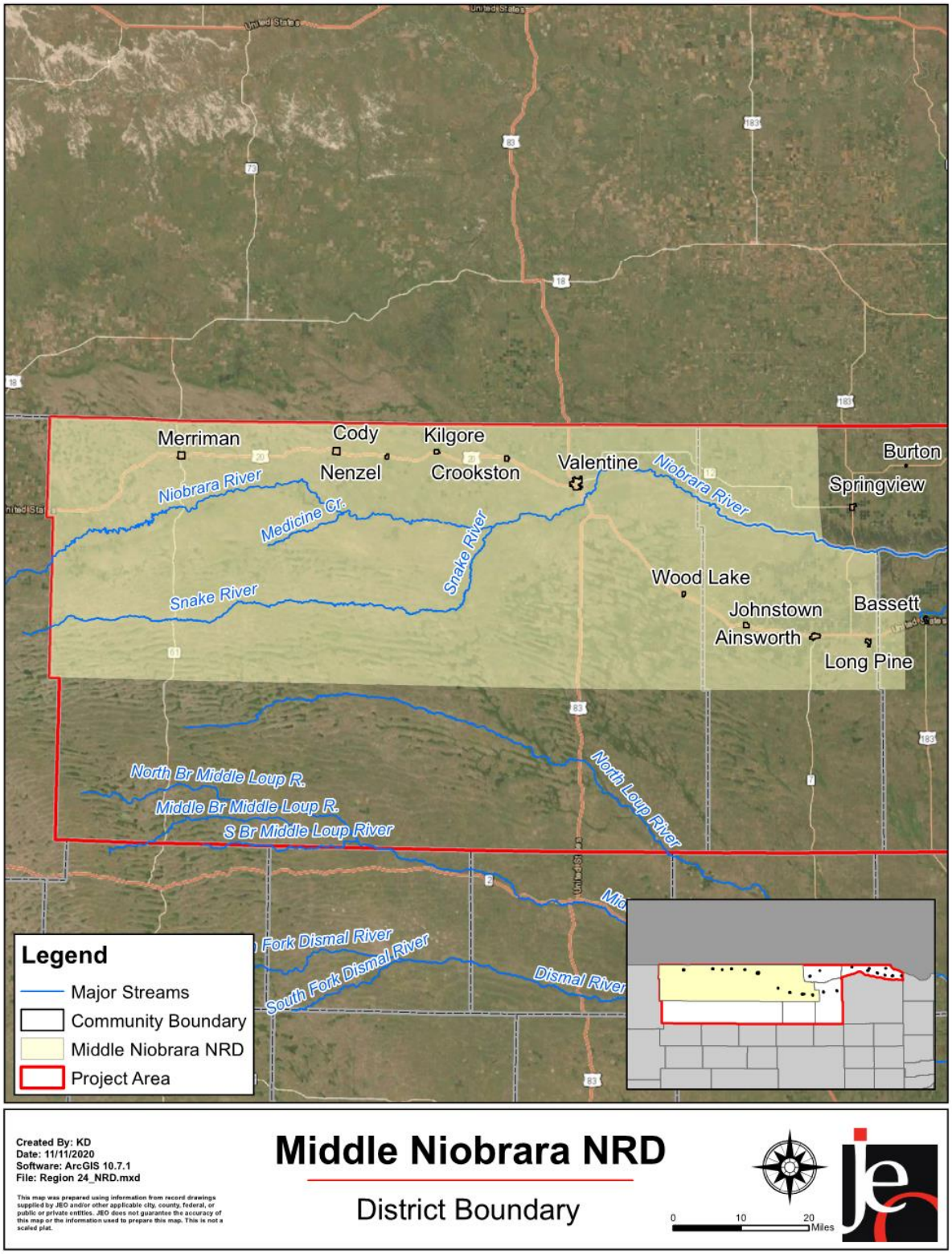
The Middle Niobrara NRD's major transportation corridors include US Highway 20, 83 and State Highway 7, 12, 97. The most traveled route is Highway 20 with an average of 3,900 vehicles daily, 340 of which are trucks.[9] Highway 83, Highway 61 south of Merriman, the old Highway 7 detour north of Ainsworth, Highway 97, Moon Lake Road south of Johnstown, and Cherry County roads have all been regularly closed due to flooding issues. There are no railway lines located in the NRD boundary. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk of transportation incidents.

Demographics

Incorporated communities within the district include Merriman, Cody, Kilgore, Crookston, Valentine, Wood Lake, Johnstown, Ainsworth, and Long Pine. It is estimated that the Middle Niobrara NRD serves an estimated population of about 5,800 people across four counties.[10] However, the NRD does not collect the demographic information of their population, nor does the U.S. Census Bureau recognize the NRD as a distinct unit. As a result, there is no population data generated specifically for the NRD. For information regarding population data, please refer to a specific jurisdiction's community profile or to *Section Three: Demographics and Asset Inventory.*

8 Center for Applied Rural Innovation. "Topographic Regions Map of Nebraska." 2001. http://digitalcommons.unl.edu/caripubs/62.
9 Nebraska Department of Roads. 2018. "Interactive Statewide Traffic Counts Map." [map]. https://gis.ne.gov/portal/apps/webappviewer/index.html?id=bb00781d6653474d945d51f49e1e7c34.
10 United States Census Bureau. "DP05: Demographic and Housing Estimates [database file]. https://data.census.gov/cedsci/.

Figure MND.1: Middle Niobrara NRD



Future Development Trends

Over the past five years, the groundwater has risen an average of five feet across the district. Many roads were damaged and continue to be repaired due to the 2019 floods. Brown County lost the old Highway 7 box culvert and that has yet to be replaced. The NRD completed a 2-tiered stream structure and bank stabilization project on Sand Draw Creek north of Ainsworth one mile downstream of Highway 7. In the next five years, the NRD is looking to add an alternate heat system by implementing a boiler system and backup power generator at the NRD office. Additionally, a tornado shelter may also be added.

Parcel Improvements and Valuation

Please refer to the individual community and county profiles for information regarding parcel improvements, valuation, and discussion for specific jurisdictions across the planning area.

Community Lifelines

Critical Facilities

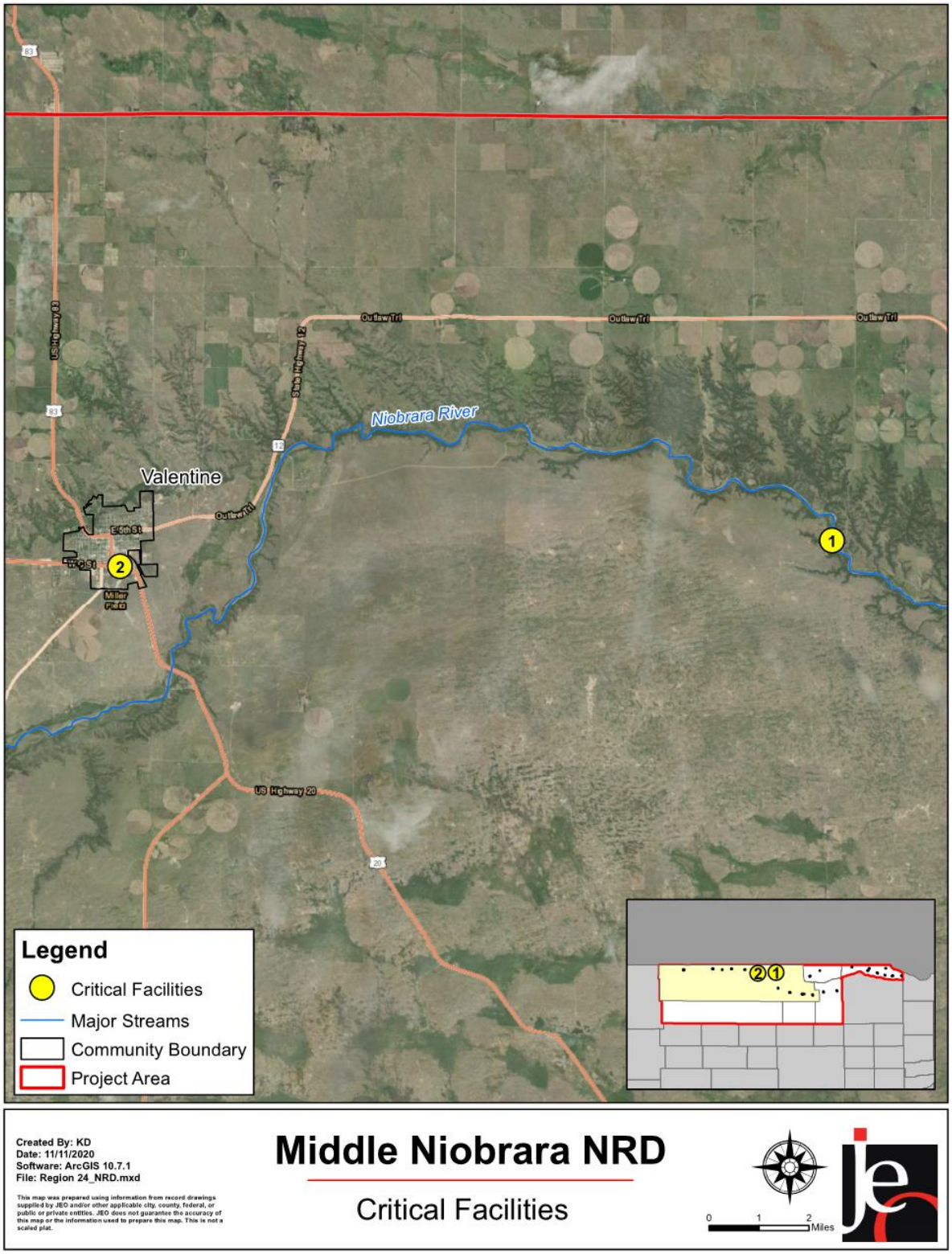
Each participating jurisdiction identified critical facilities vital for disaster response, providing shelter to the public, and essential for returning the jurisdiction's functions to normal during and after a disaster per the FEMA Community Lifelines guidance. Critical facilities were identified during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

Table MND.2: Critical Facilities

CF Number	Name	Community Shelter (Y/N)	Generator (Y/N)	Floodplain (Y/N)
1	Brewer Bridge Landing	N	N	Y*
2	NRD Office	N	N	N/A

N/A: The county does not have a mapped floodplain, so it is not known if any of the facilities are located in the floodplain.
**Although there is no floodplain, the facility is located directly on the Niobrara River*

Figure MND.2: Critical Facilities



Historical Occurrences

See the Cherry, Brown, Keya Paha, and Rock County profiles for historical hazard events, including the number of events, damage estimates, and any fatalities or injuries.

The following table provides a summary of hazards that have or have the potential to affect the NRD. The district was evaluated for previous hazard occurrence and the probability of future hazard events on each of the 20 hazards profiled in this plan. The evaluation process was based on hazard data collected; previous impacts or the potential for impacts to infrastructure, critical facilities, people, and the economy; and the proximity to certain hazards such as dams and levees.

Table MND.3: Middle Niobrara NRD Hazard Matrix

Hazard	Middle Niobrara NRD
Ag. Disease	X
Chemical Spills (Fixed Site)	X
Chemical Spills (Transportation)	X
Civil Disorder	X
Dam Failure	X
Drought	X
Earthquakes	X
Extreme Heat	X
Flooding	X
Grass/Wildfires	X
Hail	X
High Wind	X
Landslides	X
Levee Failure	
Public Health Emergency	X
Severe Thunderstorms	X
Severe Winter Storms	X
Terrorism	X
Tornadoes	X
Transportation Incidents	X

Hazard Prioritization

The hazards discussed in detail below were either identified in the previous HMP and determined to still be of top concern or were selected by the local planning team from the regional list as relevant hazards for the district. The selected hazards were prioritized by the local planning team based on historical hazard occurrences, potential impacts, and the district's capabilities. Although not a hazard identified in this plan, the NRD is also concerned with water quality. Chemical spills fixed site, chemical spills transportation, flooding, landslides, and public health emergency can all affect water quality. For more information regarding regional hazards, please see *Section Four: Risk Assessment*.

Drought

Drought is a concern because of the impacts it has on the district. Economically, farmers and ranchers lose money if drought causes loss of crops and hay ground. In addition, if the water supply is low, farmers and ranchers will have to spend more money on irrigated crops. Environmental impacts include loss of fish and wildlife habitat, lack of food and water for animals, lower water levels in bodies of water, increased soil erosion, increased wildfire potential, and poor soil quality. The last major drought that occurred was in 2012. It caused local issues including stressed crops and livestock, groundwater level decline, and drinking water level decline.

Flooding

In March 2019 the NRD experienced flooding across the district due to the "Bomb Cyclone". Heavy rains and rapid snow melt caused water levels to rise and damaged property, crop land, roads, bridges, culverts, livestock, and contamination of household wells. The event also caused the groundwater to rise five feet, which has forced long-term groundwater management issues that will need to be addressed. Flooding in September 2019 caused a box culvert on the old Highway 7 to be washed away. Both flash flooding and riverine flooding occur in the district. Valentine experiences flash flooding, while the Long Pine Creek watershed and other riparian areas experience riverine flooding. In order to reduce the impacts of flooding, the NRD completed a 2-tiered stream structure and bank stabilization project on Sand Draw Creek north of Ainsworth a mile downstream of Highway 7.

Grass/Wildfires

The sandhills within the district has many farms, ranches, and recreational opportunities, all of which can be negatively impacted by grass/wildfires. Past large wildfire events occurred in 2006 and 2012. These fires caused property and crop damage. They also came very close to impacting the City of Valentine. The NRD has a water tender truck that can be used if needed when there is a wildfire to help assist the local volunteer fire departments.

Severe Winter Storms

The last significant winter storm in the district was the March 2019 "Bomb Cyclone". In addition to the flooding impacts listed above, the cold weather and snow caused a significant loss of livestock. The loss of infrastructure from the event caused additional travel time for NRD staff to get to places within the district. The NRD is looking to add an alternate heat system by implementing a boiler system and backup power generator in the NRD office.

Governance

The NRD is governed by a group of seven elected Board of Directors from six subdistricts plus one member at large. The NRD serves both incorporated and unincorporated areas within their district and has the capability to assist villages, cities, and counties with mitigation actions (most commonly flood control and drainage improvements). The following positions may help implement mitigation projects:

- General Manager
- Assistant/Office Manager
- Water Program Supervisor
- Natural Resource Supervisor
- Administrative Assistant
- Watershed Coordinator
- Natural Resources Technicians

Capability Assessment

The NRD has the authority to levy taxes for specific purposes and to issue general obligation bonds to finance certain projects. The NRD also regularly engages in public education and information programs related to hazard mitigation in the area, and routinely works with other counties, cities, and villages within their jurisdictional boundaries.

The capability assessment consisted of a review of existing policies, regulations, plans, and programs with hazard mitigation capabilities. The following table summarizes the NRD's overall capability to implement mitigation projects.

Table MND.4: Overall Capability

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

Plan Integration

The Middle Niobrara NRD has two planning documents that relate to hazard mitigation and they are discussed below. No other planning documents were identified during this process. The NRD will seek out and evaluate any opportunities to integrate the results of the current hazard mitigation plan into other planning mechanisms and updates.

Groundwater Management Plan (1995)

The Groundwater Management Plan evaluates the district's groundwater and develops procedures for protecting it into the future. The plan gives a background on the district's current groundwater resources then outlines groundwater quantity management and groundwater quality management. Within these sections management activities, policies, and threats are discussed.

Voluntary Integrated Management Plan (2020)

The purpose of the Voluntary Integrated Management Plan is to maintain a desired balance between water uses and water supplies of both surface water and groundwater sources in both the near-term and long-term future. Goals include the adequate collection of data to assess water resources, development of systematic approaches for the development and sustainability of water resources, and development of education opportunities and outreach materials about hydrologically connected surface and groundwater. This plan is reviewed annually by the NRD and Nebraska Department of Natural Resources.

Mitigation Strategy

The Middle Niobrara NRD's funds are limited to maintaining current facilities and systems with a large portion dedicated to staff and district administration needs. Funds have stayed the same over recent years and the NRD is likely to need assistance from grants to help pay for many of the projects listed below. The NRD has experience in applying for grants and has been awarded several grants over recent years.

New Mitigation Actions

Mitigation Action	Backup and Emergency Generator
Description	A backup power generator is needed for the NRD office.
Hazard(s) Addressed	All Hazards
Estimated Cost	$40,000+
Funding	Tax Dollars
Timeline	2-5 Years
Priority	Medium
Lead Agency	General Manager, Board of Directors
Status	Not Started

Mitigation Action	Boiler System
Description	A boiler system and backup generator are needed for an alternate heating system at the NRD office.
Hazard(s) Addressed	Severe Winter Storm
Estimated Cost	$250,000
Funding	Tax Dollars
Timeline	2-5 Years
Priority	Medium
Lead Agency	General Manager, Board of Directors
Status	Not Started

Mitigation Action Name	Safe Rooms and Storm Shelters
Description	A tornado shelter is needed for the NRD office.
Hazard(s) Addressed	Tornadoes, Severe Thunderstorms, High Winds
Estimated Cost	$10,000
Funding	Tax Dollars
Timeline	2-5 Years
Priority	High
Lead Agency	General Manager, Board of Directors
Status	Planning Stage